

STATE FARM RECORD KEEPING SYSTEMS AND
COMPARATIVE FINANCIAL STATEMENT ANALYSIS

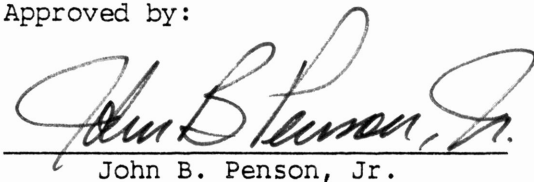
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ABSTRACT

State Farm Record Keeping Systems and
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Chapter I is an introductory chapter which provides a brief overview of the thesis. It is in Chapter II where the thesis begins to take form. Chapter II provides an analysis of the basic structure of the income statement, balance sheet, and cash flow. The means of analyzing these three statements is included in Chapter II. Ratio analysis is the most common form of financial statement analysis therefore the discussion is limited to the type of analysis. There are four groups of ratios that are discussed in Chapter II. These groups are the liquidity, solvency, efficiency and profitability ratios. Included in the discussion of the ratios are examples from each category. The last part of Chapter II has a brief discussion over proforma analysis. This is the process of forming some expectations about the future and then formulating plans and budgets around these expectations.

Chapter III and Chapter IV are the two most important chapters in this thesis. Chapter II has a brief discussion concerning the need for comparative analysis for farmers. It is in Chapters III and IV that this idea is expanded upon. Chapter III discusses the state recording keeping systems that are used in other states. Two

of the states discussed in this chapter, Illinois and Kansas, have the oldest record keeping in the country. The information available from the Texas Agricultural Extension Service to Texas farmers is also presented in Chapter III. This information is very limited in scope compared to the type of information a farmer in Illinois or Kansas has available. Thus Chapter IV presents the types of analysis that a farmer in Kansas can do that a Texas farmer cannot. Chapter IV concludes with a set proposals for establishing some form of a state record keeping system in Texas.

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CHAPTER I

INTRODUCTION

The purpose of this paper is to examine the record keeping systems in selected states and to examine the financial data available to farmers through these record keeping systems.

The second chapter of this paper covers the basic financial statements used by farmers when conducting an analysis of their farm operation. The three statements covered in this chapter are the balance sheet, income statement and cash flow statement. Once a basic knowledge of these statements has been established the means of analyzing these statements is discussed. Ratio analysis is the most common method of analyzing financial statements. These four divisions are profitability, efficiency, solvency and liquidity. There are four divisions of ratios that are covered in Chapter II.

Chapter II also has a brief discussion on proforma analysis. This is the process of forming some expectations for the future. Proforma analysis involves predicting future prices and yields and then formulating budgets around these predictions.

The third chapter covers the financial record keeping systems that are operating in some states. This chapter reviews some of the information that is available to farmers in states that have record keeping. The most common method of a record keeping system is the farm business management association. These associations are dis-

The citations on the following pages follow the style of the *American Journal of Agricultural Economics*.

cussed along with the information they provide to the farmers in their state. In addition to the farm record keeping systems in other states the chapter describes the types of information provided to Texas farmers by the Texas Extension Service.

The last chapter describes the types of analysis a farmer in Kansas can do that a Texas farmer cannot. The farm record keeping system in Kansas is one of the oldest and most respected in the country. It is for these reasons that Kansas was used instead of another state. The last section of Chapter IV has three proposals which would enable Texas to have a record keeping system. This is a system that would enable farmers in one part of the state to compare their operation to others of similar type and size throughout the state.

CHAPTER II

DESIGN AND ANALYSIS OF FINANCIAL STATEMENTS

There are three financial statements that are used in both agribusiness and agricultural-related businesses. These statements are the balance sheet, income statement, and cash flow statement. A financial analysis cannot be conducted without the use of these statements. The purpose of this chapter is to discuss the basic structure of these statements and why they are needed.

Balance Sheet

The balance sheet is a snapshot of a particular farmer's financial position. It shows the value of the resources used in his operation on the day it is completed. Most farmers chose December 31st as the day to complete their balance sheet. This provides them with the value of their resources for the year just ended and as they begin the new year. By examining his balance sheet, the farmer is able to determine what he owns of value, and what he owes to others. In agriculture, a consolidated balance sheet is often used. This consolidated balance sheet combines personal and business assets and liabilities.

Balance sheets are broken down into three components. These components are assets, liabilities, and net worth. The balance sheet is based on the fundamental accounting equation which states that assets equal liabilities plus net worth. A change on one side of the equation results in a change on the other side to keep the

equation "balanced."

Assets, as stated earlier, are anything that a farmer owns of monetary value. A more formal definition would be "resources which have value and are owned by the farmer." Assets may be divided into three categories according to their expected life. These three categories are current, intermediate, and long-term assets. Current assets are those assets that are used up or converted to cash within a year. They are listed according to their liquidity. Liquidity is the ability to convert assets to cash without disrupting the day to day operations of the business. Cash and near cash items are included in the current asset section. Some items that might appear in this section include: cash (this includes checking account balances and currency), time and savings deposits, marketable securities, and inventories waiting to be sold.

Intermediate assets are assets that will not be converted to cash for at least a year but will be consumed or sold sometime in the next 10 years. Examples of assets that fall in this category are: farm machinery, breeding livestock, household goods and motor vehicles. Finally, long-term assets are assets whose expected life is greater than 10 years. Land and permanent improvements to the land (e.g., buildings) fall in this category.

Moving to the other side of the balance sheet accounting equation, liabilities are grouped the same way as assets. That is, there are current, intermediate and long-term liabilities. Current liabilities are those obligations that are payable within a year's time. Some examples of what might be included in this category are:

Figure 1 Balance Sheet

Consolidated Balance Sheet for:

Date:

ASSETS		LIABILITIES AND NET WORTH	
Current Assets:		Current Liabilities:	
Cash	\$ _____	Accounts payable	\$ _____
Savings and time deposits	_____	Short term notes payable	_____
Marketable securities (\$ _____)	_____	Current payment on intermediate and long term note	_____
Accounts receivable	_____	Accrued interest	_____
Short term notes receivable	_____	Accrued taxes:	
Inventories:		Income and self-emplmt.	_____
Livestock	_____	Property taxes	_____
Crops and feed	_____	Employer taxes	_____
Supplies	_____	Accrued rents and leases	_____
Prepaid expenses	_____	Contingent tax on sale of current assets	_____
Other	+ _____	Other	+ _____
Total	\$ _____	Total	\$ _____
Intermediate Assets:		Intermediate Liabilities:	
Intermed. notes receivable	\$ _____	Intermediate notes less current payment	\$ _____
Machinery and motor vehicles (\$ _____)	_____	Sales contracts less current payment	_____
Breeding livestock (\$ _____)	_____	Life insurance policy loans less current payment	_____
Retirement accounts	_____	Contingent tax of sale of intermediate assets	_____
Cash value of life insurance	_____	Other	+ _____
Nonmarketable securities	_____	Total	\$ _____
Personal vehicles	_____		
Household goods	_____		
Other	+ _____		
Total	\$ _____		
Long term Assets:		Long term Liabilities:	
Long term contracts and notes receivable	\$ _____	Farm mortgages less current payment	\$ _____
Farm real estate:		Land contracts less current payment	_____
Land (\$ _____)	_____	Nonfarm mortgages less current payment	_____
Buildings (\$ _____)	_____	Contingent tax on sale of long term assets	_____
Residence (\$ _____)	_____	Other	+ _____
Other (\$ _____)	_____	Total	\$ _____
Nonfarm real estate (\$ _____)	_____		
Other	+ _____		
Total	\$ _____		
		Total Liabilities	_____
		Net Worth	+ _____
Total Asset	\$ _____	Total Liabilities and Net Worth	\$ _____

accounts payable, short term notes payable, current payment on intermediate and long-term notes, accrued expenses, and contingent tax on sale of current assets. Intermediate liabilities are those obligations that have a maturity of greater than one year but less than ten. Some examples are loans to finance intermediate assets less current payment, and the contingent tax on sale of intermediate assets. Finally, long-term liabilities are those obligations with a maturity of greater than 10 years. Liabilities falling into this category are: farm and nonfarm mortgages less current payment, and contingent tax on sale of long term assets.

Net worth is determined by subtracting total liabilities from total assets. If net worth is greater than zero, the operation is said to be solvent. This means the operator could convert all his assets to cash, pay off his liabilities, and still have some cash left over.

Income Statement

The income statement, or profit and loss statement as it is sometimes called, shows the farmer how profitable his operation has been during the year. Whereas the balance sheet is for a particular point in time, the income statement covers an entire year. The income statement should be consistent with the balance sheet. This means the income statement should be consolidated if the balance sheet is consolidated. It also means the income statement should be calculated on a calendar year basis if the balance sheet was calculated in this manner.

Figure 2 Income Statement

Consolidated Income Statement for:

Date:

Item	Subtotal	Total
Farm revenue:		
Crops and feed:		
Cash receipts	\$ _____	
Value of inventory change (±)	_____	
Livestock:		
Cash receipts	_____	
Value of inventory change (±)	_____	
Breeding stock:		
Cash receipts	_____	
Value of inventory change (±)	_____	
Livestock product receipts	_____	
Other cash farm revenue	_____	
Other noncash adjust. to revenue (±)	+ _____	
Subtotal	_____	
Purchase of feed and livestock	- _____	
Value of farm production	\$ _____	\$ _____
Farm expenses:		
Cash operating expenses (excluding interest, feed and lvsk.)	\$ _____	
Noncash adjustments to expenses:		
Depreciation	_____	
Increase in accounts payable (±)	_____	
Increase in accrued expenses (±)	_____	
Decrease in unused supplies (±)	_____	
Decrease in cash in growing crops (±)	_____	
Decrease in prepaid expenses (±)	+ _____	
Total operating expenses	\$ _____	
Interest on farm loans	- _____	
Total farm expenses	\$ _____	- _____
Income from farming operations		_____
Gain (loss) on sale of intermediate or long term farm assets (±)	_____	+ _____
Net farm income		_____
Nonfarm revenue:		
Nonfarm wages	_____	
Gain (loss) on sale of nonfarm assets	_____	
Other nonfarm revenue	- _____	
Total nonfarm income (loss)	\$ _____	+ _____
Income (loss) before taxes		_____
Provision for federal and other taxes	_____	- _____
Net Income		\$ _____

Income statements provide a summary of revenues and expenses that occurred during the year. The income statement can be divided up into four parts. These four parts are: revenue, expenses, taxes, and other.

Income from farming operations can be calculated by subtracting farm expenses from the value of farm production. Depreciation and any other noncash adjustments that are related to the farm operation should be included as farm expenses.

Any gain (loss) from the sale of an intermediate or long-term assets should be added (subtracted) to income from farming operations. By taking this step we have arrived at net farm income. By adding nonfarm revenue to net farm income, we can determine income (loss) before taxes and extraordinary items. Taxes that must be paid to the various taxing authorities are then calculated. The resulting tax expenses is then subtracted from income before taxes and extraordinary items, leaving before extraordinary items. The final step in arriving at net income is to *subtract* any extraordinary items the farmer might have. In most circumstances, extraordinary income is zero. However, there are some cases where it is greater than zero. One such case might be if the farmer had insured his crop and experienced some type of crop failure. Under these circumstances the insurance payment the farmer receives for the crop failure would be classified as an extraordinary item.

Cash Flow Statement

The cash flow statement also provides the farmer with valuable

insights to his operation. This statement is most useful when it has been broken down into monthly periods. By breaking this statement down into monthly periods, the farmer can see which months he will have a cash flow surplus (inflows exceed outflows) and which months he will have a cash deficit (outflows exceed inflows). This statement helps the farmer project his borrowing needs in advance.

The beginning cash balance is the first item on the cash flow statement. This beginning cash balance includes cash on hand and any funds that are in a checking account. Added to the beginning cash balance are other sources of cash that are available to the farmer. These other sources of cash would include cash receipts from farm marketings as well as other miscellaneous sources of cash.

The total amount of cash required is then subtracted from the total cash available. The amount of cash required can be broken down into five categories. These categories are 1) operating expenses, 2) income tax payments, 3) intermediate and long-term loan payments, 4) capital expenditures, and 5) other. Operating expenses would represent cash outlays for feed, seed, chemical and other items that are used in the operation of the farm. Income tax payments would include taxes assessed at the federal, state, and local government levels. It should be noted that short-term loan payments are not included with the intermediate and long-term payments. The short-term payments are included in a separate and distinct category in another component of the cash flow statement. Capital expenditures would include capital outlays the farmer has made for

Figure 3 Cash Flow Statement

Consolidated Cash Flow Statement for:

Date:

	1998	1999	2000	2001	2002
Cash available:					
1. Beginning cash	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
2. Crop receipts	_____	_____	_____	_____	_____
3. Livestock receipts	_____	_____	_____	_____	_____
4. Other farm receipts	_____	_____	_____	_____	_____
5. Other cash available +	+ _____	+ _____	+ _____	+ _____	+ _____
6. Total cash available	_____	_____	_____	_____	_____
Cash required:					
7. Total oper. expenses	_____	_____	_____	_____	_____
8. Income tax pymt. Loan pymt.(int.&long)	_____	_____	_____	_____	_____
9. Interest payments	_____	_____	_____	_____	_____
10. Principal payments	_____	_____	_____	_____	_____
11. Capital expenditures	_____	_____	_____	_____	_____
12. Other cash required +	+ _____	+ _____	+ _____	+ _____	+ _____
13. Total cash required	_____	_____	_____	_____	_____
14. Cash available minus cash required (6-13)	_____	_____	_____	_____	_____
15. Savings withdrawal	_____	_____	_____	_____	_____
16. Cash position (14+15)	_____	_____	_____	_____	_____
New Borrowing:					
17. Int. and long term	_____	_____	_____	_____	_____
18. Short term +	+ _____	+ _____	+ _____	+ _____	+ _____
19. Total borrowing	_____	_____	_____	_____	_____
Other uses:					
Loan pymt. (short)	_____	_____	_____	_____	_____
20. Interest payment	_____	_____	_____	_____	_____
21. Principal payment	_____	_____	_____	_____	_____
22. Additions to saving	_____	_____	_____	_____	_____
23. Ending cash (16 +19-20-21-22)	_____	_____	_____	_____	_____
Consistency check:					
24. Line 6+15+19	_____	_____	_____	_____	_____
25. Line 13+20+21+22+23	_____	_____	_____	_____	_____
Loan balances:					
26. Operating loans	_____	_____	_____	_____	_____
27. Intermediate loans	_____	_____	_____	_____	_____
28. Long term loans	_____	_____	_____	_____	_____

real estate, barns, and other intermediate and long-term assets. The other category for the total amount of cash required would include family withdrawals and cash gifts made to others.

Withdrawals from savings are then added to determine the farmer's cash position before borrowing. If this number is positive, then the farmer has excess cash that can be used for repaying short-term loans, adding to savings or increasing his checking account balance. Should this number be negative, it indicates the amount of additional the farmer cash needs to borrow.

The ending cash balance can finally be calculated by adding any new loans and subtracting short term loan payments and additions to saving from the cash position before borrowing.

Given this a basic knowledge of these three financial statements, the question of why they are needed can be raised. These statements provide the basis for financial analysis by either the farmer or his lender. Banks request a copy of these financial statements when a farmer has asked for a loan. By examining these statements, banks can assess the farmers present financial position and formulate some ideas about the risk associated with loaning the farmer additional money. For instance, if a farmer's income seems abnormally high, the lender could determine why this is the case. It might be the farmer received a capital gain from the sale of intermediate or long-term farm assets. This should be a warning signal to the lender, prompting him to make a more thorough examination of the farmer's financial statements. Farmers can also use their financial statements conduct an internal analysis of their

operation. By analyzing these statements the farmer can learn more about his financial position and performance as well as project his future borrowing needs. This requires that farmers and lenders know how to conduct ratio and proforma analysis. These two forms of analysis are discussed in detail below.

Ratio Analysis

Ratio analysis is one of the most widely used methods of financial statement analysis. There are ratios for profitability, efficiency, solvency, and liquidity. These ratios can help identify problems areas in a particular farm operation that might otherwise go unnoticed. Therefore, ratios are a useful tool in the financial analysis process.

Liquidity Ratios

There are two ratios that *are* especially useful in assisting the liquidity of a farm operation. These two ratios are the current ratio and the acid test ratio. The current ratio is calculated by dividing current assets by current liabilities. If the resulting value is greater than one the farmer has a liquid position. Therefore a current ratio of less than one would indicate illiquidity.

The quick ratio is similar to the current ratio except for the fact that certain current assets are excluded. Current assets that are not used in the quick ratio are inventories of farm products and supplies, and any cash invested in growing crops. The current assets that are included in the quick ratio are cash, accounts receivable, and marketable securities. The quick ratio helps allev-

iate one of the problems associated with using the current ratio as a single measure of liquidity. For example, two farmers may have the same current ratios but one of these farmers might be in a better position to meet an unexpected expense. This problem would be due to the fact that one of the farmers has more of his current assets in the form of cash, marketable securities, or accounts receivable. The other farmer may have more of his current assets in inventories and supplies. If this is the case then the values of the quick ratio would indicate this difference.

Solvency Ratios

The leverage ratio and the net capital ratio are used to examine the solvency position of a farmer. Solvency is the ability to convert all assets to cash, payoff all liabilities, and still have some cash left over. These solvency ratios are good indicators of the long run strength of a farm operation.

The leverage ratio is calculated by dividing net worth into total liabilities. This ratio is very often used by lenders to help assess the risk associated with making a loan to a particular farm. A leverage ratio of one would indicate that creditors have as much invested in the operation as the owner. In many cases lender will not make a loan if the borrowers leverage ratio is greater than one.

The net capital ratio is the other ratio used as a measure of solvency. It is calculated by dividing total liabilities into total assets. Lenders require a net capital ratio that is greater than

one. A value of greater than one indicates the farmer could sell all of his assets and payoff all his liabilities and still have some cash left over. In other words, the farmers position is said to be solvent. Obviously a value of less than one would mean the farmer is insolvent.

Efficiency Ratios

The next set of ratios to be examined are the efficiency ratios. These ratios measure how efficiently the farmer is using his resources. Two commonly used efficiency ratios are the turnover ratio and gross ratio. The turnover ratio equals the value of farm production divided by any productive farm assets the farmer owned during the year plus those assets rented from others. Any personal assets or nonfarm business assets should be omitted from the denominator of the turnover ratio. The higher the value of the turnover ratio the more efficiently the farmer is using his assets.

The other efficiency ratio is the gross ratio. This ratio takes total farm expenses and divides them by the value of farm production. A value of 75 cents would indicate that 75 cents out of every dollar earned went to pay expenses. Turning it around it could be said that 25 cents out of every dollar earned went to farm income.

Profitability Ratios

The last category of ratios are the ones that measure profitability. Two such ratios are the rate of return on total capital and the rate of return on equity capital. The return on total capi-

tal is calculated by taking income from farm operations, adding it to interest on farm loans, subtracting the value of unpaid labor and management and farm income taxes then dividing by the average total farm assets. Farmers like to see a large value for this ratio because the greater the value the *more* profitable their operation.

The second ratio used to measure profitability is the rate of return on equity capital. This provides the farmer with a returns per dollar of capital tied up in farming operations. Return on equity capital is calculated as follows: income from farm operations minus the value of unpaid labor and management and farm income taxes, divided by net worth in farm assets. Once again, the higher the value for this ratio the more profitable the operation is.

Historical Analysis

Having compiled some historical financial data, a farmer or rancher should compare the ratios over the period of time he has financial statements. The trends that have developed in these ratios will aide the farmer in identifying his financial strengths and weaknesses. For example, a farmers leverage ratio may have increased from a value .75 three years ago to a present value of 1.25. This would indicate that the farmer has been using more debt to finance his operation than equity. The farmer would want to go back and examine why the amount of debt he has been using increased. In this case the farmer would need to make some adjustments to get the leverage ratio down to 1.0.

Instead of comparing ratios calculated from each set of financial statements the farmer might want to calculate a percentage change using a base period. The base period would generally be in a period where the farmer experienced "good times." By using a base period in which the farmer feels his financial performance has been adequate he can determine whether or not he *has* strengthened his financial position.

The percentage change may be calculated as follows:

$$\text{Percentage Change} = \frac{\text{Current Value} - \text{Base Period Value}}{\text{Base Period Value}}$$

An example using the percentage change formula might be to assume that a farmer had a net worth of \$400,000 and a present net worth of \$500,000. Using the above formula, the value of the numerator would be \$100,000 and the value of the denominator of \$400,000; yielding a percentage change of 25 percent. The farmer may want to compute the percentage change in the current period from some base period (say his net worth of three years ago). If value of the farmers net worth in the base period is \$500,000, the percentage would be zero.

Comparative Analysis

Computing financial ratios and examining the resulting trends implied by these ratios over time is a valuable tool to the farmer. An even more valuable tool would be to compare one farmer's finan-

cial ratios with an industry norm. Unfortunately for farmers, there are little or no industry norms or standards published for agriculture. Many other industries have the good fortune of having established norms and standards published by such firms as Robert Morris Associates. Some agribusiness firms also publish norms and standards for their dealers. One agribusiness firm that is active in developing norms and standards for its dealers is John Deere. The question arises as to why industry norms and standards have been developed for many industries but not for agriculture.

There are three basic reasons no norms or standards have been established for agriculture. The first reason is the lack of homogeneity among farm operations. A hog farm cannot be compared with a dairy operation because of the difference in the timing of their cash flows. The size of the farm is a second reason norms and standards have not been developed for agriculture. In this case the factor prohibiting comparison is the different cost structures of farms. The third and final reason for a lack of comparative analysis has been developed for agriculture is geographical location. There is disagreement among analyst as to what role geographical location should play in the development of norms and standards for agriculture.

The development of norms and standards for agriculture would be very beneficial to farmers and ranchers. A farmer could compare his financial position with respect to liquidity, solvency, efficiency, and profitability to other farm operations of similar type and size. For instance, a dairy operator might be experiencing a

declining current ratio. This dairy operator would be interested in knowing if dairy operators as an aggregate are experiencing a declining current ratio. If they are, then he knows the reason is linked to a problem related to all dairy operations. If not, then he needs to look at his particular operation and determine the cause.

Proforma Analysis

Historical financial statements are important when evaluating the past performance of a farm or ranch. However, they are of little benefit unless they are used to help plan for the future. Proforma analysis is the process of planning for the future. Needless to say, planning for the future is somewhat an inexact science. However, the plans developed using proforma analysis help the farmer to guide his operation over the course of the year. This process can be contrasted with a ship and its captain. If a ship were to set sail without any type of planning before hand, it could end up almost anywhere, including the bottom of the ocean. It is the job of the captain to pick the proper course and see to it that the ship reaches its planned destination safely.

Role of Expectations

There are several steps involved in proforma analysis, one of which is the forming of some expectations about future product and input prices. The method chosen to form these is limited only by the amount of time the farmer chooses to sacrifice. He may want to form his expectations through the use of statistics or he may

choose to use the expectations of others found in outlook and trade publications. Another approach to specifying these values is to either use last year's prices or a weighted average of say the last three year's prices. If the farmer is using the futures market, he has locked himself into a predetermined price. So, there are various means a farmer can use when forming expectations of future product and input prices; he should choose the one which best fits his particular situation.

In addition to forming expectations about input and product prices, the farmer must also estimate his yield for the coming year. He may want to use last year's yield or a weighted average of past yields. The farmer might decide to use a new production method or some other technological advancement that will cause an increase in his yield. In this case, the farmer must adjust his yield accordingly. To find out the extent to which he should adjust his yield he may want to consult his county agent, extension service, or other farmers in the area who could give him a reasonable estimate of how large of an increase he could expect.

Operating Budget

Once the farmer has estimated his product and input prices along with his yield for the coming year, he can begin to build a production plan. This plan will contain estimates of amounts of feed, seed, labor, etc., that will be used in the production process. It will also contain the number and quantities of each product that are to be produced. The farmer can now estimate his pro-

duction expenses by multiplying the prices times the quantity of goods or services required in production. A sales plan is also part of the planning process. This plan will show the timing and quantities that will be marketed as well as how much will be held back in storage. Together, the production and sales plan make up the operating budget.

Financial Budget

Another type of budget a farmer should prepare is the financial budget. The financial budget includes projections of cash receipts and disbursements over the course of the coming year. It will also include the year-end projections of current assets and current liabilities. With the financial budget the farmer has a very useful aide in building his proforma cash flow statement.

If the farmer has formulated a sales plan, determining his cash receipts over the course of the year is no problem. All he has to do is multiply the quantities that will be marketed times the expected prices. The sales plan should be broken down into monthly periods so the information can be easily transferred to the proforma monthly cash flow statement.

The farmer should also break his cash disbursements down into monthly periods. Cash disbursements include the accounts payable that are carried over from the previous year as well as the other monthly disbursements included in the operating budget. Some other disbursements that should be included are loan payments and capital expenditures. The cash disbursements are a vital part of building a

proforma cash flow statement. The farmer therefore should be as accurate as possible when making his calculations.

In most cases the farmer will choose to separate the family living budget from the financial budget. This helps the farmer to better monitor the success of his operation and also keep his living expenses under control.

When a farmer prepares his budgets and plans for the upcoming year he may chose to use alternative assumptions. It is obvious that the farmer cannot precisely predict product and input prices as well as his yield. He makes his prediction based upon the conditions that are most likely to prevail. However, he may be interested in knowing what will happen if his projections are too high or too low. That is, he may want to examine his financial condition under more pessimistic conditions or under more optimistic conditions. A potential lender would certainly be interested in looking at what would happen to a farmer's financial position under the most pessimistic of conditions. This would give the lender an insight into the ability of the farmer's ability to repay the loan if things were not to go the farmer's way.

CHAPTER III

ADVANCEMENTS IN COMPARATIVE ANALYSIS

The purpose of this chapter is to further examine the need for comparative analysis, to examine the information currently available to farmers through their state extension services, and what additional data should be assembled for Texas farmers to facilitate comparative analysis.

Comparative analysis is the process of comparing financial information for a single business with an aggregate measure for similar type and size businesses. It helps the firm determine how its financial performance compares to other firms in the same industry. This type of analysis aides in (1) identifying problem areas within the firm and (2) problems that are faced by the industry as a whole. Many types of businesses are fortunate enough to have aggregate information made available to them. Robert Morris Associates which, a national association of bank loan and credit officers, have published 63 editions of *Annual Statement Studies*. These studies include a very diverse group of businesses. For example, they provide information for funeral homes, towing and tugboat services, school buses, etc. They also provide information which is related to the agriculture sector. However, this information is geared towards the manufacturer and retailer of agriculturally-related products. Robert Morris Associates does not publish information that a farmer could use in a comparative analysis.

The applicability of comparative analysis can be illustrated

with a case example. Suppose that a dairy operator has been experiencing decreasing profitability over the past three years. He would be interested in finding out whether or not other dairy operators have been experiencing a similar decline in their profitability. If they have then he could attribute his decline in profitability to causes that are more than likely beyond his control. Such a decline might be due to poor economic conditions or an increase in the use of nondairy products by consumers. However, if other dairy operators have not been experiencing declining profitability, then the individual operator would know the cause is related to something within his operation. He could then go back to his farm records and determine the cause of his declining profitability.

Comparative analysis is not only a useful tool to the farmer in making sound business decisions, it also helps lenders in making loans. By using comparative analysis, lenders can assess one farmer's performance against other farmers of similar type and size. If a farmer has been experiencing financial difficulties while other farms of a similar type and size have not, then the lender would be hesitant to make the loan. As it stands now, lenders must rely on assessing the farmer's performance based on his historical performance and subjectively formed observations.

The preceding case illustrates the usefulness of comparative analysis. It has already been pointed out that there are no aggregate statistics that farmers can use to do a comparative analysis. Some states that have farm record keeping programs that allow farmers to compare their performance with others in that state. In all

there are approximately 11 states that have established rather extensive record keeping systems.

Texas Extension Service Activities

Texas is among the majority of states who do not have farm record keeping systems. The Texas Agricultural Extension Service does provide some financial information to farmers in the form of crop enterprise budgets. These crop enterprise budgets help a farmer to project his net returns from his crops. Crop enterprise budgets are to be used as a general guide to help the farmer project his cost and returns. The projections in these budgets are based on information that has been "collected and developed by staff members of the Texas Agricultural Extension Service and approved for publication."

The Texas extension service has broken down the state into several different regions. This is done because Texas covers such a large geographical area. For example, the cotton grown in the high plains will require the use of irrigation whereas cotton grown in east Texas more than likely will not. By breaking the state down into different regions, the extension service can more accurately assess the costs associated with growing a particular crop.

The use of the crop enterprise budgets can be best illustrated by using an example. Suppose a cotton farmer in West Texas contacts his county extension agent to find out what type of financial information is available. The farmer needs some help in projecting his cost and returns for next year. The agent informs the farmer

that there are various crop enterprise budgets that can be used as a general guide in projecting cost and returns. The next day the extension agent brings by a copy of the crop enterprise budgets made available to farmers in the Texas High Plains IV Region. This farmer has decided to plant all of his irrigated land in cotton. He thumbs through the various enterprise budgets until he finds the one for irrigated cotton. The costs in this budget are based on the premise that 10 acre inches of water are applied. The enterprise budget is broken down into six basic categories: 1) gross receipts, 2) variable costs, 3) income above variable costs, 4) fixed costs, 5) total projected costs, and 6) net projected returns.

Under the category of gross receipts the farmer must project his yields of cotton lint and cottonseed. The projected value for cotton lint in this region is \$.53/lb while cottonseed is estimated at \$90.00/ton. A deficiency payment of \$.19/lb has been added to comply with the government set aside program. Suppose the farmer projects a yield of 425 lbs. of cotton lint and .35/ton of cottonseed. Adding in the deficiency payment for the 425 lbs. of cotton lint the total projected returns for the farmer is \$337.05.

Now the farmer must calculate his variable costs which are broken down into preharvest and harvest costs. Preharvest costs include the cost of his upland cotton that he is planting applications of nitrogen, phosphate, fertilizer, and herbicide. The farmer must project the amount of these inputs he will be using and then multiply his input use by the given \$/unit. Other preharvest costs are hail insurance, irrigation water, fuel and lube, repairs,

Table 1 1985 Projected Costs and Returns Per Acre

PROJECTIONS FOR PLANNING PURPOSES ONLY B-1241(CO4)
NOT TO BE USED WITHOUT UPDATING AFTER 11-21-84.

COTTON, IRRIGATED, TEXAS HIGH PLAINS IV REGION
1985 PROJECTED COSTS AND RETURNS PER ACRE
10 ACRE INCHES APPLIED

CATEGORY	PROJECTED YIELD	UNIT	PROJECTED		YOUR ESTIMATE
			\$/UNIT	VALUE	
1. GROSS RECEIPTS					
COTTON LINT	425.00	LB.	0.53	225.25	_____
COTTONSEED	0.35	TON	90.00	31.05	_____
DEFICIENCY PMT.	425.00	LB.	0.19	80.75	_____
TOTAL PROJECTED RETURNS				\$ 337.05	\$ _____
2. VARIABLE COSTS					
PREHARVEST COSTS		INPUT USE			
*SD COTTON-UPLAND	22.50	LB.	0.45	10.12	_____
*NITROGEN	40.00	LB.	0.23	9.20	_____
*PHOSPHATE	30.00	LB.	0.21	6.30	_____
FERTILIZER APPLI	1.00	ACRE	2.20	2.20	_____
*HERBICIDE	1.00	LB.	7.00	7.00	_____
HAIL INSURANCE	130.00	DOL.	0.15	19.50	_____
IRRIGATION WATER	9.00	ACIN			_____
FUEL & LUBE--TRACTOR		ACRE		10.86	_____
EQUIPMENT		ACRE		2.47	_____
IRRIGATION		ACRE		27.36	_____
REPAIRS-----TRACTOR		ACRE		3.29	_____
EQUIPMENT		ACRE		2.23	_____
IRRIGATION		ACRE		4.05	_____
LABOR-----MACHINERY	1.74	HOOR	5.00	8.69	_____
IRRIGATION	0.45	HOOR	5.00	2.25	_____
EQUIPMENT	1.12	HOOR	3.50	3.92	_____
OTHER	3.00	HOOR	3.50	10.50	_____
OPERATING CAPITAL	45.62	DOL.	0.120	5.47	_____
SUBTOTAL, PREHARVEST		ACRE		\$ 135.42	\$ _____
HARVEST COSTS					
GIN,BAG, TIES	25.70	CWT.	2.25	57.82	_____
CUSTOM HARV&HAUL	25.70	CWT.	1.75	44.97	_____
SUBTOTAL, HARVEST		ACRE		\$ 102.80	\$ _____
TOTAL VARIABLE COSTS		ACRE		\$ 238.22	\$ _____
BREAK-EVEN PRICE, VARIABLE COSTS			\$ 0.30/LB.	COTTON LINT	
3. INCOME ABOVE VARIABLE COSTS		ACRE		\$ 98.83	\$ _____
4. FIXED COSTS					
DEPREC., INTEREST, TAXES & INSUR.					
TRACTOR		ACRE		20.59	_____
EQUIPMENT		ACRE		12.08	_____
LAND---NET SHARE-RENT		ACRE		50.93	_____
IRRIG. EQUIP.	10.00	ACIN	3.00	30.00	_____
TOTAL FIXED COSTS		ACRE		\$ 113.61	\$ _____
5. TOTAL PROJECTED COSTS		ACRE		\$ 351.83	\$ _____
BREAK-EVEN PRICE, TOTAL COSTS			\$ 0.56/LB.	COTTON LINT	
6. NET PROJECTED RETURNS		ACRE		\$ -14.78	\$ _____

LAND CHARGE BASED ON 1/4 OF GROSS LESS 1/4 OF FERT, GINNING, AND 50% OF IRRIG FIXED COST. PRICE BASED ON LOAN RATE ADJUSTED FOR QUALITY. DEFICIENCY PAYMENT BASED ON COMPLIANCE WITH GOVT SET ASIDE PROGRAM.

INFORMATION PRESENTED IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION. THESE PROJECTIONS WERE COLLECTED AND DEVELOPED BY STAFF MEMBERS OF THE TEXAS AGRICULTURAL EXTENSION SERVICE AND APPROVED FOR PUBLICATION.

labor, and operating capital. Adding these values together the farmer comes up with a value of \$135.42/acre for his preharvest cost. The farmer must now determine the amount of harvest cost he will incur. Projected cost for gining, bagging, and ties are estimated at \$2.25 cwt. Our farmer estimates that he will have 25.7 cwt of cotton that will require processing. His total cost of custom harvesting and hauling are estimated at \$44.97 yielding a total harvest cost of \$102.80. Now all the farmer has to do to determine his total variable cost is to add his preharvest and harvest cost which in this case amounts to \$238.22.

The third category of the enterprise budget is income above variable cost. Income above variable cost is calculated by subtracting total variable costs from total projected returns. This farmers income above variable cost is \$98.83/acre.

Now the farmer must calculate his total fixed costs which amount to \$113.61/acre. Adding his fixed costs to his total variable costs the farmer can arrive at a total cost figure. This farmers total projected cost amount to \$351.83/acre. Subtracting his total projected cost from his total projected returns the farmer has a net projected return of \$-14.78/acre. The farmer knows now if he decides to plant cotton he will have a negative return.

The Texas Agricultural Extension Service has another financial tool they make available to individual producers. This tool is a *Financial Record Book for the Agricultural Producer*. It is made available to farmers to assist them in making decisions and to better control the management of their operation. Payment of the required fee

entitles the farmer to a binder and a packet with of filler pages. The filler pages are broken down into the following categories: operating income, operating expense, labor expense, notes, capital items, family living, cash flow, inventory, field records, depreciation, net worth, net income, and enterprise. These pages are set up so that the farmer need only fill in the appropriate blanks.

The *Financial Record Book for the Agricultural Producer* and crop enterprise are the two main sources of financial information provided by the Texas extension service to farmers. A farmer in Texas does not have any means to measure his financial performance against others in the state of similar type and size. This is a flaw in the system that should be corrected. One method that could be used to correct the system would be to start a Farm Business Association. There are approximately 11 states that have formal FBA programs most of which are in the midwest. FBA's have been in existence since the early 1920's when Illinois established the first one. An FBA works by requiring farmers to pay a fee to become a member and in return the farmer receives assistance in the areas of record keeping, record analysis, financial planning, and tax management.

Illinois Extension Activities

The state of Illinois is recognized as the grandfather of the FBA since they established the first such association in 1924. Each year a *Summary of Illinois Farm Business Records* is published which is a summary of business records from farmers in cooperation with the

University of Illinois Cooperative Extension Service, the Department of Agricultural Economics, and the Illinois Farm Business Farm Management (FBFM) Association. As of the 59th annual summary (1983), there was 7,977 farms involved in the program.

In 1940 the Illinois FBFM Association had three associations with 23 counties participating in the program. They employed a staff of three people and had 680 farmers enrolled. By 1960, the number of associations had grown to ten and the number of counties involved was up to 100. At this time the employed staff was 33 and the number of farmers in the program had reached 5,494. As of the lastest count in 1983 there were ten associations in all 102 counties of Illinois. The number field staff employed was 70 and the number of participating farmers had grown to 7,977.

One out of every five farms over 500 acres which are classified as commercial farms participate in the program. A commercial farm is defined as farm over 180 acres. Out of the 7,977 farms included in the report 86 percent were larger than 240 acres. The farms falling into this 86 percent generally included farms selling \$40,000 or more of farm products. According to the 1982 Census of Agriculture, farms which sold \$40,000 or more accounted for 80 percent of farm products sales in Illinois.

According to the 1982 Census of Agriculture, there were 66,958 farms larger than 50 acres in Illinois. Farms with more than 180 acres and sales of over 10,000 numbered 48,568. This is 73 percent of the 66,958 of farms larger than 50 acres. This 73 percent accounted for more than 97 percent of the agricultural products

sold off of Illinois farms. The following table breaks this information down according to the size of the farm:

Acres per farm	Percent of total farms over 50 acres	Percent of census farms enrolled in FBFM	Number of farms enrolled in FBFM
180-499	45.8	10.3	3,148
500-999	20.7	19.8	2,738
1,000-1,999	5.4	20.7	744
2,000+	0.7	16.6	79

The data in the *Summary of Illinois Farm Business Records* represents averages for a group which are divided according to size of business, type of farm, and quality of soil present on the farm. This summary does not represent information from a cross section of all the state's commercial farms but the data can be used with reasonable confidence.

Due to varying climatic conditions, soil types and topography the Illinois FBFM Association divided the state into three regions. These three regions are the northern, central, and southern. Within each region are several field staff offices and at least one district record processing office the fieldmen work out of these offices and are the people who work directly with the farmer.

In the back of the *Summary of Illinois Farm Business Records*, tables are set up to help the farmer do comparative analysis. A farmer raising some type of grain would have to first determine his soil rating and in which area his farm is classified. Grain farmers

in southern Illinois with a soil rating between 36-85 would use that table. The next step would be for the farmer to find the column his farm falls in according to the number of acres he owns. He can then fill in his financial information and compare his figures with the averages of similar type and size farms. In some cases the farmer can compare his performance with farmers falling in the high 25 percent or low 25 percent ranges. This type of analysis is available to grain farms, hog farms, dairy farms, and beef cattle farms for northern, central, and southern Illinois. There is also information available to part time farmers who might want to compare their figures to an aggregate.

It has already been pointed out that farms are divided according to soil type, type of farm, and size of the farm. The soil rating is measure of the inherent productivity of all tillable land on a farm. Each soil type on individual farms were given a rating with a 100 regarded as the highest. Farms are broken down according to their type of operation because the cash flows from each type of operation varies. Another reason for separating farms according to the type of operation is that one type of farm may have a successful year while another does not. For example, beef and pork are substitutes so it is very possible that hog farmers could have a successful year while beef cattle farms do not. If these two types of farms were not separated then the figures used for comparison would be distorted. Finally, farms are also separated according to their size because the cost structures of small and large farms differ. Per unit fixed costs and some variables will generally be

less on larger farms because they are spread over more factors of production. An example of this would be the ratio of machinery cost to crop acres. With this ratio the more tillable acreage the smaller the ratio. By dividing farms up according to soil type, type of farm, and size of the farm, the process of comparative analysis becomes more efficient.

In addition to the average financial summary provided to all Illinois farmers, growers of soybeans and corn are provided a bonus. They can compare some of their total costs to other soybean and corn growers on a per acre basis. Corn and soybean growers are given this special treatment because these crops form the base of Illinois agriculture. In 1983 Illinois ranked second in the production of both corn and soybeans in the United States.

The Illinois FBFM Association provides member farmers with more information than can be listed here. After reviewing the data which is made available to farmers in Illinois it is easy to see they have an extensive record keeping system. In addition to the information a farmer could use to do a comparative analysis then have several graphs and numerous tables which can be an asset to a farmer if used properly.

Kansas Extension Activities

Kansas is another state that has a farm record keeping system. The Kansas Extension Farm Management Association program is the second largest in the United States with 3600 participating members. There are six Farm Management Associations (FMA's) in Kansas

and they cover every county of the state. Each FMA is a nonprofit corporation that has an independent working agreement with the Kansas State University Extension Service. The FMA's are operated by a board of directors who are elected by the members of the association.

As with the program in Illinois, the fieldmen are a major component of the program. They are employed by the Extension Service and work directly with the members of the association. Fieldmen are farm management specialist who work for Kansas State University. The Extension Service and cooperating members jointly finance the work done by the associate.

There are several benefits that a farmer receives by becoming a member of the Kansas FMA. The first benefit is that it helps the farmer to build a good farm recording keeping system. By keeping good records the farmer can then compare his production and management skills to similar type and size farms in his area. The fieldmen can help farmers avoid mistakes in their management and production decisions. Fieldmen have exposure to other farmers in the area and sees how other farmers have handled similar problems. These fieldmen are farm management specialist who are required to keep abreast of farm income tax requirements which could save the farmer tax dollars.

Goals of the FMA are to help the farmer to keep accurate records on his farm business and family expenses. These records can then be used to improved the farm business organization and operation. When a farmer joins an association he is visited by a field-

man to discuss his problems and to make some future plans. The fieldman provides the farmer with an account book that he can use to record farm business transactions and family living expenses. In Kansas farmers have the option of using a computerized income and expense program in the place of account books. The name of the program is Financial Plus and it enables a computer to process information from checks, deposit tickets and/or journal forms. Some other computerized options available are a credit option, payroll option, and enterprise options. Each time the fieldman visits the farmer he examines the account book or K-MAR-105 and offers advice to help the farmer with any record keeping problems. To help plan year-end tax strategies the FMA office collects the account books and calculates 10 or 11 month income totals. At the end of the year income tax returns are prepared and the business can be analyzed using year-end totals. Farmers are also provided with an analysis for each farm and averages of similar farms in their area. The analysis provides the farmer with important information in relation to factors of production, size, costs, efficiency, organization and income. Information in the individual account books is kept confidential and the account books are returned once the totals have been calculated. Fieldmen hold meetings each spring to discuss management and record keeping problems from the previous year. The fieldmen make themselves available to farmers on a year round basis to help with record or business planning problems. In addition to meeting with farm groups or individual farms, the fieldmen frequently send out newsletters with tips on farm management, reports

of experiments and profitable practices used on other farms in the area.

The cost associated with joining a FMA varies because each association has its own budget. Cost of joining will be dependent on the educational program and services associated with that area. Information on the cost of the association can be obtained from the local county extension office.

Kansas is divided into six territories to accommodate six FMAs. These six areas are the northeast, north central, northwest, southwest, south central, and southeast. Each association publishes income and expenses analysis along with an analysis of the farm business for each county within their association. In addition to the county reports, a state report is also published. The state report has income and expense analysis and an analysis of the farm business according to types of farms. Enterprise analysis are also in the state report for each territory of the state. Other information in the state report includes tables for a five year trend analysis, annual net farm income averages of association farms, gross income, total expenses, and net farm income by income, financial management analysis, association and state averages for selected management factors, cost of production for dryland wheat in south central, southwest, and northwest Kansas, wheat cost of production study, analysis by age of operator, comparison of management factors by ownership type, analysis of pure crop farms, analysis of dryland farms and irrigated farms, gross farm income, and a ten year comparison, 1974 to 1983. Figures on the state and

county reports are based on averages.

The format for income and expense analysis and the analysis of the farm businesses in both the state and county reports are computed on a "per farm" and "per count" basis. Per Farm represents the overall average based on the number of farms in this category. Per Count represents the average based on the number of farms which had that particular income, expense, or item.

The analysis of the farm business and income and expense analysis have the same formats in the state and county reports. The two major components of gross income are livestock and crops. Cash operating expenses are listed next and added to the depreciated values of motor vehicles, machinery, and buildings to determine total farm expense. Net income is derived by subtracting gross income from total farm expenses. This net farm income represents a return to the operator's labor, management, and net worth computed on an accrual basis.

A 10 percent opportunity cost is assigned to current-intermediate assets and long term assets. This charge represents the cost to the farmer for having money invested in these assets.

The income and expense analysis also computes the returns to labor and management, returns to labor and management per operator and, the returns to capital. The analysis of the farm business has information on beginning and year-end values for the capital and management factors. Included in this category are values for current, intermediate and long term assets as well as current, intermediate, and long term loans.

Alabama Extension Activities

A third state which has recently formed a farm business association is Alabama. The association has not yet reached the proportions of the programs in Kansas and Illinois but they are working at it. Presently there are three associations covering 13 counties in the state. Alabama is somewhat of a testing ground in that it is the only state in the southeast with a farm business association. One attribute to the success of the program in Alabama is that the National Association of Farm Business Analysis Specialist annual meeting will be held in Alabama this year.

The idea of a farm business association in Alabama was first conceived in 1979. This is when the Tennessee Valley Authority and the Alabama Cooperative Extension Service began a study into the feasibility of a farm business analysis program. Program leaders from TVA and Auburn University visited Kansas, Nebraska, Illinois, and Iowa to study their programs. Organizers then visited TVA watershed counties to get the reactions of farmers, county agents, and agricultural leaders. Enough interest existed in Northeast Alabama to form the first association. The Northeast Farm Business Analysis Association commenced operations in January of 1981.

Each association has the goal of being 90 percent self-supporting with the rest of the funds provided by Auburn University. Auburn University's involvement is tied to a memorandum of agreement that is executed by each association president and the Director of the Alabama Cooperative Extension Service. The cost of the program to a member farmer ranges from \$500 to \$800

depending upon the type and size of farm. These fees are used to cover the salaries and expenses of the association.

The purpose of the program is the same as the programs in Illinois and Kansas. They are nonprofit organizations established to help member farmers in production, marketing and financial management. Fieldmen are employed by Auburn University to work with the farm member. The fieldmen are agricultural economists who have specialized in the areas of farm management and tax planning.

Jack Ashley and David McGriff are two farmers in Alabama who are members of the Northeast Farm Business Analysis Association. Both of these farmers feel they have made a wise decision by joining the association. Ashley (p. 6) claims, "It's the best money I ever spent. We turn our records in to the association every month and George Young, the association's fieldmen, puts it all together." Ashley also points out that he can now spend more time evaluating his operations performance, "If you gross \$250,000 per year, you don't have the time to keep financial records by hand. Your time is better spent in management, in evaluating what records tell you." Another benefit Ashley has received since joining the association has been tax management. Ashley first met George Young in 1981 to go over Ashley's 1980 tax return.

"George found enough mistakes on my tax records, in depreciation and other areas, to pay for the cost of the record system." Ashley pays the association \$600 a year for its service. "If I need him, he'll meet with my account. When George gets through, all my accountant has to do is sign the tax form." Ashley also uses these

records to help him choose the crops that will yield the highest profit. In 1982 he decided not to plant soybeans after wheat, a move he would have made had it not been for his records.

"When wheat prices are high, wheat and soybeans are fine, but when wheat prices are low, that's when wheat price records are needed. I've have harvested 30-bushel beans behind wheat. But I've also harvested 100-bushel grain sorghum behind wheat." The majority of Ashley's income is from his hog operation, so his profits are greater when he feeds 100-bushel grain sorghum instead of selling his soybeans.

These records also help Ashley to plan for the future. "For instance, we used average production figures to project a 3 percent death loss for the 4,000 hogs that we raise." Ashley used this percentage to prepare his budgets and was fortunate enough to have only a 2 percent death loss.

David McGriff (p. 3) also feels that he and other farmers can benefit from joining a farm business association. "Today's farmer has to be as business and management oriented as does a corporation president. The farmer of today must be aware of his profit point as well as his break-even point. To do this one must have good records. No reasonable decision can be made unless one has accurate and adequate facts. The farm business analysis or management association helps farmers keep a useable set of records that are understandable and give a true picture of the farm situation."

McGriff also notes that by having more concise records a farmer has a better chance of receiving a loan. McGriff (p. 3)

declares,

The decade of the 80's is the beginning of a new relationship between the farmer and his lending institution. No more is it enough to be able to say, I paid up last year and I need some more production money this year, but it has to be a larger amount this time. Banks and other lending institutions are no longer willing to lend the huge amounts of money needed for farming without a financial statement and a projected cash flow statement. They are treating us like business people and requiring business statements from us. We now have to prove to them that not only do we intend to pay back our loans, but that in fact, we do have a reasonable expectation of being able to repay the loan.

George Young is the fieldman for Alabama's Northeast Farm Analysis Association. He (p. 6) says that many of the farmers in his area were keeping goods records. "If they had a weakness, it was that they hadn't put the information to work. This gave us an opportunity to help figure out what their records mean. The fun part of my job is helping farmers use the records so they can point their operations in the right direction."

Unfortunately the aggregate information compiled by the association is not made public. Farm members are the only ones provided with this information.

The Farm Business Management Association has been for the most part a success in Alabama. Perhaps the success of this program will lead farmers, in other states to initiate similar programs. If other states are to establish such programs, it will have to be the farmers in the state to take the initiative. After all, these programs are designed for the farmers benefit.

Iowa Extension Activities

Iowa is another state which has farm business associations. The state has been divided into eight economic areas. A farm business summary for the state as a whole and each economic area is published. Figures in the tables represent weighted averages for the number of farms that are being analyzed and only farms over 100 acres are counted.

The state report provides Iowa farmers with data on Iowa farm resources, costs, returns and efficiency and how these factors vary according to 1) year, 2) area of the state, 3) size of the farm, and 4) type of farm. The report makes a comparison by years for financial returns, resources used, sources of income, and expenses, and efficiency. A second table uses the same basic headings but breaks the state down in eight geographical areas. A third table also uses the same heading but breaks the farms up according to size. So by using the first three tables a farmer could:

- 1) Compare his financial information to all other farms in the state.
- 2) Compare his financial information with other farms both inside and outside of his geographical location.
- 3) Compare his financial information with other farms of similar size.

A fourth table in the state report shows gross product and expenses, resources used, and efficiency for the high one-third and low one-third profit farms. High and low profit farms are determined on the basis of their returns to management in each size group for each area of the state.

The fifth table in the state report shows a 10-year trend for production efficiency and farm costs of Iowa farmers. From this table a corn farmer could determine that corn yields per acre average 93 bushels for the state. This is the lowest yield per acre since 1974 when yields per acre were 86 bushels. It is also below the ten year average of 109 bushels.

A sixth table shows the averages for net income of specializing farms over a ten-year period. Then the next table shows the percent return to capital invested and management over the past ten years for these specialized farms. Specializing farms used in Tables 6 and 7 are hog raising, beef feeding, dairy, grain, and beef raising. In 1983 grain farms averaged the highest net income and the second highest return to capital.

Table 8 is used as a summary for resources, production, income and expenses for hog, beef feeding, dairy, and beef raising. Also included in this table are hog-beef and hog-dairy combinations because many Iowa farms have these livestock combinations.

The summary reports for each geographical location begin with general information. For instance, in North Central Iowa the average number of corn acres decreased in 1983 causing operating expense to fall 6 percent below the 1982 level.

The first table of each economic area analysis is the same as the state report except for the figures. The figures in the state report were for the state as a whole and figures in the area reports are for that particular area. Tables 2 through 8 break the following information down according to the size of farms:

- Table 2 Resources Used by Size of Farm
- Table 3 Livestock Production by Size of Farm
- Table 4 Land Use and Crop Production by Size of Farm
- Table 5 Expenses by Size of Farm
- Table 6 Summary of Cash Income and Expense by Size of Farm
- Table 7 Summary of Accrual Income and Expenses by Size of Farm
- Table 8 Overall Efficiency Factors by Size of Farm

Table 9 of the geographical report and Table 4 of the state report have only one difference. These two tables give the farmer an opportunity to compare his financial performance to high profit farms and low profit farms. In Table 9 the farmer compares his figures to other farms within his region and Table 4 is used as an aggregate for the state.

Both the state and geographical summaries provide the necessary information needed to do a comparative analysis. An Iowa farmer can compare his performance with farmers throughout the state and within his area of the state. In addition he is provided with information to agricultural trends within the state.

Nebraska Extension Activities

Nebraska also has a farm business association. The farm business analysis begins by providing an overview of the past years. This overview provides some general facts and information that occurred during the past year. For example, in 1983, the average member of the association participated in the "Payment-in-Kind" program and 30.1 percent of total crop acres were conserving use acres.

The first table provides some average figures on selected man-

agement factors for livestock farms and grain farms. Grain farms are placed in one of three categories according to their size. All of the livestock farms are in the group.

A second table shows a 7-year trend net income, management return, investment, and return on investment for both the operator and landlords. The trends for interest expense, net income, and net worth change for the operator are also shown.

An enterprise analysis summary table for crops and livestock is also provided. The crop summary list the type of crop grown, number of member farms planting the crop, yield per acre, total cost per acre, cost per bushel, and the net return. The livestock summary lists selected livestock enterprises and the number of member farms with this type of operation. In addition the livestock summary has production income per cwt, feed cost per cwt, total cost per cwt and net return per cwt.

Graphs are located on the last six pages and show net returns and net return comparisons for the various crop and livestock enterprises.

The heart of the farm analysis contains detailed information for each crop enterprise. Group averages are listed on a per acre and total basis. Averages from farms who are in the top third are also listed on a per acre and total basis. Some selected items listed in this comparative data are: variable production expenses, total power and machiner cost, total buildings and improvements, total labor, crop share land charge, cash rent, total cost, economic net return, and economic cost per unit.

There is also some detailed information on livestock enterprises. Livestock are placed into similar groups; for example, dairy general, dairy sell bull calves, and dairy finish steers constitute one group. This has been done because of the small number of livestock operators who are members of the association.

The information provided by the Nebraska Farm Business Association is not as extensive as that of Kansas or Illinois. One reason is that the program has only been in existence since 1976 whereas the program in Illinois is over 50 years old. A second reason is the smaller number of farmers participating in the Nebraska program. Nebraska had 163 farms participating in their program compared to 3,500 in Kansas. This smaller membership also means the figures are weighted averages of farmers throughout the state. In other words, a farmer in one area cannot compare his performance against other farmers in his area. Despite these setbacks the farmers in Nebraska do have some benchmarks they can use for a comparison.

New Mexico Extension Activities

The New Mexico Farm and Ranch Business Management Association is set to begin operations this year. Its operation will be very similar to those associations in other states. This association has been formed out of the need for a more sophisticated method of record keeping and analysis. Founders feel that this association will fill this need.

Since the program has just started a copy of the data that

will be provided to farmers is not yet available. If the reader is interested in learning more about this association, a working document is available through the New Mexico Cooperative Extension Service.

CHAPTER IV

PROPOSALS AND CONCLUSIONS

The previous chapter examined some of the comparative financial information available to farmers from their state extension service. In this chapter an examination of the types of analysis a Texas farmer cannot do that Kansas farmer can will be discussed. In addition, some recommendations will be made on how Texas could establish a farm record keeping system.

The Kansas Farm Business Management Association publishes two reports that are available to member and nonmember farmers. One of these is the state report. Inside the state report is financial information that is based on weighted averages of all member farmers in Kansas. The county report is based on weighted averages of member farmers from each county.

A Kansas farmer could begin with the state report and compare his farm's gross farm income, total farm expense and net farm income to an average of the high income (top 25 percent), low income (bottom 25 percent), and an average of all farms within his region of this state. By using these figures for comparison a farmer can tell if his income is above or below the average for his area of the state.

Another analysis that can be made by using the state report is a financial management analysis. This analysis was the ratios of total loans to total assets, current and intermediate loans to current and intermediate assets, long-term loans to long-term assets,

and total loans to net worth. A small value for these ratios is an indicator of a good financial position. For example, a total loans to net worth ratio of 0.5 indicates that \$.50 is borrowed against every dollar of net worth.

The state report also has an analysis based on the age of the operator. With this analysis a farmer can compare his gross farm income, net farm income, return to labor-management, return on net worth, expense per \$100 of gross income, current and intermediate ratio, loans to net worth ratio, total assets, man work days, total crop acres, and crop cost to crop acres. By computing this information from his records a farmer can compare his performance against farmers in his age group. This analysis seems somewhat trivial but it is nonetheless available to the farmer.

In addition to the analysis by age, an operator can make a comparison to other farms with a similar type of ownership (i.e., corporation, single owner, etc.). This analysis could be useful to a farmer. For example in 1983 farms that were incorporated had a net farm income of \$33,862 while the single owner form of organization had a net farm income of \$478. This might be enough encouragement to lead a farmer to investigate the possibility of incorporating his farm.

A farmer in Kansas can also compare his performance against farms of similar size. The reason for dividing farms up by size is due to the difference in the cost structures of large and small farms. One of the analysis which divides farms according to size is the analysis of pure crop farms (farms without livestock). The man-

agement factors used in this analysis are net farm income, net income to gross income, return on net worth, total assets, total crop acres, crop acres irrigated, current and intermediate ratio, loans to net worth, machinery investment to crop acre, machinery cost to crop acre, gross crop value to crop acre, and crop production costs to crop acre. The net income to gross income ratio will show the farmer for each dollar he earns how much will be available to pay for family living, income tax, social security and principal payments on land, machinery and operating assets. The return on net worth percentage which is also shown in this analysis is an indication to the farmer what other farmers his size are earning on their investment in their farms. Another important ratio in this analysis is the loans to net worth ratio. This ratio will show the farmer how much creditors have invested in his farm operation for each dollar he has invested. In other words, a farmer can determine if his operation is as highly leveraged as other farms his size. The crop production cost to crop acre and the machinery cost to crop acre are also useful in identifying problem areas. If one or both of these ratios is significantly greater than the average for farms of similar size this could be a warning signal. The farmer should further investigate the causes for this difference. For instance, in the case of the crop production cost to crop acre the farmer may be spending too much on his inputs (i.e., insecticide, herbicide, etc.). The usefulness of these ratios in the analysis of pure crop farms is enhanced by the fact the farms are divided according to size. Had the farms not been categorized by size then the figures

in this analysis would not have been as accurate.

Kansas farmers can also do an analysis depending on whether they are dryland farming or irrigating. This analysis also divides farms up according to size and uses the selected management factors of net farm income, livestock income of gross income, return on net worth, total assets, total crop acres, machinery cost to crop acre, gross crop value to crop acre and crop production cost to crop acre. This analysis is almost identical to the analysis of pure crop farms other than the fact it breaks farms up into either dryland or irrigated farms. Therefore, the values in this analysis are probably a little more accurate since it is more specific analysis.

The Kansas farmer can also compare his net farm income and other management factors to farms having a similar level of gross farm income. Management factors included in this analysis are gross farm income, net farm income, livestock income of gross income, expenses to \$100 gross income, return on net worth, total assets, total loans, loans to assets, loans to net worth, total crop acres, number of men, number of operators and man work days per man. This analysis lets the farmer compare how highly leveraged his farm is compared to other farms with the same level of gross farm income. It also allows the farmer to compare his labor efficiency with farms having the same level of gross income.

Both the county and state reports published by the Kansas Farm Management Association have income and expense analysis. An income and expense analysis itemizes gross farm income and operating expenses. The state report has an income and expense analysis by

farm type and according to net farm income. For the purposes of the income and expense analysis by farm type each member farm is placed in one of 23 selected farm types in order to arrive at the weighted average values. The income and expense analysis by net farm income divides the farms into four categories based on net farm income. These categories are the high 25 percent, high middle, low middle, and low 25 percent. In the county report the income and expense analysis has weight average values for the member farms in each county.

The income and expense analysis are useful means of comparative analysis. Suppose a farmer was conducting an analysis using the pure crop analysis to compare his farm to the state averages of other member farmers. Also suppose that this particular farmers crop product cost to crop acre happened to be significantly greater than the average for other farms his size. By using the income and expense analysis in both the state and county reports the farmer could examine his itemized crop production costs with other farms in his county, member farms with similar type operations, and the four net farm income groups.

The income and expense analysis are useful but there is some room for improvement. If the farms were grouped according to size and type then the values in these analysis would be more meaningful. The importance of breaking farms up according to their size can be illustrated with an example from the analysis of pure crop farms. In this analysis farms are divided up into six categories according to the amount of acreage in the farm. One the ratios

measured in this analysis is the crop production cost to crop acre ratio. For farms with fewer than 400 acres this ratio was \$114.22. Farms falling in the range of 2001-2400 acres had a value of \$74.68. This is almost half the cost per acre for a farm with less than 400 acres. Had these farms been grouped together the crop production cost per crop acre would not have been as accurate. If an income and expense analysis could be broken down according to type and size of farm then it would be all the more useful to the farmer.

Texas farmers do not have any of the information that has been discussed in the preceding paragraphs of this chapter. The financial information available to farmers through the Texas Extension Service is limited. The extension service provides farmers with crop enterprise budgets which are used to project net returns for the coming year. There is also the financial record keeping book a producer can purchase from the extension service to help him keep orderly financial records. The only information that comes close to the information Kansas farmers are provided with is a publication called *Texas County Statistics*. This publication has aggregate information on crops, livestock, land use and cash receipts from marketing for each county in Texas. All of this information may be of interest to the farmer but none of it is useful to a farmer desiring to compare his farm to others within his county. Therefore, Texas needs to develop a system which will provide farmers with the necessary information needed to conduct a comparative analysis. The following section contains some proposals that would establish a

system which would provide farmers with data that could be used for comparisons.

Proposals

Texas is among the majority of states who do not have any type of farm record keeping systems. The reasons for not having a farm record keeping system in Texas have been linked to the lack of homogeneity among farms and the lack of farm management specialists in the state. I believe that the main reason Texas has failed in this area is due to the fact that no one has taken the initiative to start a program. Setting up some type of record keeping system would require patience and hard work. In this section of my paper, I am going to make some proposals to establish a record keeping system in Texas which would provide farmers with the necessary data to perform comparative analysis.

One solution would be to form a farm business management association similar to those in other states. Forming an association requires the cooperation of the extension service and farmers. Finding farmers who would be willing to participate in the program would not be a problem. The problem would be attracting qualified farm management specialist to work in the program. This means competitive pay and benefits plus a good working environment. The funds needed to run the association could be raised by requiring participating farmers to pay a membership fee. Membership fees in other states range from \$400 to \$800.

Texas could be broken down into five geographical locations.

These locations could be north, south, central, east and west. A good spot to locate the first association would be in the panhandle. This is one of the most homogeneous areas in the state in regards to farm type. If a farm business association is going to succeed in Texas then the panhandle would be a good testing ground for the first one.

Information that is to be published by the association which will be used for comparative analysis should break the farms into groups according to size and type. This would probably mean a state report would have to be published. The state report could have figures for each of the geographical locations. A county report could also be published. There is one problem with a county report. Most counties would not have enough farms to publish information according to farm size and type. This is why a regional report would probably be the next reasonable alternative.

The next question is what type of information to include in the regional and state reports. First of all a table of relevant financial ratios should be included. This table should have ratios dealing with profitability, liquidity, solvency and efficiency. Two other types of analysis that should be included are enterprise analysis and an income and expense analysis. Texas already provides farmers with enterprise budgets so an enterprise analysis based on past performance would be useful. The income and expense analysis would provide the farmer with an itemized list of income and expenses for farms of similar type and size.

My second proposal is not to use an association and let the

extension service have the sole responsibility. In order for this proposal to work the extension service would have to hire some farm management specialist. The farm management specialist would be in charge of collecting the appropriate data and then put it in a form so a farmer could use it for comparative analysis. Presently the extension service has a financial record book. This book is sold to farmers to help them keep their records organized. The extension service could request that farmers use this record book and at the end of each year the record books could be collected by the farm management specialist.

The cost to the farmer with this type of system would include the costs of the financial record book, collection and compiling of the data and the publication itself. All of these cost could be built into the purchase price of the publication. Using this method to pay for the costs would make the publication available to those farmers who do not participate in the program as well as those who do. Or, as a second alternative would be to charge the the participating farmers the cost and make the published information available only to those participating. A third alternative would be to ask the government for some funds to support the program. With government support the program would operate at a reduced cost to the farmer. Unfortunately, both the federal and state government has fallen upon lean times so the likelihood of any support is small. All of this leads to the question of whether or not this type of program can be initiated at a reasonable cost to the farmer. Personally I feel the farmer would be better off with a farm business

management association. In all probability the association would cost the farmer more (costs in other states range from \$400 to \$800) but the farmer receives many additional services. With this proposed system the farmer would simply receive a copy of the publication and would have to interpret all the data by himself.

However, one advantage of this program over the farm business management association is that it would not be as costly to the farmer. Many farmers throughout Texas have accountants in their rural communities. These accountants use the financial records given to them by the farmer to give the farmer advice, help him prepare his financial statements, and also to help the farmer with his tax strategy. Rural accountants are one reason why Texas does not have a farm business management association. It is also the reason why farm business management associations have been so successful in the corn belt. Most rural areas in the corn belt do not have an accountant to whom they can take their financial records. So, the fieldman associated with the farm business management association takes the place of the accountant. Since the majority of farmers in Texas have accountants in their community this type of program (letting the extension service have sole responsibility) should cost the farmer less since he will not need the added services of the fieldman.

My third proposal is to let banks publish the comparative analysis. This solution seems logical because banks have the financial data that is necessary to publish information for a comparative analysis. Before a farmer can secure a loan from a bank he

must first provide the bank with a set of his most current financial statements.

By publishing a comparative analysis for farmers, banks would be doing more than just the farmers a favor. They would also be doing themselves a favor. This information could be used by the bank to compare one farmer's performance against others in the area and state of the same type and size.

One method banks could use to set up the system is to establish a data base (this type of system is already used in some areas of the country). Information on individual farmers could be stored and then compiled by the bank. Each bank could then send a copy of its information to a central collection point (possibly the extension service) to have the figures published for the state and each region of the state.

Once again, both state and regional information should provide and the information should be categorized by farm size and type.

I believe that lenders would be willing to participate in some type of program like this. They would be receiving some of the benefits so it could prove advantageous to them. This is especially true since farmers are in a time of severe financial stress. A system such as this would help the lenders evaluate which farmers in their area they want to lend money to.

Since lenders would be receiving some of the benefits they would probably be willing to share in some of the cost with the farmer. In fact, I feel this system has the greatest potential of offering farmers comparative data at the lowest cost.

Conclusion

The theme behind this paper has been to show the usefulness of farm record keeping systems and the need for this type of system in Texas. The concept of the state record keeping system is by no means a new idea. Very successful programs are currently operating in many states located in the midwest. If a farmer is a good manager then he can use the information from his state's record keeping system to compare his farm to others of similar type and size. Texas farmers are in need of this type of analysis. Unfortunately, the state farm record keeping system in Texas is nonexistent. I believe the reasons for not having a system is due to the lack of initiative. No one has ever tried to start this type of system. I also believe that most farmers would be very cooperative and more than willing to participate. Any of the three proposals mentioned in Chapter IV seem like reasonable alternatives. I hope that someone in the near future will initiate the idea of a farm record keeping system for Texas. This system could help many farmers survive in a time when survival in farming has become extremely difficult.

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