AN ABSTRACT OF THE THESIS OF

John P. Hewlett for the degree of Master of Science in Agricultural and Resource Economics presented on June 17, 1987. Title: The Effect of Various Management and Policy Options on the Financial Stress Situation of Oregon Grain and Cattle Producers

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Agricultural economists have devoted considerable attention to the financial stress situation of agricultural producers. Many studies have been conducted in various regions of the U.S. in an attempt to better understand the causes of the problem. The costs associated with farm financial stress imply corresponding benefits to be realized by its reduction. Benefits of studying and resolving farm financial stress reach beyond the farms and ranches to many related sectors such as rural communities, agribusinesses, and lending institutions.

The specific hypothesis tested in this thesis is as follows: some but not all farms and ranches which have undergone serious financial stress in the early part of the 1980's in Oregon can be assisted in withstanding fluctuations in economic conditions by adopting specific strategies which promote financial stability and profitability. One of the specific objectives of this thesis was to evaluate the level of financial stress for two different agricultural production units in Oregon under differing leverage positions, and macroeconomic conditions. The production units selected for study were a cattle ranch and a wheat farm, based on their relative importance to Oregon. This first objective was satisfied through analysis of a baseline scenario, which was essentially a continuation of current conditions. Debt levels and growth rates were then altered to reflect the desired study conditions. Changing and considering three leverage ratios (20%, 40%, and 70%) and three sets of macroeconomic conditions (baseline, pessimistic, and optimistic)

allowed studying of nine alternative situations to the base firm type or a total of 18 alternatives.

Analysis of these different alternative production units was accomplished through a deterministic computer-based simulation model. The model simulates the financial structure and performance of a farm business over a transition period of four years with emphasis placed on the financial transactions of the firm. These transactions include purchases and sales of farm assets, financing terms, debt management, cash flows, tax obligations, consumption levels, and growth rates. The computer-based model made necessary calculations of cash flows and changes in financial statements to derive the ratios used for financial analysis over the planning horizon of four years beyond the present input case and is deterministic in the sense that all essential variables are entered by the researcher. Output from this model includes a set of coordinated financial statements for the firm over the planning horizon: a balance sheet, an income statement, statements for changes in net worth, flow of funds statement, and a fund availability report. The model also calculates profitability, liquidity, and solvency ratios used in financial ratio analysis which are provided on a summary sheet. These statements and reports are provided on an annual basis; thus, financial information is provided on yearly changes in financial position over the four year horizon.

Another objective of this thesis was to evaluate various policy and management strategies designed to reduce financial stress. This objective was achieved by analysis of various scenarios designed to reduce stress simultaneously with the baseline case, which served for comparison. The specific scenarios considered were: 35% reduction of debt, 35% reduction of interest rates, two year deferral of debt, sales of 35% of total assets with no lease back, sales of 35% of total assets with lease back arrangements, and an infusion of equity capital equal to 35% of total debt. Results from this analysis were intended to show what, if any, courses of action could be pursued by agricultural firm managers and policy makers to reduce farm financial stress.

The best test of the ability of these scenarios to reduce financial stress occurred in application to the high leverage wheat

farm situations, as these were the cases with the most financial stress. Appropriate programs could be adopted to strengthen the financial position of the farm; in the case of low liquidity, asset sales-lease back; in cases of low solvency, equity infusions; and in circumstances where profitability needs to be enhanced, interest reductions would be the best choice. The results also seemed to suggested that public programs can maintain current levels of financial performance for producers under financial stress but do little to improve those positions.

The Effect of Various Management and Policy Options on the Financial Stress Situation of Oregon Grain and Cattle Producers

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CHAPTER 1

INTRODUCTION

Financial stress of agricultural producers has become a national issue in the U.S. policy process. Financial stress has differing connotations to different audiences, and even agricultural economists have different definitions. Jolly, et al., defined financial stress as occurring when, "...the capacity of an individual or firm or a specific sector of the economy to adjust to the forces causing stress is exceeded". This definition, however, lacks clarity and specificity for analysis. Brake defined financial stress as a perceived or actual inability to meet planned cash flow commitments, which stem from family living needs, cash farm expenses, debt service. This more precise description of the condition known generally as financial stress will be the one used throughout this thesis.

Agricultural economists have devoted considerable attention to this issue. Boehlje and Eidman suggested strategies to improve firm survivability, which they argue is the most important criterion for farm managers at this time. Brake and Boehlje describe possible sector adjustments, firm level adjustments and various short-term policies to aid in the transition of the firm adjustments. Penson and Duncan; Hanson and Thompson; and Smith, Richardson, and Knutson also examine different farm stress reducing policies. In addition, a number of articles discuss macroeconomic policies and their effect on the farm sector (Hughes, Richardson, and Rister; Hughes and Penson; Gardner); discuss various risk management strategies for farmers, as well as lenders (Barry and Lee; Pederson and Bertelsen; Mapp et al.); the effect of farm financial stress on other economic sectors, (Ginder, Stone, and Otto; Melichar); and analysis of the factors leading to the farm stress situation (Shepard and Collins; Leathers and Chavas; Lins; Lowenberg-DeBoer and Boehlje; Melichar; Scott).

Development of current the situation of financial stress is fairly well known but will be reviewed here to aid in understanding

current conditions. Agriculture has historically been dominated by income cycles related to price, volume of production, and weather. Melichar summarizes the recent experience as, "For more than a decade, the financial experience of the agricultural sector has been dominated by the advent, and then by the after effects, of a farm boom of major historical proportions.". Firms in the agricultural sector are all affected by these cycles of boom and bust but not to the same extent. The degree to which farmers are affected by bust periods depends largely on how dependent they become on the high commodity prices of the boom period.

The current situation followed this same process. In the early 1970's, prices of major agricultural commodities increased dramatically, ushering in a boom during which nearly all producers benefited. However, the period of prosperity differed among commodity groups. Livestock prices dropped first in 1974, while grain prices remained elevated for another two years (Table 1.1). During this time, some farmers rapidly expanded production financed with debt to capitalize on the boom time prices. When the bust began, these farmers began to experience financial hardship. While such farmers pressed for government assistance, others enjoyed income levels above those of the pre-boom period and thus bid up real prices of farmland (Table 1.2). In 1978-79 livestock and crop prices again surged upward giving another boost to incomes and expectations (Table 1.1).

The boom ended in 1980 when farm commodity prices failed to advance while U.S. consumer prices continued to rise rapidly. In the following two years, large harvests and worldwide economic recession reduced prospects for a rebound in farm prices and incomes. Thus, agricultural land prices dropped sharply in the major livestock and crop producing areas. At the same time, farmers with short-term debt or variable-rate loans suffered large increases in interest rates (Table 1.3). These developments caused the number of farms in financial trouble to increase, as measured by the debt to asset ratio (Table 1.4) (Melichar).

Table 1.1 Cash Receipts from Marketings in the U.S. for 1970 to 1984: Livestock and Grain

Year	Cattle and Calves	Total Livestock	Food Grains	Total Crops
	- - - - - - - - Million Dollars - - - - - - - -			
1970	13,633	29,532	2,542	20,977
1971	14,986	30,479	2,485	22,269
1972	18,237	35,586	3,498	25,523
1973	22,336	45,772	7,194	41,114
1974	17,844	41,326	8,581	51,065
1975	17,520	43,089	8,195	45,813
1976	19,294	46,326	7,112	49,032
1977	20,225	47,635	6,055	48,600
1978	28,248	59,162	5,839	53,020
1979	35,025	69,236	9,047	62,269
1980	31,819	67,991	10,403	71,769
1981	29,538	69,151	11,619	72,936
1982	29,813	70,268	11,469	72,670
1983	28,632	69,443	9,733	66,817
1984	30,601	72,739	9,739	69,096

Source: USDA, 1985

Table 1.2 Total U.S. Real Estate and Total Agricultural Asset Values, 1970 to 1984

Year	Real Estate Prices	Total Asset Values
	- - - Billion Dollars - - -	
1970	201.3	280.2
1971	216.4	303.1
1972	241.8	341.4
1973	297.1	418.9
1974	327.0	442.3
1975	381.1	510.1
1976	453.5	590.4
1977	507.7	656.7
1978	600.7	783.7
1979	704.2	918.1
1980	779.2	1,003.2
1981	780.2	1,005.2
1982	745.6	977.8
1983	736.1	956.5
1984	639.6	856.1

Source: USDA, 1985

Table 1.3 Interest Rates Paid in the Pacific Region and the United States, 1970 to 1984

Year	Pacific Region[a]	United States
	- - - - - Percent - - - - -	
1970	5.9	6.0
1971	6.1	6.1
1972	6.3	6.3
1973	6.4	6.6
1974	6.8	6.9
1975	7.1	7.2
1976	7.3	7.3
1977	7.5	7.3
1978	7.8	7.7
1979	8.1	8.1
1980	8.5	8.6
1981	9.1	9.6
1982	9.3	9.9
1983	9.5	9.6
1984	9.6	9.7

Source: USDA, Agricultural Statistics, 1985

[a] The pacific region includes Washington, Oregon, and California.

Table 1.4 Debt to Total Asset, Debt to Equity, and Times Interest Earned Ratios, for U.S. Agriculture from 1970 to 1985

Year	Debt to Total Asset Ratio	Debt to Equity Ratio	Times Interest Earned Ratio
	- - - - Percent - - - -		Number
1970	16.7	20.1	6.0
1971	16.9	20.4	6.0
1972	16.4	19.7	6.8
1973	15.3	18.1	9.0
1974	16.3	19.4	6.3
1975	15.9	18.9	5.5
1976	15.7	18.6	4.2
1977	16.7	20.0	3.8
1978	16.2	19.3	4.0
1979	16.4	19.6	3.7
1980	16.5	19.7	2.5
1981	18.2	22.2	2.7
1982	20.1	25.1	2.3
1983	20.4	25.6	1.9
1984	22.2	28.6	2.5
1985	23.6	31.0	2.9

Source: USDA, 1985

Much recent literature discusses the incidence and intensity of current financial stress. For example, Jolly et al. stated that more than 60% of operators with debt-to-asset ratios greater than 40% and with negative cash flows are located in the Corn Belt, Lake States, and Northern Plains[1]. Of all insolvent operations, 55% are located here as well. However, the incidence is so high largely because the regions account for 44.7% of U.S. farm operators. Furthermore, of all U.S. farm debt, 62% is held by farm operators with debt to asset ratios over 40%. Approximately 13.3% is held by insolvent operators and 29% by farms with debt to asset ratios over 70%. The intensity of farm financial stress--the number of farms holding the largest proportion of outstanding debt--is greatest in the Delta, Southeast, Southern Plains, Northeast, and the Pacific (Table 1.5).

POLICY AND MANAGEMENT SOURCES OF FINANCIAL DISTRESS

As identified above, macroeconomic policies, farm policies, and individual management decisions interact in causing stress (Hughes, Richardson, and Rister). Each set of decisions has led to financially stressful conditions in parts or the whole of the agricultural economy. This section considers each category in more detail emphasizing its contribution to the present conditions of farm financial stress.

Macroeconomic Polices

In reviewing general linkages of the farm economy to the macroeconomy, Gardner found that the performance of agriculture during recessions is variable, but on average the farm sector does not preform as well as the general economy during these episodes. Farm

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1 Regions are defined as follows: Northeast- ME, NH, VT, MA, CN, RI, NY, NJ, PA, DE, MD; Lake States- MI, WI, MN; Corn Belt- OH, IN, IL, IA, MO; Northern Plains- ND, SD, KA; Appalachia- VA, WV, KY, TN, NC; Southeast- SC, GA, AL, FL; Delta- MS, LA, AR; Southern Plains- TX, OK; Mountain- MT, ID, WY, CO, UT, NM, NV, AZ; and Pacific- WA, CA, OR.

Table 1.5 Farm Real Estate Debt: Amount Outstanding by Farming Region, 1970 to 1984

Year	Northeast States	Lake States	Corn Belt	Northern Plains	Appa-lachian	South East
	- - - - - - - - - - Million Dollars - - - - - - - - - -					
1970	1,510	2,957	6,862	3,330	2,102	1,912
1971	1,627	3,170	7,276	3,499	2,247	2,082
1972	1,800	3,477	7,834	3,784	2,450	2,353
1973	2,093	3,866	8,763	4,141	2,826	2,852
1974	2,396	4,296	9,871	4,629	3,278	3,353
1975	2,613	4,756	11,072	5,211	3,719	3,794
1976	2,775	5,371	12,707	6,018	4,072	4,051
1977	3,057	6,296	15,091	7,057	4,574	4,550
1978	3,334	7,212	17,506	7,838	5,095	5,058
1979	4,053	8,798	21,030	9,379	6,179	5,926
1980	4,452	10,025	26,613	10,702	6,865	6,626
1981	4,780	11,307	26,042	11,874	7,502	7,404
1982	4,930	11,874	26,853	12,477	7,755	7,633
1983	5,007	12,324	27,198	12,698	7,845	7,737
1984	4,892	12,245	26,751	12,594	7,813	7,643

Year	Delta States	Southern Plains	Mountain States	Pacific States	United States
	- - - - - - - - - - Million Dollars - - - - - - - - - -				
1970	1,871	3,131	3,018	3,623	30,346
1971	1,974	3,249	3,199	3,831	32,191
1972	2,163	3,579	3,489	4,107	35,094
1973	2,401	4,024	3,847	4,643	39,527
1974	2,651	4,517	4,326	5,383	44,705
1975	2,842	4,921	4,865	5,884	44,682
1976	3,090	5,238	5,428	6,513	55,268
1977	3,489	5,736	6,186	7,417	63,457
1978	3,890	6,337	6,885	8,450	71,609
1979	4,700	7,278	8,172	10,078	85,598
1980	5,225	7,878	9,062	11,311	95,764
1981	5,818	8,440	9,841	12,788	105,800
1982	6,099	8,793	10,113	13,494	110,026
1983	6,162	9,171	10,340	14,133	112,621
1984	6,083	9,297	10,198	14,115	111,637

Source: USDA, Agricultural Statistics, 1985

incomes tend to decline more sharply than overall GNP, farm prices fall off more quickly relative to the general price level, as do farm wage rates compared to nonfarm wage rates. Hence, farmers have a greater incentive than other sectors of the economy to avoid recessions.

In the early 1980's, the combination of the fiscal policies of the Reagan administration and the newly altered Federal Reserve System operating policy caused some unique macroeconomic influences. The highly stimulative fiscal policy and restrictive monetary policy reduced inflation from 9.2 to 4.3 percent in three years but caused historically high real interest rates observed during the 1980's (Hughes and Penson). These policies generated prices and interest rates that have skewed economic returns in the economy away from capital-intensive and export-sensitive industries such as farming (Hughes, Richardson, and Rister). The rise in interest rates in 1980 caused financial adversity for those borrowers using short term credit from rural banks. These increases likely were not anticipated, since farm borrowers had been virtually insulated from cyclical changes in loan rates by interest rate ceilings before 1979 (Melichar; Shepard and Collins).

In addition to the above, falling land prices were another variable affecting the farm financial situation. Over the fifty years preceding 1981, land prices had increased every year but two. In those two cases the declines were only one percent. However, land prices peaked near the end of 1980 in the cash grain area of the Midwest. During 1981 prices fluctuated from one quarter to the next, with a general annual decline of four to five percent (Scott). By the end of 1983, farm real estate values were 23 percent below their peak in real dollars and seven percent below their peak in nominal terms (Hughes and Penson). Factors affecting land prices include economic returns to land, expectations of future returns and values, inflation rates, competition for land, and, for some purchasers, income tax rates. These factors all combined in a negative manner in the early 1980's. That is, the relative rate of return to land declined and the expectations of future returns also fell, which decreased competition

for land, the inflation rate dropped, and the net effect of income tax changes in 1981 was to cause disinvestment in land. This drop in land values was particularly significant in the emergence of financial stress (Scott; Lowenberg-DeBoer and Boehlje; Melichar).

Farm policies also contributed to the present farm financial distress. Farm programs under the 1977 and 1981 farm bills were successful in hiding early stages of the current decline in farm profitability. However, government expenditures needed to continue to offset other factors have not been, nor are they likely to be forthcoming (Hughes, Richardson, and Rister). Furthermore, these programs did not encourage appropriate resource adjustment to falling commodity prices. It has been found that, while large farms received more absolute benefits from the 1981 Farm Bill than small farms, they are less dependent on farm program provisions for survival. Mid-size farmers who do not participate in government programs run a substantially greater risk of not surviving than large farms who do not participate, while small-scale farms have the same chances of survival, success, and growth whether they participate in farm programs or not (Smith, Richardson, and Knutson). Thus, it seems to depend on the size of farm, as well as the particular farm program in question, as to how agricultural producers will be affected.

Management Practices

Another important source of financial stress arises from management practices. Management decisions, in part, relate to methods used to reduce business risks. Commercialization of agriculture has changed the response of management to conditions of increasing business risk. When most resources where produced on farms and little money was borrowed, successful financial management meant that income reductions first resulted in decreased family consumption, secondly in asset liquidations, and finally, as a last resort, in emergency borrowing. Today this pattern is reversed. Thus, responses to risk are now expressed as methods of liquidity management and are influenced by marketability of assets, borrowing capacity, and terms

on borrowing and leasing (Barry and Fraser). Thus, measures of relative loan magnitudes are indicative of a financially stressed state in relation to risk management.

Many producers currently confronted with financial difficulties assumed significantly more debt during the 1970's, based on the assumption of continued favorable economic conditions (Hughes, Richardson, and Rister). With the onset of the boom in the late 1970's, rapid expansion of debt occurred accompanied by more rapid increases in asset values. Although the ratio of debt to assets did not increase, a large increment of debt was assumed. If these additional asset values had continued to yield returns sufficient to service the additional debt, all would have been well because the two had risen in proportion. But any reduction in the income flow would mean a problem for debtors, who still had to meet scheduled payments. Such a reduction occurred in 1980 (Melichar).

Leverage as measured by the ratio of debt to real estate, livestock, and machinery assets in the U.S. farm sector approximately doubled between 1910 and 1924. This measure of leverage rose from 11% in 1946 to 17.5% in 1978. Financial assets as a proportion of total assets in agriculture have declined from 12% in 1950 to less than 6% in the late 1970's. This reduction in liquidity increases the possibility of vulnerability of farms to failure (Shepard and Collins). In addition, increased incidence of loan delinquencies, foreclosures, and bankruptcies have caused higher lending costs, lower lending limits on assets, and reevaluations of credit standards and loan policies (Barry and Lee).

FINANCIAL STRESS IN OREGON AGRICULTURE

Farm financial stress conditions prevalent in the rest of the nation have also affected Oregon. Little research has been conducted, however, to evaluate financial stress in Oregon. One exception is a recent survey of Oregon agricultural lenders. This study found that current economic conditions in Oregon could be characterized by increased loan delinquencies, tightened credit, delinquent interest

and/or principal payments, and reduced numbers of producers who qualified for current refinancing. The survey also found that agricultural lenders felt that the quality of loan portfolios had generally declined over the past twelve months (Taylor). Table 1.6 shows the percentage of delinquent loan balances and percentage of financing discontinued for September, 1986 and for 1978-81 both by region and statewide, while Table 1.7 shows the changes in land values over the past year.

Figure 1.1 Regional Map of Oregon

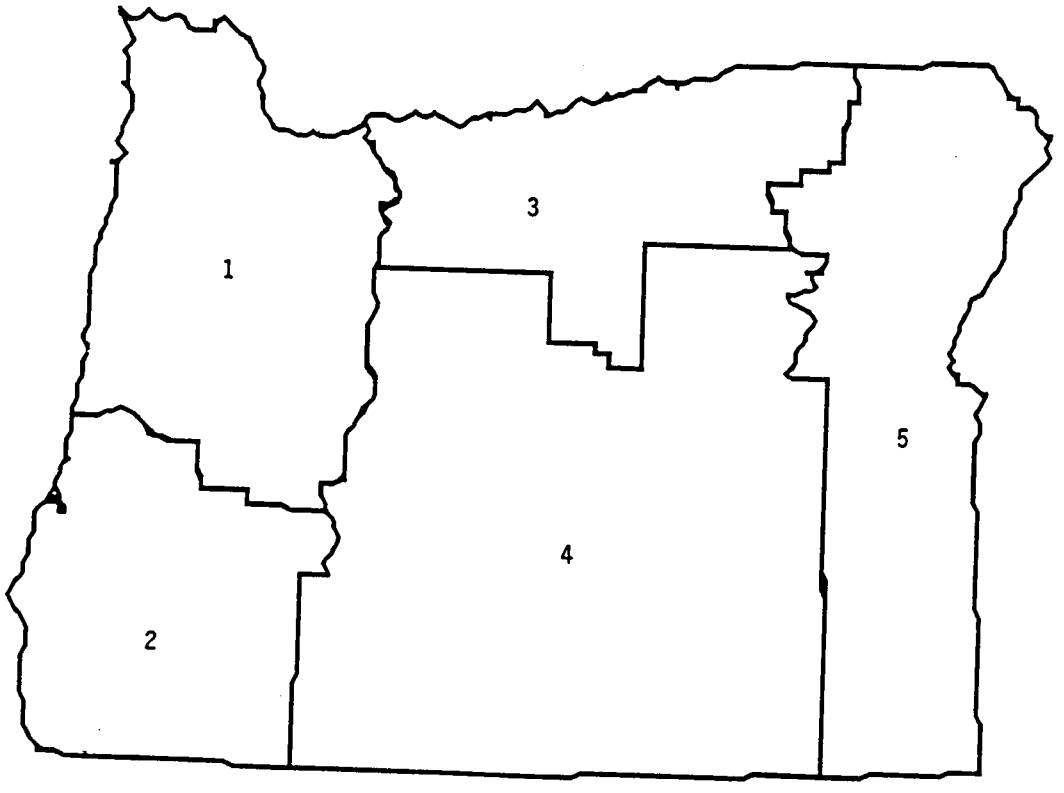


Table 1.6 Oregon Delinquent Loan Balances and Discontinued Financing for Oregon Agricultural Lenders

	Regions 1	2	3	4	5	State Wide
	- - - - - - - Percent - - - - - - -					
Delinquent Loan Balances:						
- Sept. 1986	8.7	7.4	3.3	24.2	9.9	9.4
- 1978-81	4.8	3.0	2.0	8.7	0.8	4.0
Financing Discontinued:						
- 1986	6.5	8.1	5.5	7.7	3.8	6.1
- 1978-81	3.3	2.6	0.9	1.8	1.9	2.3

Source: Taylor

Table 1.7 State Average Changes in Land Values Over Past Year in Oregon for Irrigated Cropland, Non-irrigated Cropland, and Pasture/Rangeland, September, 1986

	Regions 1	2	3	4	5	State Wide
	- - - - - - - Percent - - - - - - -					
Irrigated Cropland:	-11.5	-13.2	-16.6	-18.0	-18.3	-14.7
Non-irrigated Cropland:	-14.6	-10.0	-17.7	-20.9	-25.3	-17.4
Pasture/Rangeland:	-16.6	-10.4	-26.7	-20.6	-26.0	-19.9

Source: Taylor

The problem of financial stress does exist in Oregon. As in other areas, reduction of farm financial stress is motivated by reducing social costs of the stress. Examples of social costs of stress are: (1) default on loans may impose a cost on the economy as a whole because capital assets are not perfectly mobile, and (2) some default costs must be placed on the borrower to ensure that borrowers repay when they are able, since the lender does not have perfect information about borrower ability to repay loans (Leathers and Chavas). Other consequences besides these direct effects on agricultural production can also be identified. For example, indirect effects have implications for the viability of agribusinesses which supply inputs and marketing for farming, those who provide retail services, and other social institutions such as schools and churches, especially those located in rural areas. While reductions in rural disposable income are part of the problem, rural wealth and demographics also play a role (Ginder, Stone, and Otto).

Consequently, costs associated with farm financial stress imply corresponding benefits to be realized by its reduction. Benefits of studying and resolving farm financial stress reach beyond farms and ranches to many related sectors such as rural communities, agribusinesses, and lending institutions. Increasing pressures of financially stressful market conditions have lead to consideration of additional public assistance programs to aid producers in coping with the situation. With the current administration following a free-market approach in handling troubled sectors of the economy and its present goal of reducing the deficit by lowered government expenditures, a large new public credit program for farmers is doubtful. However, some small programs may be politically viable and economic analysis of their direct impact on financial stress would be helpful. The specific hypothesis tested in this thesis is as follows: some but not all farms and ranches which have undergone serious financial stress in the early part of the 1980's in Oregon can be assisted in withstanding fluctuations in economic conditions by adopting specific strategies which promote financial stability and profitability.

BENEFITS OF RESEARCH ON FARM FINANCIAL STRESS

The specific objectives of the project are:

1. To asses the magnitude of financial stress for different agricultural production situations with special attention to different leverage positions, and price forecasts.

2. To present various federal, state and local policy options, as well as management strategies, available to Oregon agricultural producers that may assist them in withstanding fluctuating economic conditions.

3. To analyze the effects of selected policy and management strategies on representative agricultural production situations in Oregon with differing levels of financial leverage and alternative price forecasts.

SCOPE OF THESIS

To accomplish the stated objectives, two agricultural firm types were selected to be used as the basis for study--a wheat-barley farm and a cattle ranch. These two farm types are significant in Oregon for several reasons. First, as Taylor noted, the agricultural production firms with the most difficulty in repaying non-real estate debt (an indicator of financial stress) are grain farms and beef operations, in that order. Second, according to the ranking of Oregon's leading agricultural commodities in gross dollar sales, cattle and calves are listed as number one at $289,555 while wheat is ranked third at $133,544 for 1986. Grains utilize more acreage than any other commodity in the state (1,458,650 acres). In fact, grains actually utilized 26.99% more land than the next largest user, hay and forages (1,148,650 acres) in 1986 (Miles).

To identify the area of the state in which to target the base farms, a number of things were considered, namely; whether the farms should be from the East or West side of the Cascades, whether the area is representative of a particular commodity-type, and whether data were available for the area. The area selected for the cattle ranch

was the South Central region of Oregon, specifically the Lakeview area. The site chosen for location of the wheat farm was the North Central or Columbia Gorge region of Oregon.

ORGANIZATION OF THE THESIS

The remainder of this thesis will be organized in four chapters. Chapter 2 is the conceptual framework section, which will address various measures of financial stress offered by neoclassical economics and financial management theory; discuss the different approaches to analyzing financial stress suggested in the literature; provide the rationale for selection of the model chosen for use in this thesis; examine methods used to evaluate financial stress-reducing strategies; review methods suggested in the literature for reducing financial stress; present those strategies analyzed in this thesis; and provide an overview of the model used. Chapter 3 will provide information on the economic parameters used in the thesis; discuss the base inputs for the cattle ranch and wheat farm; and describes various input changes which simulate the policy and management strategies studied. Chapter 4 provides a detailed discussion of the results from each stress-reducing strategy considered, as well as evaluates the overall effect of the strategies. Chapter 5 presents a summary and conclusion, describes limitations of this thesis, and gives some suggestions for future research.

CHAPTER 2

MEASURES OF FINANCIAL STRESS

The purpose of this thesis is to study the effects of various policy and management alternatives on reduction of farm financial stress. To implement this research, the initial task is to specify measures of financial stress. A number of measures of the financial condition of farm firms appear in the literature. For example, Lins uses a coefficient of variation and a coefficient of variation from trend for both nominal and real aggregate balance sheet values to measure instability. Smith, Richardson, and Knutson employed four criteria to evaluate the structural impacts of various programs--probability of firm survival, probability of success, the present value of ending net worth, and cropland acres farmed. Boehlje and Eidman utilized four financial characteristics of assets--net cash flow, capital gains, collateral value, liquidity value of assets--and net income to determine the effectiveness of risk reduction policies. Jolly et al., on the other hand, propose that financial stress can be determined directly by examining four long-run characteristics of the farm business: profitability, liquidity, solvency, and risk-bearing ability. Financial stress can also be measured indirectly by aggregate indicators. Examples include land value trends, foreclosure and loan delinquency rates, or loan losses taken by creditors. Unfortunately, few unambiguous, indirect indicators of financial stress can be defined (Jolly et al.).

In determining relevant measures of financial stress of a farm, firm, or business it is helpful to consider farm goals. It is difficult, if not impossible, to determine if a farm is financially stressed unless it can be ascertained whether or not its financial performance meets the goals of the business. Most studies of the goals of farmers indicate that they, like other businesses, place considerable emphasis on financial criteria for measuring performance and evaluating their overall well being. Some important goals are: (1) some reasonable level of net income and growth in net worth, (2)

stability of net income, and (3) the ability to meet financial obligations (Barry, 1985). Economic and financial theory is concerned with these financial goals and the next section reviews criteria suggested by these theories.

NEOCLASSICAL THEORY OF THE FIRM

Neoclassical theory assumes a singular goal in perfectly competitive markets of profit maximization (Koutsoyiannis). Profit (π) is defined as being the difference of total revenue (TR) and total cost (TC).

$$\pi = TR - TC \qquad 2.1$$

Given that the normal rate of profit is included in the cost items of the firm, π is the profit above the normal rate of return on capital and remuneration for the risk-bearing function of the entrepreneur. The firm is in short-run equilibrium when it produces output that maximizes the difference between total receipts and total costs.

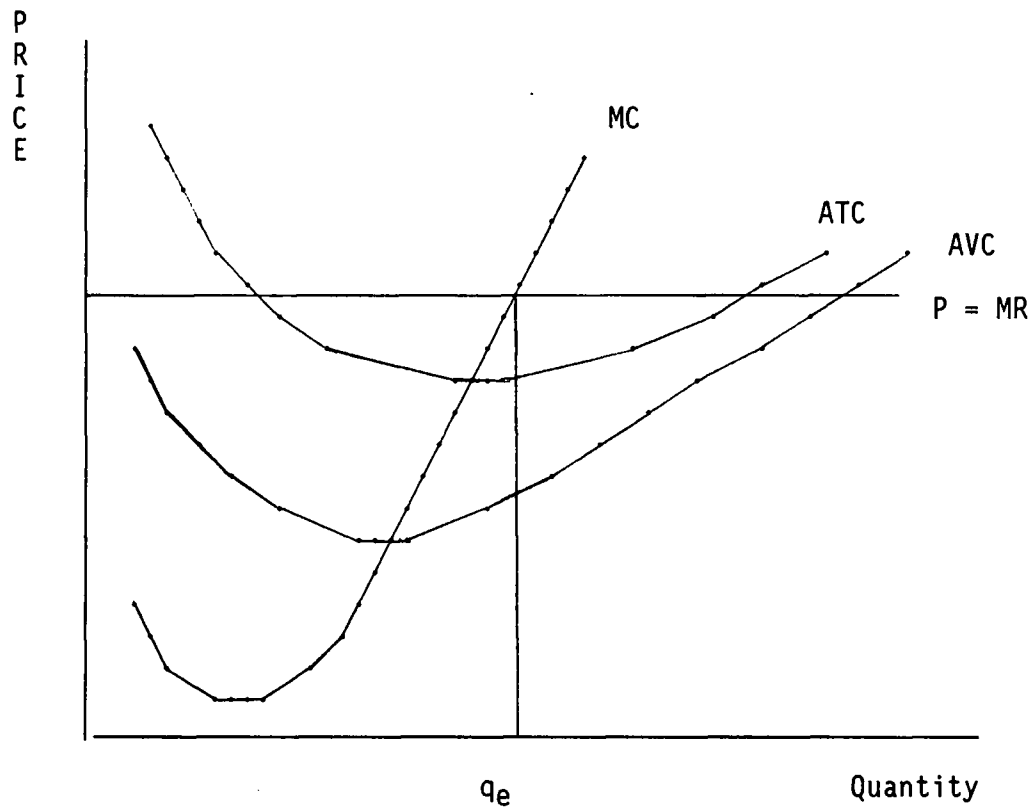
This point of equilibrium occurs at the output level, q_e, where the price received by the firm (P), which is marginal revenue (MR), is equal to the marginal cost (MC) of the last unit produced:

Equilibrium at point q_e:

$$MR = P = MC \qquad 2.2$$

This condition is illustrated in Figure 2.1 where the shaded area represents the amount of π at the equilibrium point. In this static model of the firm, the general rule in the short run is to produce where profits are positive or where: $P = MR > ATC$. If $AVC < P < ATC$, then the firm will not earn profits, but should continue to operate where $AVC < P$, as production still makes some contribution to fixed costs. The point where $AVC = P$ is called the "shut-down" point because as the price falls below average variable cost in the short run, the firm would minimize economic loss if it shut down. Thus, the short run equilibrium concept presented by neoclassical theory can be applied to farm firms under financial stress. These firms can be characterized as operating under the conditions described above where $AVC < P < ATC$ and may in fact be close or even below to the shut-down point ($P <= AVC$).

Figure 2.1 Short Run Economic Equilibrium Under Perfect Competition



Intertemporal equilibrium can be viewed as satisfying the current period's equilibrium conditions and all the following period's conditions as well. Economic theory approaches the solution to this problem by borrowing from financial theory. That is, costs and revenues in each future period are discounted the appropriate number of periods so that all periods may be compared and evaluated in today's dollars or present values. Thus, equation 2.1 above becomes as follows:

$$\text{Max } V = \sum_{t=1}^{n} \frac{TR_t}{(1+i)^t} - \sum_{t=1}^{n} \frac{TC_t}{(1+i)^t} - \sum_{t=1}^{n} \frac{\text{withdrawals}_t}{(1+i)^t} + V_0 \qquad 2.3$$

where V = present value of equity of the firm over time, V_0 = the initial equity level, i = the discount rate, and t = the number of periods. Thus, value or equity (V) is the multiperiod equivalent of single period π. The terminal value of equity (V_n) can be described as:

$$V_n = \left[\sum_{t=1}^{n} \frac{[(\pi_t - \text{withdrawals}_t)]}{(1+i)^n} + V_0 \right] (1+i)^n \qquad 2.4$$

This terminal equity is thus interchangeable with the present value of profits less withdrawals. It is important to note the implications of this equation. If V_t is less than V_0 this implies that the firm needs some source of financing to remain in production. Sources of financing in this context might include increased owner equity or borrowing from financial institutions. As V_t declines and approaches zero, the firm nears bankruptcy, which occurs where $V_t = 0$. When the firm is operating under the conditions AVC < P < ATC, the stated rule is that the firm should continue to operate to make some contribution to its fixed costs. However, an implicit assumption is that, the firm is able to obtain additional financing to cover all costs. If the terminal equity value approaches zero, the firm will not be able to obtain the financing necessary for its survival and will consequently be forced into bankruptcy (exit the market).

The above theoretical description of the firm abstracts from risk. Risk arises primarily from fluctuations in prices and yields

(business risk). This risk is magnified by leverage which introduces financial risk. The trade-off of these risks can be specified in a simple model that portrays the various sources of risk involved. Consider the example of an agricultural producer who has achieved a desired structure of assets and liabilities based on reasonable expectations for returns to assets and costs of borrowing along with risk attitudes. This equilibrium position is characterized by an acceptable level of risks relative to expected returns. Let the risk be represented by the anticipated variability (σ_e) of return to equity and the level of returns be the expected rate of return to equity capital (r_e). Equilibrium of the firm is expressed as the coefficient of variation (v) in equity capital:

$$\sigma_e / r_e = v \qquad 2.5$$

The level of risk (v) assumed by the firm at equilibrium reflects its implicit utility function. Economists use the concept of utility to describe how individuals or firms weigh the benefits and costs of a course of action. Thus, at a level of risk (v) the firm has implicitly decided that the utility which could be gained from potential returns equals the costs or utility loss associated with loosing the returns.

Business risk (v_a) can be expressed by the relationship between the random variability (σ_a) of the returns to the assets of the farm and the expected level (r_a) of these returns.

$$\sigma_a / r_a = v_a \qquad 2.6$$

Financial risk (v_f) is represented by the leverage position of the firm, expressed as a flow of the expected returns to assets relative to expected returns to equity.

$$\frac{r_a * P_a}{r_a * P_a - i * P_d} = v_f \qquad 2.7$$

where P_a is the ratio of total assets to equity capital, P_d is the ratio of total debt to equity capital, and i is the expected cost of borrowing (assumed known with certainty). Thus, the overall equilibrium relationship is:

$$\frac{\sigma_e}{r_e} = \left[\frac{\sigma_a}{r_a}\right] * \left[\frac{r_a * P_a}{r_a * P_a - i * P_d}\right] \qquad 2.8$$

This can be rewritten as: v = [business risk] * [financial risk] (Barry, 1985). A change in any of the variables will disturb the equilibrium position and will bring about action to either reestablish the initial position or to reach a revised equilibrium position.

METHOD USED TO EVALUATE RATIOS

In applying the risk equilibrium concept described above to farm businesses it is helpful to utilize such commonly used financial statements as the balance sheet and the income statement. Looking first at the balance sheet, the equilibrium position is one where the firm has what it considers an optimal level of profits, risk, and liquidity. Within the balance sheet, assets comprise all of the items of value owned by the firm, while liabilities are all claims on assets and income. Financial profits are the net returns to equity capital, or returns to assets less the interest and principal costs of debt paid to lenders and lessors. Effects of risk can be seen in the firm balance sheet. Common business risks occur on the asset side. These risks are: (1) production and yield risk, (2) market and price risk, (3) losses from disasters, (4) social and legal risks, (5) human risks in the performance of labor and management, and (6) risks of changes in technology and possible obsolescence. Business risks can be distinguished from financial risks which arise on the liability side of the balance sheet. Higher levels of financial leverage (the ratio of borrowed capital to equity) imply greater financial risks in meeting obligations to lenders and lessors. Borrowing risks come from variations in interest rates and swings in credit availability. Leasing risks come from changing rental rates and from possible denial of access to leased assets. Thus, like profits, risks are determined by forces affecting both the assets and liabilities of the firm. Risks take different forms and are correlated with one another in some

cases. While they can bring the threat of financial losses or the promise of financial gain, this depends on the economic environment and management ability of the firm (Barry, 1985).

The equilibrium concept suggests that each firm attempts to achieve an organization of assets and liabilities which contains the optimal amounts of business and financial risk, as well as the liquidity needed for responding to these risks. Within this framework, one can evaluate how various changes in the environment may influence the equilibrium position, and the effectiveness of possible actions taken to restore equilibrium. These changes might occur as shocks due to the different sources of business risk (crop disasters, unanticipated price changes, swings in land values) and financial risks (higher interest rates, changing credit availability), or they might come from new policy initiatives. Whatever the source, these changes will alter the equilibrium position, and provide incentive for action to restore equilibrium. Even though target or equilibrium levels may be impossible to attain, strategies designed to alter the financial structure of the firm can be evaluated on the basis of whether or not they move the firm in the desired direction. This type of comparative base will be used in this thesis to evaluate various policy options proposed to alleviate financially stressful conditions in the farm sector.

Boehlje and Eidman stated that probability of firm survival as an entity is one of the major concerns evolving from the current conditions of farm financial stress. When viewed in light of the theory presented above, this situation can be described by economic conditions of $P > AVC$, in the short run and $P > AC$ in the long run. Furthermore, the risk situation of firms experiencing such conditions is not the equilibrium position described above, but a case of readjustment particularly in the area of leverage or financial risk. The conclusion is that survival is nearly impossible unless the price levels rise and equilibrium risk positions can be attained by agricultural firms.

Any model which attempts to capture the essential elements of the firm must include the above elements of risk which affect the

decision-making process. Most importantly, when the time horizon includes more than just one production period, the model should first and foremost provide for survivability of the firm itself. Secondarily the model should attempt to achieve the point of profit maximization dictated by economic theory. Hence, the decision rule for a multiperiod firm model could be stated as: maximize the present value of profits subject to survivability of the firm and level of risk relative to its equilibrium position. This thesis will focus on single and multiple period profit and equity as measures of firm profitability and liquidity and solvency as measures of risk of farm failure.

VARIOUS METHODOLOGICAL APPROACHES FROM THE LITERATURE

Several methods have been used to analyze the problem of farm financial stress. The literature includes examples of each type applied to problems of a similar nature. For example, Hughes and Penson used a simulator model called COMGEM (COMmodity-specific General Equilibrium Model) to project financial conditions in the farm sector to the year 1990. Mapp et al. used a linear programming model MOTAD (Minimizes Total Absolute Deviation by the use of triangular distributions) in conjunction with simulation models to evaluate risk efficient farm plans under alternative economic futures. Pederson and Bertelsen also used a MOTAD model to evaluate financial risk management alternatives in a whole-farm setting. Shepard and Collins used econometric analysis of aggregate time-series farm-sector data in an attempt to determine why farmers fail financially. Smith, Richardson, and Knutson used FLIPSIM V (a general Firm Level Policy SImulation Model), which utilizes a multivariate normal probability distribution to study the impacts of alternative farm programs on different size cotton farms in the Texas southern high plains.

Other researchers propose more complex models to analyze multiperiod management problems. For example, Chien and Bradford describe a model which combines the desirable features of multiperiod linear programming (MLP), recursive linear programming (RLP), and

computer simulation (CS) into a single computer-base model. Their reasoning for use of this model was that neither MLP nor RLP models used alone could adequately predict financial variables. However, CS models can overcome these difficulties and can handle multiple goals, indivisibilities, and sequential decisions. CS models used alone, on the other hand, lack optimizing features, good coordination between time periods, and are some times too simplistic in application.

Boehlje and Eidman propose a model to evaluate survival and risk management strategies farm operators can use in the current financial environment. They suggest the ideal objective of maximizing expected utility, with consideration given to the appropriate sources of price, production, and financial risk. However, implementing such a model requires knowledge of firm utility functions, which implies knowledge of the optimal or equilibrium risk position of the firm. Utility functions are difficult, if not impossible, to accurately estimate.

It should be apparent from the proliferation of model types used in farm firm analysis, that each modeling technique has its good and bad points. As pointed out by Chien and Bradford, computer simulation models are very effective in handling financial variables. Furthermore, they have been in use in the field of agricultural economics for farm level analysis since the 1960's (Johnson and Rausser). Barry used this form of modeling in recent analysis of the financial stress in agriculture, which considered both policy and financial consequences. As this modeling technique has the desirable attributes for studying farm financial stress, it was selected as the technique for this study. Moreover, since Oregon State University participated in the analysis coordinated by Barry, the computer simulation model used in that report was available for this thesis.

TYPES OF FINANCIAL RATIOS

The two most important considerations in selection of criterion to measure financial well-being are measurability of the criterion and ease of obtaining it from readily available financial data, specifically the firm's financial statements. Furthermore, these

criterion should allow the user to determine if in fact the firm is meeting its specific goals. As defined by Barry, Hopkin, and Baker, financial management involves protection of equity capital from various business and financial risks, while facilitating its growth. Evaluation of new investments, financial planning, liquidity management and relationships with financial intermediaries is also important. In summary, performance criterion should measure the following: (1) profitability, (2) liquidity, and (3) solvency. These criterion are used by Barry to evaluate various financial stress-reducing strategies. Profitability refers to returns to the equity capital or net worth that producers have invested in their farm businesses. Thus, growth in net worth is a profitability measure. Risk refers to possible losses of equity capital and to difficulties in meeting financial obligations due to inadequate liquidity and solvency. Liquidity refers to the ability to generate cash in order to meet cash demands as they occur and to provide for unanticipated events. Liquidity, therefore, is a method of responding to risk so it is treated here as one of the major performance criteria. Solvency refers to the ability of the firm to convert intermediate and fixed assets into more liquid assets. Financial ratios are used to measure these three performance criteria. Thus, it can be summarized that the desired direction of movement of the profitability, liquidity, and solvency ratios is upward or larger.

Commonly used ratios based on data derived from firm financial statements are identified in Table 2.1 along with the desired direction of movement. Profitability varies with risk and liquidity, as liquidity of holdings increase and risk decreases, profitability usually declines and vice versa. Two commonly used profitability measures are the return on assets (ROA) and the return on equity (ROE). Return on assets is found by dividing net earnings before interest and taxes by the firm's total assets averaged over the beginning and end of the accounting period.

Table 2.1 Financial Performance Measures

Profitability Measures:		
1.	Return on assets (ROA)* =	Net income before taxes and interest minus taxes / Total assets
2.	Return on equity (ROE)* =	Net income after gains / Net worth without contingencies
3.	Average net income* =	Net income (before capital gains)
4.	Total net worth change* =	End of period net worth minus beginning net worth, without contingencies
Liquidity and Solvency Measures:		
5.	Current ratio* =	Current assets / Current liabilities without contingencies
6.	Leverage ratio** =	Total liabilities without contingencies / Total assets
7.	Cash flow coverage ratio* =	Cash sales plus nonfarm income, interest income, and other farm income / Interest payments plus principal payments
8.	Fund availability* =	Net income plus depreciation, capital sales, and injections; less withdrawals, downpayments, and principal payments.

* Denotes ratios with a upward desired direction of movement.

** Denotes ratios with an downward desired direction of movement.

Various measures of liquidity and solvency are closely related, as they basically are distinguished by the length of the time horizon. Liquidity generally refers to the firm's capacity to meet its financial obligations in the short term--within a year, for example. The current ratio and quick ratio or acid-test are measures of liquidity (Smith, Keith, and Stephens). Net working capital can also be used to measure liquidity. Solvency refers to the capacity to meet financial obligations over a longer period of time. Common debt management or solvency ratios include the total debt to total asset or leverage ratio and the times interest earned ratio. Thus, some of the measures clearly represent either liquidity or solvency, while others jointly represent these criteria. Where a firm has low debt levels, it generally has lower levels of financial and overall risk and lower expected returns. Conversely, farms with higher leverage ratios run the risk of large losses but have a chance of gaining higher profits. Thus, financial leverage presents a profits-risk tradeoff. If operating income is low, as in the current situation, financial leverage will reduce equity returns below the rate of return on assets and, if the return on assets stayed at the same level, the firm would be unable to meet interest payments, which would eventually force it into bankruptcy (as above where $P < ATC$) (Brigham).

Of the four measures for liquidity and solvency in Table 2.1, two come from the balance sheet and two come from an income and cash flow statement. The first two measures are balance sheet ratios relating assets to liabilities. Measure six indicates the firm's leverage as a ratio of total debt to total assets. Measure seven comes from the income statement and reflects various ways to account for the coverage of debt obligations. Finally, measure eight represents the amount of funds available for reinvestment in the business and as such represents some measure of liquidity of the firm.

ALTERNATIVES FOR ALLEVIATING FARM FINANCIAL STRESS

Past studies have identified various macro and microeconomic policy responses to farm stress. As reviewed in the first chapter,

macroeconomic variables were crucial in the development of farm financial stress and will influence the ultimate outcome. At the aggregate level, Hughes and Penson considered three different macroeconomic policies (optimistic, pessimistic, and an extension of current conditions to serve as a base line for comparison) to study their impact on the farm sector. More specifically, the alternatives they considered were (1) an adherence to expansionary fiscal policies and restrictive monetary policies, which would be reflected in continued high government deficits and slow growth in the money supply to control inflation; (2) an continuation of expansionary monetary and fiscal policies, which would lead to continued high deficits but also a faster growth in the money supply; and (3) the following of a restrictive fiscal policy and a moderate monetary policy which would lead to decreases in the budget deficit and a money supply which falls between those given by one and two above.

Other studies have suggested or used policy and management alternatives to evaluate survival and risk management strategies in an attempt to study their impact on the farm stress situation. In these studies emphasis is given to liquidity and solvency of the firm where management options allow for restructuring or liquidation of assets in an effort to improve the chances of the farm's survival. For example, Brake and Boehlje propose five sector adjustments, five firm level adjustments, and six short-term policies to aid transition of the adjustments. Penson and Duncan; Hanson and Thompson; and Smith, Richardson, and Knutson all discuss farm stress reducing policies which include equity infusions, leasing arrangements, deferral of principal payments, scaling down the size of the operation, commodity diversification, and the effects of various farm programs on farm firm survival. While Boehlje and Eidman suggest a model which would evaluate strategies such as asset liquidations, with and without leaseback options, liquidity management, and equity infusions as methods for increasing the chances of firm survivability.

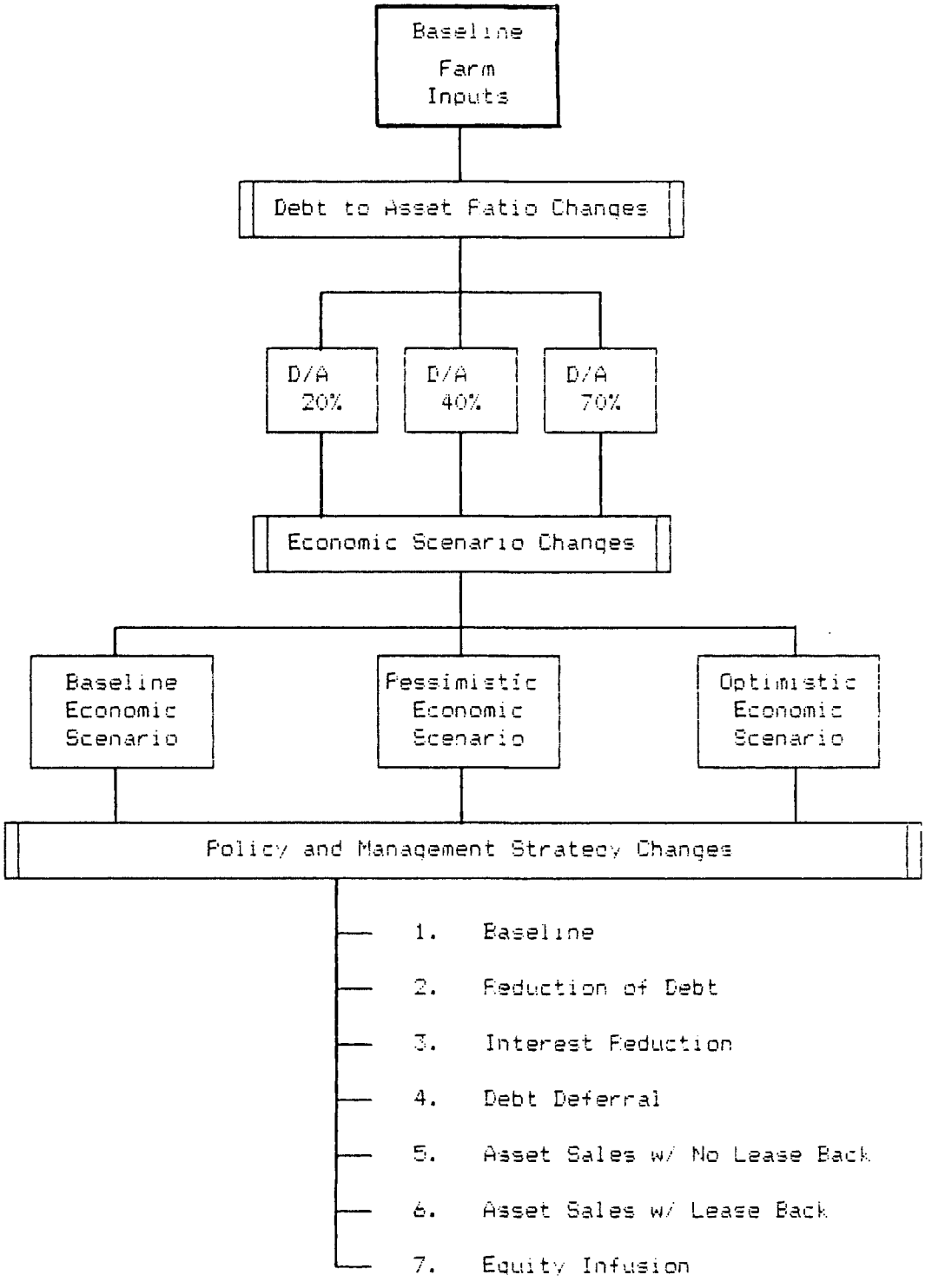
The S-180 regional study coordinated at the University of Illinois (Barry, 1986) followed these earlier studies. Six different strategies were evaluated: (1) reduction of debt, (2) reduction of

interest rates, (3) deferral of debt, (4) asset sales-no lease back, (5) asset sales-lease back, and (6) equity infusion. A continuation of current conditions was considered as a comparative baseline for results of the strategy changes. These strategies were assessed under different debt levels and different macroeconomic conditions. In short, the research approach of Barry uses techniques suggested by, or used in, previous studies, in evaluating policy and management strategies under varying leverage levels and macroeconomic conditions. The same general research approach was used in this thesis.

The general approach of the S-180 analysis is documented in Figure 2.2. To facilitate comparisons, asset levels, production organization, and personal consumption and income levels were held constant for each firm type at a baseline level. Debt levels for the baseline firms were adjusted to result in debt to asset (D/A) ratios of 20, 40, and 70%. In the analysis, the 40% D/A ratio situation was assumed to be the base firm, to which all other conditions were compared. Three macroeconomic environments--baseline, pessimistic, and optimistic--were then incorporated into each leverage situation to create nine different alternatives for each basic firm situation. Optimistic and pessimistic macroeconomic conditions were simulated by adjusting gross revenue and land values relative to the baseline. Pessimistic conditions were represented with a 10% reduction in gross revenue and a 10% reduction in land values, and the optimistic conditions required a 20% increase in gross revenue and a 20% increase in land values. The changes in land values occurred in the first year, while the gross revenues were adjusted for each year in the time horizon. Besides continuation of current conditions in a baseline scenario, six alternative strategies were considered for each of the nine macro-debt situations. Details of each of these situations are considered in the next chapter. This section summarizes the strategies.

Three of the strategies are associated with debt. The reduction of debt strategy eliminates 35% of initial debt in the first year. For example, a beginning debt level of $100,000 would be reduced to $65,000 with the reduction occurring across the different forms of

Figure 2.2 Flow Chart of Simulator Spreadsheet



debt according to their proportions of total indebtedness. The effect of this strategy is similar to a lender loan forgiveness program or a principal write-down financed with a public program policy. Similarly the reduction of interest rates strategy lowered initial interest rates 35% in the first year. Rates for short, intermediate, and long term debt were all adjusted independently. This strategy is similar to an interest rate buy-down program or a public credit program that allows the substitution of public credit for existing credit at discounted interest rates. The deferral of debt strategy deferred the scheduled loan repayments for two years with no interest accruing in the interim. Principal and interest payments resumed at the end of the two year period according to the original payment schedule. The effect of this option is analogous to a debt moratorium or debt deferral program currently available to existing Farmers Home Administration borrowers.

The three other strategies included private management responses. Asset sales-no lease back involved sale of assets in the first year in order to reduce the size of the operation. Amount of the reduction is 35% of the total market value of beginning assets. Assets are reduced in such a way that the farm has a similar mix of assets after the sale and thus, allow it to continue producing the same commodities. Therefore, primarily intermediate and long term assets are reduced. Proceeds from the asset sales are directly applied to reducing the farm debt. The asset sales-lease back strategy had the same actions as asset sales-no lease back, but liquidated assets are leased for the whole four years. The same mix of assets may or may not be sold in the asset sales-lease back strategy as some assets are not normally leased. Leasing arrangements vary from crop sharing to cash leases depending on the asset type and locality of the farm. The main objectives of this option are to relinquish ownership of fixed assets, maintain their control through leasing, reduce pressures on cash flows, and retire a portion of the farm's initial indebtedness. The equity infusion strategy required direct replacement of debt capital by new outside equity capital in the first year. The amount of this infusion was equal to 35% of total debt. Capital was applied directly

to reducing the initial debt by reducing each debt category in proportion to its contribution to total indebtedness. Equity infusion generated no new annual cash flow requirements. The implicit assumption of this strategy is that the investment is motivated by long-term capital gains on assets rather than annual cash flows from profits.

OVERVIEW OF SIMULATION MODEL FOR THIS STUDY

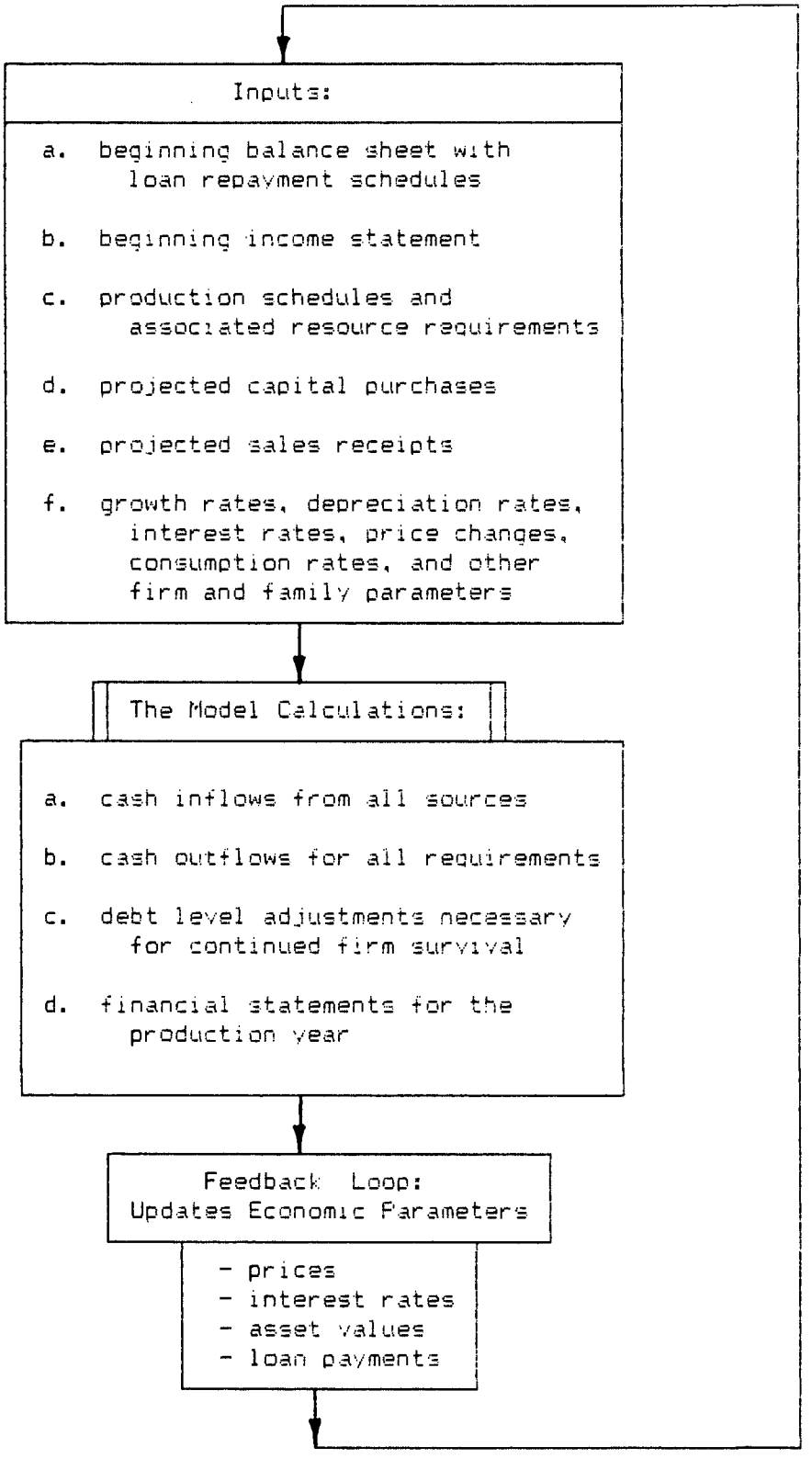
Financial analysis in this thesis was conducted using a computerized simulation model that projects the financial performance of a farm business. The model, Farm Financial Simulation Model (FFSM), was designed especially for use in the S-180 study supervised by Barry. This program runs on a micro computer using a Lotus 1-2-3^{R} spreadsheet (Schnitkey, Barry, and Ellinger). The model simulates the financial structure and performance of a farm business over a transition period of four years with an emphasis placed on financial transactions of the firm. These transactions include purchases and sales of farm assets, financing terms, debt management, cash flows, tax obligations, consumption levels, and price changes. The financial emphasis makes the model applicable to a broad range of farm types and other structural characteristics. The computer-based model made the necessary calculations of cash flows and financial statements to calculate the ratios for financial analysis over the planning horizon beyond the present input case. As with most simulation models, decisions about optimizing managerial resources in enterprise organization, marketing, or input acquisition are not made but the model does allow for determination of the effect of discrete alternative strategies on financial outcomes compared to the baseline situation.

Output of this computer model is a set of coordinated financial statements for a firm over the planning horizon. The set includes a balance sheet, an income statement, statements for changes in net worth, flow of funds statement, and a fund availability report. The model also calculates profitability, liquidity, and solvency ratios

discussed earlier in the chapter, which are provided on a summary sheet. These statements and reports are provided for the four years of the time horizon so financial information is provided on annual changes in financial position over the four years.

The processes in the simulation are outlined by the flow chart in Figure 2.3 on an annual basis. Starting with the user entered base farm inputs, the simulator calculates the beginning balance sheet entries. Cashflows for the first year are then projected, including revenues generated from operations, principal and interest payments, and new borrowing. Most of the calculations are done on a quarterly basis, allowing for a high degree of accuracy in the calculation of interest charges on borrowed funds, as well as earnings on invested funds. These calculations allow the financial statements to be estimated at the end of the first year. Utilizing the other user inputs--growth rates for changes in interest rates, asset values, price levels, and loan payments--in a feedback loop, the simulator calculates the initial conditions for the beginning of the second year. This process is continued, generating the financial statements and ratios for the four years considered by the model.

Figure 2.3 Flow Chart of Spreadsheet Simulator Calculations



CHAPTER 3

DATA AND PARAMETER INPUTS

Base Economic Parameters

Basic price relationships used in this thesis were based on national forecasts compiled by the S-180 regional research project (Barry, 1986). Tables 3.1 through 3.4 show the variables supplied by the S-180 project. The national price data were adapted for Oregon conditions in this research. In addition, most production input prices, financial variables, and family economic variables were derived in this research. This section discusses the derivation of economic variables which were utilized for both representative firms.

Beef Cattle Prices

Market sale prices for the cull cows, cull first calf heifers, cull bulls, and yearlings were localized from the national prices given in Table 3.1 with econometric analysis. The estimated equation used to project cow prices is:

$$\begin{aligned} Y_i &= 11.25920 + 0.44609\ X_1 \\ &\quad (4.38140)\quad (0.08027) \\ t &= (2.56977)\quad (5.55737) \\ R^2 &= 0.7201 \quad df = 12 \end{aligned} \qquad 3.1$$

where Y_i = local cull cow price per hundred weight (cwt) and X_1 = the Omaha fat cattle price per cwt. The first row of numbers in parentheses are the standard errors associated with the estimated coefficient, while the second row are the Student t ratios. This equation was estimated by ordinary least squares regression (OLS) using data supplied by the Oregon State University Price Reporting Service for fat cattle sales at the North Portland and Omaha livestock markets. The equation meets the standard measures of fit. The coefficient of determination (R^2) is relatively high, and the t ratios of the coefficients for the intercept and X_1 are significant at the

Table 3.1 Commodity Price Projections for the 1985 Farm Bill

Commodity	85/86	86/87	87/88	88/89	89/90
Wheat - U.S. ave. Farm Price $/Bu	$ 3.00	$ 2.47	$ 2.39	$ 2.27	$ 2.27
Corn - U.S. ave. Farm Price $/Bu	2.47	1.99	1.94	1.96	1.96
	1985	1986	1987	1988	1989
Beef (Omaha $/cwt.)	58.31	61.00	63.00	61.00	58.00

Source: Barry, 1986

Table 3.2 Values for Selected Policy Parameters for the 1985 House Farm Bill

Crop and Year	Loan Rate	Target Rate	- Reserve - Entry	Release	Set Aside	Paid Diversion	Payment Rate	LTCR Acres
			Dollars per Bushel					
Corn								
85/86	2.55	3.03	2.55	3.25	10	-	-	-
86/87	2.06	3.03	2.06	3.25	20	-	-	1.09
87/88	1.97	3.03	1.97	3.25	20	-	-	2.19
88/89	1.98	3.03	1.98	3.25	20	-	-	3.29
89/90	1.90	3.03	1.90	3.25	20	-	-	3.29
90/91	1.90	3.03	1.90	3.25	20	-	-	3.29
Wheat								
85/86	3.03	4.38	3.03	4.45	20	10	2.70	0.0
86/87	2.66	4.38	2.66	4.45	30	-	-	4.35
87/88	2.50	4.38	2.50	4.45	30	-	-	8.70
88/89	2.50	4.38	2.50	4.45	30	-	-	13.06
89/90	2.50	4.38	2.50	4.45	30	-	-	13.06
90/91	2.46	4.38	2.46	4.45	30	-	-	13.06

Source: Barry, 1986

Table 3.3 Domestic and Foreign Economic Assumptions and Projections

Conditioning Assumptions	Years 1985	1986	1987	1988	1989	1990
United States						
Real GNP % change	2.5	2.8	3.3	2.8	3.0	0.0
GNP Deflator % change	3.8	4.0	4.4	4.9	5.1	5.4
Civilian Unemployment Rate	7.3	7.4	7.2	7.2	7.1	8.0
3-Month T. Bill Rate	7.5	6.8	7.5	8.4	8.7	9.5
Moody's AA Corporate Bond Rate	11.4	10.3	10.5	10.5	10.7	10.9
Foreign/Domestic						
Foreign Currency/Dollar % change	-9.4	-4.1	-3.1	-3.8	-1.4	-0.5
Real GNP - % change:						
Latin America	2.4	3.5	4.2	3.4	3.8	4.2
Pacific Basin	5.9	6.4	6.5	6.0	6.0	6.1
Europe	2.3	2.1	2.3	2.5	2.5	2.1
Centrally Planned	3.0	3.1	3.2	3.1	3.2	2.3

Source: Barry, 1986

Table 3.4 Food and Agricultural Policy Research Institute (FAPRI) Index Numbers of Prices Paid by Farmers

Indices and Ratios (1910-14=100)	1986	1987	1988	1989	1990
Prices Paid by Farmers for Commodities, Services, Interest, Taxes, and Wage Rates	1205.1	1230.6	1277.7	1335.6	1409.7
% of Year Ago	3.1	2.1	3.8	4.5	5.5
Production Items	942.5	950.0	965.1	1001.2	1048.6
% of Year Ago	3.6	0.8	1.6	3.7	4.7
Feed	424.9	403.9	389.8	392.7	437.3
% of Year Ago	3.4	-4.9	-3.5	0.7	11.4
Feeder Livestock	7071.8	970.0	895.5	906.9	921.0
% of Year Ago	3.4	-9.5	-7.7	1.3	1.6
Seed	833.7	762.8	775.8	821.4	880.9
% of Year Ago	-0.5	-8.5	1.7	5.9	7.2
Fertilizer	435.8	457.8	483.6	510.3	543.9
% of Year Ago	6.5	5.1	5.6	5.5	6.6
Agricultural Chemicals	576.1	590.0	609.7	628.4	649.7
% of Year Ago	2.2	2.4	3.3	3.1	3.4
Fuels and Energy	725.8	773.9	830.9	885.3	932.7
% of Year Ago	1.3	6.6	7.4	6.5	5.4
Farm and Motor Supplies	677.2	699.1	730.0	758.3	788.7
% of Year Ago	2.4	3.2	4.4	3.9	4.0
Autos and Trucks	2281.4	2406.9	2538.4	2660.5	2793.6
% of Year Ago	4.8	5.5	5.5	4.8	5.0
Tractors and Self-Propelled Machinery	2332.1	2433.6	2554.6	2676.4	2811.7
% of Year Ago	3.9	4.4	5.0	4.8	5.1
Other Machinery	2155.4	2281.3	2337.0	2448.5	2571.3
% of Year Ago	3.6	5.8	2.4	4.8	5.0
Building and Fence	1328.5	1375.8	1446.0	1514.2	1589.9
% of Year Ago	2.4	3.6	5.1	4.7	5.0
Farm Services and Cash Rent	1131.4	1192.1	1235.3	1280.7	1331.4
% of Year Ago	5.3	5.4	3.6	3.7	4.0
Interest	4158.9	4022.9	4202.7	4340.5	4636.4
% of Year Ago	-4.6	-3.3	4.5	3.3	6.8
Taxes	2720.1	2932.1	3198.8	3474.2	3734.3
% of Year Ago	8.0	7.8	9.1	8.6	7.5
Wage Rates	3299.3	3466.9	3637.8	3850.7	4127.6
% of Year Ago	6.9	5.1	4.9	5.9	7.2
Production Items, Interest, Taxes, and Wage Rates	1266.3	1284.1	1326.3	1385.5	1465.4
% of Year Ago	2.9	1.4	3.3	4.5	5.8
Family Living - CPI	1053.4	1096.3	1154.4	1209.1	1269.8
% of Year Ago	3.7	4.1	5.3	4.7	5.0

Source: Barry, 1986

0.05 and 0.001 level, respectively. The Durbin-Watson test for autocorrelation could not be used for this model because the number of observations was less than 15. Therefore, the run test was used. This test uses the sign (+/-) of the residuals to detect serial correlation. By examining how runs behave in a strictly random sequence of observations one can derive a test of randomness of runs (Gujarati). Where N_1 (number of positive elements) = 7 and N_2 (number of negative elements) = 7 for a sample of 6 runs, no autocorrelation existed at the 0.05 level. Furthermore, a Park Test failed to detect heteroscedasticity. Cull heifer and bull prices were assumed to be $5 cwt higher than the local cull cow price based on subjective evaluation of the historical relationship between these prices. The cull horse price was assumed to be a constant $500 per head.

The estimated equation used to project local prices for yearlings is:

$$\begin{array}{rcccc} Y_i & = & 7.00471 & + & 1.33091\ X_1 \\ & & (9.46872) & & (0.21482) \\ t & = & (0.73977) & & (6.19547) \\ R^2 & = & .78857 & df = 13 & D.W. = 1.25590 \end{array} \qquad \begin{array}{c} -\ 9.38788\ X_2 \\ (5.01873) \\ (-1.87057) \end{array} \qquad 3.2$$

where Y_i = projected local price per cwt for steer yearlings, X_1 = Omaha fat cattle price per cwt, and X_2 = Omaha yellow corn price per bushel (bu). Since the cost of feed has a major influence on the demand for feeder animals, corn price was also included in this equation. Again, the first row of numbers in parentheses are the estimated standard errors of the coefficients, while the second row includes the Student t ratios. This equation was also estimated by OLS procedures on prices supplied by the OSU Price Reporting Service for the Washington-Oregon direct trade market and a U.S. Department of Agriculture publication (USDA, 1986). The equation meets the standard measures of fit except for the intercept term. Though the intercept term was insignificant, it was included because of an expected theoretical transportation differential between local and national prices. The coefficient of determination (R^2) is high, and the t ratios of the coefficients for X_1 and X_2 are significant at the 0.001 and the 0.1 level, respectively. The Durbin-Watson (D.W.) test

indicated no autocorrelation at the 0.01 level. Also, a Park Test for heteroscedasticity did not detect this condition.

The heifer yearling price was assumed to be $4 per cwt less than the projected steer price based on observed historical relationships. Beginning calf prices were taken from County Extension Service budgets (Hewlett, Cross, and Carr) and were inflated by the growth rate calculated for the feeder cattle in the following years. Heifer calf prices were assumed to be $3 per cwt less than the steer calf prices based on the observed historical relationship between them. These prices are used for both the cattle ranch and the wheat farm cattle operations. Table 3.5 lists the prices projected using the estimated equations.

Grain Prices

Market prices for the grains produced on the wheat-barley farm were also localized from national values in Table 3.1 and 3.2 with econometric methods. The estimated equation used to project local wheat prices is:

$$\begin{aligned} Y_i &= 0.25061 + 0.97653\ X_1 \\ &\quad (0.16434)\quad (0.04647) \\ t &= (1.52495)\quad (21.01420) \\ R^2 &= .9641 \quad df = 15 \quad D.W. = 1.69190 \end{aligned} \qquad 3.3$$

where Y_i = local wheat price per bu and X_1 = the Kansas City #1 hard red winter wheat price per bu. The first row of numbers in parenthesis are the standard errors associated with the estimated coefficient, while the second row are the Student t ratios. This equation was estimated with ordinary least squares regression (OLS) using data from the U.S. Department of Agriculture (USDA, 1987). The equation meets the standard measures of fit. The coefficient of determination (R^2) is high, and the t ratios of the coefficients for the intercept and X_1 are significant at the 0.20 and 0.001 level, respectively. The Durbin-Watson (D.W.) test for autocorrelation was rejected at the 0.05 level. A Park Test determined that heteroscedasticity bias was not present.

Table 3.5 Projected Livestock Prices Over the Time Horizon

Livestock Category	1987	1988	1989	1990
	- - - - - Dollars / cwt - - - - -			
Cull Cows:	38.47	39.36	38.47	37.13
Cull Bulls:	43.47	44.36	43.47	42.13
Cull Heifers:	43.47	44.36	43.47	42.13
Cull Horse:[a]	-	500.00	-	500.00
Steer Yearlings:	69.51	72.64	69.79	65.80
Heifer Yearlings:	65.51	68.64	65.79	61.80
Steer Calves:	65.00	67.93	65.26	61.73
Heifer Calves:	62.00	64.93	62.26	58.53

[a] Horses are culled biannually on the cattle ranch only.

The econometric equation used to project local barley prices was based on the national corn price, as barley is primarily used as a feed grain. The estimated equation is:

$$Y_i = -0.05681 + 1.01169\ X_1 \qquad 3.4$$
$$(0.25061) \quad (0.10175)$$
$$t = (-0.22669) \quad (9.94264)$$
$$R^2 = .8759 \quad df = 14 \quad D.W. = 1.67593$$

where Y_i = the projected local barley price per bu and X_1 = the Omaha #2 yellow corn price per bu. Again, the first row of numbers in parentheses are the estimated standard errors of the coefficient, while the second row includes the Student t ratios. This equation was estimated with OLS using USDA data (USDA, 1986). The equation meets the standard measures of fit except for the intercept term. Though the intercept term was found to be insignificant, it was included because of its theoretical significance as a transportation differential between the local and national prices. The coefficient of determination (R^2) is high, and the t ratio for the X_1 coefficient is significant at the 0.001 level. The Durbin-Watson (D.W.) test for autocorrelation was rejected at the 0.05 level. Again, the Park Test found no evidence of heteroscedasticity. Table 3.6 shows local wheat and barley prices projected with the above equations and national projections (Table 3.1).

Family Consumption and Taxes

Annual family consumption for both production units was specified as 35 percent of net income before interest and taxes or a minimum level, whichever was higher. The 35 percent average propensity to consume before interest and taxes (APC_{bt}) can be related to the conventional after tax average propensity to consume (APC_{at}). Since net income after taxes (NI) partially depends on interest paid on loans which finance consumption withdrawals, income taxes are simultaneously determined with consumption. For this reason consumption was based on net income before interest and taxes (EBIT).

Table 3.6 Trends in Wheat and Barley Prices Over the Time Horizon

	1987	1988	1989	1990
	- - - - - - Dollars / bu - - - - - -			
Wheat Price Received:				
Projected Wheat Price	2.66	2.58	2.47	2.47
Adjusted Natl. Loan Rate[a]	2.81	2.65	2.65	2.65
Projected Farm Price[b]	2.81	2.65	2.65	2.65
Barley Price Received:				
Projected Barley Price	1.96	1.91	1.93	1.93
Adjusted Natl. Loan Rate[a]	1.79	1.71	1.72	1.66
Projected Farm Price[b]	1.96	1.91	1.93	1.93

a These rates were adjusted from those given in Table 3.2 based on projected relationships (Oregon ASCS office) (Doanes).

b Based on the current government programs, if the loan rate exceeds the market price then the producer is entitled to receive the loan price.

The relationship of net income to earnings before interest and taxes (EBIT) can be defined as:

$$NI = (EBIT - I)(1 - t) \quad 3.5$$

where I = interest charges and t = average tax rate. The times interest earned ratio[2] (r) is: r = EBIT / I (Brigham). Solving for (I) gives I = r / EBIT. Substituting for (I) in equation 3.5 and simplifying yields:

$$NI = EBIT(1 - 1 / r)(1 - t) \quad 3.6$$

Consumption (C) after taxes can be defined as $C = APC_{at} * NI$ or on a before tax basis as $C = APC_{bt} * EBIT$. Using these definitions of consumption to solve for APC_{bt} yields:

$$APC_{bt} = (APC_{at} * NI) / EBIT \quad 3.7$$

Substituting the definition of NI from equation 3.6 into 3.7 gives:

$$APC_{bt} = APC_{at}(1 - 1 / r)(1 - t) \quad 3.8$$

Using values of 0.80 for APC_{at}, 2.0 for r, and 0.125 for t results in an average propensity to consume before interest and taxes of 0.35. Estimates of APC_{at} came from a macroeconomics theory class, r from agricultural finance (Barry, Hopkin, and Baker), and t from preliminary baseline runs for the production units.

The minimum level of consumption for the first year was assumed to be $17,679 and in future years adjusted by the CPI index in Table 3.4 there after. For income tax calculations, the cattle ranch and wheat farm used "married, filing jointly" with no itemized deductions and five exemptions. State income tax was approximated from tax tables with the following rates: (1) 5 percent average tax rate for $0-10,000; (2) 7.93 percent average tax rate for $10,000-20,000; (3) 8.76 percent average tax rate for 20,000-30,000; (4) 9.11 percent average tax rate for $30,000-40,000; (5) 9.31 percent average tax rate for $40,000-50,000; and (6) 9.49 percent average tax rate for > $50,000. Other economic variables used in the model are listed in Table 3.7. The next sections will cover parameters which are specific to each production unit in the analysis.

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2 Called the interest coverage ratio by some agricultural finance texts (Barry, Hopkin, and Baker).

Table 3.7 Economic Variables For Both Firms Over the Time Horizon

	1987	1988	1989	1990
CATTLE RANCH:				
Interest Rates Charged:		Percent		
Long Term Loans[a]	11.25	11.25	11.25	11.25
Growth Rates:				
Machinery[b]	-2.99	-4.28	-3.27	-2.99
Buildings[c]	-0.01	1.44	1.06	1.35
WHEAT FARM:				
Interest Rates Charged:		Percent		
Long Term Loans	7.35	7.31	7.26	7.17
Growth Rates:				
Machinery[d]	-12.65	-13.81	-12.90	-12.65
Buildings[e]	-3.31	-1.91	-2.28	-2.00
COMMON FACTORS:				
Interest Rates Charged:		Percent		
Current and Inter. Loans[a]	10.16	9.66	9.66	9.66
Interest Rates Earned:				
Marketable Securities	5.5	5.0	5.0	5.0
Retirement Account	7.0	7.0	7.0	7.0
Growth Rates:				
Production Expenses	XXX.XX	1.6	3.7	4.7
Overhead Expenses	XXX.XX	1.6	3.7	4.7
Land	0.0	0.0	0.0	0.0
Family Living Expenses	XXX.XX	5.3	4.7	5.0

a These interest rates were taken from a telephone interview with a local Farm Credit System manager.

b A weighted growth rate from (FAPRI) (Table 3.4) for tractors and self-propelled machinery. Also based on the weighted average life of the aggregate machinery compliment.
$G = 1 - [(1 + g) * (1 - d)]$ Where G = tabled growth rate, g = weighted average FAPRI growth rate, and d = depreciation rate based on weighted average life of machinery, 7.7 percent.
$-2.99\% = 1 - \{1 + [(0.044 + 0.058)/2] * [1 - 0.077]\}$

c A growth rate calculated using the same formula as above, where g is the FAPRI growth rate for buildings and fences and d = 3.48 percent. $-0.01\% = 1 - \{[1 + (.036)] * [1 - 0.0348]\}$

d Similar to f above but d = 16.89 percent.
$-12.65\% = 1 - \{1 + [(0.044 + 0.058)/2] * [1 - 0.1689]\}$

e Similar to g above but d = 6.67 percent.
$-3.31\% = 1 - \{[1 + (.036)] * [1 - 0.0667]\}$

CATTLE RANCH BASE INPUTS

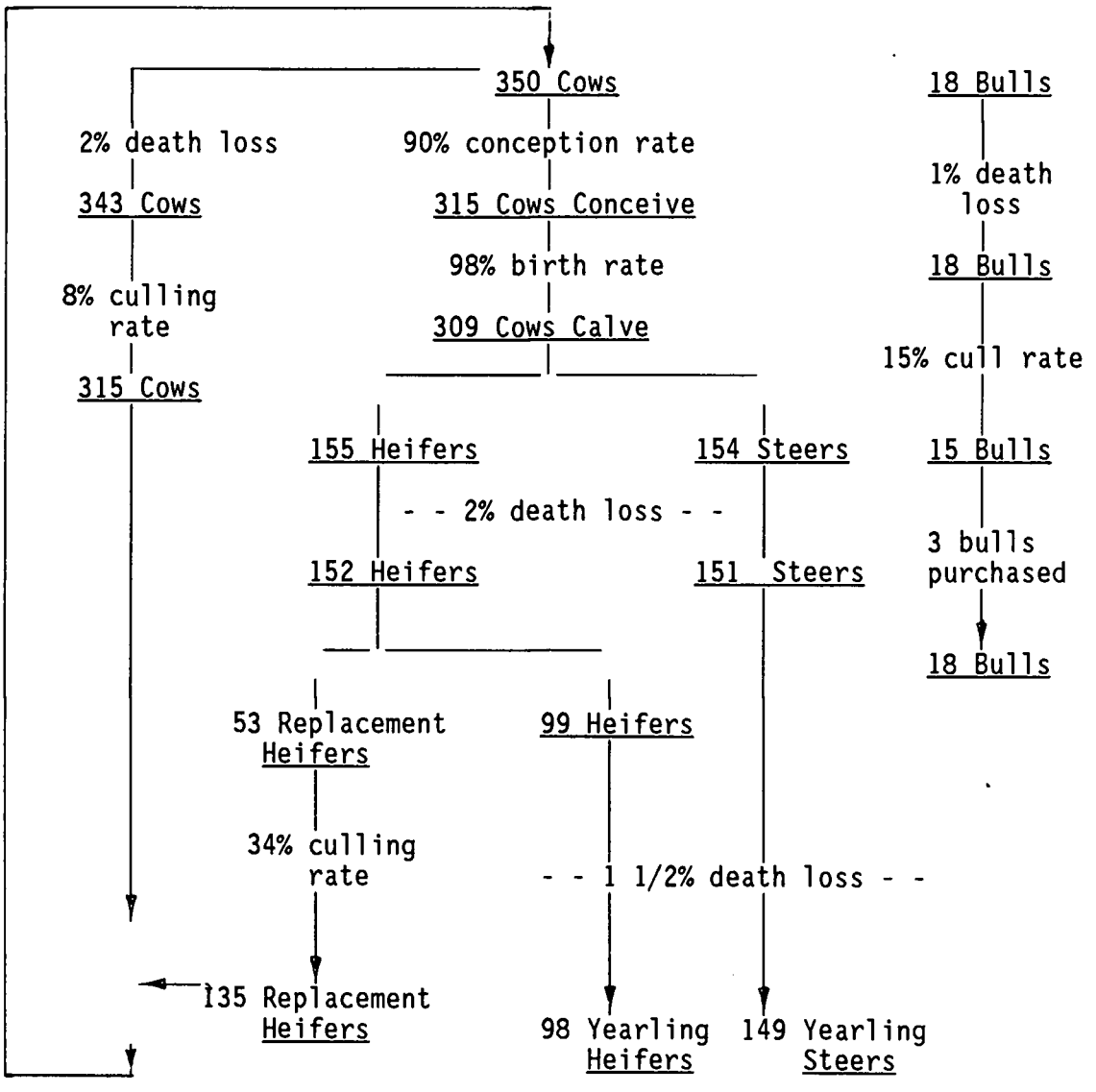
The basic production and cash flow parameters for the cattle ranch in this thesis were developed from Oregon State University Extension Service cow-calf, cow-yearling, and native hay budgets (Hewlett, Cross, and Carr). These budgets were developed for use by producers in the South Central region of Oregon (Lakeview area) and were intended to represent an average ranch in that area. These budgets contain detailed information on production input requirements, fixed and variable costs of production, capital requirements, and costs associated with the use of borrowed capital. The program used to develop these budgets provides detailed financial and cash flow statements for the simulation model (Micro-computer Budget Management System). This section describes the inputs used for the base cattle ranch in the FFSM program, while Appendix A contains a print-out of the inputs as they appear in the model.

The representative cattle ranch selected for study was a cow-yearling operation. A family owned and operated business with only part-time labor assumed. Table 3.8 lists the beginning asset situation. Total land resources are 2,600 acres with 400 acres of irrigated hay-land, 200 acres of irrigated pasture, and 2,000 acres of rangeland. Hay yields are one and one half tons of native grass hay per acre or 600 total tons per year. A 600 ton inventory was assumed at the beginning of the four years valued at $50/ton. The owned rangeland is utilized primarily for wintering the cattle and for calving in the spring, the irrigated pasture provides forage in the early spring, while rented U.S. Forest Service and privately owned land providing forage the rest of the production year. Buildings, hay bunks, and corrals have an aggregate cost of $181,818 with a market value of $100,000. The ranch owns machinery necessary to harvest the hay. The combined cost of the machinery complement was assumed to be $105,400 and the market value $64,763. Figure 3.1 shows the cow-yearling production flow-chart. The cows and replacement heifers are bred in May and 90 percent of these conceive; of this 90 percent, 98 percent (309) result in live births. A two percent death loss leaves

Table 3.8 Cost and Current Market Values of Beginning Assets and on the Cattle Ranch

Asset Category	Basis	Current Market Value
	- - - - - - Dollars - - - - - -	
Land:		
Irrigated Hay Land	10,516	200,000
Irrigated Pasture	5,258	90,000
Rangeland	52,580	140,000
	68,354	430,000
Machinery:		
50 HP Tractor	13,500	8,775
75 HP Tractor	15,500	10,075
Swather	26,000	18,200
Bale Accumulator	2,500	1,250
Baler	18,000	9,900
Farmhand Bale Loader	3,200	1,840
Harrow	1,000	500
Hay Wagon	3,500	2,013
Side Delivery Rake	4,000	2,200
Post-hole Auger	1,500	825
3-wheeler	1,500	825
Branding-iron Heater	200	110
Horse Trailer	10,000	5,500
Squeeze Chute	5,000	2,750
	105,400	64,763
Buildings:		
Sheds and Structures	181,818	100,000
Hay Bunks	5,000	2,750
Corrals	10,000	5,500
	196,818	108,250
Breeding Livestock:		
Cows	0.00	121,180.50
Replacement Heifers	0.00	10,650.15
Bulls	21,600.00	10,171.98
Horses	5,000.00	2,500.00
	26,600.00	144,502.63
Young Animals:		
Steer Calves	0.00	48,425.00
Heifer Calves	0.00	24,304.00
	0.00	72,729.00
Current Assets:		
Cash		1,050
Marketable Securities		4,000
Retirement Account		8,000
Pre-paid Expenses		500

Figure 3.1 Cow-Yearling Production Flow-chart for the Cattle Ranch



303 calves. Of the calves 53 heifers are retained each year for replacements with 34 percent being culled for failure to become pregnant, leaving 35 replacement heifers to enter the cow herd. The remaining 99 heifer and 151 steer calves are held until they are approximately one and one half years of age. During this holding period 1 1/2 percent die, leaving 247 head of yearlings to be marketed annually. The bulls are culled at a rate of 15 percent per year and are replaced by new purchases. The horses (not included in the flow-chart) have a culling rate of ten percent per year or one every other year, and are also replaced through new purchases. The livestock breeding herd consists of 315 cows, 35 replacement heifers, 18 bulls, and 5 saddle horses. Beginning tax cost basis for breeding animals was reflected for the bull and horse categories only.

The main source of revenues on this ranch come from the sale of market yearlings and cull cattle. Table 3.9 provides a listing of the number of head and weights of the cattle for the ranch. Table 3.10 lists cull livestock revenues, while Table 3.11 gives a list of feeder livestock revenues. Table 3.12 provides similar information for the young animals. Non-farm income earned was assumed to be $12,890, $13,573, $14,211, and $14,922 for the years 1987-90. The 1987 amount was estimated by using average off-farm income earned in the Mountain states for this size production unit. Subsequent values were obtained by inflating the initial value by the CPI index given in Table 3.4 over the next four years. Sales of depreciated machinery also generated revenue for the ranch of $4,250 in 1987, $4,407 in 1988, $4,619 in 1989, and $4,855 in 1990. These values were calculated from the weighted average salvage value on the existing equipment compliment for 1987 and inflating this amount by the FAPRI growth rate from Table 3.4 for following years.

Production expenses came directly from the budgets. Annual hay production expenses incurred by the ranch include fuel, lube, and repairs; twine; and ditch maintenance which totaled $12.90 per acre. Livestock expenses included an annual purchase of replacement bulls and biannual purchase of horses. These expenses were $1,200 when only bulls were replaced and $1,150 when both bulls and horses were

Table 3.9 Market and Cull Livestock Sale Parameters For Both Firms

Livestock Category	Number of Head	Weight Per Head	Total Sale Weight
CATTLE RANCH:	Number	- - - Hundred Weight (cwt) - - -	
Breeding Livestock Sales:			
Cull Cows	28	10	280
Cull Bulls	3	13	39
Cull Replacement Heifers	18	7	126
	49	30	445
Young Animal Available for Sale or Transfer:			
Steer Calves	149	5	745
Heifer Calves	98	4	392
	247	9	1,137
Yearling Livestock:			
Steer Yearlings	149	8	1,192
Heifer Yearlings	98	7.25	710.5
	247	15.25	1,902.5
WHEAT FARM:			
Breeding Livestock Sales:			
Cull Cows	12	10	120
Cull Bulls	1	13	13
Cull Replacement Heifers	2	7	14
	15	30	147
Young Animal Available for Sale or Transfer:			
Steer Calves	35	5	175
Heifer Calves	17	4	68
	52	9	243

Table 3.10 Trends in Cull Livestock Revenues for Both Firms Over the Time Horizon

Livestock Category	1987	1988	1989	1990
CATTLE RANCH:		- - - - - - Total Dollars - - - - - -		
Cull Cows[a]	10,771.60	11,020.80	10,771.60	10,396.40
Cull Bulls[a]	1,695.33	1,730.04	1,695.33	1,643.07
Cull Heifers[a]	5,477.22	5,589.36	5,477.22	5,308.38
Cull Horse	XXX.XX	500.00	XXX.XX	500.00
	- - - - - - - - - Dollars - - - - - - - - -			
Average Price per Head	366.21	376.80	366.21	356.96
	- - - - - - - - - Percent - - - - - - - - -			
Calculated Growth Rate	XXX.XX	2.89	-2.81	-2.53
WHEAT FARM:		- - - - - - Total Dollars - - - - - -		
Cull Cows[a]	4,616.40	4,723.20	4,616.40	4,455.60
Cull Bulls[a]	565.11	576.68	565.11	547.69
Cull Heifers[a]	608.58	621.04	608.58	589.82
	- - - - - - - - - Dollars - - - - - - - - -			
Average Price per Head	386.01	394.73	386.01	372.87
	- - - - - - - - - Percent - - - - - - - - -			
Calculated Growth Rate	XXX.XX	2.26	-2.21	-3.40

[a] These prices were calculated by first projecting the price using the equation and then multiplying it by the total weight of the category of animals to be sold.

Table 3.11 Trends in Yearling Livestock Revenues for the Cattle Ranch Over the Time Horizon

Livestock Category	1987	1988	1989	1990
CATTLE RANCH:		- - - - - - Total Dollars - - - - - -		
Steer Yearlings[a]	82,855.92	86,586.88	83,189.68	78,433.60
Heifer Yearlings[a]	44,939.86	47,087.04	45,131.94	42,394.80
	- - - - - - - - - Dollars - - - - - - - - -			
Price per Pound	0.6805	0.7118	0.6833	0.6434
	- - - - - - - - - Percent - - - - - - - - -			
Calculated Growth Rate	XXX.XX	4.60	-4.0	-5.84

[a] These prices were calculated by first projecting the price using the equation and then multiplying it by the total weight of the category of animals to be sold. The aggregate sale weight of these animals was assumed to be 770.24 lbs.

Table 3.12 Calf Values Used For Sale or Transfer Pricing For Both Firms Over the Time Horizon

Livestock Category	1987	1988	1989	1990
CATTLE RANCH:		- - - - - - Total Dollars - - - - - -		
Steer Calf Price[a]	48,425.00	50,607.85	48,618.70	45,988.85
Heifer Calf Price[a] [b]	24,304.00	25,452.56	24,405.92	22,943.76
		- - - - - - - - - Dollars - - - - - - - - -		
Price per Head	294.45	307.94	295.65	279.08
		- - - - - - - - - Percent - - - - - - - - -		
Calculated Growth Rate	XXX.XX	4.58	-3.99	-5.60
WHEAT FARM:		- - - - - - Total Dollars - - - - - -		
Steer Calf Price[a]	11,375.00	11,886.88	11,420.91	10,767.64
Heifer Calf Price[a] [b]	4,216.00	4,405.72	4,233.02	3,990.89
		- - - - - - - - - Dollars - - - - - - - - -		
Price per Head	299.83	313.32	301.04	283.82
		- - - - - - - - - Percent - - - - - - - - -		
Calculated Growth Rate	XXX	4.50	-3.92	-5.72

a These prices were calculated by first using the price from the budgets (Hewlett, Cross, and Carr), inflating this by the feeder cattle growth rate, and finally multiplying by the total weight of the category of animals to be sold.

b The heifer calf price was assumed to remain a constant $3 per cwt under the steer calf price based on the historical relationship.

purchased. Table 3.13 gives a breakdown of the annual feed and non-feed costs for the breeding herd and feeder livestock, as well as the unallocated ranch costs.

New machinery purchases were scheduled to replace depreciated equipment. The amount of the machinery purchase was estimated as 7.7 percent (depreciation rate) of the total existing machinery cost. This initial amount was then inflated at the tabled FAPRI growth rate (g) in Table 3.4 for each successive year. The resulting machinery purchase schedule was $8,116 in 1987, $8,416 in 1988, $8,820 in 1989, and $9,270 in 1990. Though the current tax law has changed, this model allows for investment tax credit to be taken on qualifying asset purchases. Therefore, 10 percent investment tax credit was taken on machinery purchases. These purchases were assumed to be 80 percent financed with new three year loans, while the remaining 20 percent comes from a cash payment. Depreciation expenses on these newly purchased machines were calculated based on the weighted average life of the existing machinery compliment of 7.7 percent per year.

Table 3.14 shows the relationship of beginning asset, liability, and equity positions to the various leverage levels. Short term loans are those which will be repaid within the current year. Intermediate liabilities usually are repaid within three to five years, while long term liabilities are loans with longer periods of repayment. The equity position in each case is calculated as the difference between assets and liabilities.

Economic Scenario Changes

Different macroeconomic conditions were simulated by adjusting gross revenue and land values in the first year, as discussed in Chapter 2. Gross revenues were also adjusted for years two through four. Table 3.15 shows the relationship of gross revenues and land values in these economic scenarios compared to the base.

Table 3.13 Annual Feed, Non-Feed, and Unallocated Costs on the Cattle Ranch

Cost Category	- Number[a] -		Total Cost
Feed Costs:			- Dollars -
Breeding Livestock			
U.S. Forest Service grazing fees	373 hd		1,681
Hay Pasture rent	373 hd		8,242
Feeder Livestock			
Alfalfa Hay	247 hd		17,018
Pasture rent	247 hd		6,919
Total:			33,860
Non-Feed Costs:			
Breeding Livestock			
Fall Vaccine (cows)	350 hd		826
Pour On	373 hd		385
Salt and Mineral	373 hd		672
Spring Vaccine (cows)	403 hd		246
Vaccine (calves)	303 hd		182
Vet. and Preg. Testing	403 hd		1,210
Fuel and Oil	373 hd		6,756
Miscellaneous	373 hd		175
Feeder Livestock			
Fly Tags	247 hd		210
Implants	247 hd		543
Salt and Mineral	247 hd		358
Selenium	247 hd		112
Vaccine (yearlings)	247 hd		150
Miscellaneous			
Brand Inspection Fee	247 hd		420
Marketing Fees	247 hd		371
Total:			12,616
Unallocated Costs:			
Hired Labor		2,600 ac	1,000
Machinery Repair (other than haying equipment)		2,600 ac	4,229
Building and Fence Repair		2,600 ac	600
Utilities		2,600 ac	1,500
Insurance		2,600 ac	3,899
Real Estate Tax		2,600 ac	4,700
Total:			15,928

Source: Oregon State Extension Service Budgets (Hewlett, Cross, and Carr)

[a] hd = head, ac = acres

Table 3.14 Beginning Asset, Liability and Equity Positions by Leverage Situation Under Baseline Macroeconomic Conditions for the Cattle Ranch

	Leverage Position		
	20% D/A	40% D/A	70% D/A
	Dollars		
Beginning Assets:			
Current Assets	100,282	100,282	100,282
Intermediate Assets	235,067	235,067	235,067
Fixed Assets	530,000	530,000	530,000
	865,349	865,349	865,349
Beginning Liabilities[a]:			
Short Term			
Current Loans	61,802	130,340	233,125
Accounts Payable	2,000	2,000	2,000
Accrued Interest	1,570	3,311	5,921
Accrued Taxes	15,000	15,000	15,000
Intermediate	61,802	130,340	233,125
Long Term	30,901	65,170	116,562
	173,075	346,161	605,733
Beginning Net Worth:	692,275	519,189	259,616

[a] Debt balances do not include contingencies. Intermediate and long term debt balances include current and deferred portion of the respective liability.

Table 3.15 Base, Pessimistic, and Optimistic Economic Scenario Changes in Gross Revenue and Land Values for the Cattle Ranch

	Base	Pessimistic	Optimistic
Gross Revenue by Economic Scenario:			
		- - - - - - Dollars - - - - - -	
1987	139,475	125,528	167,370
1988	161,188	145,069	193,426
1989	141,290	127,161	169,548
1990	132,649	119,385	159,179
Land Values by Economic Scenario:			
Beginning	430,000	430,000	430,000
1987	430,000	387,000	516,000
1988	430,000	387,000	516,000
1989	430,000	387,000	516,000
1990	430,000	387,000	516,000

WHEAT FARM BASE INPUTS

The base wheat farm in this thesis is a representative dryland grain and livestock farm from the North Central or Columbia Gorge region of Oregon. Base parameters for the model were derived from a case study farm developed at Washington State University to illustrate the use of coordinated financial statements in identifying and analyzing farm financial performance (the Max Prophet case-farm). The following section describes various inputs used for the base wheat-barley farm in the FFSM program, while Appendix B contains a print-out for the model.

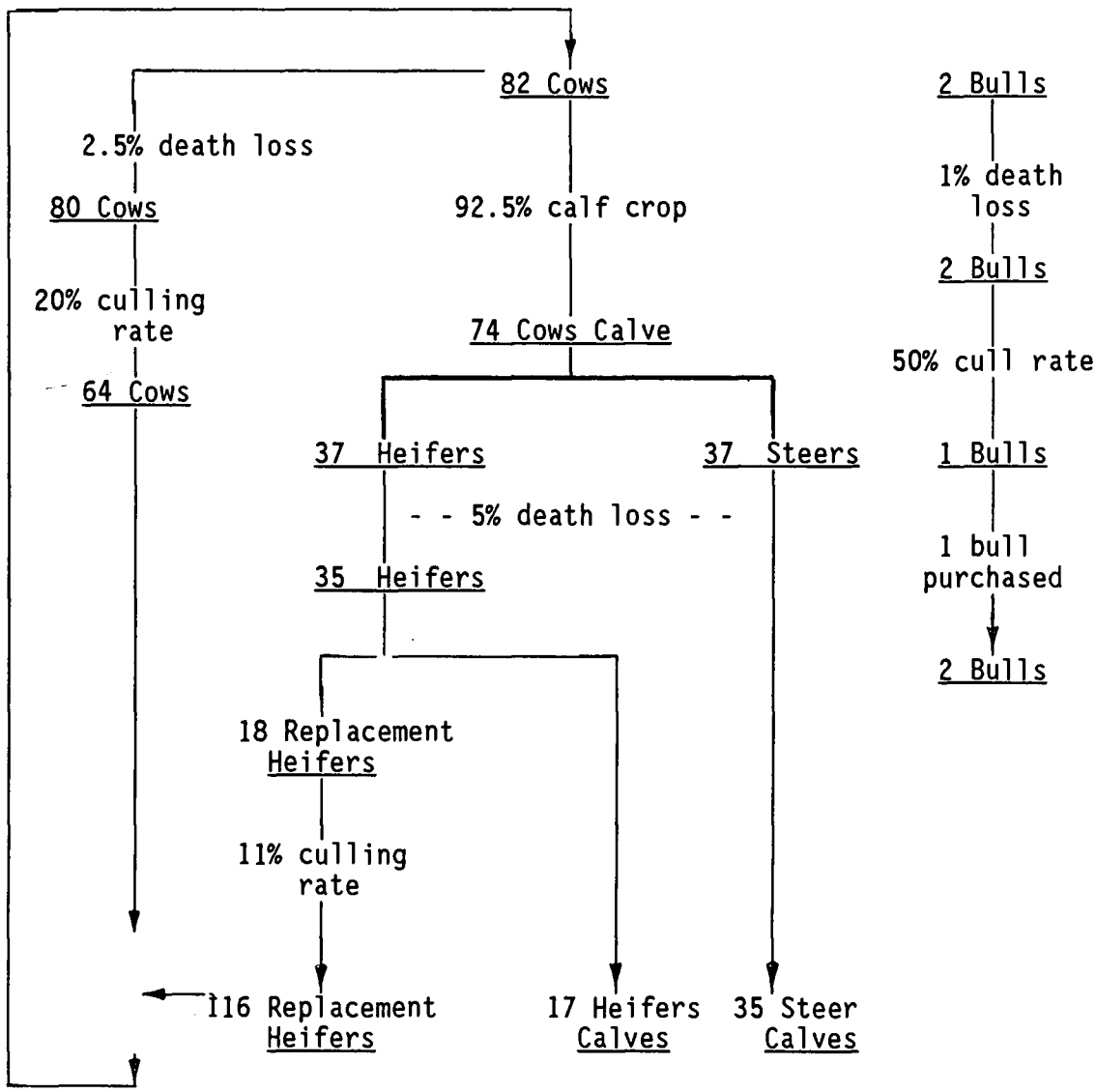
The wheat farm is owned and managed as a family farm with some seasonal part-time hired labor. Table 3.16 summarizes the farm owned assets. Land resources consist of 3,250 acres with 1,200 acres of cropland, 2,000 acres of range-wasteland, and 50 acres of improved pasture. Combined cost of this land was assumed to be $599,000, while the market value was estimated to be $1,131,647. Cropland is farmed in a three year rotation of winter wheat, spring barley, and summer fallow with equal acreage being allocated to each. Average rainfall for this area is 17 inches annually, giving average yields of 65 bushels per acre for wheat and 62.5 bushels per acre for barley. A beginning inventory of 9,000 bushels of wheat and 4,167 bushels of barley was assumed. Wheat inventory was valued at $2.81/bu, while barley was valued at $1.96/bu. Range-wasteland and irrigated pasture are used for grazing cattle year around, although hay must be purchased for feed in the winter.

Figure 3.2 shows the production flow-chart for the livestock enterprise. The breeding herd consists of an 82 cow and two bull herd which spends 9 months on range and 3 months on hay and crop residues. Table 3.9 lists the number of head and weights of each livestock category. Cows and replacement heifers are bred in May and have a 92.5 percent calf crop (74 calves). Some calves are lost to disease and other factors (5%), leaving 70 calves produced annually. Eighteen of the best heifers are held out for replacement heifers and are culled in the Fall, leaving only 16 replacement heifers to enter the

Table 3.16 Beginning Asset Costs and Current Market Values for the Wheat Farm

Asset Category	Basis	Current Market Value
	- - - - - - Dollars - - - - - -	
Land:		
Home Place	343,000	796,847
Peterson Place	256,000	334,800
	599,000	1,131,647
Machinery:		
4-wheel Drive Tractor	85,000	
Crawler Tractor	35,000	
Chisel	8,400	
Cultivator	10,000	
Rodweeder	7,500	
Drill	14,200	
Harrow	1,050	
Plow	7,000	
Combine	101,500	
2-ton Truck	25,000	
2-ton Truck	15,200	
	309,850	251,200
Buildings:		
Home Place	64,166	149,069
	64,166	149,069
Breeding Livestock:		
Cows	0.00	31,545
Replacement Heifers	0.00	4,869
Bulls	2,400	1,130
	2,400	37,544
Current Assets:		
Cash		1,050
Marketable Securities		4,020
Retirement Account		8,405
Pre-paid Expenses		2,800
		16,275

Figure 3.2 Livestock Enterprise Flow-chart for the Wheat Farm



herd each year. The 52 remaining calves are sold in the Fall as yearlings. Bulls are rotated once every two years. The beginning market value of the breeding herd was calculated to be $37,544 and cost basis of $2,400 (on the bulls only).

The main sources of income on this farm are from the sale of grain and livestock. Table 3.10 gives a list of the cull livestock revenues and Table 3.12 provides similar information for the calves. Marketing of the wheat and barley is assumed to be evenly distributed over the quarter after production. The farm is assumed to participate in government wheat and feed grain programs. Participation in these programs reduces wheat acreage by 30 percent and barley acreage by 20 percent. Deficiency payment calculations are shown in Table 3.17 for wheat and Table 3.18 for barley. Government payment from these programs were entered as miscellaneous farm income. Besides income from farm production of grain and beef cattle, miscellaneous farm income of $10,731 and off-farm income of $19,545 were assumed for the initial year. These two figures were inflated by the CPI index from Table 3.4 for the next four years.

Table 3.19 lists gives a breakdown of the cash crop expenses. Total direct cash crop expenses in year one are $40.37 per acre for wheat, $59.51 per acre for barley, and $6.96 per acre for summer fallow. Livestock expenses include the annual purchase of replacement bulls for an annual cost of $1,200. Table 3.20 gives a breakdown of the annual feed and non-feed costs for the breeding herd, as well as the unallocated farm costs. Machinery purchased (only in year one) include a new pickup and a combine, the first a three year asset and the second a five year asset under Accelerated Cost Recovery System (ACRS) depreciation. As mentioned in the section on the cattle ranch, these assets were subject to investment tax credit. A credit of six percent was taken on the pickup and ten percent on the combine. Total cost of machinery purchases is $59,000; financed with a down payment of $3,750, trade-in of old equipment, and new loans in the amount of $55,250. Table 3.21 shows the relationship of beginning asset, liability, and equity positions to the various leverage levels.

Table 3.17 Wheat Deficiency Payment Calculations Over the Time Horizon

Year	Wheat Acres	Yield Bu/ac	Target Price	National Loan Rate	Estimated[a] Price	Payment[b] Per Bushel	Total[c] Payment
					Dollars		
1987	280	65	4.38	2.66	2.81	1.72	31,304
1988	280	65	4.38	2.50	2.65	1.88	34,216
1989	280	65	4.38	2.50	2.65	1.88	34,216
1990	280	65	4.38	2.50	2.65	1.88	34,216

a The estimated prices are from Table 3.6 above.

b Payment amount is calculated as the difference of the target price and the market price or national loan rate which ever is higher.

c Total Payment is the payment per bushel times the total average number of bushels harvested annually.

Table 3.18 Barley Deficiency Payment Calculations Over the Time Horizon

Year	Barley Acres	Yield Bu/ac	Target Price	National Loan Rate	Estimated[a] Price	Payment[b] Per Bushel	Total[c] Payment
					Dollars		
1987	320	62½	2.71	1.68	1.96	0.75	15,000
1988	320	62½	2.71	1.60	1.91	0.80	16,000
1989	320	62½	2.71	1.61	1.93	0.78	15,600
1990	320	62½	2.71	1.55	1.93	0.78	15,600

a The estimated prices are from Table 3.6 above.

b Payment amount is calculated as the difference of the target price and the market price or national loan rate which ever is higher.

c Total Payment is the payment per bushel times the total average number of bushels harvested annually.

Table 3.19 Annual Cash Crop Expenses for the Wheat Farm

	Wheat	Barley	Fallow
	- - - - - - Dollars / AC - - - - - -		
Fuel	5.86	12.82	6.96
Fertilizer & Lime	2.95	22.88	0.00
Machinery Hire	8.14	5.35	0.00
Herbicides	11.82	5.21	0.00
Seed	6.60	8.25	0.00
Miscellaneous	5.00	5.00	0.00

Table 3.20 Annual Feed, Non-Feed, and Unallocated Costs for the Wheat Farm

Cost Category			Total Cost
Feed Costs:	- - Number - -		- Dollars -
Breeding Livestock			
Hay	100 hd		6,695
Rolled Barley	100 hd		1,100
Supplement	100 hd		800
Salt and Mineral	100 hd		85
Total:			8,680
Non-Feed Costs:			
Breeding Livestock			
Vet. and Medicine	100 hd		100
Miscellaneous	100 hd		9,150
Total:			9,250
Unallocated Costs:			
Hired Labor		3,250 ac	9,753
Farm Supplies		3,250 ac	1,613
Machinery Repair		3,250 ac	5,828
Building and Fence Repair		0 ac	0
Utilities		3,250 ac	2,400
Insurance		3,250 ac	2,080
Real Estate Tax		3,250 ac	11,264
Miscellaneous		3,250 ac	200
Total:			33,138

Table 3.21 Beginning Asset, Liability, and Equity Positions by Leverage Situation Under Baseline Macroeconomic Conditions on the Wheat Farm

	Leverage Position		
	20% D/A	40% D/A	70% D/A
Beginning Assets:		Dollars	
Current Assets	56,807	56,807	56,807
Intermediate Assets	314,949	314,949	314,949
Fixed Assets	1,280,716	1,280,716	1,280,716
	1,652,472	1,652,472	1,652,472
Beginning Liabilities[a]:			
Short Term			
Current Loans	23,168	47,656	84,392
Accounts Payable	2,802	2,802	2,802
Accrued Interest	588	1,210	2,144
Accrued Taxes	15,115	15,115	15,115
Intermediate	109,569	225,384	399,122
Long Term	179,293	368,805	653,099
	330,535	660,972	1,156,674
Beginning Net Worth:	1,321,937	991,499	495,799

[a] Debt balances do not include contingencies. Intermediate and long term debt balances include current and deferred potion of the respective liability.

Economic Scenario Changes

Under the pessimistic and optimistic economic scenarios, adjustments were made to the gross farm revenue earned in each of the four years, and to the market value of land during the first year. Gross revenues were also adjusted for years two through four. Table 3.22 shows the relationship of gross revenues and land values in these economic scenarios compared to the base.

POLICY AND MANAGEMENT STRATEGY CHANGES

This section discusses changes in the base inputs to simulate the various stress-reducing strategies studied in this thesis. The explanations will consider both production units simultaneously.

Reduction of Debt

This option decreased initial indebtedness by 35 percent for all debt maturities. Beginning debt levels for each leverage position and its relationship to the base situation (40% D/A) are shown in Table 3.23. All debt forgiveness is treated as taxable income. Intermediate and long term debt forgiveness are entered in the simulator as the variable loan forgiveness (Appendix A). Short term debt is reduced with the variable cash injection in year one. Principal payments on the outstanding debt are also reduced by 35 percent.

Reduction in Interest Rates

In this option interest rates on all debt outstanding are reduced by 35 percent. Table 3.24 shows the original and adjusted interest rates.

Table 3.22 Base, Pessimistic, and Optimistic Economic Scenario Changes in Gross Revenue and Land Values for the Wheat Farm

	Base	Pessimistic	Optimistic
Gross farm Revenue by Economic Scenario:		- - - - - - Dollars - - - - - -	
1987	168,817	151,936	202,581
1988	169,984	152,985	203,980
1989	167,952	151,157	201,543
1990	166,957	150,261	200,348
Land Values by Economic Scenario:			
Beginning	1,131,647	1,131,647	1,131,647
1987	1,131,647	1,018,482	1,357,976
1988	1,131,647	1,018,482	1,357,976
1989	1,131,647	1,018,482	1,357,976
1990	1,131,647	1,018,482	1,357,976

Table 3.23 Beginning Levels of Indebtedness and Reductions Needed to Meet 35 Percent Reduction Criteria at Specified D/A Ratios[a] For Both Firms Over the Time Horizon

	Short Term Liabilities	Intermediate Liabilities	Long Term Liabilities
CATTLE RANCH:		Dollars	
20% D/A Beginning Debt	61,802	61,802	30,901
35% Reduction	21,631	21,631	10,815
40% D/A Beginning Debt	130,340	130,340	65,170
35% Reduction	45,619	45,619	22,810
70% D/A Beginning Debt	233,125	233,125	116,562
35% Reduction	81,594	81,594	40,797
WHEAT FARM:		Dollars	
20% D/A beginning Debt	23,168	109,569	179,293
35% reduction	8,109	38,349	62,753
40% D/A beginning Debt	47,656	225,384	368,805
35% reduction	16,680	78,884	129,082
70% D/A beginning Debt	84,392	399,122	653,099
35% reduction	29,537	139,693	228,585

[a] Balances do not include contingencies. Intermediate and long term debt balances include current and deferred portion of the respective liability.

Table 3.24 Interest Rate Adjustments For Both Firms Over the Time Horizon

	1987	1988	1989	1990
CATTLE RANCH:		Percent		
Original:				
Short and intermediate term	10.16	9.66	9.66	9.66
Long term	11.25	11.25	11.25	11.25
35% Reduced:				
Short and intermediate term	6.60	6.28	6.28	6.28
Long term	7.31	7.31	7.31	7.31
WHEAT FARM:		Percent		
Original				
Short and intermediate term	10.16	9.66	9.66	9.66
Long term	7.35	7.31	7.26	7.17
35% Reduced				
Short and intermediate term	6.60	6.28	6.28	6.28
Long term	4.78	4.75	4.72	4.66

Deferral of Debt Obligation

In this option, all scheduled payments of principal and interest are deferred for two years. No interest is accrued during this period. All payments begin in the third year at the original payment plan. This plan was implemented by delaying all scheduled intermediate and long term principal payments by two years and entering a zero interest rate for intermediate and long term debt in years 1 and 2. Principal payments on initial debt for capital purchases in the planning horizon were not deferred. Table 3.25 summarizes reduction in debt payments.

Asset Sales-No Lease Back

Thirty-five percent of total ranch assets were to be sold with this option. The nature of asset reduction is approximately linear, accomplished by reducing each component of the asset base, while maintaining the same production practices. Proceeds from cattle sales were applied directly to the reduction of intermediate term debt, while other sales receipts were used to reduce overall debt. When sale proceeds exceeded the debt balance, the remaining amount was invested in marketable securities where it earned interest until needed. Table 3.26 lists the assets sold in this scenario for both production units.

On the ranch, proceeds from the sale of land were $226,500, while $94,432 came from sale of livestock. Real estate taxes were reduced from $4,700 to $2,224, hired labor from $1,000 to $472, machine repairs from $4,229 to $2,001, and building and fence repairs from $600 to $284 to reflect reduced acreage and cattle herd. Furthermore, a new cattle rotation was calculated for the reduced herd, Figure 3.3.

Due to economies of size in machinery on the wheat farm, a proportionate reduction in machinery was not feasible. Thus, more than 35 percent of the land and all cattle were sold. Proceeds from sale of land were $532,398, machinery $8,457, and livestock $37,544. Machinery purchases scheduled for the first year in the base situation

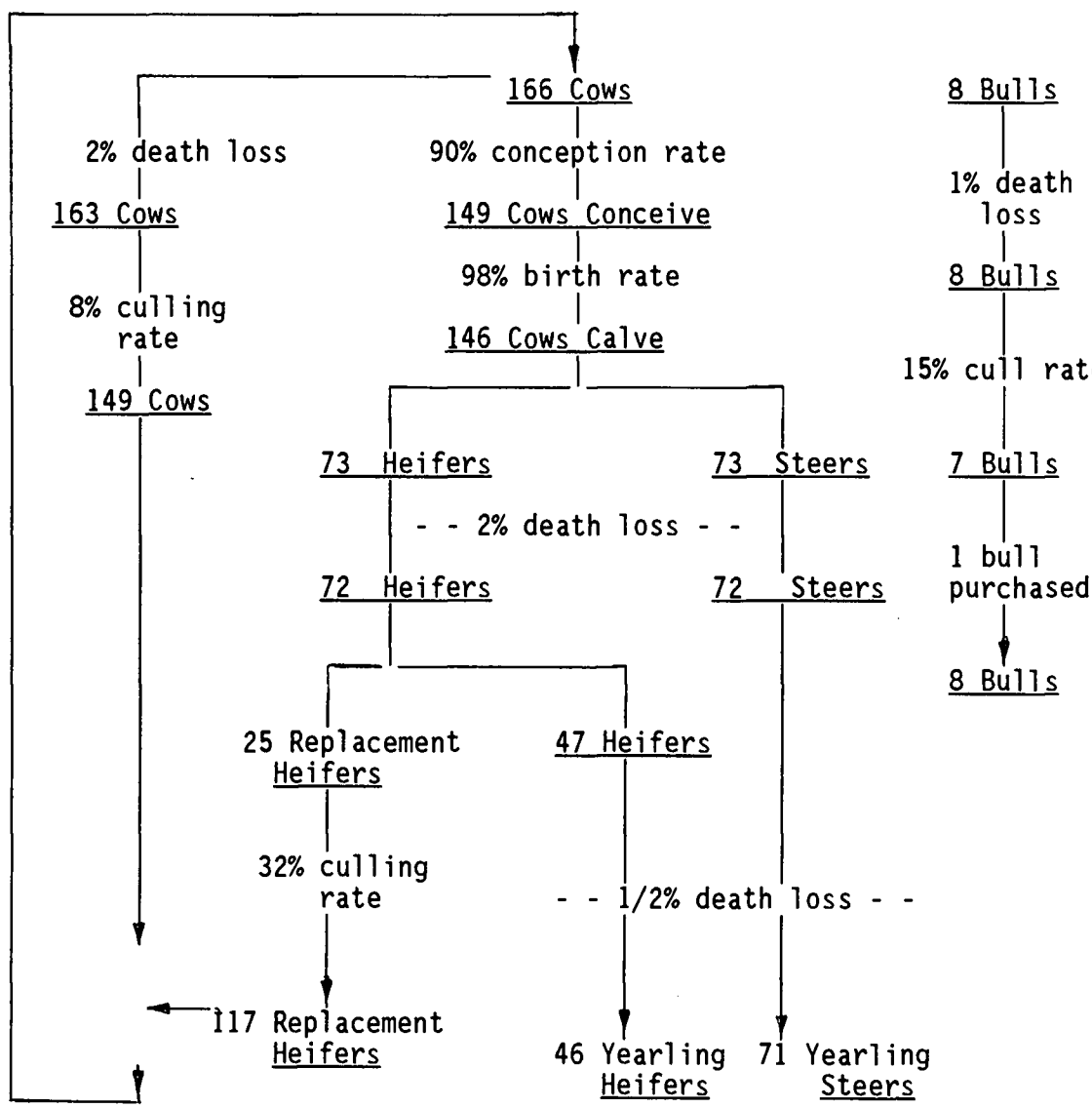
Table 3.25 Adjustments of Principal Payments for Debt Deferral Scenario For Both Firms Over the Time Horizon

Principal Repayment Schedule	1987	1988	1989	1990
CATTLE RANCH:			Dollars	
20% D/A Base	15,680	16,679	17,332	15,906
Adjusted for Debt Deferral	2,029	3,892	17,983	17,139
40% D/A Base	31,699	32,764	33,478	31,748
Adjusted for Debt Deferral	2,097	4,140	34,223	33,333
70% D/A Base	55,693	56,790	57,540	55,656
Adjusted for Debt Deferral	2,126	4,252	58,325	57,424
WHEAT FARM:			Dollars	
20% D/A Base	75,530	77,318	63,146	38,155
Adjusted for Debt Deferral	12,550	12,550	71,780	73,568
40% D/A Base	142,099	145,777	120,589	69,184
Adjusted for Debt Deferral	12,550	12,550	138,349	142,027
70% D/A Base	241,962	248,475	206,762	115,731
Adjusted for Debt Deferral	12,550	12,550	238,212	244,725

Table 3.26 Assets Sold in Asset Sales Scenarios For Both Firms

	Units Sold	Current Market Value
CATTLE RANCH:		Dollars
Asset Sale-No Lease Back:		
Land		
Base Pasture	1,054 ac	105,400
Irrigated Pasture	105 ac	47,250
Hay Land	211 ac	73,850
Livestock		
Cows	166 hd	74,632
Heifers	18 hd	10,954
Bulls	10 hd	7,346
Horses	3 hd	1,500
		320,932
Asset Sale-Lease Back:		
Land		
Base Pasture	1,408 ac	140,800
Irrigated Pasture	141 ac	63,450
Hay Land	282 ac	98,700
		302,950
WHEAT FARM:	Number	Dollars
Asset Sale-No Lease Back:		
Land	1,529 ac	532,398
Machinery		
Pickup	1	3,457
Combine	1	5,000
Livestock		
Cows	82 hd	31,545
Heifers	16 hd	4,869
Bulls	2 hd	1,130
		578,399
Asset Sale-Lease Back:		
Land	1,661 ac	578,360
		578,360

Figure 3.3 Revised Cow-Yearling Production Flow-chart for the Cattle Ranch



also are not made under this option. Real estate taxes were reduced from $11,264 to $5,964, farm supplies from $1,613 to $854, hired labor from $9,753 to $5,164, machine repair from $5,828 to $3,086, and miscellaneous from $200 to $106 to reflect the reduced acreage. Acres farmed of wheat were reduced to 148, barley to 170, and fallow to 317. Furthermore, government program payments received by the farm were reduced. Table 3.27 and 3.28 show these new payment amounts. Remaining rangeland was rented out on an animal unit month (AUM) basis at $1.35/AUM since the breeding herd was liquidated.

Asset Sales-Lease Back

This asset restructuring option involves selling 35 percent of the assets and leasing back assets sold. Table 3.26 above shows the assets sold for this scenario for both production units.

For the cattle ranch this plan was implemented by selling land. Proceeds from sales totaled $302,950 and again were applied to the overall level of indebtedness as in the above strategy. Land was leased with differing payments. Pasture was leased at $1.35/AUM for 1,134 AUM's, which is the number of AUM's provided by the acreage sold. Irrigated pasture was leased for a fixed charge of $7 per head per month. Hay land was leased on a per acre cash rent of $26.11/ac. The total annual lease payment was $17,197, which was entered as a constant miscellaneous unallocated cost. Real estate taxes were reduced in this scenario from $4,700 to $1,390 due to the reduction of acreage owned.

On the grain farm, machinery was not sold and new machinery was purchased, since acreage farmed remained the same. Proceeds were applied as outlined in the asset sales-no lease back strategy. The land was leased on a 1/3 - 2/3 share of output and selected inputs[3] as shown in Table 3.29.

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3 The crop-share percentage for simulator input was calculated as follows:
(owned land x % of receipts) + (leased land x % of receipts)
0.49(1) + 0.51(.667) = 0.83

Table 3.27 Wheat Deficiency Payment Calculations Over the Time Horizon in Asset Sales Strategies

Year	Wheat Acres	Yield Bu/ac	Payment[a] Per Bushel	Total Payment
			Dollars	
Asset Sales-No Lease Back:				
1987	148	65	1.72	16,546
1988	148	65	1.88	18,086
1989	148	65	1.88	18,086
1990	148	65	1.88	18,086
Asset Sales-Lease Back:				
1987	280	65	1.72	25,982
1988	280	65	1.88	28,399
1989	280	65	1.88	28,399
1990	280	65	1.88	28,399

[a] From Table 3.17 above.

Table 3.28 Barley Deficiency Payment Calculations Over the Time Horizon in Asset Sales Strategies

Year	Barley Acres	Yield	Payment[a] Per Bushel	Total Payment
			Dollars	
Asset Sales-No Lease Back:				
1987	170	62½	0.75	7,969
1988	170	62½	0.80	8,500
1989	170	62½	0.78	8,288
1990	170	62½	0.78	8,288
Asset Sales-Lease Back:				
1987	320	62½	0.75	12,450
1988	320	62½	0.80	13,280
1989	320	62½	0.78	12,948
1990	320	62½	0.78	12,948

[a] From Table 3.18 above.

Table 3.29 Crop Share Arrangement For Asset Sales-Lease Back on the Wheat Farm

	Crop share in Lease back plan (%)
Yield	83
Fuel	100
Fertilizer and lime	83
Machine hire	100
Herbicides	83
Insecticides	83
Seed	83
Custom work	100
Miscellaneous	100
Drying	100
Storage	100

Government program payments where distributed on the same basis as the crop-share percentage and resulted in lower payments received by the owner. Table 3.27 and 3.28 above show the government payments received under this strategy. Real estate taxes were reduced from $11,264 to $5,757 due to the reduction of acreage owned.

Equity Infusion

This strategy refers to the direct investment of outside capital to reduce existing indebtedness. It was implemented by injecting new equity in the amount of 35 percent of total indebtedness of the firm. All proceeds from the infusion were used to directly reduce debt. Table 3.30 shows the amount of funds that were injected and the allocation of funds to short, intermediate and long term debt obligations for both production units.

Table 3.30 Equity Infusion Calculations by Beginning Debt to Asset Ratio For Both Production Units

	Debt to Asset Ratio		
	20%	40%	70%
CATTLE RANCH:		- - - - - - Dollars - - - - - -	
Total Debt[a]	154,505	325,850	582,812
Equity Infusion at 35%	54,077	114,048	203,984
Equity Distribution:			
Short term debt	21,631	45,619	81,594
Intermediate debt	21,631	45,619	81,594
Long term debt	10,815	22,810	40,797
WHEAT FARM:		- - - - - - Dollars - - - - - -	
Total Debt[a]	312,030	641,845	1,136,613
Equity Infusion at 35%	109,211	224,646	397,815
Equity Distribution:			
Short term debt	8,103	16,668	29,519
Intermediate debt	38,355	78,896	139,712
Long term debt	62,753	129,082	228,584

[a] Does not include contingencies or accrued interest.

CHAPTER 4

RESULTS AND SIMULATOR OUTPUTS

As described in Chapter 2, the simulator generates an annual series of financial statements and ratio analysis for each scenario. Appendix Tables C.1 through C.6 and D.1 through D.6 present outputs for the baseline runs of the cattle ranch and the wheat farm, respectively. With different debt levels, macroeconomic conditions, and management scenarios, 63 sets of such output per production unit (or a total of 126 sets) were considered in this thesis. Obviously it would be difficult to draw any meaningful conclusions from the output if arranged in this manner. To facilitate interpretation, the output has been summarized in Appendix E for the cattle ranch and Appendix F for the wheat farm. Within these appendices results are grouped primarily with debt to asset ratios. Under these main groupings, tables are sub-grouped and labeled as baseline, pessimistic, and optimistic to correspond to the macroeconomic conditions. For each of these sub-groups balance sheets and income statements are presented in separate tables. Condensed summary sheets will be presented and discussed in this chapter.

As noted in Chapter 2, identification of trends or movements of various financial variables is the method of analysis in this thesis. The following sections will consider the following financial variables: (1) total assets, contingent tax liabilities, total liabilities, net worth with contingencies, and net worth without contingencies from the balance sheet; (2) net income with gains and net income without gains from the income statement; and (3) a summary of financial variables which includes ending debt to asset ratio, ending current ratio, average fund availability, cash flow coverage ratio, total net worth change, average net income, ending return on equity, and ending return on assets. Desired direction of movement for ratios included on the summary sheets was indicated in Table 2.1. Due to the number of variables to be considered, the scenario which resulted in the most favorable outcomes for a particular variable is

identified with a symbol (*). As an example, in Table 4.1 the asset sales-no lease back scenario resulted in the most favorable ending debt-to-asset ratio and is designated by (*) directly before the result, i.e., *0.022640. This method of demarkation is used in the condensed summary sheets (Tables 4.1 to 4.24) and throughout Appendices E and F.

Following sections of this chapter will summarize the results for each firm type, on the basis of management and policy options. All balance sheet data and ratios are presented without contingent liabilities in order to shorten the presentation. Each management and policy option will be compared with base runs to evaluate the effect on the firms under different leverage positions. Discussion will focus on the base economic scenario with differences among economic scenarios noted. This organization of the discussion is consistent with the objectives of the thesis. An alternative organization could have focused on the alternatives for each basic firm situation, with all differences discussed relative to the base situations. However, such an interpretation can be made by the interested reader from the material as presented.

CATTLE RANCH OUTPUTS

Original Management Situation (Baseline)

Tables 4.1 through 4.9 give the condensed summary sheets from the various scenarios. Baseline average net income followed the trend in leverage levels, as expected, highest for the 20% situation and lowest for the 70% case. Ending return on equity was highest for 40% leverage at 0.0634, with the 70% and 20% situations following with 0.0458 and 0.0573, respectively. Ending return on assets was highest for 70% D/A at 0.0677, while the 40 and 20% D/A cases resulted in 0.0586 and 0.0458; this pattern reflects the amount of income taxes paid. Thus, leverage was favorable in the 20% and 40% situations, since the return on equity was greater than the return on assets. This result arose because the return on assets was greater than the

Table 4.1 Baseline Summary Sheet for 20% Debt Situation on the Cattle Ranch

	- - - - - - E N D I N G V A L U E S - - - - - -						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.083929	0.066457	0.074183	0.093622	*0.022640	0.031036	0.041023
Ending current ratio	1.708827	3.483401	2.088440	2.883489	*14.09100	12.219686	4.128475
Average fund availability	(765)	8,716	1,124	8,125	48,465	*55,474	7,898
Cash flow coverage ratio	6.773775	11.163685	7.701647	6.171893	34.609564	*49.08089	9.883622
Total net worth change	88,689	127,013	96,247	99,694	79,962	105,053	*149,269
Average net income	37,001	33,279	38,931	*40,011	9,139	24,595	38,979
Ending return on equity	0.057383	0.056527	0.058762	0.056603	0.052073	*0.064598	0.053679
Ending return on assets	0.045899	0.044679	0.044378	0.046478	0.034896	*0.047249	0.040861

Table 4.2 Pessimistic Summary Sheet for 20% Debt Situation on the Cattle Ranch

	- - - - - - E N D I N G V A L U E S - - - - - -						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.097478	0.060406	0.089368	0.090267	*0.015442	0.020676	0.030855
Ending current ratio	1.476320	4.543234	1.680883	3.124599	*19.38198	18.037994	6.106884
Average fund availability	(2,513)	9,157	(1,084)	5,697	42,479	*53,900	6,446
Cash flow coverage ratio	6.632283	11.211058	7.563318	6.102089	34.173718	*48.95359	9.753882
Total net worth change	48,930	96,008	54,645	57,215	39,861	99,853	*110,695
Average net income	31,245	29,659	32,695	*33,445	1,907	19,377	33,419
Ending return on equity	0.053170	0.052658	0.055039	0.052624	0.041315	*0.05828	0.052802
Ending return on assets	0.042064	0.041020	0.040510	*0.04326	0.023740	0.041440	0.040008

Table 4.3 Dptimistic Summary Sheet for 20% Debt Situation on the Cattle Ranch

	- - - - - - E N D I N G V A L U E S - - - - - -						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.077670	0.075073	0.078164	0.100105	*0.03950	0.050748	0.050381
Ending current ratio	1.798623	2.850629	1.929552	2.326975	*8.39220	7.388299	3.201819
Average fund availability	637	11,488	2,301	8,722	*53,504	53,702	9,617
Cash flow coverage ratio	6.995772	11.542155	7.842866	6.240221	35.075190	*49.14747	10.068889
Total net worth change	159,833	203,637	166,487	167,617	122,874	117,323	*221,682
Average net income	48,622	46,378	50,329	50,867	21,037	32,709	*50,969
Ending return on equity	0.064937	0.063788	0.066238	0.063999	0.066672	*0.07696	0.063773
Ending return on assets	0.053358	0.051470	0.052083	0.053064	0.049105	*0.05842	0.050692

Table 4.4 Baseline Summary Sheet for 40% Debt Situation on the Cattle Ranch

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.322981	0.218652	0.303622	0.295688	0.047503	*0.03195	0.168420
Ending current ratio	0.369446	0.639487	0.391678	0.539971	1.496301	*5.48366	0.718026
Average fund availability	(23,622)	(1,701)	(20,092)	(4,147)	18,247	*27,400	(5,609)
Cash flow coverage ratio	2.724896	4.794296	3.289288	2.752987	19.888482	*39.16889	4.038656
Total net worth change	61,354	148,751	75,474	83,357	61,922	95,544	*191,812
Average net income	29,850	23,206	33,380	*35,359	4,135	20,388	34,145
Ending return on equity	0.063492	0.061340	0.069646	0.063350	0.059538	*0.078523	0.060545
Ending return on assets	*0.058609	0.052576	0.051959	0.057650	0.036789	0.056609	0.050297

Table 4.5 Pessimistic Summary Sheet for 40% Debt Situation on the Cattle Ranch

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.355366	0.238728	0.327870	0.330480	0.106216	*0.019645	0.185229
Ending current ratio	0.351389	0.608150	0.380290	0.491304	0.712287	*7.744876	0.681392
Average fund availability	(26,647)	(3,347)	(21,698)	(7,921)	11,452	*24,891	(7,133)
Cash flow coverage ratio	2.673872	4.684975	3.257103	2.686144	12.667869	*36.20051	3.966864
Total net worth change	16,486	109,398	36,283	35,492	18,585	86,607	*152,948
Average net income	22,958	17,685	27,907	27,709	(3,906)	14,972	*28,729
Ending return on equity	0.053284	0.054798	0.063319	0.054076	0.047672	*0.068909	0.054628
Ending return on assets	0.053068	0.048265	0.047532	0.052593	0.027955	*0.047387	0.046059

Table 4.6 Optimistic Summary Sheet for 40% Debt Situation on the Cattle Ranch

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.280325	0.178825	0.254882	0.270206	*0.041993	0.059200	0.129715
Ending current ratio	0.387267	0.743371	0.430079	0.530829	2.751642	*3.287395	0.883065
Average fund availability	(20,713)	2,713	(15,322)	(4,642)	25,985	*27,784	(405)
Cash flow coverage ratio	2.855571	5.286957	3.441434	2.818648	26.845877	*40.42103	4.422257
Total net worth change	138,525	231,940	160,087	146,914	125,187	116,438	*278,164
Average net income	42,802	37,712	48,192	44,940	16,733	29,930	*49,493
Ending return on equity	0.068696	0.066937	0.073584	0.068420	0.082547	*0.091453	0.066199
Ending return on assets	0.060734	0.055674	0.055552	0.060319	0.059420	*0.067781	0.053647

Table 4.7 Baseline Summary Sheet for 70% Debt Situation on the Cattle Ranch

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.706532	0.497038	0.642200	0.659773	0.704027	0.554324	*0.406053
Ending current ratio	0.172953	0.267612	0.185167	0.225968	0.121567	0.272815	*0.309772
Average fund availability	(64,147)	*(19,222)	(51,237)	(28,485)	(38,696)	(22,221)	(27,318)
Cash flow coverage ratio	1.389265	2.379043	1.735996	1.413481	2.188520	*4.940210	1.963728
Total net worth change	(4,759)	173,356	46,884	34,338	(12,587)	61,232	*251,708
Average net income	13,322	6,854	26,233	23,096	(14,833)	8,333	*26,593
Ending return on equity	0.045893	0.061303	0.105708	0.052981	0.035211	*0.109468	0.064634
Ending return on assets	0.067769	0.063548	0.063589	0.068032	0.053753	*0.076327	0.062703

Table 4.8 Pessimistic Summary Sheet for 70% Debt Situation on the Cattle Ranch

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.793637	0.545109	0.694956	0.724394	0.839496	0.622375	*0.447781
Ending current ratio	0.161592	0.254531	0.179629	0.213399	0.108813	0.250580	*0.293506
Average fund availability	(74,307)	*(23,595)	(55,033)	(34,508)	(52,005)	(29,593)	(31,378)
Cash flow coverage ratio	1.354009	2.331732	1.721687	1.395437	1.973779	*4.609020	1.931573
Total net worth change	(78,165)	123,095	(1,070)	(22,520)	(81,982)	21,661	*202,703
Average net income	(705)	(1,386)	18,569	13,206	(29,363)	(1,328)	*18,645
Ending return on equity	-0.023816	0.040252	*0.084608	0.002668	-0.104751	0.061239	0.048985
Ending return on assets	0.055064	0.055308	0.055354	0.055312	0.029241	*0.058030	0.055285

Table 4.9 Optimistic Summary Sheet for 70% Debt Situation on the Cattle Ranch

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.617237	0.457313	0.575119	0.566304	0.545002	0.503687	*0.360604
Ending current ratio	0.179709	0.262062	0.187457	0.243776	0.140705	0.284824	*0.316406
Average fund availability	(58,297)	(20,603)	(49,302)	(20,757)	(23,731)	*(18,507)	(25,462)
Cash flow coverage ratio	1.420461	2.393277	1.762106	1.458515	2.524736	*5.251421	2.014769
Total net worth change	84,178	233,370	120,160	130,788	79,586	84,267	*324,671
Average net income	29,215	15,517	38,210	*40,867	4,752	20,948	38,535
Ending return on equity	0.094285	0.081173	0.109931	0.090506	0.114890	*0.155331	0.074077
Ending return on assets	0.081931	0.072823	0.068455	0.080145	0.080219	*0.096525	0.067055

average after tax cost of debt. Ending net worth increased $86,390 and $59,054 for the 20 and 40 percent debt to asset situations but declined $7,058 for the 70 percent debt-to-asset case. Ending debt-to-asset ratios were relatively stable for the 40 and 70% situations at 32.29 and 70.65 percent, respectively. A significant drop in ending debt-to-asset ratio characterized the 20 percent case at 8.39. An ending current ratio of 1.70 resulted in the 20% situation, while the 40 and 70% cases ended with ratios less than 0.4. Average fund availability was highest for the 20% situation, as expected, at -$765, while at the 40 and 70% levels the results were -$23,622 and -$64,147, respectively. The cash flow coverage ratios followed a similar trend. In short the solvency position was stable in all situations, liquidity was good in the 20% cases, but poor in the 40 and 70% situations due to high beginning and ending current loan balances (Appendix E).

Average net income under the optimistic economic conditions followed the same pattern as before. However, trends in ending return on equity and return on assets had some differences; the 70% situation had the highest returns at 0.0942 and 0.0819, while the 40% returns were 0.0686 and 0.0607, and the 20% case resulted in returns of 0.0649 and 0.0533, respectively. This reversal can be explained by increased profitability with the improved economic conditions accompanied by an increase in income tax liabilities, the net effect of which improved returns in the 20% case least. Leverage was thus favorable under optimistic conditions in all situations. Trends in net worth were the same, the 20% condition resulted in the biggest increase over the beginning value, $177,999, while the 40 and 70% cases followed with increases of $156,690 and $102,344, respectively. Terminal debt-to-asset ratios were greatly improved at 7.76, 28.03, and 61.72, respectively, for the 20, 40, and 70% situations. Ending current ratios were similar to the base case, while average fund availability improved in all cases, being positive for the 20% situation and remaining negative in the other two. Cash flow coverage ratios followed the previous trend.

Under pessimistic macroeconomic conditions the trends in net worth were similar. Ending debt-to-asset ratios were similar for the

20 and 40% cases, though slightly higher, but increased 8.71 percentage points for the 70% situation to end at 79.36. Current ratios ended at levels similar to the base case and the trend in average fund availability was the same but at lower levels. Tendencies of the other measures followed the previous pattern, except in the case of ending return on equity where the 20% case had the highest ratio at 0.0531 followed by the 40 and 70% situations with 0.0528 and -0.0238, respectively. Ending return on assets were 0.0550, 0.0530, and 0.0420 for the 70, 40, and 20% situations, respectively.

Debt Reduction

Under this option, net worth increased for all beginning leverage situations under all economic scenarios more than in the baseline scenario. This pattern is explained by the nature of the scenario; Table 4.10 contrasts the amount of debt reduction to the increase in net worth for this scenario and the baseline. This table shows that in the 20% situations, 40% base and optimistic, and the 70% optimistic cases the increase in net worth exceeds the amount of debt reduction. Ending debt-to-asset and cash flow coverage ratios also improved in a similar manner. However, average fund availability was reduced in all situations due to large income tax liabilities generated by debt forgiveness. Average net income was negative for the 70% pessimistic case only. Ending return on equity ratios were reduced in all situations except the 40% pessimistic and 70% base and pessimistic situations. Ending return on assets remained constant or declined across all conditions.

Interest Reduction

Interest reduction resulted in greatly improved average net incomes. Table 4.11 depicts changes in interest charges versus changes in average net income. Changes in average net income were less than changes in interest paid due to the associated increase in

Table 4.10 Amount of Debt Reduction and Changes in Net Worth Over the Planning Horizon by Leverage Position for the Original Management and Debt Reduction Scenarios on the Cattle Ranch

	20% D/A	40% D/A	70% D/A
	- - - - - - Dollars - - - - - -		
Amount of Debt Reduction:			
Short Term	21,631	45,619	81,594
Intermediate Term	21,631	45,619	81,594
Long Term	10,815	22,810	40,797
Total	54,077	114,048	203,985
Changes in Net Worth from Beginning Levels[a]:			
Original Management Situation:			
Pessimistic	-101,331	-226,324	-443,768
Baseline	30,205	-42,299	-259,743
Optimistic	278,357	227,052	89,096
Debt Deferral Scenario:			
Pessimistic	83,477	96,866	110,564
Baseline	124,714	146,451	171,058
Optimistic	221,802	250,105	251,536

a Changes in net worth calculated without contingencies.

Table 4.11 Changes in Average Net Income and Interest Paid in the Final Year Over the Planning Horizon by Leverage Position for the Interest Reduction Scenario on the Cattle Ranch

	20% D/A	40% D/A	70% D/A
	- - - - - - Dollars - - - - - -		
Changes in Ending Interest[a]			
Pessimistic	-2,856	-10,697	-25,534
Baseline	-2,740	-9,999	-23,061
Optimistic	-2,366	-9,506	-21,800
Changes in Average Net Income			
Pessimistic	1,450	4,949	19,274
Baseline	1,930	3,530	12,911
Optimistic	1,707	5,390	8,995

a Changes in ending interest paid figures taken from Appendix E.

tax liabilities. In absolute value and percentage change, ending net income increased most in the 20% pessimistic case, more than $50,000 or a 450% increase over the beginning value, and to a lesser degree in the other circumstances (Appendix E). Returns on equity remained fairly constant except in the 70% pessimistic situation, which realized an increase of 455%, resulting from large relative decreases in interest costs which increased ending net income. Ending return on assets held relatively constant or were slightly reduced. Ending net worth improved dramatically over the baseline case. The biggest increases occurred in the 70% optimistic situation, as anticipated, nearly doubling in value. Large increases were also noted in other cases, though not as great. Debt-to-asset ratios improved for all situations except the 20% optimistic case where the ratio increased 0.63 percent over the baseline. Ending current ratios increased slightly in all cases and scenarios, as did average fund availability, and cash flow coverage ratios. However, fund availability remained negative for the 20, 40, and 70% pessimistic cases; as well as the 40 and 70% optimistic cases.

Debt Deferral

Debt deferral resulted in average net incomes which increased markedly in most cases with the largest increase, of over $45,000, occurring in the 20% pessimistic case, due to lower interest charges in the first two years. As Table 4.12 shows, changes in ending net incomes under this scenario were less than the original situation. Ending returns on equity and assets were relatively stable in all cases but the 70% pessimistic case, where return on equity increased 111% over the baseline. Also, debt deferral improved ending net worth values over the baseline, but increases were relatively slight. Thus, income increases were temporary with this option. A small improvement in ending debt-to-asset ratios was also noted in all but the 20% base and optimistic situations, due to increased tax liabilities and family consumption. Current ratios were improved in all situations, as was average fund availability, though the 40 and 70% conditions all ended

Table 4.12 Changes in Net Income Over the Planning Horizon by Leverage Position for Original and Debt Deferral Scenarios on the Cattle Ranch

	20% D/A	40% D/A	70% D/A
	- - - - - - - Dollars - - - - - - -		
Changes in Net Incomes[a]:			
Original Management Scenario:			
Pessimistic	51,159	46,910	30,352
Baseline	5,757	6,172	-4,541
Optimistic	-77,109	-84,575	-79,680
Debt Deferral Scenario:			
Pessimistic	45,346	40,424	15,749
Baseline	-537	-3,038	-17,592
Optimistic	-82,353	-88,616	-100,122

[a] Since beginning net income is different for each scenario, the changes in net incomes are calculated relative to the beginning values under each scenario using net income with gains (Appendix E).

with negative funds available. Cash flow coverage ratios were relatively stable when compared to the baseline.

Asset Sale-No Lease Back

Asset sales scenarios were designed to decrease debt and therefore increase liquidity and profitability. Asset sales-no lease back ended in average net incomes which were generally lower and even negative for the 40 and 70% pessimistic and the 70% base cases, due primarily to the reduction in gross revenues and large tax liabilities resulting from the sale of assets. However, as shown in Table 4.13, ending net income values increased more, relative to the beginning level, under asset sales-no lease back than the baseline in all cases. Ending return on equity and assets where generally lower than the baseline except in the 40 and 70% optimistic cases where ending return on equity was higher. Table 4.13 shows changes in net worth values relative to beginning baseline values. This scenario resulted in reduced ending net worth values in most cases, most notably the 70% pessimistic case which declined nearly $180,000 from the beginning level, due to reduced revenue and tax liabilities resulting from sale of assets. However, the 20 and 40% optimistic situations resulted in slightly increased ending net worth relative to beginning levels, which is not too surprising after recognizing these cases had the highest levels of ending net worth under the original management conditions. Ending debt-to-asset ratios were dramatically improved in all 20% situations and the 40% optimistic case, terminating in the lowest ratios of any scenario considered for these situations. Improvements were noted in the other situations as well, however in the 70% pessimistic case this ratio increased slightly, since ending total assets declined more than ending total liabilities. Current ratios were dramatically improved in the 20 and 40% situations but declined slightly in the 70% cases due to large current loan balances relative to asset values. Large increases in the average fund availability was also noted for the 20 and 40% situations, in some cases as much as $50,000 but was only slightly improved under higher

Table 4.13 Changes in Net Income and Net Worth Over the Planning Horizon by Leverage Position for Original Management and Asset Sales-No Lease Back Scenarios on the Cattle Ranch

	20% D/A	40% D/A	70% D/A
	- - - - - - - Dollars - - - - - - -		
Changes in Net Incomes[a]:			
Original Management Scenario:			
Pessimistic	51,159	46,910	30,352
Baseline	5,757	6,172	-4,541
Optimistic	-77,109	-84,575	-79,680
Asset Sales-No Lease Back:			
Pessimistic	92,404	90,199	67,732
Baseline	74,917	71,684	59,006
Optimistic	35,726	35,119	28,468
Changes in Net Worth[b]:			
Original Management Scenario:			
Pessimistic	36,399	3,954	-90,696
Baseline	86,390	59,054	-7,058
Optimistic	177,999	156,690	102,344
Asset Sales-No Lease Back:			
Pessimistic	-57,284	-78,561	-179,127
Baseline	-12,993	-31,033	-105,542
Optimistic	47,858	40,613	-4,957

a Since beginning net income is different for each scenario, the changes in net incomes are calculated relative to the beginning values under each scenario using net income with gains (Appendix E).

b Changes in net worth are calculated using net worth without contingencies over the beginning level (Appendix E).

debt conditions. This pattern was repeated in changes of cash flow coverage ratios, indicating continued liquidity problems in 70% situations.

Asset Sale-Lease Back

Asset sale-lease back resulted in average net income lower in all cases than baseline levels; however, ending net incomes were improved in all cases relative to beginning levels. Thus, income taxes from asset sales reduced net income in the first year. Table 4.14 compares changes in net income levels relative to beginning levels under the asset sale-lease back scenario to the original management scenario changes. Under pessimistic and baseline economic circumstances the asset sales-no lease back scenario improved net incomes more than the asset sales-lease back cases, which can be seen by comparing improvements in Tables 4.13 and 4.14. Ending return on equity ratios did not change much except in the 40% pessimistic and optimistic cases, as well as the 70% situations where this ratio increased; largest increases occurred in the 70% pessimistic case, 357 percent. Ending return on assets were relatively constant in all circumstances. As shown in Table 4.14, asset sales-lease back resulted in less improvement in net worth values for all circumstances, except for the 40 and 70% pessimistic cases. Changes in net worth relative to the baseline were more desireable under this scenario than asset sales-no lease back. Ending debt-to-asset ratios were greatly improved in the 20 and 40% cases and to a lesser degree in the 70% situations. Ending current ratios followed the same pattern, as did average fund availability and cash flow coverage ratios.

Equity Infusion

The equity infusion scenario terminated in average fund availability generally better than the baseline case. Ending returns on equity and assets were slightly lower in all cases except the 70% base and pessimistic situations where ending return on equity

Table 4.14 Changes in Net Income and Net Worth Over the Planning Horizon by Leverage Position for Original Management and Asset Sales-Lease Back Scenarios on the Cattle Ranch

	20% D/A	40% D/A	70% D/A
	- - - - - - - Dollars - - - - - - -		
Changes in Net Incomes[a]:			
Original Management Scenario:			
Pessimistic	51,159	46,910	30,352
Baseline	5,757	6,172	-4,541
Optimistic	-77,109	-84,575	-79,680
Asset Sales-Lease Back:			
Pessimistic	78,031	76,460	64,696
Baseline	65,238	64,802	59,862
Optimistic	51,902	50,254	38,381
Changes in Net Worth[b]:			
Original Management Scenario:			
Pessimistic	36,399	3,954	-90,696
Baseline	86,390	59,054	-7,058
Optimistic	177,999	156,690	102,344
Asset Sales-Lease Back:			
Pessimistic	23,118	9,872	-55,073
Baseline	42,117	32,608	-12,886
Optimistic	60,433	59,547	27,376

a Since beginning net income is different for each scenario, the changes in net incomes are calculated relative to the beginning values under each scenario using net income with gains (Appendix E).

b Changes in net worth are calculated using net worth without contingencies over the beginning level (Appendix E).

increased 40 and 305 percent, respectively. Reductions in these ratios are consistent with leverage being favorable for this case. As anticipated, equity infusion resulted in higher levels of net worth in all situations than any other scenario. Table 4.15 compares increases in net worth under the original management and equity infusion scenarios to the amount of equity infusion. The greatest gain was seen in the 70% pessimistic case which increased $280,000 more than under the baseline scenario. Ending debt-to-asset ratios in the 70% cases were at the most desireable levels when compared to the other scenarios, with optimistic conditions resulting in a ratio of under 40%. Improvements were also noted at the other debt levels. Ending current ratios were improved in all cases relative to the baseline results, though still low. Average fund availability was improved but remained negative in the 40 and 70% situations. Cash flow coverage ratios were also generally better compared to the baseline results.

Generalizations and Summary

Detailed analysis of individual scenarios is helpful to understand how suggested strategies affect the financial position of the firm. However, policy and management decisions require consideration of the overall effects of different strategies, rather than details about a single response to it. In general, the cattle ranch used in the analysis was suffering little financial stress. This was indicated by the fact that in all 20 and 40% situations, all 70% optimistic, and some 70% baseline cases returns on equity exceed returns on assets, indicating leverage was favorable. In the other 70% situations, returns on assets exceeded return on equity but more importantly debt-to-asset ratios were constant or declined thereby indicating financial stress was limited in these cases. Statements can be made, however, about the effects of various scenarios on the financial position of the ranch. Profitability, as measured by average net income, was highest in the debt deferral scenarios in cases of lower leverage but better in equity infusion scenarios for higher debt conditions. Ending net incomes were generally highest in

Table 4.15 Amount of Equity Infusion and Changes in Net Worth Over the Planning Horizon by Leverage Position for the Original Management and Equity Infusion Scenarios on the Cattle Ranch

	20% D/A	40% D/A	70% D/A
		- - - - - - - Dollars - - - - - - -	
Amount of Equity Infusion:	54,077	114,048	203,984
Changes in Ending Net Worth[a]:			
Original Management Scenario:			
Pessimistic	36,399	3,954	-90,696
Baseline	86,390	59,054	-7,058
Optimistic	177,999	156,690	102,344
Equity Infusion:			
Pessimistic	98,164	140,417	190,172
Baseline	146,970	189,513	249,409
Optimistic	239,848	296,330	342,836

a Changes in net worth are calculated using net worth without contingencies over the beginning level (Appendix E).

the equity infusion scenario but asset sales-lease back options ended with highest terminal values in some cases. Liquidity, as measured by the current ratio, was most favorable under the asset sales-no lease back scenario for low debt conditions, the asset sales-lease back option for middle debt situations, and the equity infusion scenario for high debt cases. However, it should be noted that short term loans were increased, while intermediate and long term loan balances were reduced in these situations. This borrowing practice is an effective method for obtaining capital under emergency conditions but causes leverage and liquidity problems. Solvency, measured by the debt-to-asset ratio, followed the same trend. Thus, equity infusion appears to improve the financial position of this cattle ranch in high leverage situations. In cases of lower leverage, debt deferrals or asset sales are better at strengthening financial positions.

WHEAT FARM OUTPUTS

Original Management Situation (Baseline)

Tables 4.16 through 4.24 show the condensed summary sheets from the various scenarios for the wheat situation. In the baseline, average net income was positive in all 20% circumstances and in the 40% base and optimistic cases. The pessimistic 40% case and all 70% situations had negative average net income. Ending return on equity ranged from 0.015 to 0.02 for the 20% situations, from 0.014 to -0.011 for the 40% conditions, and from -0.006 to -0.5 for the 70% cases. Ending return on assets appeared stable at the 0.03 level for the low debt cases, while the 40% debt situations had values close to 0.045, and the high debt conditions terminated in values ranging from 0.04 to 0.06. It is interesting to note that leverage is not favorable for this farm, at least under the original management scenario, as returns on equity are lower than returns on assets. Ending net worth values under the original management situation terminated at higher levels for the 20% base case and all optimistic situations but were lower in all other circumstances. The largest decline occurred in the 70%

Table 4.16 Baseline Summary Sheet for 20% Debt Situation on the Wheat Farm

	- - - - - ENDING VALUES - - - - -						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.116257	0.092462	0.106258	0.128562	*0.026049	0.035736	0.032851
Ending current ratio	0.167413	0.952899	0.186827	0.747454	*11.92237	10.426226	0.383571
Average fund availability	(24,888)	(3,779)	(21,259)	2,103	93,215	*94,607	(12,990)
Cash flow coverage ratio	2.467176	4.331667	2.778745	1.438227	*NA	12.442495	3.760953
Total net worth change	43,285	103,281	57,800	54,297	46,864	71,839	*169,867
Average net income	21,318	9,526	24,975	*28,284	11,516	16,291	25,721
Ending return on equity	0.017813	0.018661	0.019668	0.017676	0.021604	*0.026487	0.019726
Ending return on assets	0.032240	0.031105	0.030222	0.034028	0.032204	*0.035200	0.029104

Table 4.17 Pessimistic Summary Sheet for 20% Debt Situation on the Wheat Farm

	- - - - - ENDING VALUES - - - - -						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.139057	0.094347	0.125342	0.131860	*0.023609	0.031397	0.051617
Ending current ratio	0.150042	0.488212	0.166593	0.523864	*13.42264	12.296658	0.269487
Average fund availability	(30,524)	(B,362)	(25,944)	(1,419)	*90,546	89,904	(18,518)
Cash flow coverage ratio	2.344300	4.089314	2.704343	1.427218	*NA	12.326810	3.517234
Total net worth change	(61,322)	282	(42,999)	(41,849)	(9,477)	10,868	*61,518
Average net income	12,700	1,928	17,302	*21,654	7,25B	8,855	17,182
Ending return on equity	0.015155	0.015643	0.016614	0.015442	0.019401	*0.0222B6	0.016680
Ending return on assets	0.032674	0.030264	0.02902B	*0.033792	0.030778	0.031877	0.028245

Table 4.18 Optimistic Summary Sheet for 20% Debt Situation on the Wheat Farm

	- - - - - ENDING VALUES - - - - -						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.088297	0.093157	0.086563	0.119631	*0.030090	0.048578	0.039037
Ending current ratio	0.197554	0.961897	0.204332	0.981635	*9.664310	6.811400	0.601341
Average fund availability	(19,275)	(2,045)	(17,386)	6,209	*94,051	91,161	(10,166)
Cash flow coverage ratio	2.615119	4.440099	2.869248	1.453629	*NA	12.476215	3.937758
Total net worth change	237,580	275,250	240,416	243,194	141,535	142,381	*344,994
Average net income	36,729	21,109	38,643	*42,645	15,368	21,149	38,723
Ending return on equity	0.022161	0.022302	0.023425	0.026102	0.025507	*0.028668	0.023132
Ending return on assets	0.032927	0.032207	0.031652	*0.038764	0.034903	0.036129	0.030645

Table 4.19 Baseline Summary Sheet for 40% Debt Situation on the Wheat Farm

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.382935	0.295262	0.346215	0.335747	*0.027763	0.040963	0.207962
Ending current ratio	0.058768	0.087084	0.056561	0.084273	1.799753	*2.139295	0.077383
Average fund availability	(99,933)	(55,644)	(86,622)	(37,563)	9,814	*10,891	(69,538)
Cash flow coverage ratio	1.082451	1.842730	1.319448	0.711498	*188.535	10.801406	1.445566
Total net worth change	(29,219)	102,471	24,023	39,446	25,587	50,949	*237,405
Average net income	2,092	(21,147)	15,403	*21,944	1,442	5,862	13,631
Ending return on equity	0.014999	0.012844	0.018350	0.012549	0.018587	*0.025394	0.016031
Ending return on assets	*0.049986	0.041198	0.038517	0.044507	0.033915	0.037516	0.038517

Table 4.20 Pessimistic Summary Sheet for 40% Debt Situation on the Wheat Farm

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.463748	0.345626	0.394886	0.382319	*0.022178	0.031464	0.253401
Ending current ratio	0.054207	0.080407	0.054533	0.079284	1.278459	*1.730438	0.072585
Average fund availability	(117,648)	(64,958)	(93,990)	(44,436)	*5,876	4,024	(79,525)
Cash flow coverage ratio	1.031131	1.736826	1.283349	0.701050	*50.92923	9.550379	1.368084
Total net worth change	(186,315)	(21,018)	(91,685)	(74,282)	(26,855)	(3,960)	*111,218
Average net income	(18,553)	(33,390)	5,104	*11,995	(2,682)	(2,292)	713
Ending return on equity	-0.011065	0.007028	0.019595	0.001771	0.017215	*0.023170	0.014694
Ending return on assets	0.042344	*0.042452	0.042307	0.041719	0.034823	0.037725	0.042388

Table 4.21 Optimistic Summary Sheet for 40% Debt Situation on the Wheat Farm

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.308655	0.244666	0.286355	0.285430	*0.032913	0.048253	0.163112
Ending current ratio	0.060300	0.089904	0.058225	0.084134	2.097192	*2.413475	0.080879
Average fund availability	(89,178)	(49,287)	(80,031)	(34,636)	15,067	*19,551	(61,870)
Cash flow coverage ratio	1.143642	1.944163	1.355615	0.721711	*NA	10.989875	1.521485
Total net worth change	186,274	296,198	222,860	223,623	135,494	165,510	*440,546
Average net income	22,401	(5,215)	31,549	*34,908	9,763	20,898	31,619
Ending return on equity	0.019800	0.022308	0.027050	0.020053	0.024271	*0.036785	0.024525
Ending return on assets	0.045687	0.042797	0.040846	0.044723	0.036781	*0.046311	0.040406

Table 4.22 Baseline Summary Sheet for 70% Debt Situation on the Wheat Farm

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.847918	0.653465	0.733202	0.709110	0.707508	0.670251	*0.504356
Ending current ratio	0.037419	0.047746	0.033346	0.045664	0.037177	*0.049050	0.045325
Average fund availability	(238,114)	(143,682)	(194,501)	*(107,813)	(144,607)	(143,328)	(168,201)
Cash flow coverage ratio	0.573553	0.948474	0.726309	0.393153	0.949056	*1.546920	0.728429
Total net worth change	(246,663)	52,075	(72,210)	(34,752)	(120,969)	(87,227)	*283,384
Average net income	(52,269)	(77,038)	(8,655)	*2,128	(38,489)	(34,044)	(17,919)
Ending return on equity	-0.158442	-0.036301	*0.002912	-0.053769	-0.060549	-0.024198	-0.006737
Ending return on assets	0.049627	0.049840	0.049900	0.050095	0.060803	*0.064872	0.049715

Table 4.23 Pessimistic Summary Sheet for 70% Debt Situation on the Wheat Farm

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.963887	0.745257	0.836980	0.795452	0.800090	0.778929	*0.593061
Ending current ratio	0.036647	0.045975	0.032220	0.044410	0.036390	*0.046789	0.043603
Average fund availability	(255,829)	(157,918)	(210,770)	(118,492)*	(154,051)	(158,657)	(185,519)
Cash flow coverage ratio	0.558815	0.916911	0.711880	0.389115	0.912390	*1.451554	0.705371
Total net worth change	(403,759)	(91,105)	(223,521)	(163,703)	(206,328)	(192,474)	*127,874
Average net income	(72,914)	(94,204)	(27,855)	*(11,587)	(48,102)	(50,464)	(38,416)
Ending return on equity	-0.510221	-0.100889	-0.071711	-0.132607	-0.136460	-0.114422*	-0.045026
Ending return on assets	0.042016	0.042219	0.042281	0.042460	*0.055386	0.053296	0.042097

Table 4.24 Optimistic Summary Sheet for 70% Debt Situation on the Wheat Farm

	ENDING VALUES						
	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFERRAL	ASSET NO LEASE	ASSET LEASE BACK	EQUITY INFUSION
Ending debt to asset ratio	0.670542	0.529429	0.603512	0.592384	0.564135	0.515467	*0.392935
Ending current ratio	0.038985	0.049504	0.034139	0.046777	0.038543	*0.052540	0.047129
Average fund availability	(207,487)	(126,068)	(178,816)	*(95,482)	(128,435)	(120,618)	(147,771)
Cash flow coverage ratio	0.600626	1.002266	0.745983	0.397690	1.024975	*1.752281	0.764369
Total net worth change	48,319	295,006	163,002	182,804	24,157	76,048	*537,573
Average net income	(12,135)	(49,880)	16,538	*24,218	(19,445)	(6,044)	13,076
Ending return on equity	-0.006881	0.000555	0.027129	0.007721	0.008454	*0.032014	0.019044
Ending return on assets	0.062000	0.051081	0.051055	0.059556	0.069832	*0.072978	0.053148

pessimistic case, over $443,000. Declines in ending net worth can be attributed to high interest costs, which caused negative net incomes to be recognized in many of these scenarios. Ending debt-to-asset ratios declined in the 20% situations, the 40% base and optimistic cases, and under the 70% optimistic conditions. However, this ratio increased in all other situations with the largest advance occurring in the 70% pessimistic case, which terminated at 96.38%. Thus, solvency problems intensify under the pessimistic conditions. Ending current ratios for the 20% conditions were all above the 0.15 level, while in 40% cases values were closer to 0.05, and in 70% situations approximately 0.04. Average fund availability, as expected, was highest for the 20% situations at approximately -$20,000, while the 40 and 70% situations followed with -$100,000 and -$200,000, respectively, and was negative in all cases. Current ratios and average fund availability values indicate liquidity problems for all circumstances. Ending cash flow coverage ratios seemed stable around the 2.4% level for 20% situations, around 1.0 for 40% cases, and the 0.6 level under the 70% conditions, which also indicate problems with liquidity.

Debt Reduction

Reduction of debt resulted in average net incomes which did not improve over baseline levels, primarily due to some of the largest income tax liabilities generated by any scenario considered. Taxes were $59,000 to $200,000 more than the original situation (Appendix F). Ending return on equity and assets remained almost unchanged in most cases but returns on equity did improve slightly in the 40% pessimistic and optimistic situations, as well as the 70% cases as a result of increases in ending net income values. Table 4.25 contrasts the amount of debt reduction with changes in net worth for this scenario and the baseline. Debt reduction resulted in ending net worth values which were higher in all cases than terminal values under baseline conditions. The most dramatic increase occurred in the 70% pessimistic case with an increase of $312,000 over the ending baseline

Table 4.25 Amount of Debt Reduction and Changes in Net Worth Over the Planning Horizon by Leverage Position for the Original Management and Debt Reduction Scenarios on the Wheat Farm

	20% D/A	40% D/A	70% D/A
	- - - - - - Dollars - - - - - -		
Amount of Debt Reduction:			
Short Term	8,109	16,680	29,537
Intermediate Term	38,349	78,884	139,693
Long Term	62,753	129,082	228,585
Total	109,211	224,646	397,815
Changes in Net Worth from Beginning Levels[a]:			
Original Management Situation:			
Pessimistic	-101,331	-226,324	-443,768
Baseline	30,205	-42,299	-259,743
Optimistic	278,357	227,052	89,096
Debt Reduction Scenario:			
Pessimistic	-39,727	-61,027	-131,114
Baseline	90,200	89,391	38,995
Optimistic	316,027	336,976	335,783

[a] Changes in net worth calculated without contingencies.

value. However, only in the 20 and 40% optimistic cases did increases in the baseline exceed the amount of debt reduction. Ending debt-to-asset ratios were improved in all situations except the 20% optimistic case, due to higher tax liabilities. Ending current ratios and cash flow coverage ratios showed similar improvements, though more dramatic in some circumstances. Average fund availability also improved, although remained negative in all cases and conditions.

Interest Reduction

Interest reduction caused markedly improved average net incomes in all cases, only remaining negative in the 70% base and pessimistic situations. Table 4.26 depicts changes in interest paid versus changes in average net income. The disparity between changes in interest charged and net income increases when moving to more optimistic conditions due to increasing tax liabilities. Ending returns on equity and assets were relatively unchanged in this scenario. Ending net worth levels were lower than in the debt reduction scenario but were higher than baseline results in all cases. Ending debt-to-asset ratios followed a similar pattern of improvement over the baseline in all situations. Terminal current ratios were relatively unchanged in this scenario, however cash flow coverage ratios were slightly improved in all circumstances. Average fund availability was slightly improved over the baseline but lower than in the debt reduction scenario.

Debt Deferral

Average net income levels resulting from debt deferral were greatly improved over ending baseline values, terminating in the highest levels of any other scenario considered for all cases. However, this measure remained negative in the 70% pessimistic case. Increases in ending net income were not as great and losses were more extensive for this scenario when compared to the original management scenario due to higher interest charges in the last two years, Table

Table 4.26 Changes in Interest Paid in the Final Year and Average Net Income Over the Planning Horizon by Leverage Position for the Interest Reduction Scenario on the Wheat Farm

	20% D/A	40% D/A	70% D/A
		Dollars	
Changes in Ending Interest Paid[a]			
Pessimistic	-7,358	-25,847	-52,537
Baseline	-5,905	-22,218	-49,992
Optimistic	-4,321	-18,420	-43,794
Changes in Average Net Income			
Pessimistic	4,602	23,657	45,059
Baseline	3,657	13,311	43,614
Optimistic	1,914	9,148	28,673

[a] Changes in ending interest paid from Appendix F.

Table 4.27 Changes in Net Income Over the Planning Horizon by Leverage Position for the Original Management and Debt Deferral Scenarios on the Wheat Farm

	20% D/A	40% D/A	70% D/A
		Dollars	
Changes in Net Incomes[a]:			
Original Management Scenario:			
Pessimistic	121,057	124,316	106,954
Baseline	3,355	16,421	-943
Optimistic	-226,173	-224,779	-218,325
Debt Deferral Scenario:			
Pessimistic	106,065	89,007	39,737
Baseline	-8,409	-19,080	-57,896
Optimistic	-228,232	-244,417	-263,267

[a] Since beginning net income is different for each scenario, the changes in net incomes are calculated relative to the beginning values under each scenario using net income with gains (Appendix F).

4.27. The impact of this scenario on net incomes is therefore temporary. Ending returns on equity and assets were little changed from the baseline values. Ending net worth values resulting from debt deferral were improved over terminal baseline values in all cases. Terminal debt-to-asset ratios were improved in all circumstances except in the 20% base and optimistic situations, as a result of increased taxes. Ending current ratios were universally improved over baseline levels. Average fund availability was better in all situations and positive in the 20% base and optimistic cases. Ending cash flow coverage ratios were lower in all circumstances due to higher interest and principal payments required on average.

Asset Sale-No Lease Back

Average net income under this scenario was higher in the 40 and 70% base and pessimistic situations. In all other circumstances, this measure ended lower than the baseline, again the result of high income tax payments on capital gains from asset sales. Despite changes in net income, ending levels were generally more favorable than under the original situation (Appendix F). Returns on equity and assets were relatively unchanged from the baseline level. Asset sales-no lease back had ending net worth values lower than ending baseline levels, except in the 40% pessimistic and 70% base and pessimistic situations, again resulting from large income tax liabilities generated by the sale of assets, the highest of all scenarios in most cases. Table 4.28 contrasts changes in ending net worth and ending net incomes under this scenario with terminal values from the original situation. Terminal debt-to-asset ratios were at the most desireable levels of any scenario in the 20 and 40% debt situations, ending in near zero values. However, high debt situation had only slightly improved values for this ratio. Ending current ratios were dramatically improved for the 20% situations, especially in the pessimistic case increasing 8,845 percent. Improvements in this ratio were less marked in medium debt circumstances and relatively unchanged in high debt situations. Similar results were observed in cash flow coverage

Table 4.28 Changes in Net Income and Net Worth Over the Planning Horizon by Leverage Position for the Original Management and Asset Sales-No Lease Back Scenarios on the Wheat Farm

	20% D/A	40% D/A	70% D/A
	- - - - - - - Dollars - - - - - - -		
Changes in Net Incomes[a]:			
Original Management Scenario:			
Pessimistic	121,057	124,316	106,954
Baseline	3,355	16,421	-943
Optimistic	-226,173	-224,779	-218,325
Asset Sales-No Lease Back:			
Pessimistic	127,752	127,936	118,634
Baseline	68,717	66,609	63,670
Optimistic	-35,099	-51,187	-43,861
Changes in Net Worth[b]:			
Original Management Scenario:			
Pessimistic	-101,331	-226,324	-443,768
Baseline	30,205	-42,299	-259,743
Optimistic	278,357	227,052	89,096
Asset Sales-No Lease Back:			
Pessimistic	-115,994	-142,646	-322,120
Baseline	-45,693	-66,969	-224,419
Optimistic	77,497	71,457	-39,880

a Since beginning net income is different for each scenario, the changes in net incomes are calculated relative to the beginning values under each scenario using net income with gains (Appendix F).

b Changes in net worth are calculated using net worth without contingencies over the beginning level (Appendix F).

ratios but with even more dramatic changes. The most notable improvements for this ratio were in the 40% optimistic and 20% cases, which terminated in infinite ratios. Average fund availability was improved in all cases over the baseline but was still negative in the high debt situations.

Asset Sales-Lease Back

Asset sales-lease back resulted in average net income values which ended higher than terminal baseline values for 70% situations and the 40% pessimistic case but lower in all others. These lower values were again due to income tax liabilities due to asset sales. Table 4.29 depicts changes in net income and net worth over the planning horizon relative to terminal original management scenario values. Comparing results in Table 4.28 and 4.29 show that changes in net incomes resulting from asset sales-lease back were not as great as those changes which resulted from asset sales-no lease back. Final values for returns on equity and assets were little different than terminal baseline figures. This scenario resulted in net worth values higher than the terminal baseline except for optimistic conditions and the 20% base case. Changes in net worth resulting from this scenario are closer to terminal baseline values when compared to the asset sales-no lease back scenario. Ending debt-to-asset ratios were more favorable in the 20% and 40% situations with in values near zero, while the 70% situations were greatly improved, with the highest ratio at 77.89. Ending current ratios ranged from 6.81 to 12.29% in the low debt cases and were improved in the 40 and 70% cases. Average fund availability was better overall but still negative in the 70% situations. Cash flow coverage ratios were dramatically improved in all circumstances.

Table 4.29 Changes in Net Income and Net Worth Over the Planning Horizon by Leverage Position for the Original Management and Asset Sales-Lease Back Scenarios on the Wheat Farm

	20% D/A	40% D/A	70% D/A
	- - - - - - - Dollars - - - - - - -		
Changes in Net Incomes[a]:			
Original Management Scenario:			
Pessimistic	121,057	124,316	106,954
Baseline	3,355	16,421	-943
Optimistic	-226,173	-224,779	-218,325
Asset Sales-Lease Back:			
Pessimistic	121,766	129,691	117,496
Baseline	-1,908	67,712	87,564
Optimistic	-33,527	-40,111	-35,923
Changes in Net Worth[b]:			
Original Management Scenario:			
Pessimistic	-101,331	-226,324	-443,768
Baseline	30,205	-42,299	-259,743
Optimistic	278,357	227,052	89,096
Asset Sales-Lease Back:			
Pessimistic	-81,175	-106,120	-294,634
Baseline	-7,037	-27,927	-177,991
Optimistic	89,836	112,965	20,503

a Since beginning net income is different for each scenario, the changes in net incomes are calculated relative to the beginning values under each scenario using net income with gains (Appendix F).

b Changes in net worth are calculated using net worth without contingencies over the beginning level (Appendix F).

Equity Infusion

The infusion of equity capital resulted in average net incomes which were markedly improved over the baseline in all cases, with negative values remaining only in the 70% base and pessimistic situations. Ending return on equity and assets again remained relatively stable at baseline levels. Table 4.30 compares the resulting changes in ending net worth to the original management situation. This scenario resulted in net worth values which were unsurpassed by any other scenario under all conditions, as anticipated. Unlike debt reduction, equity infusion did not create income tax liabilities. Ending debt-to-asset ratios were essentially zero for the 20% situations and better in the 40% cases than ending baseline values. High debt cases were helped most by equity infusion in lowering this ratio, as the terminal values were not bettered by any other scenarios. The highest ending debt-to-asset ratio for the 70% situations was 59.30% under this scenario. Ending current ratios were only slightly better than the baseline overall, as was the case with average fund availability and cash flow coverage ratios.

Generalizations and Summary

It is useful to look at the overall effect these scenarios have had on the wheat farm in this analysis. The first point to note is that this farm is suffering from financial stress especially under the conditions of higher leverage and more pessimistic macroeconomic conditions. Unlike the results from analysis of the cattle ranch, no scenario resulted in returns on equity greater than returns on assets for this farm. Furthermore, under the high debt conditions debt-to-asset ratios are little improved and increase for some scenarios. The 70% cases approach bankruptcy under baseline and pessimistic economic conditions the highest resulting debt-to-asset ratio, 96.38%, came from the original management situation under pessimistic conditions. Looking at the measures of profitability, as shown by average net income, the debt deferral scenario yielded the highest value for this

Table 4.30 Amount of Equity Infusion and Changes in Net Worth Over the Planning Horizon by Leverage Position for the Original Management and Equity Infusion Scenarios on the Wheat Farm

	20% D/A	40% D/A	70% D/A
	- - - - - - - Dollars - - - - - - -		
Amount of Equity Infusion:	109,211	224,644	397,815
Changes in Net Worth[a]:			
Original Management Scenario:			
Pessimistic	-101,331	-226,324	-443,768
Baseline	30,205	-42,299	-259,743
Optimistic	278,357	227,052	89,096
Equity Infusion:			
Pessimistic	21,509	71,210	87,865
Baseline	156,786	224,325	270,304
Optimistic	385,771	481,323	578,350

a Changes in net worth are calculated using net worth without contingencies over the beginning level (Appendix F).

measure in all situations. Ending net incomes, also a measure of profitability, were highest for the asset sales-lease back scenario for all 40% situations and for the base and pessimistic 20% cases, as well. However, the 20% pessimistic case was most improved as a result of debt deferral, while the 70% base and pessimistic situations yielded higher values under the interest reduction scenarios. The 70% optimistic case had the highest ending net income under the equity infusion conditions. Liquidity, as measured by the current ratio, was most favorable under the asset sale-no lease back scenario for the low debt situations but was better under the asset sale-lease back scenario for the higher debt situations. Debt-to-asset ratios, indicators of solvency, were most improved in the asset sales-lease back cases for the 20 and 40% debt situations, while the 70% situations had better ratios resulting from equity infusion. Thus, the asset sales-no lease back scenario seems to better the financial position of this farm in situations of lower leverage, but means of improving the higher debt situations do not appear to be so clear cut. Depending on which financial problem is most critical, the appropriate programs could be adopted to strengthen the financial position of the farm: asset sales-lease back for low liquidity, equity infusions for low solvency and interest reductions for profitability. However, the various scenarios do little to improve any of the ratios for this farm. Thus, public programs can maintain the current level of performance but do little to improve solvency for this case.

CHAPTER 5

SUMMARY AND CONCLUSIONS

Summary

Agricultural economists have devoted considerable attention to the financial stress situation of agricultural producers. Boehlje and Eidman suggest that farm firm survivability has become the most important criterion for farm managers at this time. Many studies have been conducted in various regions of the U.S. in an attempt to better understand the causes of the problem (Chapter 1). In addition, studies have analyzed both public policy and management strategies which might help agricultural firms which are suffering financial stress. Many factors led to the current conditions, none of which alone would have resulted in the present situation. However, together they have lead to conditions of financial stress, as measured by the farm bankruptcy rate, which is nearly that recorded in the 1930's (Shepard and Collins).

Some of the factors which contributed to the conditions of financial stress are: (1) Agricultural prices which turned down reducing operating capital from profits for producers. (2) Land values fell quite dramatically due to a decline in current and expected future agricultural prices; and increasing inflation rates, competition, and income tax rates. (3) Increases in interest rates were unanticipated by producers who relied heavily on short-term operating loans and/or were highly leveraged. (4) Macroeconomic policies, specifically the incompatibility of President Reagan's fiscal policy and the Federal Reserve System operating policy, generated prices and interest rates that skewed economic returns in the economy away from capital-intensive and export-sensitive industries such as farming (Hughes, Richardson, and Rister). (5) Farm programs also contributed by encouraging inappropriate resource adjustment to falling commodity prices. (6) Management practices and manager response to changing risk levels and market conditions lead to

an increased use of debt as a means of expanding production during the high price era of the 1970's.

Costs associated with farm financial stress imply corresponding benefits to be realized by its reduction. Benefits of studying and resolving farm financial stress reach beyond farms and ranches to many related sectors such as rural communities, agribusinesses, and lending institutions. The specific hypothesis tested in this thesis is as follows: some but not all farms and ranches which have undergone serious financial stress in the early part of the 1980's in Oregon can be assisted in withstanding fluctuations in economic conditions by adopting specific strategies which promote financial stability and profitability.

This thesis is related to the traditional objectives of farm management as summarized by Jensen(p. 74):

> In 1948 Earl Heady wrote, "Farm management research relates to the study of the economic efficiency and productivity of farm resources. Its specific objectives are (1) to guide individual farmers in the best use of their resources and in a manner compatible with the welfare of society and (2) to provide fundamental analyses of the efficiency of farm resource combinations which can serve as a basis for bettering the public or institutions which condition production efficiency are concerned". He went on to state, "The individual farm and broader industry or social objectives are sometimes looked upon as incongruous. They are not however. Both channel to the same end in respect to resource efficiency.... Agriculture as a competitive industry provides an environment in which the best use of resources by the individual firm can result in the most efficient use of resources from the standpoint of society ..."

These goals, just as important today, were inherent in the stated objectives of this thesis and were the reason for its conception and completion.

One of the specific objectives of this thesis was to evaluate the level of financial stress for two different agricultural production units in Oregon under differing leverage positions and macroeconomic conditions. The production units selected for study were a cattle ranch and a wheat farm, based on their relative importance to Oregon. Under base conditions the cattle ranch had $865,000 in assets, made up

of 373 head of breeding cattle, 2,600 acres of land, and various equipment and machinery. The wheat farm under base conditions had $1,652,472 in assets composed of 100 head of breeding cattle, 3,250 acres of land, as well as machinery and equipment. This first objective was satisfied through analysis of a baseline scenario, which was essentially a continuation of current conditions. Debt levels and growth rates were then altered to reflect the desired study conditions. Changing and considering three leverage ratios (20%, 40%, and 70%) and three sets of macroeconomic conditions (baseline, pessimistic, and optimistic) allowed studying of nine alternative situations to the base firm type or a total of 18 alternatives.

Analysis of these different alternative production units was accomplished through a deterministic computer-based simulation model. The model simulates the financial structure and performance of a farm business over a transition period of four years with emphasis placed on the financial transactions of the firm. These transactions include purchases and sales of farm assets, financing terms, debt management, cash flows, tax obligations, consumption levels, and growth rates. The computer-based model made necessary calculations of cash flows and changes in financial statements to derive ratios used for financial analysis over a planning horizon of four years beyond the present input case and is deterministic in the sense that all essential variables are entered by the researcher. Output from this model includes a set of coordinated financial statements for the firm over the planning horizon: a balance sheet, an income statement, statements for changes in net worth, flow of funds statement, and a fund availability report. The model also calculates profitability, liquidity, and solvency ratios used in financial ratio analysis which are provided on a summary sheet. These statements and reports are provided on an annual basis, thus financial information is provided on yearly changes in financial position over the four year horizon. Starting with user entered base farm inputs, the simulator calculates beginning balance sheet entries and cashflows for the first year are then projected, including revenues generated from operations, principal and interest payments, and new borrowing. These

calculations allow financial statements to be estimated at the end of the first year. Utilizing other user inputs--growth rates for changes in interest rates, asset values, price levels, and loan payments--in a feedback loop, the simulator calculates initial conditions for the beginning of the second year. This process is continued, generating financial statements and ratios for each of the four years considered in the model.

Analysis of baseline conditions indicated that the cattle ranch was suffering little financial stress under current conditions. This was indicated by the fact that in all 20 and 40% leverage situations, all 70% optimistic, and some 70% baseline cases returns on equity exceed returns on assets, indicating leverage was favorable. In the other 70% situations, returns on assets exceeded return on equity but debt-to-asset ratios were constant or decreased thereby indicating financial stress was not serious in any of these cases. Recent increases in beef prices (Table 1.1) and future projected increases in this analysis (Table 3.5) explain these results. The wheat farm, however, was suffering financial distress. High debt situations ended with more debt than they started with under baseline economic conditions, middle leverage positions were stable, while lower leverage cases appeared to hold a sound financial position, actually reducing debt-to-asset ratios under all conditions. Furthermore, unlike the results from analysis of the cattle ranch, no situations resulted in returns on equity greater than returns on assets for this farm. Unlike cattle prices, grain prices (Table 1.1) and resulting incomes have continued to drop and are projected in this thesis to drop further (Table 3.6).

Another objective of this thesis was to evaluate various policy and management strategies designed to reduce financial stress. This objective was achieved by analysis of various scenarios designed to reduce stress for comparison with the baseline case. Specific scenarios considered were: (1) 35% reduction of debt, (2) 35% reduction of interest rates, (3) two year deferral of debt, (4) sales of 35% of total assets with no lease back, (5) sales of 35% of total assets with lease back arrangements, and (6) an infusion of equity

capital equal to 35% of total debt. Results from this analysis were intended to show what, if any, courses of action could be pursued by agricultural firm managers and policy makers to reduce farm financial stress.

On the cattle ranch profitability, as measured by average net income, was highest in the debt deferral scenarios in cases of lower leverage but better in the equity infusion scenarios for the higher debt conditions. Ending net incomes were generally highest in the equity infusion scenario but asset sales-lease back options ended with the highest terminal values in some cases. Liquidity, as measured by the current ratio, was most favorable under the asset sales-no lease back scenario for the low debt conditions, the asset sales-lease back option for the middle debt situations, and the equity infusion scenario for the high debt cases. Solvency, measured by the debt-to-asset ratio, followed the same trend. Thus, equity infusion appears to improve the financial position of this cattle ranch in high leverage situations and in cases of lower leverage, debt deferrals or asset sales are better at strengthening financial positions.

For the wheat farm, average net income had the highest value under the debt deferral scenario. Ending net incomes, also a measure of profitability, were highest for the asset sales-lease back scenario for all 40% situations and for the base and pessimistic 20% cases, as well. However, the 20% pessimistic case was most improved as a result of debt deferral, while the 70% base and pessimistic situations had higher values under the interest reduction scenarios. The 70% optimistic case resulted in the highest ending net income under the equity infusion conditions. Liquidity, as measured by the current ratio, was most favorable under the asset sale-no lease back scenario for the low debt situations, but was better under the asset sale-lease back scenario for the higher debt situations. Debt-to-asset ratios, indicators of solvency, were most improved in the asset sales-lease back cases for the 20 and 40% debt situations, while the 70% situations had better ratios resulting from equity infusion. Overall, the asset sales-no lease back scenario seems to better the financial

position of this farm in situations of lower leverage, but means of improving the higher debt situations do not appear to be so clear cut.

The best test of the ability of these scenarios to reduce financial stress occurred in application to the high leverage wheat farm situations, as these cases had the most financial stress. Depending on which financial problems are most critical, the appropriate programs could be adopted to strengthen the financial position of the farm: asset sales-lease back for cases of low liquidity, equity infusion for cases of low solvency, and interest reductions for profitability. The results also seemed to suggest that public programs can maintain current levels of financial performance for producers under financial stress but do little to improve those positions.

Limitations

Limitations imposed on the findings of this thesis are many. One of the limitations results from changes in tax code, since tax laws have such a large impact on profitability. This analysis assumed the tax code as it existed prior to the legislated change in 1986. Also, since the state of Oregon has a high rate of income tax, dramatic swings in the tax rate assumptions used in the analysis are possible. Another limitation imposed on the results stems from the fact that the analysis was done using representative operations from a particular area of the state of Oregon. Thus, the results can not be easily extended to other types of agricultural production in other regions under differing conditions, because prices and other economic variables only hold for the particular operations considered. However, results obtained in this thesis are similar to those in the S-180 study (Barry, 1986), with the main differences being that the degree of financial stress exhibited by the production units in this thesis was not as great and scenarios other than asset sales proved helpful under some conditions. Other limitations arise from the fact that prices and yields in this analysis are deterministic. Therefore, methods of analysis which allow for probabilisitic or random variation

in these variables could result in different outcomes. Risk analysis of variation in prices and yields could also lead to different policy and management recommendations for financially stressed agricultural producers. Finally, considerable uncertainty exists about future land prices, especially if large numbers of farmers and ranchers sell land.

Conclusions and Implications for Future Research

It was shown in Chapter 1 that the financial stress situation of agricultural firms has become a major concern of agricultural economists in the 1980's, not only at the national, but also at the state level and with good reason. This thesis studied the effects of financial stress on two of Oregon's most important agricultural firms. The major conclusions of this research are: that financial stress does exist for these producers; public assistance programs can do little to improve the financial positions of firms under stress but are instrumental in maintaining current positions; and that according to economic and financial theory under current conditions where prices are less than or equal to average costs, unless financing can be obtained in the long run to pay fixed costs, bankruptcy is eminent. Furthermore, unless programs are specifically targeted to highly stressed agricultural producers, the benefits will accrue to those producers under less financial stress. An example of this type of mistake in recent years, was the payment-in-kind (PIK) program designed to reduce government grain surpluses, as well as reduce grain acreage in production. This program resulted in large government payments being made to large producers who obviously had the most debt. While these producers may have needed the money, they most certainly were not the intended recipients. To avoid these problems, financial-aid programs must consider cash flows (liquidity) rather than levels of debt (solvency). In addition, many different public programs considered in this thesis were found to be helpful under various conditions of financial stress, this does not imply that they are all needed nor that the result would be better if more than one were implemented at one time.

The overriding conclusion for agricultural producers suffering financial stress is that, even the 70% leverage situations can survive and improve if economic conditions improve. Public programs also preserve the capacity of the U.S. to meet increased demand for food and could prove valuable in the event of a natural disaster or widespread crop failure. Alternatively, the effect of public programs may be to merely slow the adjustment process, which must take place when economic conditions change under a market system. For example, it is possible that the cattle sector has already began to improve after adjusting to economic conditions, while the grain sectors, which have public income support programs, are still adjusting. One of the reasons for the higher levels of financial stress on the wheat farm may be federal commodity programs. Another consideration is that not all agricultural producers view their occupation as a business where the important criterion are measured as economic returns, some also receive non-economic benefits from the operation of a farm or ranch which are difficult to estimate. Thus, the decision of whether or not to exit the market for some producers is purely an economic decision, but for others it involves non-pecuniary consumption as well.

Several factors in this thesis could benefit from future research. For example, this model could be used on the same base farms to evaluate the impact of different state and federal income tax codes on the firms, as well as various other taxes such as sales taxes and property taxes. The method used to estimate family consumption before interest and taxes could benefit from more thorough analysis and may be a useful estimation method in future research projects. Evaluation of the effects of different leasing options on the firms could lead to more improvement in financial position in the asset sales-lease back scenarios. This model could also be used to study and/or estimate the optimal level of debt for the two production units considered. Such analysis could have dramatic implications on the results and their interpretation as presented in this thesis.

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APPENDICES

APPENDIX A

Appendix Table A.1 Cattle Ranch Base Inputs

	CROP INPUTS					
	Tract 1	Tract 2	Tract 3	Tract 4	Tract 5	Tract 6
Crop Raised	Crop 1	Crop 1	Crop 2	Crop 2	Crop 3	Crop 3
Total acres per year						
--year 1	400	0	0	0	0	0
--year 2	400	0	0	0	0	0
--year 3	400	0	0	0	0	0
--year 4	400	0	0	0	0	0
Annual Yield						
--year 1	1.5	0.0	0.0	0.0	0.0	0.0
--year 2	1.5	0.0	0.0	0.0	0.0	0.0
--year 3	1.5	0.0	0.0	0.0	0.0	0.0
--year 4	1.5	0.0	0.0	0.0	0.0	0.0
Costs per acre for year one						
Fuel	9.50	0.00	0.00	0.00	0.00	0.00
Fert. and lime	0.00	0.00	0.00	0.00	0.00	0.00
Mach. Hire	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	0.00	0.00	0.00	0.00	0.00	0.00
Insecticides	0.00	0.00	0.00	0.00	0.00	0.00
Seed	0.00	0.00	0.00	0.00	0.00	0.00
Custom work	0.00	0.00	0.00	0.00	0.00	0.00
Cash Rent	0.00	0.00	0.00	0.00	0.00	0.00
Misc	3.40	0.00	0.00	0.00	0.00	0.00
Drying and storage costs per unit for year one						
Drying	0.00	0.00	0.00	0.00	0.00	0.00
Storage	0.00	0.00	0.00	0.00	0.00	0.00
Percentage share of production						
Yield	100.00	0.00	0.00	0.00	0.00	0.00
Fuel	100.00	0.00	0.00	0.00	0.00	0.00
Fert. and lime	100.00	0.00	0.00	0.00	0.00	0.00
Mach. Hire	100.00	0.00	0.00	0.00	0.00	0.00
Herbicides	100.00	0.00	0.00	0.00	0.00	0.00
Insecticides	100.00	0.00	0.00	0.00	0.00	0.00
Seed	100.00	0.00	0.00	0.00	0.00	0.00
Custom work	100.00	0.00	0.00	0.00	0.00	0.00
Cash Rent	100.00	0.00	0.00	0.00	0.00	0.00
Misc	100.00	0.00	0.00	0.00	0.00	0.00
Drying	100.00	0.00	0.00	0.00	0.00	0.00
Storage	100.00	0.00	0.00	0.00	0.00	0.00
Timing of production and sales						
	Crop 1		Crop 2		Crop 3	
Qtr. prod. begins	2		0		0	
Qtr. prod. ends	3		0		0	
Qtr. sales distributed	1		0		0	

Appendix Table A.1 (Cont.)

BREEDING LIVESTOCK INPUTS -- CAPITAL TRANSACTIONS

Breeding animals at beginning

		year 1	year 2	year 3	year 4
No.	373				
value/animal	387.41				
Basis/animal	71.31				
Depreciation/animal		0	0	0	0

Price of young animals at beginning 294.45

No. of breeding livestock purchased, sold, died, and homegrown

PURCHASES OF BREEDING ANIMALS ------- Purchases made in --------

	year 1	year 2	year 3	year 4
Number of animals	3	4	3	4
Price per animal	1,200.00	1,150.00	1,200.00	1,150.00
Depreciation per animal				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Down payment per animal	1,200.00	1,150.00	1,200.00	1,150.00
Principal payment per animal				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Sales of breeding animals	0	0	0	0

	year 1	year 2	year 3	year 4
Number of animals	49	50	49	50
Basis per animal	73.47	92.00	73.47	92.00
Depreciation reduction per animal				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Percent of selling value applied against intermediate loan	0	0	0	0

Deaths of breeding animals ------ Deaths occurring in ------

	year 1	year 2	year 3	year 4
Number of animals	7	7	7	7
Basis per animal	0.00	0.00	0.00	0.00
Depreciation reduction per animal				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0

Appendix Table A.1 (Cont.)

Homegrown breeding animals	------ Animals entering in ------			
	year 1	year 2	year 3	year 4
Number of animals	53	53	53	53

BREEDING LIVESTOCK INPUTS -- PRODUCTION PRACTICES

No. of animals born per breeding animal that will be sold or transfered	
--qtr 1	0.6622
--qtr 2	0.0000
--qtr 3	0.0000
--qtr 4	0.0000
No. of quarters between birth and sales or transfer	3
Percent of young animals sold or transferred	
% sold	0
% transferred	100
Animal products sold per breeding animal	
-- qtr 1	0
-- qtr 2	0
-- qtr 3	0
-- qtr 4	0
Annual non-feed costs per breeding animal in year one	
Vet. medicine	9.44
Breeding fees	0.00
Trucking	0.00
Utilities	0.00
Fuel,oil	18.11
Misc.	0.47
Annual feed inputs and costs per breeding animal	
Units--crop 1	1.61
Units--crop 2	0.00
Units--crop 3	0.00
Cost of other feed	26.52

FEEDER LIVESTOCK INPUTS

Quarters in production cycle	4
Quarter animals are placed in the production process (1=yes, 0=no)	
Quarter 1	0
Quarter 2	0
Quarter 3	0
Quarter 4	1

Appendix Table A.1 (Cont.)

Number of animals purchased per quarter	
Year 1	0
Year 2	0
Year 3	0
Year 4	0
Non-feed costs per animal in year one	
Feeder animal	0.00
Vet. Medicine	5.56
Trucking	0.00
Utilities	0.00
Misc.	3.20
Feed inputs and cost per animal	
Units--crop 1	0.0
Units--crop 2	0.0
Units--crop 3	0.0
Cost of other feed	96.91
Selling weight of each feeder animal in pounds	770.24

UNALLOCATED COSTS

	Year 1	Year 2	Year 3	Year 4
Hired labor	1,000			
Farm supplies	0			
Mach. repair	4,229			
Bld, fence repair	600			
Utilities	1,500			
Insurance	3,899			
Real estate tax	4,700			
Misc	0			
Adjustments (+ or -)		0	0	0

Appendix Table A.1 (Cont.)

PRICES, INCOMES, AND GROWTH RATES

Prices	Price in	------- growth rate in ------		
Selling--old crop	year 1	year 2	year 3	year 4
Crop 1	50.00	0.00	0.00	0.00
Crop 2	0.00	0.00	0.00	0.00
Crop 3	0.00	0.00	0.00	0.00
Selling--new crop				
Crop 1	50.00	0.00	0.00	0.00
Crop 2	0.00	0.00	0.00	0.00
Crop 3	0.00	0.00	0.00	0.00
End of year				
Crop 1	50.00	0.00	0.00	0.00
Crop 2	0.00	0.00	0.00	0.00
Crop 3	0.00	0.00	0.00	0.00
Purchase price				
Crop 1	50.00	0.00	0.00	0.00
Crop 2	0.00	0.00	0.00	0.00
Crop 3	0.00	0.00	0.00	0.00
Breeding livestock enterprise (per animal)				
Breeding--selling price	366.21	2.89	-2.81	-2.53
--end of year	366.21	2.89	-2.81	-2.53
Young --selling	294.45	4.58	-3.99	-5.60
--end of year	294.45	4.58	-3.99	-5.60
Animal Product Price (per unit)	0.00	0.00	0.00	0.00
Feeder livestock enterprise (per pound)				
Feeders--selling price	0.6805	4.60	-4.00	-5.84
--end of year	0.6805	4.60	-4.00	-5.84

Growth Rates	------growth rate in ---------			
	year 1	year 2	year 3	year 4
production expenses	xxxxxxxxx	1.60	3.70	4.70
overhead expenses	xxxxxxxxx	1.60	3.70	4.70
machinery	-2.99	-4.28	-3.27	-2.99
building	-0.01	1.44	1.06	1.35
land	0.00	0.00	0.00	0.00
	-------income generated in ------			
Miscellaneous income	year 1	year 2	year 3	year 4
Farm --taxable	0	0	0	0
--non-taxable	0	0	0	0
Non-farm--taxable	12,890	13,573	14,211	14,922
--non-taxable	0	0	0	0
	---------- percent in ----------			
Percent of expenses	year 1	year 2	year 3	year 4
accounts payable	3.00	3.00	3.00	3.00
prepaid expenses	3.00	3.00	3.00	3.00

Appendix Table A.1 (Cont.)

BEGINNING ASSET SITUATION

CURRENT ASSETS	Amt.	
Cash on hand	1,050	
Mkt Securities	4,000	
Crop inventories	Amt.	Market Price
crop 1	600	50.00
crop 2	0	0.00
crop 3	0	0.00
	Amt.	
Prepaid expenses	500	

INTERMEDIATE ASSETS

			Depreciation			
	cost	Mkt Value	1	2	3	4
Machines	105,400	64,763	5,991	5,991	5,991	5,991
Ret Acct	8,000	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx				
Other	17,800	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx				

FIXED ASSETS

			Depreciation			
	Cost	Mkt value	1	2	3	4
Building	181,818	100,000	3,799	3,799	3,799	3,799
Land	68,354	430,000	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Other	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx				
	Acres of land owned		2,600			

BEGINNING LIABILITY SITUATION

CURRENT LIABILITIES		interest rate in			
	amt.	year 1	year 2	year 3	year 4
Current (Out)	130,340	10.16	9.66	9.66	9.66
Inventory Fin.	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Operating-crop	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
-crop 2	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
-crop 3	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Acct payable	2,000	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Accrued taxes	15,000	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			

INTERMEDIATE LIABILITIES		year 1	year 2	year 3	year 4
Amount (Out)	130,340	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Interest rate		10.16	9.66	9.66	9.66
Principal payts.		26,068	26,068	26,068	26,068
LONG TERM LIABILITIES		year 1	year 2	year 3	year 4
Amount (Out)	65,170	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Interest rate		11.25	11.25	11.25	11.25
Principal payts.		4,344	4,344	4,344	4,344

Appendix Table A.1 (Cont.)

PURCHASES OF MACHINERY

	-------purchases made in -------			
	year 1	year 2	year 3	year 4
Cost of asset	8,116	8,416	8,820	9,270
Investment tax credit				
10% invest. credit	8,116	8,416	8,820	9,270
6% invest. credit	0	0	0	0
Downpayment	1,623	1,683	1,764	1,854
Principal payments				
--year 1	2,164	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	2,164	2,244	xxxxxxxxxxxxxxxxx	
--year 3	2,164	2,244	2,352	xxxxxxxxx
--year 4	0	2,244	2,352	2,472
Depreciation --year 1	240	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	240	249	xxxxxxxxxxxxxxxxx	
--year 3	240	249	261	xxxxxxxxx
--year 4	240	249	261	271

PURCHASES OF BUILDINGS

	-------purchases made in -------			
	year 1	year 2	year 3	year 4
Cost of asset	0	0	0	0
Investment tax credit				
10% invest. credit	0	0	0	0
6% invest. credit	0	0	0	0
Downpayment	0	0	0	0
Principal payments				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Depreciation --year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0

Appendix Table A.1 (Cont.)

PURCHASES OF LAND

	-------purchases made in -------			
	year 1	year 2	year 3	year 4
Cost of the asset	0	0	0	0
Downpayment	0	0	0	0
Principal payments				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Number of acres	0	0	0	0

SALES OF MACHINERY

	-------sales made in -------			
	year 1	year 2	year 3	year 4
Basis of asset	4,250	4,407	4,619	4,855
Recapture of investment tax credit	0	0	0	0
Depreciation reduction				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Proceeds	4,250	4,407	4,619	4,855

SALES OF BUILDINGS

	-------sales made in -------			
	year 1	year 2	year 3	year 4
Basis of asset	0	0	0	0
Recapture of investment tax credit	0	0	0	0
Depreciation reduction				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Proceeds	0	0	0	0

Appendix Table A.1 (Cont.)

SALES OF LAND

	sales made in year 1	sales made in year 2	sales made in year 3	sales made in year 4
Basis of the asset	0	0	0	0
Proceeds	0	0	0	0
Number of acres sold	0	0	0	0

FAMILY, TAX AND DEBT FORGIVENESS INPUTS

	year 1	year 2	year 3	year 4
Number of exemptions	5	5	5	5
Family Withdrawals				
minimum withdrawal	17,600	18,616	19,491	20,465
maximum withdrawal	0	0	0	0
% of net inc before I&T	35	35	35	35
Injections	0	0	0	0
Returns on				
marketable securities	5.50	5.00	5.00	5.00
retirement account	7.00	7.00	7.00	7.00
Movement of cash				
cash	0	0	0	0
marketable securities	100	100	100	100
retirement account	0	0	0	0
	100	100	100	100
FORGIVENESS OF DEBT				
intermediate liabilities	0	0	0	0
long term liabilities	0	0	0	0

STATE TAX CODE

Income greater than	Income less than	Average Tax Rate %
$0	$10,000	5.00 %
$10,000	$20,000	7.93 %
$20,000	$30,000	8.76 %
$30,000	$40,000	9.11 %
$40,000	$50,000	9.31 %
$50,000		9.49 %

APPENDIX B

Appendix Table B.1 Wheat Farm Base Inputs

	CROP INPUTS					
	Tract 1	Tract 2	Tract 3	Tract 4	Tract 5	Tract 6
Crop Raised	Crop 1	Crop 1	Crop 2	Crop 2	Crop 3	Crop 3
Total acres per year						
--year 1	280	0	320	0	600	0
--year 2	280	0	320	0	600	0
--year 3	280	0	320	0	600	0
--year 4	280	0	320	0	600	0
Annual Yield						
--year 1	65.0	0.0	62.5	0.0	0.0	0.0
--year 2	65.0	0.0	62.5	0.0	0.0	0.0
--year 3	65.0	0.0	62.5	0.0	0.0	0.0
--year 4	65.0	0.0	62.5	0.0	0.0	0.0
Costs per acre for year one						
Fuel	5.86	0.00	12.82	0.00	6.96	0.00
Fert. and lime	2.95	0.00	22.88	0.00	0.00	0.00
Mach. Hire	8.14	0.00	5.35	0.00	0.00	0.00
Herbicides	11.82	0.00	5.21	0.00	0.00	0.00
Insecticides	0.00	0.00	0.00	0.00	0.00	0.00
Seed	6.60	0.00	8.25	0.00	0.00	0.00
Custom work	0.00	0.00	0.00	0.00	0.00	0.00
Cash Rent	0.00	0.00	0.00	0.00	0.00	0.00
Misc	5.00	0.00	5.00	0.00	0.00	0.00
Drying and storage costs per unit for year one						
Drying	0.00	0.00	0.00	0.00	0.00	0.00
Storage	0.00	0.00	0.00	0.00	0.00	0.00
Percentage share of production						
Yield	100.00	0.00	100.00	0.00	100.00	0.00
Fuel	100.00	0.00	100.00	0.00	100.00	0.00
Fert. and lime	100.00	0.00	100.00	0.00	100.00	0.00
Mach. Hire	100.00	0.00	100.00	0.00	100.00	0.00
Herbicides	100.00	0.00	100.00	0.00	100.00	0.00
Insecticides	100.00	0.00	100.00	0.00	100.00	0.00
Seed	100.00	0.00	100.00	0.00	100.00	0.00
Custom work	100.00	0.00	100.00	0.00	100.00	0.00
Cash Rent	100.00	0.00	100.00	0.00	100.00	0.00
Misc	100.00	0.00	100.00	0.00	100.00	0.00
Drying	100.00	0.00	100.00	0.00	100.00	0.00
Storage	100.00	0.00	100.00	0.00	100.00	0.00
Timing of production and sales						
	Crop 1		Crop 2		Crop 3	
Qtr. prod. begins	4		2		2	
Qtr. prod. ends	3		3		2	
Qtr. sales distributed	1		1		1	

Appendix Table B.1 (Cont.)

BREEDING LIVESTOCK INPUTS -- CAPITAL TRANSACTIONS

Breeding animals at beginning					
No.	100				
value/animal	375.44				
Basis/animal	24.00	year 1	year 2	year 3	year 4
Depreciation/animal		0	0	0	0
Price of young animals at beginning		0			
No. of breeding livestock purchased, sold, died, and homegrown					
PURCHASES OF BREEDING ANIMALS		------- Purchases made in --------			
		year 1	year 2	year 3	year 4
Number of animals		1	1	1	1
Price per animal		1,200.00	1,200.00	1,200.00	1,200.00
Depreciation per animal					
--year 1		0	xxxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2		0	0	xxxxxxxxxxxxxxxxx	
--year 3		0	0	0	xxxxxxxxx
--year 4		0	0	0	0
Down payment per animal		1,200.00	1,200.00	1,200.00	1,200.00
Principal payment per animal					
--year 1		0	xxxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2		0	0	xxxxxxxxxxxxxxxxx	
--year 3		0	0	0	xxxxxxxxx
--year 4		0	0	0	0
Sales of breeding animals		0	0	0	0
		year 1	year 2	year 3	year 4
Number of animals		15	15	15	15
Basis per animal		80.00	80.00	80.00	80.00
Depreciation reduction per animal					
--year 1		0	xxxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2		0	0	xxxxxxxxxxxxxxxxx	
--year 3		0	0	0	xxxxxxxxx
--year 4		0	0	0	0
Percent of selling value applied against intermediate loan		0	0	0	0
Deaths of breeding animals		------ Deaths occurring in ------			
		year 1	year 2	year 3	year 4
Number of animals		2	2	2	2
Basis per animal		0.00	0.00	0.00	0.00
Depreciation reduction per animal					
--year 1		0	xxxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2		0	0	xxxxxxxxxxxxxxxxx	
--year 3		0	0	0	xxxxxxxxx
--year 4		0	0	0	0

Appendix Table B.1 (Cont.)

Homegrown breeding animals	Animals entering in year 1	year 2	year 3	year 4
Number of animals	16	16	16	16

BREEDING LIVESTOCK INPUTS -- PRODUCTION PRACTICES

No. of animals born per breeding animal that will be sold or transfered	
--qtr 1	0.52
--qtr 2	0.00
--qtr 3	0.00
--qtr 4	0.00
No. of quarters between birth and sales or transfer	2
Percent of young animals sold or transferred	
% sold	100
% transferred	0
Animal products sold per breeding animal	
-- qtr 1	0
-- qtr 2	0
-- qtr 3	0
-- qtr 4	0
Annual non-feed costs per breeding animal in year one	
Vet. medicine	1.00
Breeding fees	0.00
Trucking	0.00
Utilities	0.00
Fuel,oil	0.00
Misc.	91.50
Annual feed inputs and costs per breeding animal	
Units--crop 1	0.0
Units--crop 2	0.0
Units--crop 3	0.0
Cost of other feed	86.80

FEEDER LIVESTOCK INPUTS

Quarters in production cycle	0
Quarter animals are placed in the production process (1=yes, 0=no)	
Quarter 1	0
Quarter 2	0
Quarter 3	0
Quarter 4	0

Appendix Table B.1 (Cont.)

Number of animals purchased per quarter	
Year 1	0
Year 2	0
Year 3	0
Year 4	0
Non-feed costs per animal in year one	
Feeder animal	0.00
Vet. Medicine	0.00
Trucking	0.00
Utilities	0.00
Misc.	0.00
Feed inputs and cost per animal	
Units--crop 1	0.0
Units--crop 2	0.0
Units--crop 3	0.0
Cost of other feed	0.00
Selling weight of each feeder animal in pounds	0

UNALLOCATED COSTS

	Year 1	Year 2	Year 3	Year 4
Hired labor	9,753			
Farm supplies	1,613			
Mach. repair	5,828			
Bld, fence repair	0			
Utilities	2,400			
Insurance	2,080			
Real estate tax	11,264			
Misc	200			
Adjustments (+ or -)		0	0	0

Appendix Table B.1 (Cont.)

PRICES, INCOMES, AND GROWTH RATES

Prices	Price in year 1	growth rate in year 2	year 3	year 4
Selling--old crop				
Crop 1	2.81	-5.69	0.00	0.00
Crop 2	1.96	-2.55	1.05	0.00
Crop 3	0.00	0.00	0.00	0.00
Selling--new crop				
Crop 1	2.81	-5.69	0.00	0.00
Crop 2	1.96	-2.55	1.05	0.00
Crop 3	0.00	0.00	0.00	0.00
End of year				
Crop 1	2.81	-5.69	0.00	0.00
Crop 2	1.96	-2.55	1.05	0.00
Crop 3	0.00	0.00	0.00	0.00
Purchase price				
Crop 1	2.81	-5.69	0.00	0.00
Crop 2	1.96	-2.55	1.05	0.00
Crop 3	0.00	0.00	0.00	0.00
Breeding livestock enterprise (per animal)				
Breeding--selling price	386.01	2.26	-2.21	-3.40
--end of year	386.01	2.26	-2.21	-3.40
Young --selling	299.83	4.50	-3.92	-5.72
--end of year	299.83	4.50	-3.92	-5.72
Animal Product Price (per unit)	0.00	0.00	0.00	0.00
Feeder livestock enterprise (per pound)				
Feeders--selling price	0.00	0.00	0.00	0.00
--end of year	0.00	0.00	0.00	0.00

Growth Rates	------growth rate in --------- year 1	year 2	year 3	year 4
production expenses	xxxxxxxxx	1.60	3.70	4.70
overhead expenses	xxxxxxxxx	1.60	3.70	4.70
machinery	-12.65	-13.81	-12.90	-12.65
building	-3.31	-1.91	-2.28	-2.00
land	0.00	0.00	0.00	0.00

Miscellaneous income	-------income generated in ------ year 1	year 2	year 3	year 4
Farm --taxable	56,037	60,465	60,547	61,084
--non-taxable	0	0	0	0
Non-farm--taxable	19,545	20,581	21,548	22,626
--non-taxable	0	0	0	0

Percent of expenses	---------- percent in ---------- year 1	year 2	year 3	year 4
accounts payable	3.00	3.00	3.00	3.00
prepaid expenses	3.00	3.00	3.00	3.00

Appendix Table B.1 (Cont.)

BEGINNING ASSET SITUATION

CURRENT ASSETS	Amt.	
Cash on hand	1,050	
Mkt Securities	4,020	
		Market
Crop inventories	Amt.	Price
crop 1	9,000	2.81
crop 2	4,167	1.96
crop 3	0	0.00
	Amt.	
Prepaid expenses	2,800	

INTERMEDIATE ASSETS

			-------Depreciation----------			
	cost	Mkt Value	1	2	3	4
Machines	309,850	251,200	52,304	48,615	7,350	7,350
Ret Acct	8,405	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx				
Other	17,800	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx				

FIXED ASSETS

			------Depreciation----------			
	Cost	Mkt value	1	2	3	4
Building	64,166	149,069	1,620	1,440	1,260	1,080
Land	599,000	1,131,647	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Other	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx				
	Acres of land owned		3,250			

BEGINNING LIABILITY SITUATION

CURRENT LIABILITIES		-------interest rate in -----			
	amt.	year 1	year 2	year 3	year 4
Current (Out)	47,656	10.16	9.66	9.66	9.66
Inventory Fin.	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Operating-crop	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
-crop 2	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
-crop 3	0	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Acct payable	2,802	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Accrued taxes	15,115	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			

INTERMEDIATE LIABILITIES		year 1	year 2	year 3	year 4
Amount (Out)	225,384	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Interest rate		10.16	9.66	9.66	9.66
Principal payts.		81,064	81,064	55,669	0
LONG TERM LIABILITIES		year 1	year 2	year 3	year 4
Amount (Out)	368,805	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx			
Interest rate		7.35	7.31	7.26	7.17
Principal payts.		48,485	52,163	56,120	60,384

Appendix Table B.1 (Cont.)

PURCHASES OF MACHINERY

	-------purchases made in -------			
	year 1	year 2	year 3	year 4
Cost of asset	59,000	0	0	0
Investment tax credit				
10% invest. credit	44,000	0	0	0
6% invest. credit	15,000	0	0	0
Downpayment	3,750	0	0	0
Principal payments				
--year 1	12,550	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	12,550	0	xxxxxxxxxxxxxxxxx	
--year 3	8,800	0	0	xxxxxxxxx
--year 4	8,800	0	0	0
Depreciation --year 1	9,908	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	14,725	0	xxxxxxxxxxxxxxxxx	
--year 3	14,162	0	0	xxxxxxxxx
--year 4	8,778	0	0	0

PURCHASES OF BUILDINGS

	-------purchases made in -------			
	year 1	year 2	year 3	year 4
Cost of asset	0	0	0	0
Investment tax credit				
10% invest. credit	0	0	0	0
6% invest. credit	0	0	0	0
Downpayment	0	0	0	0
Principal payments				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Depreciation --year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0

Appendix Table B.1 (Cont.)

PURCHASES OF LAND

	-------purchases made in -------			
	year 1	year 2	year 3	year 4
Cost of the asset	0	0	0	0
Downpayment	0	0	0	0
Principal payments				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Number of acres	0	0	0	0

SALES OF MACHINERY

	-------sales made in -------			
	year 1	year 2	year 3	year 4
Basis of asset	0	0	0	0
Recapture of investment tax credit	0	0	0	0
Depreciation reduction				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Proceeds	0	0	0	0

SALES OF BUILDINGS

	-------sales made in -------			
	year 1	year 2	year 3	year 4
Basis of asset	0	0	0	0
Recapture of investment tax credit	0	0	0	0
Depreciation reduction				
--year 1	0	xxxxxxxxxxxxxxxxxxxxxxxxxx		
--year 2	0	0	xxxxxxxxxxxxxxxxx	
--year 3	0	0	0	xxxxxxxxx
--year 4	0	0	0	0
Proceeds	0	0	0	0

Appendix Table B.1 (Cont.)

SALES OF LAND

	-------sales made in -------			
	year 1	year 2	year 3	year 4
Basis of the asset	0	0	0	0
Proceeds	0	0	0	0
Number of acres sold	0	0	0	0

FAMILY, TAX AND DEBT FORGIVENESS INPUTS

	year 1	year 2	year 3	year 4
Number of exemptions	5	5	5	5
Family Withdrawals				
minimum withdrawal	17,679	18,616	19,491	20,465
maximum withdrawal	0	0	0	0
% of net inc before T&I	35	35	35	35
Injections	0	0	0	0
Returns on				
marketable securities	5.50	5.00	5.00	5.00
retirement account	7.00	7.00	7.00	7.00
Movement of cash				
cash	0	0	0	0
marketable securities	100	100	100	100
retirement account	0	0	0	0
	100	100	100	100
FORGIVENESS OF DEBT				
intermediate liabilities	0	0	0	0
long term liabilities	0	0	0	0

STATE TAX CODE

Income greater than	Income less than	Average Tax Rate %
$0	$10,000	5.00 %
$10,000	$20,000	7.93 %
$20,000	$30,000	8.76 %
$30,000	$40,000	9.11 %
$40,000	$50,000	9.31 %
$50,000		9.49 %

APPENDIX C

Appendix Table C.1 Cattle Ranch: BALANCE SHEET (MARKET VALUES)

	Beg.	Year 1	Year 2	Year 3	Year 4
ASSETS					
Current Assets					
Cash	1,050	3,243	3,474	4,110	4,672
Marketable Securities	4,000	0	0	0	0
Inventories--grain	30,000	14,987	14,989	14,989	14,989
--livestock	64,732	64,732	67,710	65,002	61,206
Prepaid expenses	500	348	354	367	384
Investment in growing crop	0	0	0	0	0
Total Current Assets	100,282	83,310	86,527	84,468	81,252
Intermediate Assets					
Breeding stock	144,504	136,596	140,544	136,595	133,139
Machinery	64,763	68,167	70,632	73,953	77,537
Retirement accounts	8,000	8,560	9,159	9,800	10,486
Other	17,800	17,800	17,800	17,800	17,800
Total Inter. assets	235,067	231,123	238,135	238,148	238,962
Fixed Assets					
Building	100,000	99,990	101,430	102,505	103,889
Land	430,000	430,000	430,000	430,000	430,000
Other	0	0	0	0	0
Total Fixed Assets	530,000	529,990	531,430	532,505	533,889
Total Assets	865,349	844,423	856,092	855,120	854,103
LIABILITIES					
Current loans	130,340	129,125	150,845	169,263	187,355
Inventory financing	0	0	0	0	0
Accounts payable	2,000	348	354	367	384
Accrued interest	3,311	3,280	3,643	4,088	4,525
Accrued taxes	15,000	22,013	18,846	14,199	8,207
Current of inter. & long term loans	30,412	33,873	34,958	33,751	19,457
Contingencies	56,356	47,425	49,198	47,587	45,328
Total Cur. Liabilities	237,419	236,065	257,844	269,254	265,257
Intermediate loans	104,272	75,698	48,520	23,030	12,119
Contingencies	23,146	22,970	25,441	26,277	27,334
Total Inter. Liab.	127,418	98,669	73,961	49,307	39,453
Long term loans	60,826	56,482	52,138	47,794	43,812
Contingencies	66,588	67,490	68,736	69,896	71,129
Total Long Term liab.	127,414	123,972	120,874	117,690	114,941
Total Liabilities	492,251	458,705	452,679	436,251	419,650
Net Worth with cont.	373,099	385,718	403,414	418,869	434,452
Net Worth W/O cont.	519,189	523,603	546,788	562,629	578,243

Appendix Table C.2 Cattle Ranch: INCOME STATEMENT

	Year 1	Year 2	Year 3	Year 4
Gross revenue				
Crop sales	14,987	0	0	0
Market livstck. & prod. sales	129,465	135,420	130,004	122,411
Breeding livestock sales	17,944	18,840	17,944	17,490
Inventory adjustments--crops	(15,013)	3	0	0
--market livestock	0	2,978	(2,708)	(3,796)
--breeding livestock	(7,908)	3,948	(3,949)	(3,456)
Other farm income	0	0	0	0
Gross revenue	139,475	161,188	141,290	132,649
Expenses				
Direct expenses	53,104	52,430	54,370	56,925
Crop purchases	0	29	26	27
Livestock purchases	3,600	4,600	3,600	4,600
Overhead expenses	15,928	16,183	16,782	17,570
A/P adjustment	(1,652)	6	13	17
Prepaid adjustment	152	(6)	(13)	(17)
Investment in crops adjustment	0	0	0	0
Total expenses	71,132	73,242	74,777	79,122
Depreciation	10,030	10,279	10,540	10,811
Income from operations	58,313	77,667	55,972	42,717
Misc. non-farm income	12,890	13,573	14,211	14,922
Interest income	615	599	641	686
Income before taxes and interest	71,818	91,840	70,824	58,325
Interest costs	29,813	27,840	26,732	25,759
Taxes	22,013	18,846	14,199	8,207
Net income	19,993	45,154	29,894	24,358
Realized gains from sales	0	0	0	0
Unrealized gains from mkt. chngs.	9,558	10,175	10,735	11,364
Net income after gains	29,551	55,329	40,629	35,723

Appendix Table C.3 Cattle Ranch: CHANGES IN NET WORTH

	Year 1	Year 2	Year 3	Year 4
Beginning net worth W/O cont.	519,189	523,603	546,788	562,629
Net income	19,993	45,154	29,894	24,358
Realized and unrealized gains	9,558	10,175	10,735	11,364
Withdrawals	(25,136)	(32,144)	(24,789)	(20,465)
Injections & debt forgiveness	0	0	0	0
Ending net worth without cont.	523,603	546,788	562,629	577,886

Appendix Table C.4 Cattle Ranch: FLOW OF FUNDS STATEMENT

	Year 1	Year 2	Year 3	Year 4
Beginning cash	1,050	3,243	3,474	4,110
Plus				
Cash income from operations	75,420	66,779	58,826	47,890
Other income	12,945	13,573	14,211	14,922
Cash generated by capital sales	17,944	18,840	17,944	17,847
Injections	0	0	0	0
Less				
Interest payments	29,843	27,476	26,287	25,322
Downpayments	5,223	6,283	5,364	6,454
Tax payments	15,000	22,013	18,846	14,199
Principal payments	31,699	32,764	33,478	31,748
Withdrawals	25,136	32,144	24,789	20,465
Adjustments				
Inventory financing	0	0	0	0
Current debt	(1,215)	21,720	18,418	18,092
Marketable securities	4,000	0	0	0
Retirement accounts	0	0	0	0
Ending cash	3,243	3,474	4,110	4,672

Appendix Table C.5 Cattle Ranch: FUND AVAILABILTY REPORT

	Year 1	Year 2	Year 3	Year 4
Net Income	19,993	45,154	29,894	24,358
+ depreciation	10,030	10,279	10,540	10,811
+ cash generated by capital sales	0	0	0	0
+ injections	0	0	0	0
- withdrawals	25,136	32,144	24,789	20,465
- downpayments	5,223	6,283	5,364	6,454
Total Funds Available to Repay Principal	(336)	17,006	10,282	8,250
- principal payments	31,699	32,764	33,478	31,748
Funds Available For Alternative Uses	(32,036)	(15,758)	(23,196)	(23,497)

Appendix Table C.6 Cattle Ranch: SUMMARY SHEET

	Beg.	Year 1	Year 2	Year 3	Year 4
Net income		19,993	45,154	29,894	24,358
Net income after gain		29,551	55,329	40,629	35,723
Net income from operations		58,313	77,667	55,972	42,717
Cash income from operations		75,420	66,779	58,826	47,890
Maximum current loan		145,054	159,192	179,050	195,155
Changes in net worth with cont.		12,620	17,695	15,456	15,583
RATIO ANALYSIS WITH CONTINGENCIES:					
Return on assets		0.0576	0.0864	0.0661	0.0586
Cost of Debt		0.0374	0.0374	0.0389	0.0415
Return on equity without gain		0.0536	0.1171	0.0741	0.0582
Return on equity with gain		0.0792	0.1434	0.1007	0.0853
Current ratio	0.4224	0.3529	0.3356	0.3137	0.3063
Intermediate ratio	1.8448	2.3424	3.2197	4.8299	6.0569
Fixed ratio	4.1597	4.2751	4.3966	4.5246	4.6449
Debt to asset ratio	0.5688	0.5432	0.5288	0.5102	0.4913
Interest coverage ratio		2.41	3.30	2.65	2.26
Cash flow coverage ratio		2.86	2.80	2.72	2.72
Debt to income ratio		16.66	8.29	11.14	12.21
RATIO ANALYSIS WITHOUT CONTINGENCIES:					
Return on assets		0.0576	0.0864	0.0661	0.0586
Cost of Debt		0.0531	0.0535	0.0569	0.0619
Return on equity without gain		0.0385	0.0862	0.0547	0.0433
Return on equity with gain		0.0569	0.1057	0.0743	0.0635
Current ratio	0.5539	0.4416	0.4147	0.3811	0.3694
Intermediate ratio	2.2544	3.0532	4.9080	10.3409	19.7179
Fixed ratio	8.7134	9.3833	10.1928	11.1417	12.1859
Debt to asset ratio	0.4000	0.3799	0.3613	0.3420	0.3230

AVERAGE FUND AVAILABLITY: (23,622)

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NA denotes a ratio that is infinite

APPENDIX D

Appendix Table D.1 Wheat Farm: BALANCE SHEET (MARKET VALUES)

	Beg.	Year 1	Year 2	Year 3	Year 4
ASSETS					
Current Assets					
Cash	1,050	3,934	6,481	8,633	9,821
Marketable Securities	4,020	0	0	0	0
Inventories--grain	33,457	0	0	0	0
--livestock	0	0	0	0	0
Prepaid expenses	2,800	474	481	499	522
Investment in growing crop	15,480	15,480	15,727	16,309	17,076
Total Current Assets	56,807	19,887	22,690	25,441	27,420
Intermediate Assets					
Breeding stock	37,544	38,601	39,473	38,601	37,289
Machinery	251,200	270,960	233,540	203,413	177,682
Retirement accounts	8,405	8,993	9,623	10,296	11,017
Other	17,800	17,800	17,800	17,800	17,800
Total Inter. assets	314,949	336,354	300,436	270,111	243,788
Fixed Assets					
Building	149,069	144,135	141,382	138,158	135,395
Land	1,131,647	1,131,647	1,131,647	1,131,647	1,131,647
Other	0	0	0	0	0
Total Fixed Assets	1,280,716	1,275,782	1,273,029	1,269,805	1,267,042
Total Assets	1,652,472	1,632,023	1,596,155	1,565,357	1,538,249
LIABILITIES					
Current loans	47,656	144,597	259,594	357,632	406,910
Inventory financing	0	0	0	0	0
Accounts payable	2,802	474	481	499	522
Accrued interest	1,210	3,673	6,269	8,637	9,827
Accrued taxes	15,115	0	0	0	0
Current of inter. & long term loans	129,549	145,777	120,589	69,184	49,312
Contingencies	19,904	0	0	0	0
Total Cur. Liabilities	216,236	294,520	386,933	435,951	466,571
Intermediate loans	144,320	93,406	28,937	20,137	14,013
Contingencies	(593)	5,475	12,225	10,368	8,199
Total Inter. Liab.	143,727	98,881	41,162	30,505	22,212
Long term loans	320,320	268,157	212,037	151,653	108,465
Contingencies	146,952	146,164	145,851	145,384	144,983
Total Long Term Liab.	467,272	414,321	357,888	297,037	253,449
Total Liabilities	827,235	807,721	785,983	763,493	742,232
Net Worth with cont.	825,237	824,302	810,172	801,864	796,018
Net Worth W/O cont.	991,499	975,940	968,248	957,616	949,200

Appendix Table D.2 Wheat Farm: INCOME STATEMENT

	Year 1	Year 2	Year 3	Year 4
Gross revenue				
Crop sales	123,799	86,432	86,834	86,834
Market livstck. & prod. sales	15,591	16,293	15,654	14,759
Breeding livestock sales	5,790	5,921	5,790	5,593
Inventory adjustments--crops	(33,457)	0	0	0
--market livestock	0	0	0	0
--breeding livestock	1,057	872	(872)	(1,312)
Other farm income	56,037	60,465	60,547	61,084
Gross revenue	168,817	169,984	167,952	166,957
Expenses				
Direct expenses	52,455	53,292	55,264	57,861
Crop purchases	0	0	0	0
Livestock purchases	1,200	1,200	1,200	1,200
Overhead expenses	33,138	33,668	34,914	36,555
A/P adjustment	(2,328)	8	18	23
Prepaid adjustment	2,326	(8)	(18)	(23)
Investment in crops adjustment	0	(248)	(582)	(767)
Total expenses	86,791	87,913	90,796	94,850
Depreciation	63,832	64,780	22,772	17,208
Income from operations	18,195	17,291	54,385	54,899
Misc. non-farm income	19,545	20,581	21,548	22,626
Interest income	1,546	630	674	721
Income before taxes and interest	39,285	38,502	76,606	78,246
Interest costs	60,999	56,428	54,248	52,596
Taxes	0	0	0	0
Net income	(21,714)	(17,926)	22,358	25,651
Realized gains from sales	0	0	0	0
Unrealized gains from mkt. chngs.	19,658	24,607	(10,578)	(11,287)
Net income after gains	(2,057)	6,681	11,780	14,364

Appendix Table D.3 Wheat Farm: CHANGES IN NET WORTH

	Year 1	Year 2	Year 3	Year 4
Beginning net worth W/O cont.	991,499	975,940	968,248	957,616
Net income	(21,714)	(17,926)	22,358	25,651
Realized and unrealized gains	19,658	24,607	(10,578)	(11,287)
Withdrawals	(17,679)	(18,616)	(26,812)	(27,386)
Injections & debt forgiveness	0	0	0	0
Ending net worth without cont.	971,764	964,005	953,216	944,593

Appendix Table D.4 Wheat Farm: FLOW OF FUNDS STATEMENT

	Year 1	Year 2	Year 3	Year 4
Beginning cash	1,050	3,934	6,481	8,633
Plus				
Cash income from operations	53,798	15,765	12,310	7,176
Other income	76,539	81,046	82,095	83,710
Cash generated by capital sales	5,790	5,921	5,790	5,593
Injections	0	0	0	0
Less				
Interest payments	58,537	53,831	51,880	51,405
Downpayments	4,950	1,200	1,200	1,200
Tax payments	15,115	0	0	0
Principal payments	142,099	145,777	120,589	69,184
Withdrawals	17,679	18,616	26,812	27,386
Adjustments				
Inventory financing	0	0	0	0
Current debt	96,941	114,997	98,038	49,278
Marketable securities	4,020	0	0	0
Retirement accounts	0	0	0	0
Ending cash	(242)	2,239	4,233	5,215

Appendix Table D.5 Wheat Farm: FUND AVAILABILTY REPORT

	Year 1	Year 2	Year 3	Year 4
Net Income	(21,714)	(17,926)	22,358	25,651
+ depreciation	63,832	64,780	22,772	17,208
+ cash generated by capital sales	0	0	0	0
+ injections	0	0	0	0
- withdrawals	17,679	18,616	26,812	27,386
- downpayments	4,950	1,200	1,200	1,200
Total Funds Available to Repay Principal	19,489	27,038	17,118	14,272
- principal payments	142,099	145,777	120,589	69,184
Funds Available For Alternative Uses	(122,610)	(118,739)	(103,471)	(54,912)

Appendix Table D.6 Wheat Farm: SUMMARY SHEET

	Beg.	Year 1	Year 2	Year 3	Year 4
Net income		(21,714)	(17,926)	22,358	25,651
Net income after gain		(2,057)	6,681	11,780	14,364
Net income from operations		18,195	17,291	54,385	54,899
Cash income from operations		53,798	15,765	12,310	7,176
Maximum current loan		144,597	259,594	357,632	406,910
Changes in net worth with cont.		(935)	(14,130)	(8,308)	(5,847)
RATIO ANALYSIS WITH CONTINGENCIES					
Return on assets		0.0238	0.0236	0.0480	0.0500
Cost of Debt		0.0619	0.0587	0.0580	0.0579
Return on equity without gain		-0.0263	-0.0217	0.0276	0.0320
Return on equity with gain		-0.0025	0.0081	0.0145	0.0179
Current ratio	0.2627	0.0675	0.0586	0.0584	0.0588
Intermediate ratio	2.1913	3.4016	7.2989	8.8547	10.9754
Fixed ratio	2.7408	3.0792	3.5571	4.2749	4.9992
Debt to asset ratio	0.5006	0.4949	0.4924	0.4877	0.4825
Interest coverage ratio		0.64	0.68	1.41	1.49
Cash flow coverage ratio		0.83	0.65	0.76	1.08
Debt to income ratio		-402.22	120.89	66.72	53.15
RATIO ANALYSIS WITHOUT CONTINGENCIES					
Return on assets		0.0238	0.0236	0.0480	0.0500
Cost of Debt		0.0775	0.0722	0.0726	0.0727
Return on equity without gain		-0.0219	-0.0184	0.0231	0.0268
Return on equity with gain		-0.0021	0.0068	0.0122	0.0150
Current ratio	0.2893	0.0675	0.0586	0.0584	0.0588
Intermediate ratio	2.1823	3.6010	10.3824	13.4137	17.3970
Fixed ratio	3.9982	4.7576	6.0038	8.3731	11.6816
Debt to asset ratio	0.4000	0.4020	0.3934	0.3882	0.3829

AVERAGE FUND AVAILABLITY: (99,933)

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NA denotes a ratio that is infinite

Appendix Table E.1 CATTLE RANCH: 20% D/A DUTPUT TABLE FDR BASELINE BALANCE SHEETS

		ENDING				ENDING		
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	100,282	77,154	102,298	76,963	98,386	219,007	288,047	102,296
BREEDING LIVESTOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXED ASSETS	530,000	533,889	533,889	533,889	533,889	307,364	230,906	533,889
TOTAL ASSETS	865,349	850,005	*875,149	849,814	871,237	695,018	757,915	875,147
CURRENT LOANS	61,802	13,829	0	4,312	0	0	0	0
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	14,420	10,483	7,479	10,483	13,780	2,268	2,967	(379)
OTHER CURRENT LOANS	74,926	66,166	67,216	67,386	65,669	31,792	65,933	70,485
INTERMEDIATE LOANS	49,441	5,416	13,015	5,416	22,577	193	(50)	1,031
LONG TERM LOANS	28,841	20,774	15,777	20,774	24,869	0	0	10,092
CONTINGENT TAX LIAB.	146,090	143,791	143,791	143,791	143,791	*53,135	83,154	143,791
TOTAL LIABILITIES	319,164	215,131	201,951	206,833	225,358	*68,871	106,677	179,693
NET WORTH W/ CONT.	546,185	634,874	673,198	642,982	645,879	626,147	651,238	*695,454
NET WORTH W/O CONT.	692,275	778,665	816,989	786,773	789,671	679,282	734,392	*839,245

Appendix Table E.2 CATTLE RANCH: 20% O/A OUTPUT TABLE FOR BASELINE INCOME STATEMENTS

	BASELINE		DEBT REDUCTION		INTEREST REDUCTION		DEBT DEFFERAL		ASSET SALE NO LEASE		ASSET SALE LEASE BACK		EQUITY INFUSION	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	139,475	132,649	139,475	132,649	139,475	132,649	139,475	132,649	128,598	62,555	139,475	132,649	139,475	132,649
TOTAL EXPENSES	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OPS.	58,313	42,717	58,313	42,717	58,313	42,717	58,313	42,717	70,621	12,230	44,426	29,171	58,313	42,717
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTEREST INCOME	1,531	1,566	2,146	2,506	1,565	1,749	1,531	2,765	10,155	9,659	11,658	11,100	3,068	2,589
INTEREST COSTS	12,471	7,086	7,859	5,187	8,004	4,346	1,880	8,394	0	447	6,507	555	10,430	3,008
TAXES	32,217	20,120	57,235	21,504	34,234	21,606	36,458	19,957	143,481	13,093	91,448	20,221	33,467	24,773
NET INCOME W/O GAINS	28,047	31,998	8,255	33,454	30,531	33,436	34,397	32,053	(49,815)	23,271	(28,981)	*34,418	30,374	32,446
NET INCOME W/ GAINS	37,605	43,362	17,812	44,818	40,088	44,800	43,954	43,417	(40,282)	34,635	(19,456)	*45,782	39,931	43,811

Appendix Table E.3 CATTLE RANCH: 20% O/A OUTPUT TABLE FOR PESSIMISTIC BALANCE SHEETS

		- - - E N D I N G - - -			- - - - - - - - E N D I N G - - -			
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE ND LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	100,282	77,524	95,774	77,213	80,231	189,286	273,331	85,753
BREEDING LIVESTOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXED ASSETS	530,000	490,889	490,889	490,889	490,889	287,017	218,204	490,889
TOTAL ASSETS	865,349	807,375	*825,625	807,064	810,082	644,950	730,497	815,604
CURRENT LOANS	61,802	29,281	0	21,670	0	0	0	0
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	14,420	10,483	7,479	10,483	13,780	2,268	2,967	(379)
OTHER CURRENT LOANS	74,926	58,076	58,930	59,112	57,226	26,016	51,418	59,749
INTERMEDIATE LOANS	49,441	5,416	13,015	5,416	22,577	193	(50)	1,031
LONG TERM LOANS	28,841	20,774	15,777	20,774	24,869	0	0	10,092
CONTINGENT TAX LIAB.	146,090	133,559	133,559	133,559	133,559	*48,944	69,356	133,559
TOTAL LIABILITIES	319,164	212,260	183,432	205,685	206,682	*58,904	84,459	158,724
NET WORTH W/ CONT.	546,185	595,115	642,193	601,380	603,400	586,046	646,038	*656,880
NET WORTH W/O CONT.	692,275	728,674	775,752	734,939	736,959	634,991	715,393	*790,439

Appendix Table E.4 CATTLE RANCH: 20% D/A OUTPUT TABLE FOR PESSIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----ND LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	125,528	119,385	125,528	119,385	125,528	119,385	125,528	119,385	114,650	49,290	125,528	119,385	125,528	119,385
TOTAL EXPENSES	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OPS.	44,366	29,452	44,366	29,452	44,366	29,452	44,366	29,452	56,673	(1,035)	30,479	15,906	44,366	29,452
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTEREST INCOME	1,288	1,312	1,902	2,410	1,322	1,444	1,288	2,221	9,865	8,519	11,368	10,670	2,824	2,123
INTEREST COSTS	12,808	7,590	7,950	5,119	8,219	4,734	2,209	8,597	0	447	6,507	555	10,738	3,172
TAXES	25,649	11,656	41,876	13,217	28,180	13,059	30,390	11,513	135,011	7,317	82,577	11,802	27,074	14,037
NET INCOME W/O GAINS	20,087	26,439	9,332	28,448	22,179	28,025	25,945	26,484	(55,583)	14,641	(34,348)	29,142	22,268	*29,288
NET INCOME W/ GAINS	(13,356)	37,803	(24,111)	39,812	(11,263)	39,389	(7,498)	37,848	(66,398)	26,006	(37,525)	40,506	(11,174)	*40,652

Appendix Table E.5 CATTLE RANCH: 20% D/A OUTPUT TABLE FOR OPTIMISTIC BALANCE SHEETS

		- - - E N D I N G - - -						
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE ND LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	100,282	84,710	129,419	93,030	116,882	253,871	297,677	122,725
BREEDING LIVESTOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXED ASSETS	530,000	619,889	619,889	619,889	619,889	348,059	256,309	619,889
TOTAL ASSETS	865,349	943,561	*988,270	951,881	975,733	770,577	792,948	981,576
CURRENT LOANS	61,802	0	0	0	D	D	0	0
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	14,420	10,483	7,479	10,483	13,780	2,268	2,967	(379)
OTHER CURRENT LOANS	74,926	81,942	83,249	83,059	81,778	49,378	82,651	84,037
INTERMEDIATE LOANS	49,441	5,416	13,015	5,416	22,577	193	(50)	1,031
LONG TERM LOANS	28,841	20,774	15,777	20,774	24,869	D	D	10,092
CONTINGENT TAX LIAB.	146,090	164,256	164,256	164,256	164,256	*71,075	89,199	164,256
TOTAL LIABILITIES	319,164	237,542	238,448	238,658	261,931	*101,519	129,440	213,709
NET WORTH W/ CONT.	546,185	706,018	749,822	713,222	713,802	669,059	663,508	*767,867
NET WORTH W/O CONT.	692,275	870,274	914,077	877,478	878,058	740,133	752,708	*932,123

Appendix Table E.6 CATTLE RANCH: 20% D/A OUTPUT TABLE FOR OPTIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----ND LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	167,370	159,179	167,370	159,179	167,370	159,179	167,370	159,179	156,493	89,085	167,370	159,179	167,370	159,179
TOTAL EXPENSES	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OPS.	86,208	69,247	86,208	69,247	86,208	69,247	86,208	69,247	98,516	38,760	72,321	55,701	86,208	69,247
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTEREST INCOME	2,019	2,078	2,633	3,437	2,050	2,312	2,019	3,383	10,735	10,878	12,239	11,325	3,555	3,268
INTEREST COSTS	11,808	6,495	7,678	4,806	7,578	4,129	1,672	8,214	0	447	6,507	555	10,253	2,783
TAXES	52,871	36,230	71,942	37,537	55,282	37,346	58,012	36,065	160,421	27,802	121,954	36,939	54,385	38,324
NET INCOME W/O GAINS	36,437	43,522	22,111	45,264	38,288	45,006	41,433	43,272	(38,280)	36,310	(31,011)	44,455	38,015	*46,330
NET INCOME W/ GAINS	131,995	54,886	117,669	56,628	133,846	56,370	136,990	54,637	11,948	47,674	3,917	55,819	133,573	*57,694

Appendix Table E.7 CATTLE RANCH: 40% O/A OUTPUT TABLE FOR BASELINE BALANCE SHEETS

	BEGINNING	ENDING BASELINE	ENDING DEBT REDUCTION	ENDING INTEREST REDUCTION	ENDING DEBT DEFFERAL	ENDING ASSET SALE NO LEASE	ENDING ASSET SALE LEASE BACK	ENDING EQUITY INFUSION
CURRENT ASSETS	100,282	81,252	79,061	79,451	79,394	36,490	100,140	79,384
BREEDING LIVESTOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXED ASSETS	530,000	533,889	533,889	533,889	533,889	307,364	230,906	533,889
TOTAL ASSETS	865,349	*854,103	851,912	852,302	852,245	512,501	570,008	852,235
CURRENT LOANS	130,340	187,355	94,473	166,418	108,573	12,220	0	108,162
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	30,412	19,457	13,036	19,457	26,319	2,479	2,989	(15,995)
OTHER CURRENT LOANS	76,667	58,445	61,451	62,300	57,469	28,206	60,601	63,720
INTERMEDIATE LOANS	104,272	12,119	29,366	12,119	52,516	(41)	(50)	11,691
LONG TERM LOANS	60,826	43,812	33,274	43,812	52,448	0	0	21,283
CONTINGENT TAX LIAB.	146,090	143,791	143,791	143,791	143,791	*53,135	83,154	143,791
TOTAL LIABILITIES	492,251	419,650	330,063	402,569	395,789	*77,480	101,366	287,325
NET WORTH W/ CONT.	373,099	434,452	521,849	449,733	456,455	435,020	468,642	*564,911
NET WORTH W/O CONT.	519,189	578,243	665,640	593,524	600,247	488,156	551,797	*708,702

Appendix Table E.8 CATTLE RANCH: 40% O/A OUTPUT TABLE FOR BASELINE INCOME STATEMENTS

	BASELINE		DEBT REDUCTION		INTEREST REDUCTION		DEBT DEFFERAL		ASSET SALE NO LEASE		ASSET SALE LEASE BACK		EQUITY INFUSION	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	139,475	132,649	139,475	132,649	139,475	132,649	139,475	132,649	128,598	62,555	139,475	132,649	139,475	132,649
TOTAL EXPENSES	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OPS.	58,313	42,717	58,313	42,717	58,313	42,717	58,313	42,717	70,621	12,230	44,426	29,171	58,313	42,717
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTEREST INCOME	615	686	836	686	615	686	615	686	4,512	838	7,286	2,234	2,775	686
INTEREST COSTS	29,813	25,759	17,461	16,598	19,038	15,760	7,698	23,596	3,876	1,562	13,470	1,164	23,403	12,686
TAXES	22,013	8,207	69,945	13,457	29,344	13,974	33,682	9,135	136,782	9,211	83,820	14,889	27,716	15,396
NET INCOME W/O GAINS	19,993	24,358	(15,367)	28,269	23,437	28,590	30,438	25,594	(52,636)	17,216	(32,688)	*30,274	22,859	30,243
NET INCOME W/ GAINS	29,551	35,723	(5,810)	39,633	32,995	39,955	39,996	36,958	(43,103)	28,581	(23,164)	*41,638	32,417	41,607

Appendix Table E.9 CATTLE RANCH: 40% O/A OUTPUT TABLE FOR PESSIMISTIC BALANCE SHEETS

	BEGINNING	- - - E N D I N G - - - BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	- - - - - - - - E N D I N G - - - - - - - - ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	100,282	81,684	79,394	79,665	79,908	37,327	82,496	79,709
BREEDING LIVESTOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXED ASSETS	530,000	490,889	490,889	490,889	490,889	287,017	218,204	490,889
TOTAL ASSETS	865,349	*811,535	809,245	809,516	809,759	492,991	539,663	809,560
CURRENT LOANS	130,340	205,711	108,579	180,291	130,372	47,737	0	121,932
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	30,412	19,457	13,036	19,457	26,319	2,479	2,989	(15,995)
OTHER CURRENT LOANS	76,667	52,621	54,264	55,065	51,282	20,706	46,896	56,371
INTERMEDIATE LOANS	104,272	12,119	29,366	12,119	52,516	(41)	(50)	11,691
LONG TERM LOANS	60,826	43,812	33,274	43,812	52,448	0	0	21,283
CONTINGENT TAX LIAB.	146,090	133,559	133,559	133,559	133,559	*48,944	69,356	133,559
TOTAL LIABILITIES	492,251	421,951	326,748	398,975	401,168	101,308	*79,958	283,513
NET WORTH W/ CONT.	373,099	389,584	482,497	410,541	408,591	391,683	459,705	*526,047
NET WORTH W/O CONT.	519,189	523,143	616,055	544,100	542,150	440,628	529,061	*659,606

Appendix Table E.10 CATTLE RANCH: 40% O/A OUTPUT TABLE FOR PESSIMISTIC INCOME STATEMETS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	125,528	119,385	125,528	119,385	125,528	119,385	125,528	119,385	114,650	49,290	125,528	119,385	125,528	119,385
TOTAL EXPENSES	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OPS.	44,366	29,452	44,366	29,452	44,366	29,452	44,366	29,452	56,673	(1,035)	30,479	15,906	44,366	29,452
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTEREST INCOME	615	686	738	686	615	686	615	686	4,222	686	6,995	1,836	2,531	686
INTEREST COSTS	30,621	27,001	18,077	17,446	19,552	16,304	8,506	25,159	3,876	4,102	13,470	1,346	23,740	13,502
TAXES	13,236	1,941	61,254	5,929	20,135	6,522	27,501	2,421	128,312	855	74,773	7,279	18,181	7,714
NET INCOME W/O GAINS	14,014	16,118	(21,336)	21,685	18,184	22,234	21,863	17,481	(58,403)	9,617	(37,880)	*24,039	17,866	23,844
NET INCOME W/ GAINS	(19,428)	27,482	(54,779)	33,049	(15,258)	33,598	(11,579)	28,845	(69,218)	20,981	(41,057)	*35,403	(15,576)	35,208

Appendix Table E.11 CATTLE RANCH: 40% O/A OUTPUT TABLE FOR OPTIMISTIC BALANCE SHEETS

		- - - E N D I N G - - -			- - - - - - - - E N D I N G - - -			
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE ND LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	100,282	80,294	77,970	78,722	78,767	67,634	119,881	78,220
BREEDING LIVESTOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXED ASSETS	$30,000	619,889	619,889	619,889	619,889	348,059	2$6,309	619,889
TOTAL ASSETS	865,349	*939,145	936,821	937,573	937,618	584,340	615,153	937,071
CURRENT LOANS	130,340	1$$,972	57,442	128,482	91,240	0	0	68,03$
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	30,412	19,4$7	13,036	19,457	26,319	2,479	2,989	(1$,995)
OTHER CURRENT LOANS	76,667	77,234	79,738	80,429	76,154	40,618	78,807	81,867
INTERMEDIATE LOANS	104,272	12,119	29,366	12,119	52,516	(41)	(50)	11,691
LONG TERM LOANS	60,826	43,812	33,274	43,812	52,448	0	0	21,283
CONTINGENT TAX LIAB.	146,090	164,256	164,256	164,256	164,256	*61,$17	89,199	164,256
TOTAL LIABILITIES	492,251	427,521	331,783	403,227	417,606	*86,055	125,616	285,808
NET WORTH W/ CONT.	373,099	$11,624	60$,039	534,346	520,013	498,28$	489,$36	*651,263
NET WORTH W/O CONT.	$19,189	67$,879	769,294	698,602	684,268	$$9,802	578,736	*815,519

Appendix Table E.12 CATTLE RANCH: 40% O/A OUTPUT TABLE FOR OPTIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	167,370	159,179	167,370	159,179	167,370	159,179	167,370	159,179	156,493	89,085	167,370	159,179	167,370	159,179
TOTAL EXPENSES	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OPS.	86,208	69,247	86,208	69,247	86,208	69,247	86,208	69,247	98,$16	38,760	72,321	55,701	86,208	69,247
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTEREST INCOME	615	686	1,318	711	615	686	615	686	5,093	1,842	7,866	2,775	3,262	686
INTEREST COSTS	28,196	23,132	16,779	13,501	18,009	13,626	6,081	22,282	3,876	721	13,470	1,0$3	22,730	9,2$1
TAXES	37,167	27,754	84,655	32,638	41,498	32,699	54,874	28,238	153,722	21,919	114,174	33,094	40,029	34.$11
NET INCOME W/O GAINS	34,350	33,968	(1,017)	38,741	40,206	38,530	38,758	34,33$	(41,100)	32,883	(34,567)	39,2$1	39,601	*41.092
NET INCOME W/ GAINS	129,907	4$,332	94,540	50,105	135,764	49,894	134,31$	45,699	9,128	44,247	361	50,615	135,159	*52.456

Appendix Table E.13 CATTLE RANCH: 70% O/A OUTPUT TABLE FOR BASELINE BALANCE SHEETS

	BEGINNING	ENDING BASELINE	ENDING DEBT REDUCTION	ENDING INTEREST REDUCTION	ENDING DEBT DEFFERAL	ENDING ASSET SALE NO LEASE	ENDING ASSET SALE LEASE BACK	ENDING EQUITY INFUSION
CURRENT ASSETS	100,282	87,749	83,423	83,147	84,387	44,559	83,740	84,170
BREEDING LIVESTOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXED ASSETS	530,000	533,889	533,889	533,889	533,889	307,364	230,906	533,889
TOTAL ASSETS	865,349	*860,600	856,274	855,998	857,238	520,570	553,608	857,021
CURRENT LOANS	233,125	462,904	279,460	405,553	320,336	354,403	292,897	311,122
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	54,395	32,892	21,293	32,892	44,991	3,393	4,194	(51,855)
OTHER CURRENT LOANS	79,278	56,892	56,308	55,923	53,449	27,258	49,090	57,778
INTERMEDIATE LOANS	186,500	22,321	54,355	22,321	98,327	(41)	(70)	38,211
LONG TERM LOANS	108,793	78,362	59,513	78,362	93,808	0	0	38,068
CONTINGENT TAX LIAB.	146,090	143,791	143,791	143,791	143,791	*53,135	71,972	143,791
TOTAL LIABILITIES	751,823	751,833	569,392	693,513	709,374	419,631	*378,850	491,787
NET WORTH W/ CONT.	113,526	108,767	286,882	162,485	147,864	100,939	174,758	*365,234
NET WORTH W/O CONT.	259,616	252,558	430,674	306,276	291,655	154,074	246,730	*509,025

Appendix Table E.14 CATTLE RANCH: 70% O/A OUTPUT TABLE FOR BASELINE INCOME STATEMENTS

	BASELINE		DEBT REDUCTION		INTEREST REDUCTION		DEBT DEFFERAL		ASSET SALE NO LEASE		ASSET SALE LEASE BACK		EQUITY INFUSION	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	139,475	132,649	139,475	132,649	139,475	132,649	139,475	132,649	128,598	62,555	139,475	132,649	139,475	132,649
TOTAL EXPENSES	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OPS.	58,313	42,717	58,313	42,717	58,313	42,717	58,313	42,717	70,621	12,230	44,426	29,171	58,313	42,717
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTEREST INCOME	615	686	615	686	615	686	615	686	615	686	1,593	686	2,336	686
INTEREST COSTS	58,501	57,724	35,625	39,804	37,345	34,643	19,115	54,002	23,074	33,265	30,468	27,415	42,903	33,013
TAXES	6,370	0	86,438	3,847	18,475	3,843	28,982	0	123,653	0	71,500	2,400	13,953	4,552
NET INCOME W/O GAINS	6,947	600	(50,245)	14,674	15,998	19,839	23,721	4,322	(62,601)	(5,427)	(43,058)	14,964	16,683	*20,760
NET INCOME W/ GAINS	16,505	11,964	(40,687)	26,038	25,556	31,203	33,279	15,687	(53,069)	5,937	(33,534)	26,328	26,240	*32,124

Appendix Table E.15 CATTLE RANCH: 70% O/A OUTPUT TABLE FOR PE55IM15TIC 8ALANCE 5HEET5

	BEGINNING	- - - E N D I N G - - - 8A5ELINE	DE8T REDUCTION	INTERE5T REOUCTION	DEBT DEFFERAL	- - - - - - - - E N D I N G - - - A5SET SALE NO LEA5E	A5SET 5ALE LEASE BACK	EQUITY INFUSION
CURRENT A55ET5	100,282	88,707	83,926	83,441	84,955	45,813	84,492	84,660
8REEOING LIVE5TOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXEO A55ET5	530,000	490,889	490,889	490,889	490,889	287,017	218,204	490,889
TOTAL A55ET5	865,349	*818,558	813,777	813,292	814,806	501,477	541,658	814,511
CURRENT LOAN5	233,125	503,519	300,788	424,577	344,412	407,611	324,763	331,899
CURRENT OF INTERMEOIATE AND LONG TERM LOAN5	54,395	32,892	21,293	32,892	44,991	3,393	4,194	(51,855)
OTHER CURRENT LOAN5	79,278	57,873	52,977	52,378	54,030	28,543	47,460	53,728
INTERMEOIATE LOAN5	186,500	22,321	54,355	22,321	98,327	(41)	(70)	38,211
LONG TERM LOAN5	108,793	78,362	59,513	78,362	93,808	0	0	38,068
CONTINGENT TAX LIA8.	146,090	133,559	133,559	133,559	133,559	*48,944	69,356	133,559
TOTAL LIABILITIE5	751,823	783,197	577,156	698,761	723,800	469,932	*406,471	498,282
NET WORTH W/ CONT.	113,526	35,361	236,621	114,531	91,006	31,545	135,188	*316,229
NET WORTH W/O CONT.	259,616	168,920	370,180	248,090	224,565	80,489	204,543	*449,788

Appendix Table E.16 CATTLE RANCH: 70% O/A OUTPUT TABLE FOR PE55IM15TIC INCOME 5TATEMENT5

	-----8A5ELINE-----		--OEBT REOUCTION--		INTERE5T REOUCTION		--OEBT OEFFERAL--		A55ET 5ALE ----NO LEA5E----		A55ET 5ALE ---LEA5E BACK---		EQUITY ------INFU5ION-----	
	BEGINNING	ENOING	8EGINNING	ENOING	BEGINNING	ENOING	BEGINNING	ENOING	BEGINNING	ENOING	BEGINNING	ENOING	BEGINNING	ENOING
GRO55 REVENUE	125,528	119,385	125,528	119,385	125,528	119,385	125,528	119,385	114,650	49,290	125,528	119,385	125,528	119,385
TOTAL EXPEN5E5	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OP5.	44,366	29,452	44,366	29,452	44,366	29,452	44,366	29,452	56,673	(1,035)	30,479	15,906	44,366	29,452
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTERE5T INCOME	615	686	615	686	615	686	615	686	615	686	1,350	686	2,092	686
INTERE5T CO5T5	59,309	61,036	36,434	41,322	37,859	35,502	19,923	55,773	23,883	37,749	30,854	29,915	43,240	34,481
TAXE5	83	0	77,187	0	8,890	0	19,603	0	115,025	0	62,419	0	6,400	0
NET INCOME W/O GAIN5	(1,522)	(15,976)	(55,750)	3,738	11,121	9,557	18,345	(10,713)	(68,730)	(23,176)	(48,555)	1,599	9,708	*10,579
NET INCOME W/ GAIN5	(34,964)	(4,612)	(89,192)	15,102	(22,322)	20,922	(15,098)	651	(79,544)	(11,812)	(51,732)	12,964	(23,734)	*21,943

Appendix Table E.17 CATTLE RANCH: 70% O/A OUTPUT TABLE FOR OPTIMISTIC BALANCE SHEETS

		- - - E N D I N G - - -				- - - - - - - - E N D I N G - - -		
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	100,282	86,801	83,040	82,627	83,216	42,920	82,977	83,369
BREEDING LIVESTOCK	144,504	133,139	133,139	133,139	133,139	62,824	133,139	133,139
MACHINERY / OTHER	90,563	105,823	105,823	105,823	105,823	105,823	105,823	105,823
FIXED ASSETS	530,000	619,889	619,889	619,889	619,889	348,059	256,309	619,889
TOTAL ASSETS	865,349	*945,652	941,891	941,478	942,067	559,627	578,248	942,220
CURRENT LOANS	233,125	431,937	272,421	381,163	279,884	284,934	265,009	286,405
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	54,395	32,892	21,293	32,892	44,991	3,393	4,194	(51,855)
OTHER CURRENT LOANS	79,278	63,508	68,486	72,052	61,815	35,230	67,451	74,267
INTERMEDIATE LOANS	186,500	22,321	54,355	22,321	98,327	(41)	(70)	38,211
LONG TERM LOANS	108,793	78,362	59,513	78,362	93,808	0	0	38,068
CONTINGENT TAX LIAB.	146,090	164,256	164,256	164,256	164,256	*61,517	89,199	164,256
TOTAL LIABILITIES	751,823	747,948	594,995	705,718	697,752	*366,514	380,455	504,024
NET WORTH W/ CONT.	113,526	197,705	346,896	235,761	244,315	193,112	197,793	*438,197
NET WORTH W/O CONT.	259,616	361,960	511,152	400,016	408,570	254,629	286,992	*602,452

Appendix Table E.18 CATTLE RANCH: 70% O/A OUTPUT TABLE FOR OPTIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	167,370	159,179	167,370	159,179	167,370	159,179	167,370	159,179	156,493	89,085	167,370	159,179	167,370	159,179
TOTAL EXPENSES	71,132	79,122	71,132	79,122	71,132	79,122	71,132	79,122	47,947	39,514	85,019	92,667	71,132	79,122
INCOME FROM OPS.	86,208	69,247	86,208	69,247	86,208	69,247	86,208	69,247	98,516	38,760	72,321	55,701	86,208	69,247
NON-FARM INCOME	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922	12,890	14,922
INTEREST INCOME	615	686	615	686	615	686	615	686	615	686	2,080	686	2,823	686
INTEREST COSTS	56,885	55,139	34,009	39,445	36,317	33,339	17,499	50,532	21,464	27,734	29,795	25,441	42,230	31,007
TAXES	24,990	7,364	118,514	16,194	34,027	20,355	41,306	9,343	140,903	9,649	88,913	15,339	31,669	21,638
NET INCOME W/O GAINS	17,838	22,351	(52,810)	29,215	29,369	31,161	40,909	24,980	(50,347)	16,985	(31,416)	30,529	28,023	*32,210
NET INCOME W/ GAINS	113,395	33,715	42,748	40,579	124,927	42,525	136,466	36,344	(119)	28,349	3,512	41,893	123,580	*43,574

Appendix Table F.1 WHEAT FARM: 20% O/A OUTPUT TABLE FOR BASELINE BALANCE SHEETS

	BEGINNING	- - - E N D I N G - - - BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	- - - - - - - - E N D I N G - - - ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	56,807	19,188	45,179	18,542	53,429	406,963	431,167	18,121
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,267,042	1,267,042	1,267,042	1,267,042	734,639	688,676	1,267,042
TOTAL ASSETS	1,652,472	1,530,018	1,556,009	1,529,372*	1,564,258	1,310,379	1,363,631	1,528,950
CURRENT LOANS	23,168	57,868	0	39,937	0	0	0	5,133
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	62,980	26,703	16,374	26,703	44,041	0	5,173	7,987
OTHER CURRENT LOANS	38,409	30,044	31,038	32,608	27,440	34,134	36,181	34,121
INTERMEDIATE LOANS	70,160	10,531	35,100	10,531	20,490	0	7,377	0
LONG TERM LOANS	155,722	52,730	61,360	52,730	109,134	0	0	2,985
CONTINGENT TAX LIAB.	166,263	153,182	153,182	153,182	153,182	*81,004	88,403	153,182
TOTAL LIABILITIES	496,798	331,058	297,055	315,691	354,287	*115,139	137,134	203,409
NET WORTH W/ CONT.	1,155,674	1,198,959	1,258,955	1,213,681	1,209,971	1,195,240	1,226,496*	1,325,541
NET WORTH W/O CONT.	1,321,937	1,352,142	1,412,137	1,366,863	1,363,154	1,276,244	1,314,900*	1,478,723

Appendix Table F.2 WHEAT FARM: 20% O/A OUTPUT TABLE FOR BASELINE INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	168,817	166,957	168,817	166,957	168,817	166,957	168,817	166,957	87,885	84,249	145,587	143,726	168,817	166,957
TOTAL EXPENSES	86,791	94,850	86,195	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	18,195	54,899	18,195	54,899	18,195	54,899	18,195	54,899	(3,990)	34,359	3,465	40,996	18,195	54,899
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	1,850	835	2,014	1,799	1,856	1,007	1,850	5,081	15,827	19,106	18,072	20,106	6,155	1,281
INTEREST COSTS	31,103	14,885	21,580	11,228	20,020	8,980	494	20,223	5,925	0	16,746	2,062	30,273	4,994
TAXES	7,435	28,124	70,801	30,516	14,285	31,459	26,164	26,917	86,298	33,937	76,766	35,693	9,133	33,475
NET INCOME W/O GAINS	1,052	35,351	(52,627)	37,580	5,290	38,093	12,931	35,466	(60,841)	42,155	(52,429)	*45,973	4,489	40,337
NET INCOME W/ GAINS	20,709	24,064	(32,969)	26,293	24,947	26,806	32,588	24,179	(41,165)	27,552	(32,778)	*34,686	24,147	29,050

Appendix Table F.3 WHEAT FARM: 20% O/A OUTPUT TABLE FOR PESSIMISTIC BALANCE SHEETS

		- - - E N D I N G - - -			- - - - - - - - E N D I N G - - -			
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	56,807	20,089	18,121	19,044	30,766	391,304	403,846	18,900
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,153,877	1,153,877	1,153,877	1,153,877	674,715	633,348	1,153,877
TOTAL ASSETS	1,652,472	1,417,754	1,415,786	1,416,709*	1,428,431	1,234,796	1,280,981	1,416,565
CURRENT LOANS	23,168	90,182	1,790	66,438	0	0	0	39,819
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	62,980	26,703	16,374	26,703	44,041	0	5,173	7,987
OTHER CURRENT LOANS	38,409	17,002	18,952	21,172	14,688	29,153	27,669	22,328
INTERMEDIATE LOANS	70,160	10,531	35,100	10,531	20,490	0	7,377	0
LONG TERM LOANS	155,722	52,730	61,360	52,730	109,134	0	0	2,985
CONTINGENT TAX LIAB.	166,263	126,254	126,254	126,254	126,254	*66,745	75,237	126,254
TOTAL LIABILITIES	496,798	323,402	259,829	303,827	314,606	*95,897	115,456	199,373
NET WORTH W/ CONT.	1,155,674	1,094,352	1,155,956	1,112,881	1,113,825	1,138,899	1,165,525*	1,217,192
NET WORTH W/O CONT.	1,321,937	1,220,606	1,282,210	1,239,135	1,240,078	1,205,643	1,240,762*	1,343,446

Appendix Table F.4 WHEAT FARM: 20% O/A OUTPUT TABLE FOR PESSIMISTIC INCOME STATMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	151,936	150,261	151,936	150,261	151,936	150,261	151,936	150,261	79,097	75,824	131,028	129,354	151,936	150,261
TOTAL EXPENSES	86,791	94,850	86,791	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	1,313	38,204	1,313	38,204	1,313	38,204	1,313	38,204	(12,779)	25,934	(11,093)	26,623	1,313	38,204
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	1,731	721	1,789	1,262	1,737	721	1,731	4,048	15,644	18,388	17,769	18,849	5,804	839
INTEREST COSTS	31,664	17,487	21,817	12,414	20,380	10,129	715	20,223	5,925	0	16,746	2,062	30,721	7,218
TAXES	0	14,302	59,765	18,387	3,413	19,607	15,228	14,165	80,598	28,955	67,996	27,180	0	20,844
NET INCOME W/O GAINS	(9,075)	29,762	(58,935)	31,300	(1,197)	31,814	6,645	30,490	(64,112)	37,993	(58,521)	*38,856	(4,060)	33,607
NET INCOME W/ GAINS	(102,582)	18,475	(152,442)	20,013	(94,704)	20,527	(86,862)	19,203	(104,361)	23,391	(94,197)	*27,569	(97,567)	22,320

Appendix Table F.5 WHEAT FARM: 20% O/A OUTPUT TABLE FOR OPTIMISTIC BALANCE SHEETS

		- - - E N O I N G - - -			- - - - - - - E N D I N G - - -			
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	56,807	18,121	68,068	18,121	86,972	419,586	440,736	39,921
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,493,372	1,493,372	1,493,372	1,493,372	854,488	799,332	1,493,372
TOTAL ASSETS	1,652,472	1,755,280	1,806,227	1,755,280*	1,824,131	1,442,850	1,483,856	1,777,080
CURRENT LOANS	23,168	10,605	0	5,437	0	0	0	0
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	62,980	26,703	16,374	26,703	44,041	0	5,173	7,987
OTHER CURRENT LOANS	38,409	54,417	55,430	56,542	44,558	43,416	59,533	58,400
INTERMEDIATE LOANS	70,160	10,531	35,100	10,531	20,490	0	7,377	0
LONG TERM LOANS	155,722	52,730	61,360	52,730	109,134	0	0	2,985
CONTINGENT TAX LIAB.	166,263	207,040	207,040	207,040	207,040	*109,523	114,735	207,040
TOTAL LIABILITIES	496,798	362,025	375,303	358,983	425,262	*152,940	186,818	276,412
NET WORTH W/ CONT.	1,155,674	1,393,254	1,430,924	1,396,297	1,398,869	1,289,911	1,297,038*	1,500,668
NET WORTH W/O CONT.	1,321,937	1,600,294	1,637,964	1,603,337	1,605,908	1,399,434	1,411,773*	1,707,708

Appendix Table F.6 WHEAT FARM: 20% O/A OUTPUT TABLE FOR OPTIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	202,581	200,348	202,581	200,348	202,581	200,348	202,581	200,348	105,462	101,099	174,705	172,472	202,581	200,348
TOTAL EXPENSES	86,791	94,850	86,791	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	51,958	88,291	51,958	88,291	51,958	88,291	51,958	88,291	13,587	51,209	32,583	69,741	51,958	88,291
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	2,374	1,449	2,630	2,526	2,381	1,471	2,374	6,526	16,193	19,606	18,678	20,472	6,858	1,683
INTEREST COSTS	30,080	11,993	21,415	10,650	19,547	7,672	157	20,223	5,925	0	16,746	2,062	29,924	4,038
TAXES	28,162	53,638	104,965	54,907	32,728	55,934	49,578	44,036	112,205	43,218	110,396	59,044	30,134	57,878
NET INCOME W/O GAINS	15,634	46,735	(52,247)	47,886	21,609	48,781	24,142	*53,184	(68,804)	50,223	(56,335)	51,733	18,304	50,684
NET INCOME W/ GAINS	261,621	35,448	193,740	36,599	267,596	37,494	270,129	*41,897	70,720	35,621	73,973	40,446	264,290	39,397

Appendix Table F.7 WHEAT FARM: 40% O/A OUTPUT TABLE FOR BASELINE BALANCE SHEETS

	BEGINNING	ENDING BASELINE	ENDING DEBT REDUCTION	ENDING INTEREST REDUCTION	ENDING DEBT DEFFERAL	ENDING ASSET SALE NO LEASE	ENDING ASSET SALE LEASE BACK	ENDING EQUITY INFUSION
CURRENT ASSETS	56,807	27,420	22,917	23,111	21,515	47,515	72,265	24,228
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,267,042	1,267,042	1,267,042	1,267,042	734,639	688,676	1,267,042
TOTAL ASSETS	1,652,472	*1,538,249	1,533,747	1,533,940	1,532,345	950,931	1,004,728	1,535,058
CURRENT LOANS	47,656	406,910	215,967	335,397	156,721	0	0	271,570
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	129,549	49,312	27,558	49,312	84,788	0	5,173	16,430
OTHER CURRENT LOANS	39,031	10,349	19,636	23,887	13,796	26,401	28,607	25,093
INTERMEDIATE LOANS	144,320	14,013	63,481	14,013	34,687	0	7,377	0
LONG TERM LOANS	320,320	108,465	126,216	108,465	224,489	0	0	6,141
CONTINGENT TAX LIAB.	166,263	153,182	153,182	153,182	153,182	*81,004	88,403	153,182
TOTAL LIABILITIES	827,235	742,232	606,039	684,256	667,662	*107,405	129,560	472,416
NET WORTH W/ CONT.	825,237	796,018	927,708	849,684	864,683	843,526	875,168*	1,062,642
NET WORTH W/O CONT.	991,499	949,200	1,080,890	1,002,867	1,017,865	924,530	963,572*	1,215,824

Appendix Table F.8 WHEAT FARM: 40% O/A OUTPUT TABLE FOR BASELINE INCOME STATEMENTS

	BASELINE		DEBT REDUCTION		INTEREST REDUCTION		DEBT DEFFERAL		ASSET SALE NO LEASE		ASSET SALE LEASE BACK		EQUITY INFUSION	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	168,817	166,957	168,817	166,957	168,817	166,957	168,817	166,957	87,885	84,249	145,587	143,726	168,817	166,957
TOTAL EXPENSES	86,791	94,850	86,791	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	18,195	54,899	18,195	54,899	18,195	54,899	18,195	54,899	(3,990)	34,359	3,465	40,996	18,195	54,899
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	1,546	721	1,787	721	1,560	721	1,546	1,293	6,852	1,391	9,097	2,280	9,933	721
INTEREST COSTS	60,999	52,596	39,752	39,065	39,255	30,378	1,707	45,143	17,718	371	28,768	2,062	58,704	29,404
TAXES	0	0	132,706	13,898	3,001	18,099	25,256	9,488	73,774	26,203	66,269	28,118	0	18,012
NET INCOME W/O GAINS	(21,714)	25,651	(132,931)	25,283	(2,956)	29,769	12,323	24,187	(69,086)	31,801	(62,930)	*35,721	(11,032)	30,830
NET INCOME W/ GAINS	(2,057)	14,364	(113,274)	13,996	16,701	18,482	31,980	12,900	(49,410)	17,199	(43,278)	*24,434	8,626	19,543

Appendix Table F.9 WHEAT FARM: 40% D/A OUTPUT TABLE FOR PESSIMISTIC BALANCE SHEETS

		- - - E N D I N G - - -			- - - - - - - - E N D I N G - - -			
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	56,807	29,231	24,264	23,934	22,499	24,615	37,006	25,735
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,153,877	1,153,877	1,153,877	1,153,877	674,715	633,348	1,153,877
TOTAL ASSETS	1,652,472	*1,426,896	1,421,928	1,421,599	1,420,164	868,106	914,142	1,423,400
CURRENT LOANS	47,656	477,867	267,226	382,809	192,451	0	0	329,637
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	129,549	49,312	27,558	49,312	84,788	0	5,173	16,430
OTHER CURRENT LOANS	39,031	12,063	6,976	6,771	6,541	19,253	16,213	8,483
INTERMEDIATE LOANS	144,320	14,013	63,481	14,013	34,687	0	7,377	0
LONG TERM LOANS	320,320	108,465	126,216	108,465	224,489	0	0	6,141
CONTINGENT TAX LIAB.	166,263	126,254	126,254	126,254	126,254	*57,769	65,120	126,254
TOTAL LIABILITIES	827,235	787,974	617,710	687,623	669,209	*77,022	93,882	486,945
NET WORTH W/ CONT.	825,237	638,922	804,219	733,976	750,955	791,084	820,259	*936,455
NET WORTH W/O CONT.	991,499	765,175	930,472	860,230	877,209	848,853	885,379	*1,062,709

Appendix Table F.10 WHEAT FARM: 40% D/A OUTPUT TABLE FOR PESSIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	151,936	150,261	151,936	150,261	151,936	150,261	151,936	150,261	79,097	75,824	131,028	129,354	151,936	150,261
TOTAL EXPENSES	86,791	94,850	86,791	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	1,313	38,204	1,313	38,204	1,313	38,204	1,313	38,204	(12,779)	25,934	(11,093)	26,623	1,313	38,204
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	1,367	721	1,609	721	1,383	721	1,367	842	6,669	960	8,794	1,277	9,581	721
INTEREST COSTS	61,785	59,014	40,537	43,652	39,758	33,167	2,040	47,432	17,949	1,192	29,155	3,107	59,153	34,629
TAXES	0	0	121,640	0	0	238	14,104	1,371	68,502	19,056	61,696	15,724	0	0
NET INCOME W/O GAINS	(39,560)	2,536	(139,711)	17,899	(17,517)	28,145	6,082	12,868	(73,017)	29,273	(73,605)	*31,696	(28,714)	26,922
NET INCOME W/ GAINS	(133,067)	(8,751)	(233,218)	6,612	(111,024)	16,858	(87,426)	1,581	(113,265)	14,671	(109,282)	*20,409	(122,221)	15,635

Appendix Table F.11 WHEAT FARM: 40% O/A OUTPUT TABLE FOR OPTIMISTIC BALANCE SHEETS

		- - - E N O I N G - - -				- - - - - - - - E N O I N G - - -		
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	56,807	25,420	21,633	22,202	20,401	75,866	117,341	22,720
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,493,372	1,493,372	1,493,372	1,493,372	854,488	799,332	1,493,372
TOTAL ASSETS	1,652,472	*1,762,579	1,758,792	1,759,361	1,757,560	1,099,131	1,160,461	1,759,879
CURRENT LOANS	47,656	333,782	173,196	288,318	121,336	0	0	219,301
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	129,549	49,312	27,558	49,312	84,788	0	5,173	16,430
OTHER CURRENT LOANS	39,031	38,456	39,867	43,694	36,362	36,175	43,446	45,184
INTERMEDIATE LOANS	144,320	14,013	63,481	14,013	34,687	0	7,377	0
LONG TERM LOANS	320,320	108,465	126,216	108,465	224,489	0	0	6,141
CONTINGENT TAX LIAB.	166,263	207,040	207,040	207,040	207,040	*109,523	114,735	207,040
TOTAL LIABILITIES	827,235	751,068	637,357	710,841	708,701	*145,699	170,731	494,096
NET WORTH W/ CONT.	825,237	1,011,511	1,121,435	1,048,521	1,048,860	953,432	989,729	*1,265,783
NET WORTH W/O CONT.	991,499	1,218,551	1,328,475	1,255,560	1,255,900	1,062,956	1,104,464	*1,472,822

Appendix Table F.12 WHEAT FARM: 40% O/A OUTPUT TABLE FOR OPTIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY -------INFUSION-----	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	202,581	200,348	202,581	200,348	202,581	200,348	202,581	200,348	105,462	101,099	174,705	172,472	202,581	200,348
TOTAL EXPENSES	86,791	94,850	86,791	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	51,958	88,291	51,958	88,291	51,958	88,291	51,958	88,291	13,587	51,209	32,583	69,741	51,958	88,291
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	1,903	721	2,134	721	1,914	721	1,903	1,759	7,217	2,565	9,703	4,327	10,635	721
INTEREST COSTS	59,632	46,150	38,712	35,448	38,381	27,730	1,042	43,106	17,691	0	28,512	2,062	58,088	24,903
TAXES	10,655	29,872	157,479	35,162	25,025	38,645	48,560	32,910	85,175	35,978	83,128	42,957	16,169	39,366
NET INCOME W/O GAINS	3,120	35,615	(122,554)	41,028	10,012	45,263	23,804	36,661	(62,517)	40,423	(49,810)	*51,674	7,882	47,369
NET INCOME W/ GAINS	249,107	24,328	123,433	29,741	255,999	33,976	269,791	25,374	77,008	25,821	80,498	*40,387	253,869	36,082

Appendix Table F.13 WHEAT FARM: 70% O/A OUTPUT TABLE FOR BASELINE BALANCE SHEETS

	BEGINNING	- - - E N O I N G - - - BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	- - - - - - - - E N D I N G - - - ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	56,807	41,333	32,431	30,636	29,154	24,404	31,324	34,841
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,267,042	1,267,042	1,267,042	1,267,042	734,639	688,676	1,267,042
TOTAL ASSETS	1,652,472	*1,552,163	1,543,261	1,541,466	1,539,984	927,820	963,787	1,545,671
CURRENT LOANS	84,392	996,968	619,456	822,233	480,458	640,768	618,016	721,647
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	229,412	83,053	44,313	83,053	145,863	(0)	5,173	29,095
OTHER CURRENT LOANS	39,964	24,599	15,482	13,431	12,125	15,672	15,414	17,950
INTERMEDIATE LOANS	255,569	19,412	105,706	19,412	56,034	0	7,377	0
LONG TERM LOANS	567,239	192,076	223,510	192,076	397,536	0	0	10,876
CONTINGENT TAX LIAB.	166,263	153,182	153,182	153,182	153,182	*70,111	76,515	153,182
TOTAL LIABILITIES	1,322,936	1,469,290	1,161,650	1,283,388	1,245,200	726,551	*722,495	932,751
NET WORTH W/ CONT.	329,536	82,874	381,611	258,078	294,784	201,269	241,292	*612,920
NET WORTH W/O CONT.	495,799	236,056	534,794	411,260	447,966	271,380	317,808	*766,103

Appendix Table F.14 WHEAT FARM: 70% O/A OUTPUT TABLE FOR BASELINE INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION------	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	168,817	166,957	168,817	166,957	168,817	166,957	168,817	166,957	87,885	84,249	145,587	143,726	168,817	166,957
TOTAL EXPENSES	86,791	94,850	86,791	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	18,195	54,899	18,195	54,899	18,195	54,899	18,195	54,899	(3,990)	34,359	3,465	40,996	18,195	54,899
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	1,001	721	1,428	721	1,029	721	1,001	721	644	721	792	721	15,599	721
INTEREST COSTS	106,187	115,691	68,558	87,962	68,325	65,699	3,695	93,709	59,440	61,757	67,252	61,381	101,380	72,310
TAXES	0	0	210,903	0	0	0	23,557	0	58,757	0	55,441	0	0	0
NET INCOME W/O GAINS	(67,447)	(37,445)	(240,294)	(9,716)	(29,556)	*12,547	11,488	(15,463)	(101,999)	(4,051)	(98,890)	2,962	(48,042)	5,936
NET INCOME W/ GAINS	(47,789)	(48,732)	(220,636)	(21,003)	(9,899)	*1,260	31,146	(26,750)	(82,323)	(18,653)	(79,239)	(8,325)	(28,384)	(5,351)

Appendix Table F.15 WHEAT FARM: 70% O/A OUTPUT TABLE FOR PESSIMISTIC BALANCE SHEETS

		- - - E N D I N G - - -			- - - - - - - E N D I N G - - -			
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	56,807	43,144	33,915	31,733	30,302	25,295	32,818	36,615
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,153,877	1,153,877	1,153,877	1,153,877	674,715	633,348	1,153,877
TOTAL ASSETS	1,652,472	*1,440,809	1,431,579	1,429,398	1,427,967	868,786	909,954	1,434,280
CURRENT LOANS	84,392	1,067,925	676,505	887,384	523,286	678,523	679,344	791,019
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	229,412	83,053	44,313	83,053	145,863	(0)	5,173	29,095
OTHER CURRENT LOANS	39,964	26,313	16,860	14,454	13,160	16,584	16,895	19,626
INTERMEDIATE LOANS	255,569	19,412	105,706	19,412	56,034	0	7,377	0
LONG TERM LOANS	567,239	192,076	223,510	192,076	397,536	0	0	10,876
CONTINGENT TAX LIAB.	166,263	126,254	126,254	126,254	126,254	*57,769	65,120	126,254
TOTAL LIABILITIES	1,322,936	1,515,032	1,193,148	1,322,632	1,262,133	*752,876	773,909	976,869
NET WORTH W/ CONT.	329,536	(74,222)	238,432	106,766	165,834	115,910	136,045	*457,411
NET WORTH W/O CONT.	495,799	52,031	364,685	233,020	292,087	173,679	201,165	*583,664

Appendix Table F.16 WHEAT FARM: 70% O/A OUTPUT TABLE FOR PESSIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION------	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	151,936	150,261	151,936	150,261	151,936	150,261	151,936	150,261	79,097	75,824	131,028	129,354	151,936	150,261
TOTAL EXPENSES	86,791	94,850	86,791	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	1,313	38,204	1,313	38,204	1,313	38,204	1,313	38,204	(12,779)	25,934	(11,093)	26,623	1,313	38,204
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	822	721	1,249	721	852	721	822	721	644	721	644	721	15,248	721
INTEREST COSTS	106,972	122,110	69,344	93,085	68,829	69,573	4,378	97,507	60,027	64,974	67,940	66,724	101,804	78,581
TAXES	0	0	200,556	0	0	0	10,776	0	56,062	0	51,016	0	0	0
NET INCOME W/O GAINS	(85,293)	(60,559)	(247,793)	(31,535)	(47,118)	*(8,022)	6,526	(35,957)	(108,680)	(15,693)	(109,861)	(16,754)	(65,698)	(17,031)
NET INCOME W/ GAINS	(178,800)	(71,846)	(341,300)	(42,822)	(140,626)	*(19,309)	(86,981)	(47,244)	(148,929)	(30,295)	(145,537)	(28,041)	(159,206)	(28,318)

Appendix Table F.17 WHEAT FARM: 70% O/A OUTPUT TABLE FOR OPTIMISTIC BALANCE SHEETS

		- - - E N O I N G - - -						
	BEGINNING	BASELINE	DEBT REDUCTION	INTEREST REDUCTION	DEBT DEFFERAL	ASSET SALE NO LEASE	ASSET SALE LEASE BACK	EQUITY INFUSION
CURRENT ASSETS	56,807	38,164	30,018	29,172	27,687	22,744	28,639	32,254
BREEDING LIVESTOCK	37,544	37,289	37,289	37,289	37,289	0	37,289	37,289
MACHINERY / OTHER	277,405	206,499	206,499	206,499	206,499	168,777	206,499	206,499
FIXED ASSETS	1,280,716	1,493,372	1,493,372	1,493,372	1,493,372	854,488	799,332	1,493,372
TOTAL ASSETS	1,652,472	*1,775,323	1,767,177	1,766,331	1,764,846	1,046,009	1,071,758	1,769,413
CURRENT LOANS	84,392	874,252	528,801	739,239	429,936	575,982	514,214	623,631
CURRENT OF INTERMEDIATE AND LONG TERM LOANS	229,412	83,053	44,313	83,053	145,863	(0)	5,173	29,095
OTHER CURRENT LOANS	39,964	21,636	33,264	32,223	16,097	14,108	25,693	31,663
INTERMEDIATE LOANS	255,569	19,412	105,706	19,412	56,034	0	7,377	0
LONG TERM LOANS	567,239	192,076	223,510	192,076	397,536	0	0	10,876
CONTINGENT TAX LIAB.	166,263	207,040	207,040	207,040	207,040	*109,523	114,735	207,040
TOTAL LIABILITIES	1,322,936	1,397,468	1,142,635	1,273,042	1,252,506	699,613	*667,191	902,304
NET WORTH W/ CONT.	329,536	377,855	624,543	493,289	512,340	346,395	404,567	*867,110
NET WORTH W/O CONT.	495,799	584,895	831,582	700,329	719,380	455,919	519,302	*1,074,149

Appendix Table F.18 WHEAT FARM: 70% O/A OUTPUT TABLE FOR OPTIMISTIC INCOME STATEMENTS

	-----BASELINE-----		--DEBT REDUCTION--		INTEREST REDUCTION		--DEBT DEFFERAL--		ASSET SALE ----NO LEASE----		ASSET SALE ---LEASE BACK---		EQUITY ------INFUSION------	
	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING	BEGINNING	ENDING
GROSS REVENUE	202,581	200,348	202,581	200,348	202,581	200,348	202,581	200,348	105,462	101,099	174,705	172,472	202,581	200,348
TOTAL EXPENSES	86,791	94,850	86,791	94,850	86,791	94,850	86,791	94,850	37,952	41,460	78,290	85,522	86,791	94,850
INCOME FROM OPS.	51,958	88,291	51,958	88,291	51,958	88,291	51,958	88,291	13,587	51,209	32,583	69,741	51,958	88,291
NON-FARM INCOME	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626	19,545	22,626
INTEREST INCOME	1,358	721	1,785	721	1,383	721	1,358	721	644	721	1,100	721	16,302	721
INTEREST COSTS	104,814	104,642	67,189	79,899	67,448	60,848	3,030	89,383	58,273	55,933	65,921	52,038	100,789	63,553
TAXES	0	0	233,194	19,972	7,393	20,094	46,775	5,192	64,144	0	64,715	12,786	0	16,079
NET INCOME W/O GAINS	(31,953)	6,996	(227,095)	11,767	(1,955)	30,695	23,056	17,063	(88,642)	18,623	(77,408)	28,264	(12,984)	*32,005
NET INCOME W/ GAINS	214,034	(4,291)	18,892	480	244,032	19,408	269,043	5,776	50,882	4,021	52,900	16,977	233,003	*20,718