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Impacts of Federal Tax Laws and Economic Developments on the Texas Cattle Industry



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**Impacts of Federal Tax Laws and Economic Developments
on the Texas Cattle Industry**

by

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Executive Summary

Recent changes in the U.S. federal income tax provisions enacted in the Tax Reform Act of 1986 (TRA) will significantly alter the manner in which costs and revenues associated with beef cattle production are treated in computing federal income taxes. The federal tax law changes are following close behind other economic developments which have recently impacted the beef cattle industry, particularly in Texas.

Key Tax Law Changes Impacting Beef Cattle Production

- Elimination of the provision for excluding 60 percent of long-term capital gains from taxable income.
- New requirements to spread depreciation deductions over longer periods.
- Restrictions on the use of cash as opposed to accrual accounting methods.
- Restrictions on use of prepaid and preproduction period expenses as deductions against current year income.
- Restrictions on the allowance of land improvement costs as allowable deductions against current year income.
- Elimination of use of losses from business in which individual is only "passive" investor to offset income from other sources.
- Elimination of the use of interest on investment capital in excess of investment income to offset income from other sources.
- Investment tax credit is eliminated.
- Increase in first-year expensing deduction for depreciable assets.
- Reduction in the number and level of tax rate brackets.

Economic and Market Developments Impacting Texas Beef Cattle Production

- Continuing general economic recession in Texas due to recession in the oil and agriculture industries.
- Decline in consumer demand for beef due to:
 - (a) increased price and merchandising competition from poultry,
 - (b) increased consumer concern about health implications of beef,
 - (c) year to year declines and/or slow growth in real income of U.S. consumers over past 8 years, and
 - (d) changing age structure and dietary preferences of the consuming public.
- Recent initiation of industry-wide research, education and promotion programs for beef funded by check-offs from cattle sales.
- A ten-year period of high inflation, high interest rates and rapidly increasing land prices ended in 1984 with an abrupt decline in land prices and inflation rates.
- "Real" interest rates, however, remain high for operating and investment loans.
- The U.S. cow herd has been significantly reduced in size over the past five years.

Approach

There is little indication that most of these economic and marketing conditions will soon reverse themselves. In addition, the changes in the federal tax law will become effective during the 1987-1990 period. As a result of these developments, substantial adjustments may occur in the beef cattle production industry over the next several years, particularly in Texas. The purpose of this study is to project the impact of these changes on the future production and structure of the cattle industry in Texas.

Four areas of impact are analyzed. First, the impacts of the TRA and other recent economic developments on future land and cattle prices are examined. Second, the impacts on the economic viability of representative ranch firms in selected major beef producing areas of Texas are analyzed using a firm-level simulation model. The third area of impact addressed is the Texas cattle feeding industry. The fourth section addresses the likely direction and rate of structural change throughout the beef industry and the implications of these changes for Texas producers. The report concludes with a discussion of conclusions and implications for additional research, education and government programs.

Conclusions

- Economic conditions have resulted in a sharp decline in land prices over the past three years. The TRA will likely help inhibit a reoccurrence of rapid inflation in land prices in the foreseeable future, even with improvement in the general economic conditions in the state. In the longer run, Texas ranch land prices should remain closer to their capitalized value as productive assets than has been the case over the past decade.
- Economic conditions, including the cattle cycle, have put cattle in a position where real prices for the next two to five years should be higher than those of the past six years. While the TRA's impact on commercial cow and calf prices will be negligible, prices for registered breeding stock may be negatively impacted by the TRA because buying, raising and selling mature breeding stock will no longer offer the significant tax deductions available in pre-TRA years.
- The firm level simulation analyses indicate that the TRA will have little impact on the economic viability of ranches under the conditions studied. For ranches with outside income of \$60,000 per year or more, the reduction in the tax rates and increased expensing provided by the TRA more than off-set the losses in investment tax credit and changes in depreciation allowances (assuming that the \$60,000 is not "passive" relative to the ranch income). For ranches with less than \$60,000 per year in outside income the TRA will result in higher tax liabilities and relatively lower net worth over the next 10 years compared to levels that would be expected without the TRA. Ranching should, therefore, be less attractive to operators with low outside incomes.
- The primary impact of the TRA on the Texas cattle feeding industry will be to shift some of the ownership of cattle on feed to the feedlot operating companies and away from custom feeders. However, the overall impact of this shift will be slight. Custom feeding will continue as a major activity with ranchers and stocker operators as the primary owners of custom fed cattle. Packer ownership of cattle on feed, through custom feeding and packer ownership of feedlots, is likely to increase slightly over the next several years. However, expected changes in carcass characteristics demanded by packers will likely result in significant changes in feedlot operations during the next several years. The dominant role of Texas' Panhandle-Southern Plains feedlots throughout the U.S. cattle feeding industry is likely to remain. Multi-lot ownership is likely to continue to increase, resulting in increased concentration.

- Overall, the beef production industry is becoming more concentrated and vertically integrated. The trend toward vertical integration is just beginning to exert itself and will increase in importance as the industry produces and markets more specialized, brand identified products. Packers are likely to expand the use of contracts which specify genetic make-up, age and growing and finishing practices of the beef cattle to insure uniformity and quality for their meat products. Although commodity-type production and marketing will remain predominant for the foreseeable future, producers who can compete for the packer contracts will undoubtedly obtain premium prices for their cattle as compared to producers who continue to market a relatively heterogeneous commodity.

Implications

- As its developers intended, the TRA will discourage tax motivated investments including ranchland ownership and beef cattle production. In the long run, however, the impact of the TRA on structure and production in the Texas beef cattle industry will be minimal and will be greatly overshadowed by the impacts of economic and market developments.
- The trend toward brand identified, specialized beef products will necessitate increased specifications of beef carcass characteristics beyond those incorporated in the current USDA yield and quality grade standards.
- An array of different specifications will likely be stipulated to meet the requirements for different company brands and different products under the same brand.
- Once delineated, efficient means of obtaining the beef carcasses with the specified characteristics must be developed. This will not be a simple task because several different meat products are produced from each carcass and there are likely to be many alternative combinations of age, genetic make-up, and production and processing practices which would result in a high percentage of carcasses meeting the specified characteristics.
- Research and education programs are needed to delineate, evaluate and communicate to producers the relative efficiency of alternative combinations of breed, age, and production and processing practices which meet the specified characteristics of finished beef carcasses.
- Research and education programs also are needed to provide producers and government agencies information on the efficiency and equity of alternative marketing institutions and practices which can be used to maintain the competitiveness and viability of ranchers, stocker operators and feedlots faced with the new product specifications. Issues which should be investigated include:
 - (a) the possible role of marketing associations and/or cooperatives as mechanisms for allowing smaller scale ranches to participate in contracts and/or otherwise remain competitive,
 - (b) the role of USDA (AMS and PSA) in monitoring and regulating competition and pricing practices including interpreting contract compliance and non-compliance penalties, and
 - (c) the relative magnitude and incidence of cost, returns and risks associated with alternative beef cattle production and marketing practices and arrangements.

TABLE OF CONTENTS

	Page
Introduction	1
Key Tax Law Changes Impacting Beef Cattle Production	1
Economic and Market Developments Impacting Texas Beef Cattle Production	2
Objectives	2
Organization	3
Impacts on Land and Cattle Prices	3
Ranch Land Prices	3
Cattle Prices	4
Effects on Viability of Representative Ranches	6
Scenarios Analyzed	9
Simulation Results	10
Impacts of Tax Changes	10
Importance of Off-Farm Income	13
Impacts of Land Prices.....	17
Impact on the Texas Cattle Feeding Industry	17
Current Status of the Industry	17
Ownership of Cattle in Feedlots	20
Structure and Organizational Characteristics of Texas Feedlots	21
Competitive Position of Texas Cattle Feeding	23
Structural Aspects of the Industry	24
Conclusions and Implications	26
Conclusions	26
Implications	27
REFERENCES	29
APPENDIX	31

List of Tables

Table	Page
1 Financial Characteristics of Representative Cow/Calf Ranches in the Texas Rolling Plains Under Alternative Debt Levels	7
2 Financial Characteristics of Representative Cow/Calf Ranches in East Texas Under Alternative Debt Levels	7
3 Livestock Production on Representative Rolling Plains and East Texas Cow/Calf Ranches	8
4 Average October Cattle Price Assumed for an Analysis of Tax Policy Changes on Texas Ranches	8
5 Number of Feedlots and Number of Fed Cattle Marketed, By Size of Feedlot; Texas, 1970 and 1986	22
6 Percent of Texas Cattle and Cattle Herds by Herd Size, July 1986	25
A1 Simulation Results for a Representative Rolling Plains Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$20,000 of Annual Off-Farm Income and 6% Increase in Land VALUE AFTER 1990	31
A2 Simulation Results for a Representative Rolling Plains Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$60,000 of Annual Off-Farm Income and 6% Increase in Land VALUE AFTER 1990	32
A3 Simulation Results for a Representative Rolling Plains Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$20,000 of Annual Off-Farm Income and 3% Increase in Land VALUE AFTER 1990	33
A4 Simulation Results for a Representative Rolling Plains Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$60,000 of Annual Off-Farm Income and 3% Increase in Land VALUE AFTER 1990	34
A5 Simulation Results for a Representative East Texas Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$20,000 of Annual Off-Farm Income and 6% Increase in Land VALUE AFTER 1990	35
A6 Simulation Results for a Representative East Texas Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$60,000 of Annual Off-Farm Income and 6% Increase in Land VALUE AFTER 1990	36
A7 Simulation Results for a Representative East Texas Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$20,000 of Annual Off-Farm Income and 3% Increase in Land VALUE AFTER 1990	37
A8 Simulation Results for a Representative East Texas Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$60,000 of Annual Off-Farm Income and 3% Increase in Land VALUE AFTER 1990	38

List of Figures

Figure	Page
1	CYCLICAL TRENDS FOR STEER PRICES 5
2	Average Annual Net Cash Income for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 11
3	Average Annual Net Cash Income for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 11
4	Average Annual Taxable Income for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 12
5	Average Annual Taxable Income for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 12
6	Average Annual Income Taxes for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 14
7	Average Annual Income Taxes for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 14
8	Average Annual Ending Net Worth for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 15
9	Average Annual Ending Net Worth for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 15
10	Average After-Tax Net Present Value for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 16
11	Average After-Tax Net Present Value for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts 16
12	Average Annual Net Cash Income for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, Two Annual Inflation Rates for Land Prices, and the 1986 Tax Reform Act 18
13	Average Annual Net Cash Income for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, Two Annual Inflation Rates for Land Prices, and the 1986 Tax Reform Act 18
14	Average Present Value of Ending Net Worth for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, Two Annual Inflation Rates for Land Prices, and the 1986 Tax Reform Act 19
15	Average Present Value of Ending Net Worth for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, Two Annual Inflation Rates for Land Prices, and the 1986 Tax Reform Act 19

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Introduction

Beef cattle production is the leading agricultural commodity in cash receipts for farmers and ranchers in Texas. Since 1969, sale of cattle and calves have averaged 42.5 percent of all cash receipts from agricultural production firms in Texas.

The cattle production segment of the beef industry consists of three major phases: cow-calf, stocker, and finishing or feeding. In 1986, there were an estimated 142,000 cow-calf operations in Texas with herds that ranged from less than 10 head to thousands of head. Cow-calf enterprises are predominantly owned and managed by the same individuals or companies that own the pasture and rangeland on which the cattle are based. Some, however, are operated on leased land. Stocker operations use weaned calves from the cow-calf phase to add weight and age to the steers and heifers through grazing small grain, other improved pastures, or, in some cases, rangeland. Most stockers in Texas, however, are grazed on wheat and other small grains. In some instances, steers and heifers are taken directly from cow-calf operations to feedlots for the finishing phase. Most often, however, cattle are moved into feedlots after the stocker phase. The objective of the feedlot operation is to produce fat cattle by putting rapid weight gain on the steers and heifers using a high quality, grain-based ration. Texas had 1,000 feedlots in 1986 from which 5.3 million head of fat cattle were sold. From the feedlots, the cattle are moved to packing plants for the first step in the beef processing, distribution, and retailing segments of the industry. In 1985, packing plants in Texas accounted for 17 percent of the total cattle slaughter in the United States.

Recent changes in the U.S. federal income tax provisions will significantly alter the manner in which costs and revenues associated with beef cattle production are treated in computing federal income taxes. The federal tax law changes are following close behind other economic developments which have also recently impacted the beef cattle industry, particularly in Texas.

The Tax Reform Act of 1986 (TRA) made more changes in the income tax laws of the United States than any other package of changes enacted by Congress. One of the primary motivations for the change was to discourage investment in noneconomic activities including certain farm-related ventures. The over-all impact of the changes will generally lower the total tax bill for individuals through lower and fewer rate brackets and generally increase the taxes paid by corporations through reduction in the number of "deductions" allowed in computing taxable income and/or elimination of credits against tax liabilities.

There have been numerous articles written to explain the specific TRA changes in the tax code which are relevant for crop and livestock producers (eg. Willingham and Bravenec; Geske; Nixon and Richardson; Stinson and Boehlje). The purpose of this study, however, is to look beyond the immediate impacts of these tax changes to the longer-run implications of the TRA for the cattle producing segment of the beef industry in Texas. In so doing, the impacts of the TRA will be considered within the context of current market and economic conditions facing the beef cattle industry.

Key Tax Law Changes Impacting Beef Cattle Production

While there are numerous changes precipitated by the TRA, those most likely to significantly impact beef cattle production are listed below.

1. Elimination of the provision for excluding 60 percent of long-term capital gains from taxable income.
2. New requirements to spread depreciation deductions over longer periods.
3. Restrictions on the use of cash as opposed to accrual accounting methods.
4. Restrictions on use of prepaid and preproduction period expenses as deductions against current year income.
5. Restrictions on the allowance of land improvement costs as allowable deductions against current year income.
6. Elimination of use of losses from business in which individual is only a "passive" investor to off-set income from other sources.
7. Elimination of the use of interest on investment capital in excess of investment income to off-set income from other sources.
8. Elimination of investment tax credit.
9. Reduction in the number and level of tax rate brackets.
10. Increase in first year expensing deductions for depreciable assets.

Economic and Market Developments Impacting Texas Beef Cattle Production

During the past several years, numerous economic and market changes have had significant impacts on the beef cattle industry in Texas. A few of these changes are listed below.

1. Continuing general economic recession in Texas due to recessions in the oil and agriculture industries and their large proportion of the total Texas economy. This change in the Texas economy has resulted in significant reductions in personal income for most state residents, many of whom are landowners and/or cattle producers.
2. Decline in consumer demand for beef due to:
 - (a) increased price and merchandising competition from poultry,
 - (b) increased consumer concern about health implications of beef,
 - (c) year to year declines and/or slow growth in real income of U.S. consumers over past 8 years, and
 - (d) changing age structure and dietary needs of the consuming public.
3. Recent initiation of industry-wide research, education, and promotion programs for beef funded by check-offs from cattle sales. This provides an organizational and resource base for strengthening the beef industry's market position.
4. A ten-year period of high inflation, high interest rates, and rapidly increasing land prices ended in 1984 with an abrupt decline in land prices and inflation rates.
5. "Real" interest rates, however, remain high for operating and investment loans.
6. The U.S. cow herd has been significantly reduced in size over the past five years.

Objectives

There is little indication that these economic and marketing conditions will soon reverse themselves. In addition, the changes in the federal income tax law will become effective during the 1987-1990 period. As a result of these developments, it is expected that there will be substantial adjustments in the beef cattle production industry over the next several years, particularly in Texas. The objectives of this study are to project the impact of these changes on the future production and structure of the cattle industry in Texas and to suggest research, education and/or programmatic efforts that might be initiated to mediate negative aspects of the adjustments.

Organization

This report is organized into five sections. In the first section, the impacts of the TRA and other recent economic developments on land and cattle prices over the next few years are discussed. The second section presents results of a firm-level simulation analysis of the impact of the TRA on the economic viability of representative ranch firms in selected major beef producing areas of Texas. In the third section, the impacts of the TRA and other economic developments on the Texas cattle feeding industry are addressed. The fourth section addresses the likely direction and rate of structural change throughout the beef industry and the implications of these changes for Texas producers. In the final section, conclusions and implications for additional research, education, and government programs are discussed.

Impacts on Land and Cattle Prices

Ranch Land Prices

Ranch land was, over the past several decades, an attractive investment commodity in comparison to alternatives such as stocks, bonds, savings accounts, etc. A significant reason for its attractiveness was ranch lands' potential for serving as more than just a hedge against inflation or shelter for capital. Ranch land could also be simultaneously used as a productive resource in a livestock and/or recreational business; a source for consumptive activities such as enjoying the out-of-doors and the ranching "lifestyle," and a means of reducing overall tax liabilities by offsetting income from other sources with investment and operating expenses allowed as tax deductions in the ranch business (Pope and Goodwin; Conner).

Federal income tax provisions in effect over the past several decades have tended to make ranch land and the ranching business relatively more attractive investments than would otherwise be the case. That is, under the previous tax provisions, a person could buy ranch land and deduct the interest on the borrowed money used to purchase the land as a business expense. Later, when the land was sold, the investor would pay income taxes on only 40 percent of the positive difference between the purchase and sale price. As long as land values were appreciating, as they generally did between 1940 and 1984, land was a most attractive investment commodity.

Other provisions of the tax code provided incentives for livestock production and investment in range improvement practices, particularly for ranch owners who had significant income sources other than ranching. Such provisions included allowing a rancher to include much, if not all, of the cost of range improvement practices as an operating expense (a deduction from taxable revenues) during the year in which costs were incurred rather than having to depreciate the expenditure over the useful life of the practice. Another provision allowed a person with ranching interests to deduct losses incurred in the ranch business against taxable income from other sources, thereby lowering his overall tax liability.

The overall impact of these provisions has been to encourage investment in rangeland by persons with significant non-farm income. Further, this provision encouraged participation in the ranching business (livestock production) by persons whose motives were not consistent with the traditional goals related to ranch firm survival as a single business.

The general economic recession will likely continue to plague Texas for the next several years. The recession, coupled with the advent of the TRA provisions, will simultaneously restrict the amount of available investment capital and make land relatively less attractive compared to alternative investment opportunities. Specifically, the elimination of the capital

gains provision and the restrictions on the use of interest on investment capital in excess of investment income as a tax deduction to offset income from other sources will dampen the relative attractiveness of land as an investment. In addition, the rules restricting expensing of range improvements and the restrictions on the use of prepayment and preproduction expenses to offset current year income will make "hobby" and/or part-time cattle ranching less attractive. Another negative factor relative to the demand for ranch land is the apparent break in the upward trend in the value of wildlife based recreation enterprises (lease hunting). This break is, in part, related to the general economic recession in Texas and neighboring states. However, the TRA also reduces by 20 percent the amount a company can deduct as expenses associated with a hunting lease (entertainment expense) against taxable income. This change will likely cause a significant decrease in the demand for hunting leases by companies. A recent survey of Edward Plateau and Rio Grande Plains hunting lessors indicated that 18 percent of the lessees were companies (Steinbach, et al.).

These negative aspects will not, however, eliminate ranch land as an investment commodity. Ranch land is a scarce resource. Furthermore, it will continue to serve simultaneous uses related to production and consumption. Pope and Goodwin reported in 1983 that only 22 percent of the average sale price of rural land could be attributed to the productive potential of the land in agricultural enterprises. Over the next several years, however, it is expected that ranch land prices will be more closely related to the income producing potential of the land than has been the case during the past 2 or 3 decades.

Texas land prices have decreased 13 percent from 1984 through 1986 (Gilliland). However, compared to prices in other agricultural states, the declines in Texas have been relatively modest. The next 2 or 3 years will likely bring little change from current levels in Texas land prices. However, as the Texas economy begins to improve and more investment capital becomes available, modest increases consistent with general price inflation and changes in productive value are expected.

Cattle Prices

Typical cyclic movements of cattle prices through time are illustrated in Figure 1. Recent price levels and beef cattle inventories indicate that 1987 will correspond with year 5 or 6 in Figure 1. If these indications are correct, year to year increases in feeder cattle prices would be anticipated over the next 2 to 4 years. However, with the delicate balance between supply and demand of beef and the strong competition from the poultry sector, cattle prices may differ from historical cyclical trends. Sharp increases in the U.S. cow herd and eventual beef supplies could quickly lower sensitive cattle prices.

The TRA will impact cattle prices only slightly. The TRA will reduce the tax advantages associated with owning breeding livestock; i.e., investment credit and capital gains will be eliminated and, in some cases, using pre-production period expenses associated with raising heifers as operating expenses in the year incurred will be disallowed. In general, these changes should make owning breeding cattle, especially highly priced purebred cattle, less attractive than in years before the TRA.

The impact of these changes will likely be greatest in the registered (purebred) beef cattle operations. Since these businesses primarily sell mature breeding stock, they will feel the impact of the tax law changes more than commercial producers who primarily sell calves and yearlings.

The TRA may have a slightly positive, indirect impact on beef cattle prices in that it may result in increases in the costs of producing poultry and pork because production in these industries is relatively capital intensive. While the overall impact of the TRA on these

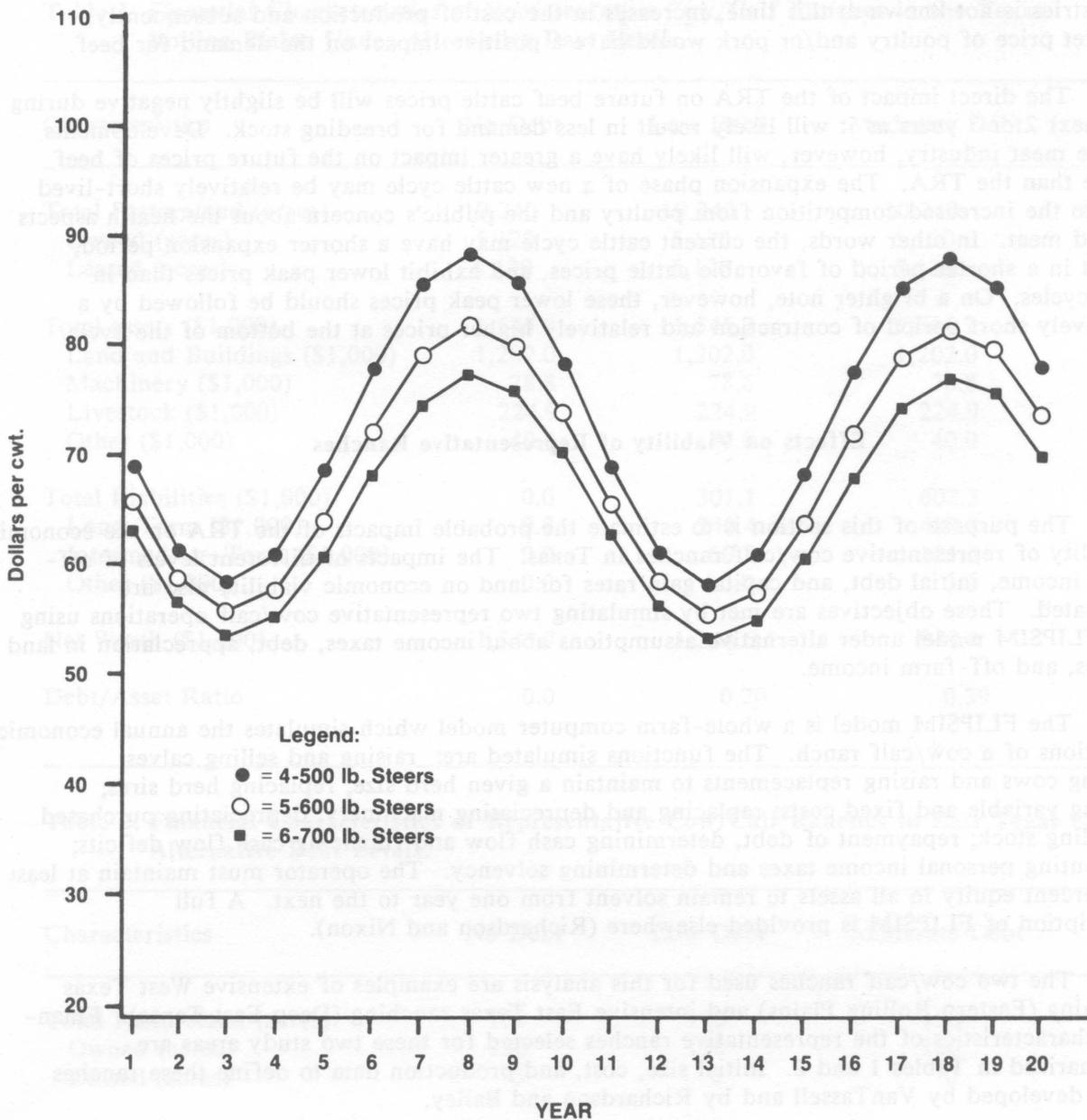


Figure 1. Cyclical Trends for Steer Prices.

industries is not known at this time, increases in the cost of production and subsequently, market price of poultry and/or pork would have a positive impact on the demand for beef.

The direct impact of the TRA on future beef cattle prices will be slightly negative during the next 2 or 3 years as it will likely result in less demand for breeding stock. Developments in the meat industry, however, will likely have a greater impact on the future prices of beef cattle than the TRA. The expansion phase of a new cattle cycle may be relatively short-lived due to the increased competition from poultry and the public's concern about the health aspects of red meat. In other words, the current cattle cycle may have a shorter expansion period, result in a shorter period of favorable cattle prices, and exhibit lower peak prices than in past cycles. On a brighter note, however, these lower peak prices should be followed by a relatively short period of contraction and relatively higher prices at the bottom of the cycle.

Effects on Viability of Representative Ranches

The purpose of this section is to estimate the probable impacts of the TRA on the economic viability of representative cow/calf ranches in Texas. The impacts of different levels of off-farm income, initial debt, and capital gain rates for land on economic viability also are evaluated. These objectives are met by simulating two representative cow/calf operations using the FLIPSIM model under alternative assumptions about income taxes, debt, appreciation in land values, and off-farm income.

The FLIPSIM model is a whole-farm computer model which simulates the annual economic functions of a cow/calf ranch. The functions simulated are: raising and selling calves; culling cows and raising replacements to maintain a given herd size; replacing herd sires; paying variable and fixed costs; replacing and depreciating machinery; depreciating purchased breeding stock; repayment of debt, determining cash flow and financing cash flow deficits; computing personal income taxes and determining solvency. The operator must maintain at least 10 percent equity in all assets to remain solvent from one year to the next. A full description of FLIPSIM is provided elsewhere (Richardson and Nixon).

The two cow/calf ranches used for this analysis are examples of extensive West Texas ranching (Eastern Rolling Plains) and intensive East Texas ranching (Deep East Texas). Financial characteristics of the representative ranches selected for these two study areas are summarized in Tables 1 and 2. Initial size, cost, and production data to define these ranches were developed by VanTassell and by Richardson and Bailey.

Three different levels of initial debt were assumed for each ranch to demonstrate the interaction between income tax changes and initial debt levels (Tables 1 and 2). The alternative debt levels represent ranches with no debt; 20 percent debt on land, machinery, and livestock; and 40 percent debt on land, machinery, and livestock.

The livestock production factors for the two types of ranches are summarized in Table 3. The Rolling Plains ranch has 477 cows and has a continuous grazing system with no brush control program. The ranch culls about 8 percent of the cows each year and has a 2 percent annual death loss for cows. The calving percentage is 85 and about 7 percent of these calves die after birth. No hay or improved pasture is raised on the ranch. These and the other production statistics in Table 3 for the Rolling Plains ranch are detailed in VanTassell. Enterprise budgets developed by the Texas Agricultural Extension Service were used to estimate the annual production cost reported in Table 3.

Table 1. Financial Characteristics of Representative Cow/Calf Ranches in the Texas Rolling Plains Under Alternative Debt Levels.

Characteristics	No Debt	Low Debt	Moderate Debt
Total Pastureland (acres)	10,240	10,240	10,240
Owned (acres)	5,120	5,120	5,120
Leased (acres)	5,120	5,120	5,120
Total assets (\$1,000)	1,545.7	1,545.7	1,545.7
Land and Buildings (\$1,000)	1,202.0	1,202.0	1,202.0
Machinery (\$1,000)	78.8	78.8	78.8
Livestock (\$1,000)	224.9	224.9	224.9
Other (\$1,000)	40.0	40.0	40.0
Total Liabilities (\$1,000)	0.0	301.1	602.3
Long-Term (\$1,000)	0.0	240.4	480.8
Intermediate-Term (\$1,000)	0.0	60.7	121.5
Other (\$1,000)	0.0	0.0	0.0
Net Worth (\$1,000)	1,545.7	1,244.6	943.4
Debt/Asset Ratio	0.0	0.20	0.39

Table 2. Financial Characteristics of Representative Cow/Calf Ranches in East Texas Under Alternative Debt Levels.

Characteristics	No Debt	Low Debt	Moderate Debt
Total Pastureland (acres)	150	150	150
Owned (acres)	150	150	150
Leased (acres)	0	0	0
Total assets (\$1,000)	232.3	232.3	232.3
Land and Buildings (\$1,000)	120.0	120.0	120.0
Machinery (\$1,000)	55.3	55.3	55.3
Livestock (\$1,000)	28.0	28.0	28.0
Other (\$1,000)	29.0	29.0	29.0
Total Liabilities (\$1,000)	0.0	40.7	61.0
Long-Term (\$1,000)	0.0	24.0	36.0
Intermediate-Term (\$1,000)	0.0	16.7	25.0
Other (\$1,000)	0.0	0.0	0.0
Net Worth (\$1,000)	232.3	191.6	171.3
Debt/Asset Ratio	0.0	0.18	0.26

Table 3. Livestock Production on Representative Rolling Plains and East Texas Cow/Calf Ranches.

Characteristic	Rolling Plains	East Texas
Number of cows	477	50
Death loss per year	0.02	0.02
Sale weight (lbs)	1,000	1,100
Price of replacements (\$)	550	550
Culling rate	0.08	0.10
Number of bulls	50	2
Sale weight (lbs)	1,600	1,700
Number of years in herd	5	4
Price of herd bull (\$)	2,750	2,500
Calving fraction	0.85	0.85
Calf death loss (fraction)	0.07	0.02
Heifers retained (fraction)	0.10	0.10
Heifer sale weight (lbs)	496	465
Steer sale weight (lbs)	530	485
Cash production cost per cow (\$/year) ¹	54.80	39.90
Acres of hay and improved pasture	0	82

¹Costs do not include interest, labor, machinery repairs, depreciation, raised hay, and fixed costs.

Table 4. Average October Cattle Price Assumed for an Analysis of Tax Policy Changes on Texas Ranches.

Year	Cull Cows	Heifer Calves	Steer Calves	Replace Heifers	Cull Bulls
	----- (\$/cwt) -----				
1987	43.5	66.7	78.0	64.4	54.2
1988	49.3	75.3	81.2	72.8	61.3
1989	49.3	75.3	81.2	72.8	61.3
1990	44.7	68.3	79.9	86.0	55.6
1991	39.8	60.9	71.2	58.8	49.5
1992	40.6	62.1	72.6	59.9	50.5
1993	39.7	60.7	71.1	58.7	49.4
1994	39.3	60.2	70.4	58.1	48.9
1995	42.1	64.3	75.3	62.2	52.4
1996	46.3	70.8	82.8	68.4	57.6

The livestock production factors for the East Texas ranch indicate there are 50 mother cows and 2 bulls on the operation (Table 3). The ranch has 82 acres of improved pasture (coastal bermuda, coastal bermuda and clover, and small grains) used for grazing and haying. The use of farm-raised hay reduces the per head production cost for this operation relative to the Rolling Plains ranch. The calving percentage is the same as the Rolling Plains ranch; however, the death loss for calves is only 2 percent. Average weaning weights for the calves on the East Texas ranch are lower than the Rolling Plains ranch.

Each representative ranch was simulated for 10 years, beginning in 1987. Forecasts of interest rates and inflation rates for purchased inputs in 1987-1990 were developed from the COMGEM model, assuming high federal budget deficits and rapid expansion in the money supply (Knutson, et al.). Interest rates and inflation rates for 1990 were assumed to remain constant for 1991-1996 to provide an internally consistent set of assumed values. As a result, inflation was assumed to average 6.6 percent per year over the planning horizon and interest rates for operating loans average 14.7 percent. In the base situation, farm and ranch land is assumed to increase in value 0 percent in 1987, 1 percent in 1988, 2 percent in 1989 and 1990, and 6 percent per year in 1991-1996. These values are based on the assumption that land values in Texas will recover slowly over the next 4 years and will increase with the general rate of inflation after 1990.

Average annual cattle prices (cull cows, replacement heifers, calves, and cull bulls) for 1987-1996 are included in the model. These values are the basis for entering the cattle cycle into the model. The FLIPSIM model is run stochastically, meaning that the 10-year planning period is repeated 50 times as iterations. For each iteration the model draws a different set of random prices using the mean values in Table 4 and historical variability for cattle prices in Texas. By simulating the 10-year planning horizon 50 times, we are confident of experiencing most reasonable combinations of price variations about the mean prices in Table 4. The mean values in Table 4 reflect the assumption that cattle prices will strengthen in 1987 and stimulate an expansion phase in 1988. The expansionary phase of the cycle is expected to last for 3 years, then gradually decline in 1991, and decline for 5 years as the industry contracts. A second cycle is assumed to begin in 1995 with an initial increase in prices in 1995 and 1996.

Scenarios Analyzed

Both representative ranches were analyzed under the pre-TRA (including the 1984 Tax Reform Act) and the TRA to quantify the effects of the recent tax change on the economic viability of Texas ranches. To test the sensitivity of the results to alternative debt levels, each ranch was simulated with three different initial debt levels.

Previous studies indicated that off-farm income was critical to the survival of these two representative ranches (VanTassell; Richardson and Bailey). To further test this sensitivity, the ranches were analyzed assuming two levels of annual off-farm income: \$20,000 and \$60,000. The lower off-farm income represents the level of off-farm income a ranch operation might earn by having one full-time, off-farm wage earner. The higher level of off-farm income represents the situation where substantial off-farm income was being provided by off-farm investments, oil royalties or executive salary. The scenarios described above assume land values increase at the base rate of 6 percent per year after 1990. A lower rate of inflation in land values after 1990 (3 percent per year) was used to examine the effects of the land market on the economic viability of Texas ranches.

In summary, the base situation for each representative ranch involves the following:

- Sole Proprietorship

- Federal Tax provisions immediately prior to the TRA,
- \$20,000 of annual off-farm income,
- 6 percent annual inflation in land values after 1990, and
- 3 debt levels (0, 20, and 40 percent debt on land, cattle and machinery).

Sensitivity scenarios for this base situation are summarized as follows:

- TRA 1986 federal income tax provisions
- Off-farm income (\$60,000 per year of off-farm income) and
- Pessimistic land market recovery (3 percent annual increase in land values after 1990)

Simulation Results

Tables summarizing the results of simulating 24 different scenarios for each representative ranch are in Appendix A (Tables A1-A8). Each table reports the mean, minimum, and maximum values for eight key output variables from FLIPSIM. The probability of survival (chance of the ranch remaining solvent for 10 years) does not appear to be affected by the recent change in the federal income tax provisions. In all scenarios analyzed the probability of survival is the same under the pre-TRA and the TRA provisions. For example, the specific low debt Rolling Plains ranch with \$20,000 of off-farm income analyzed had a 100 percent chance of remaining solvent under both federal income tax provisions (Table A1).

Probability of economic success (chance of earning a 5 percent return on initial net worth) for the specified representative ranches was only slightly affected by the recent income tax changes. Results of the simulations indicated a zero probability of success for the specified Rolling Plains ranch regardless of income tax provisions, off-farm income, or inflation rate in land values, if the ranch initially has 20 or 40 percent debt (Tables A1-A4). Starting with no initial debt and the pre-TRA gives the simulated Rolling Plains ranch a 32 percent chance of success (5 percent return on investment) if there is \$20,000 of off-farm income, and a 50 percent chance if there is \$60,000 of off-farm income (Tables A1 and A2). Shifting to the TRA provisions reduces the chance of success to 22 percent for the lower off-farm income situation and raises it to 52 percent for the higher off-farm income situation. The probability of success for the specified East Texas ranch does not change as a result of the TRA unless the ranch has only \$20,000 of annual off-farm income and no initial debt. Please note that these indications of survivability and success apply only under the conditions specified in the simulation model.

The remainder of this section of the report discusses the results of the other variables presented in Tables A1-A8. The results for the recent changes in federal income tax provisions are presented first. Next, the effects of off-farm income on ranch viability are discussed. Finally, the sensitivity of the results to lower land values is presented.

Impacts of Tax Changes. Average annual net cash incomes for the two representative ranches are summarized in Figures 2 and 3. The results for both income tax provisions indicate that net cash income (total receipts minus total cash production expenses) is negative for the Rolling Plains ranch unless there is no initial debt. For the East Texas ranch net cash income is negative if initial debt is 40 percent. Shifting to the TRA for the Rolling Plains and East Texas ranches has little or no effect.

Average annual taxable incomes for the Rolling Plains and East Texas ranches are summarized in Figures 4 and 5, respectively. Taxable income is greater than zero for all scenarios even though net cash incomes are negative for several of the scenarios, because

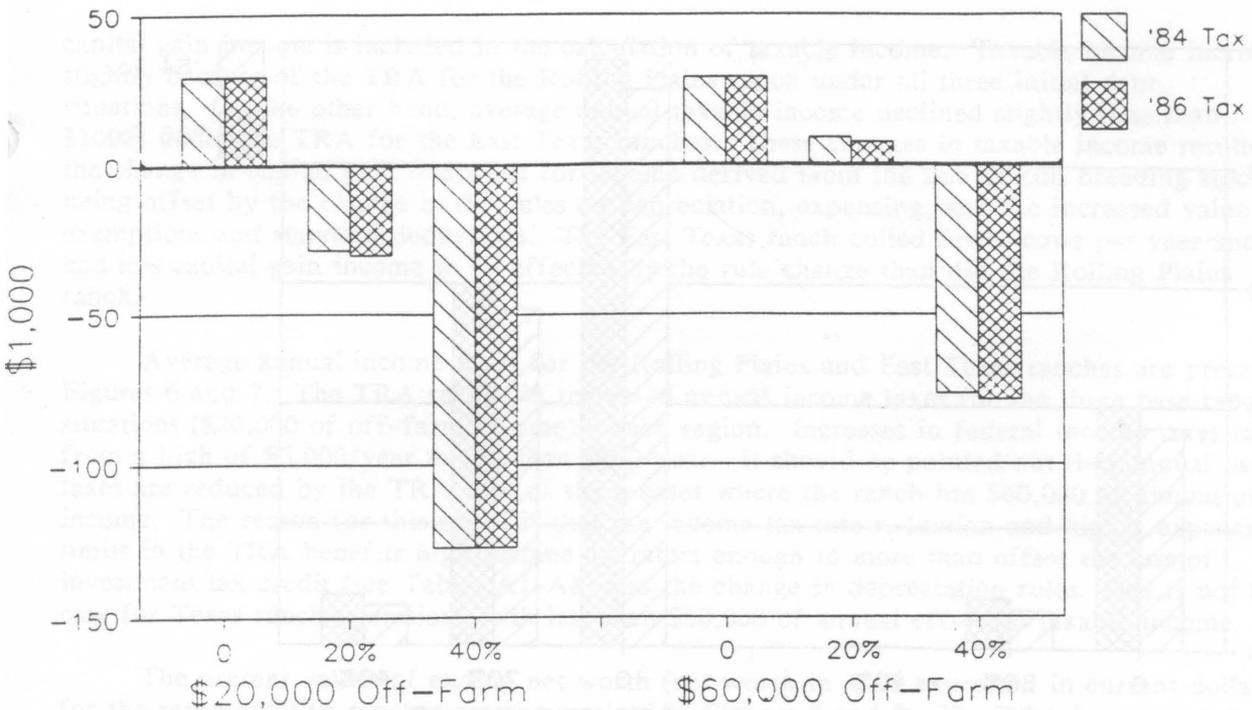


Figure 2. Average Annual Net Cash Income for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

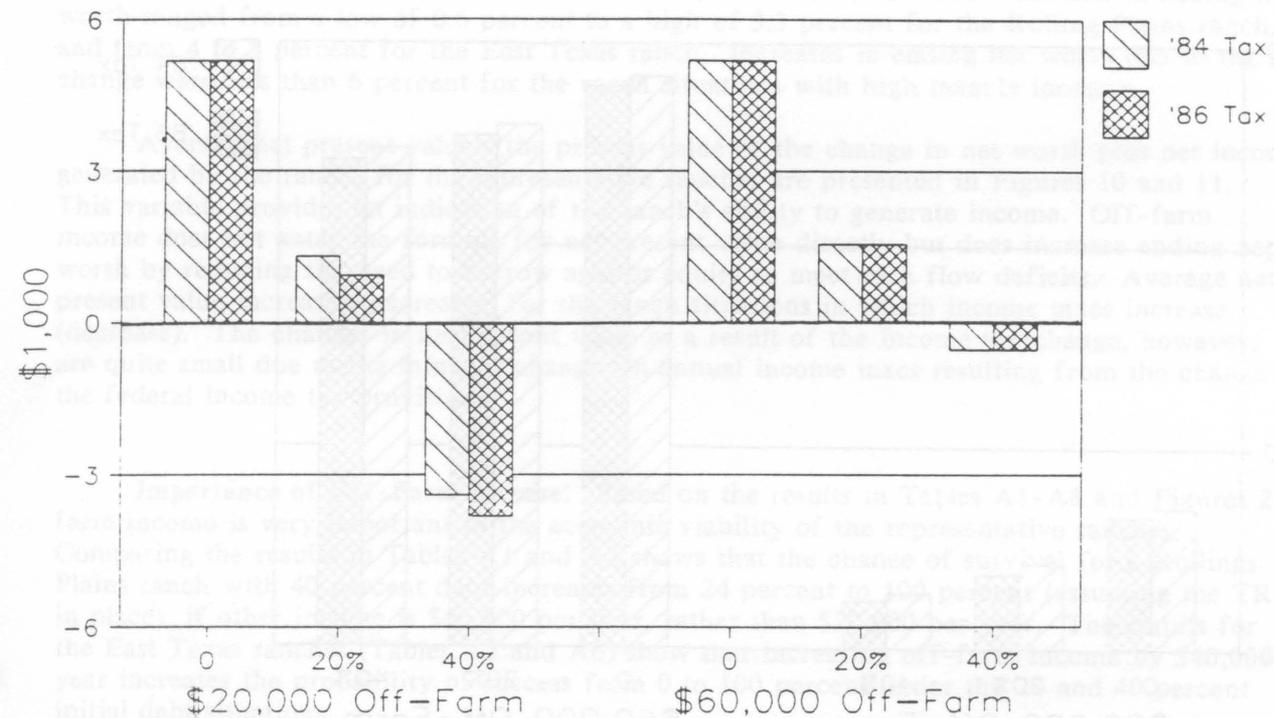


Figure 3. Average Annual Net Cash Income for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

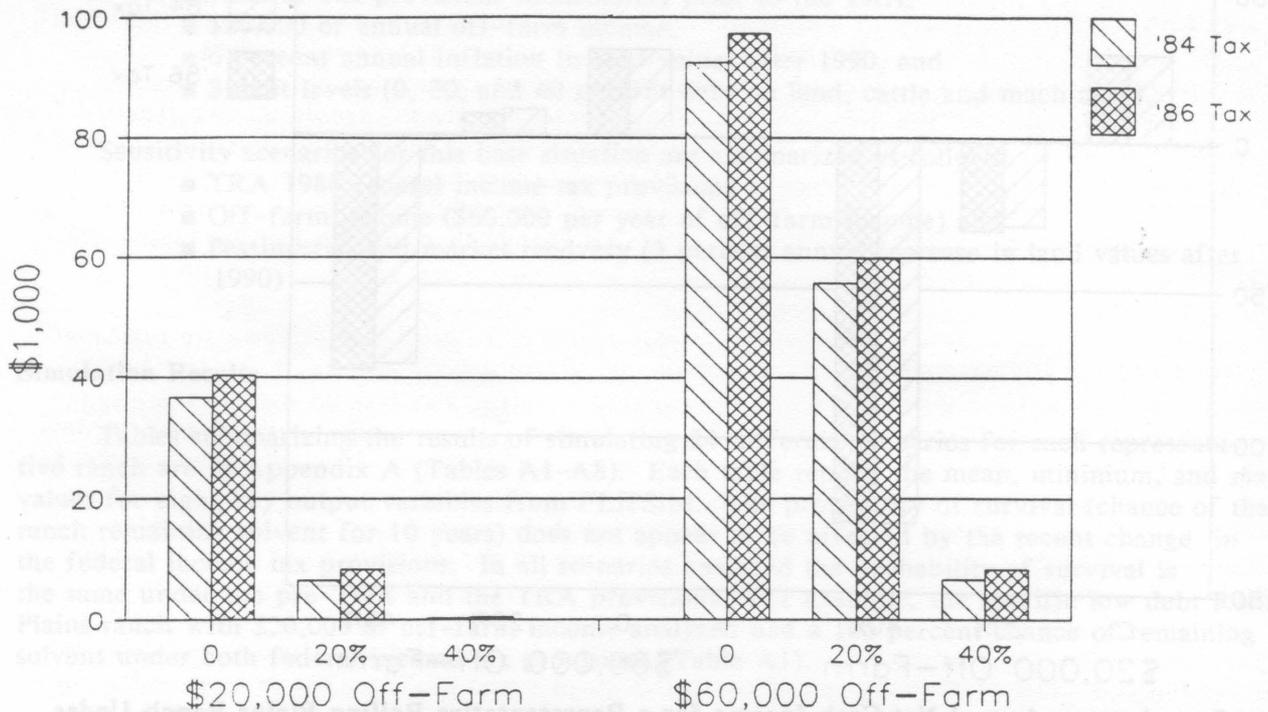


Figure 4. Average Annual Taxable Income for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

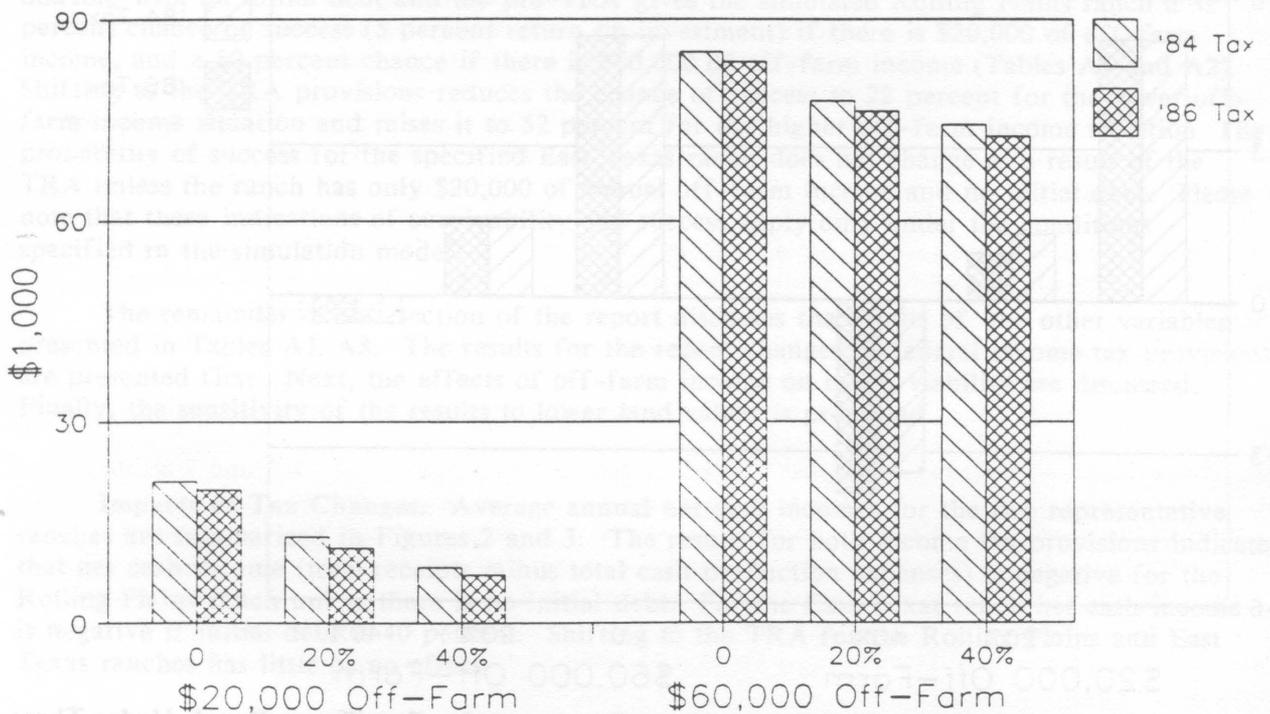


Figure 5. Average Annual Taxable Income for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

capital gain income is included in the calculation of taxable income. Taxable income increased slightly because of the TRA for the Rolling Plains ranch under all three initial debt situations. On the other hand, average annual taxable income declined slightly (less than \$1000) under the TRA for the East Texas ranches. These changes in taxable income resulted from the change in capital gain treatment for income derived from the sale of cull breeding stock being offset by the change in the rules on depreciation, expensing, and the increased value of exemptions and standard deductions. The East Texas ranch culled fewer cows per year and thus had less capital gain income to be affected by the rule change than did the Rolling Plains ranch.

Average annual income taxes for the Rolling Plains and East Texas ranches are presented in Figures 6 and 7. The TRA results in increased annual income taxes for the three base ranch situations (\$20,000 of off-farm income) in each region. Increases in federal income taxes range from a high of \$3,000/year to less than \$100/year. It should be pointed out that annual income taxes are reduced by the TRA in 4 of the 6 cases where the ranch has \$60,000 of annual off-farm income. The reason for this result is that the income tax rate reduction and higher expensing limits in the TRA benefits high income operators enough to more than offset the loss of investment tax credit (see Tables A1-A8) and the change in depreciation rules. This is not the case for Texas ranch operations with less than \$60,000 of annual off-farm taxable income.

The present values of ending net worth (net worth in 1996 expressed in current dollars) for the representative ranches are summarized in Figures 8 and 9. The TRA is responsible for reducing average ending net worth, relative to the 1984 Tax Act, for all 6 base scenarios (\$20,000 annual off-farm income). A reduction in ending net worth is also observed for 2 of the 6 scenarios where off-farm income is \$60,000 per year. Changes in average ending net worth are directly related to the change in annual income taxes. Ranches which experience a tax increase also experience a reduction in net worth, and vice versa. The reduction in ending net worth ranged from a low of 0.6 percent to a high of 3.3 percent for the Rolling Plains ranch, and from 4 to 5 percent for the East Texas ranch. Increases in ending net worth due to the tax change were less than 6 percent for the ranch situations with high taxable incomes.

Average net present values (the present value of the change in net worth plus net income generated by the ranch) for the representative ranches are presented in Figures 10 and 11. This variable provides an indication of the ranch's ability to generate income. Off-farm income does not enter the formula for net present value directly but does increase ending net worth by reducing the need to borrow against equity to meet cash flow deficits. Average net present value increases (decreases) for the ranch situations in which income taxes increase (decrease). The changes in net present value as a result of the income tax change, however, are quite small due to the minimal changes in annual income taxes resulting from the change in the federal income tax provisions.

Importance of Off-Farm Income. Based on the results in Tables A1-A8 and Figures 2-9, off-farm income is very important to the economic viability of the representative ranches. Comparing the results in Tables A1 and A2 shows that the chance of survival for a Rollings Plains ranch with 40 percent debt increases from 24 percent to 100 percent (assuming the TRA is in place), if other income is \$60,000 per year, rather than \$20,000 per year. The results for the East Texas ranches (Tables A5 and A6) show that increasing off-farm income by \$40,000 per year increases the probability of success from 0 to 100 percent under the 20 and 40 percent initial debt situations.

Average annual net cash income is substantially greater for the ranches with \$60,000 of annual off-farm income than for comparable ranches with \$20,000 of off-farm income, given the ranches have 20 or 40 percent initial debt (Figures 2 and 3). Off-farm income does not

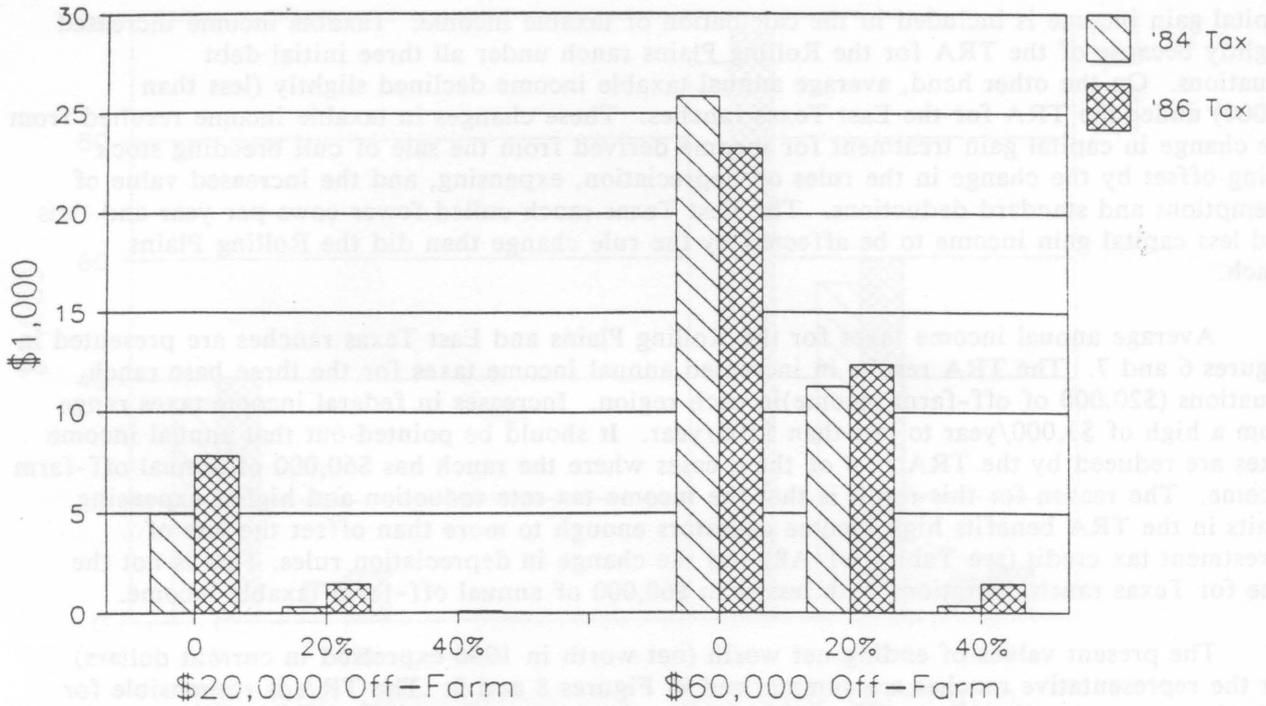


Figure 6. Average Annual Income Taxes for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

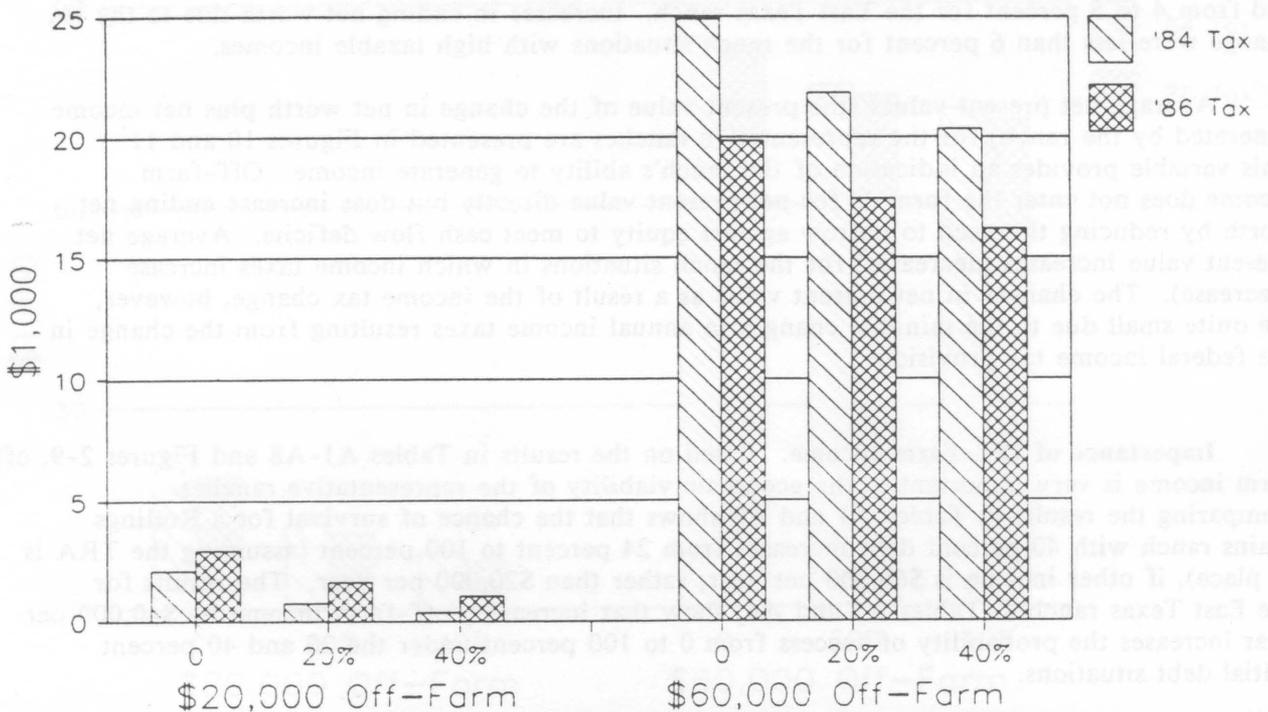


Figure 7. Average Annual Income Taxes for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

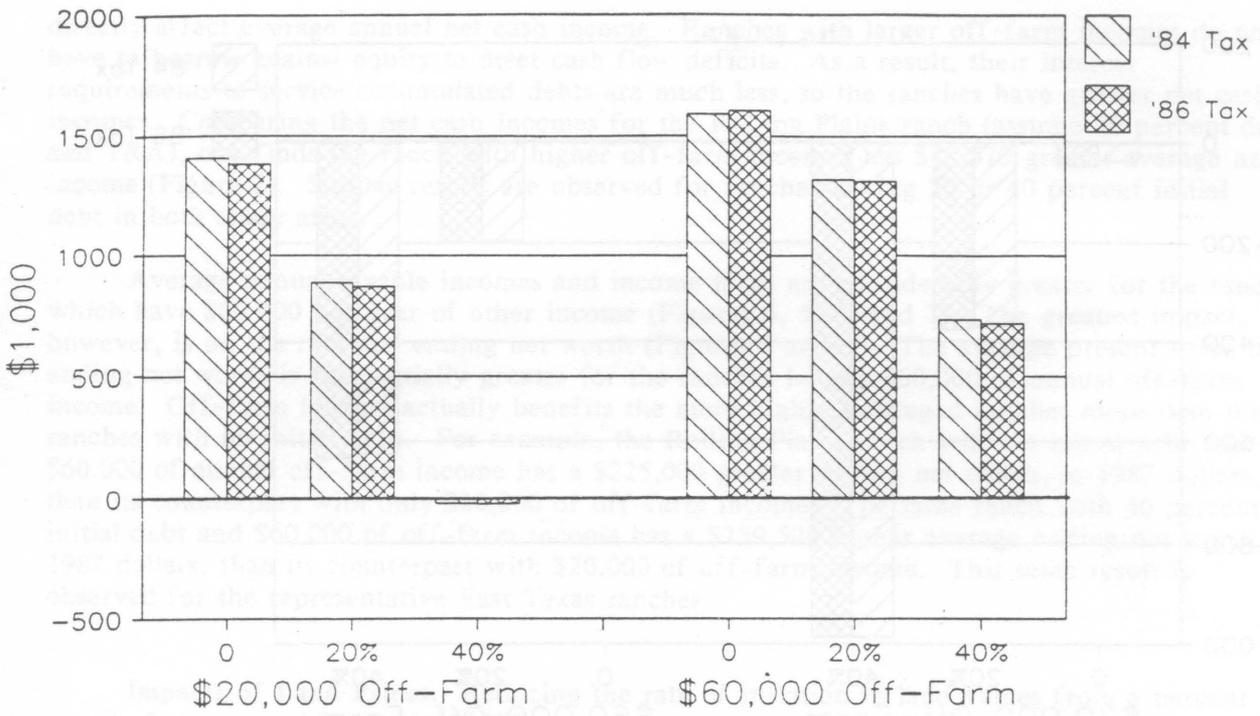


Figure 8. Average Annual Ending Net Worth for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

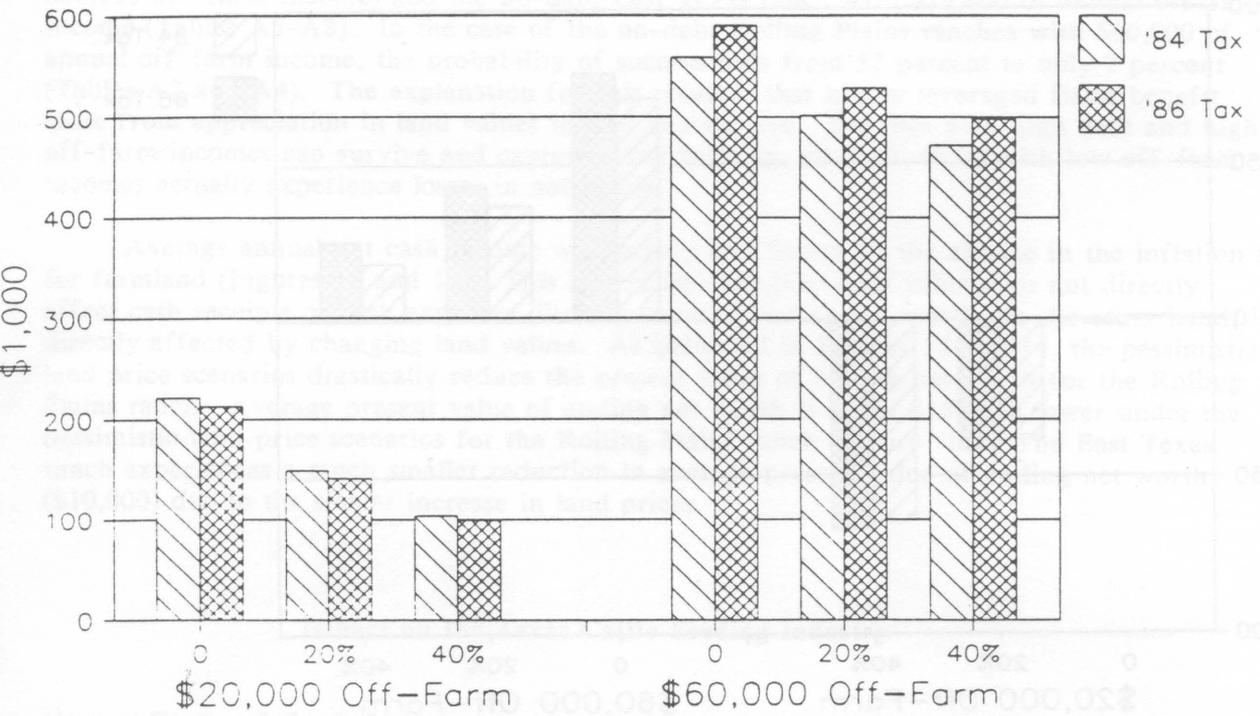


Figure 9. Average Annual Ending Net Worth for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

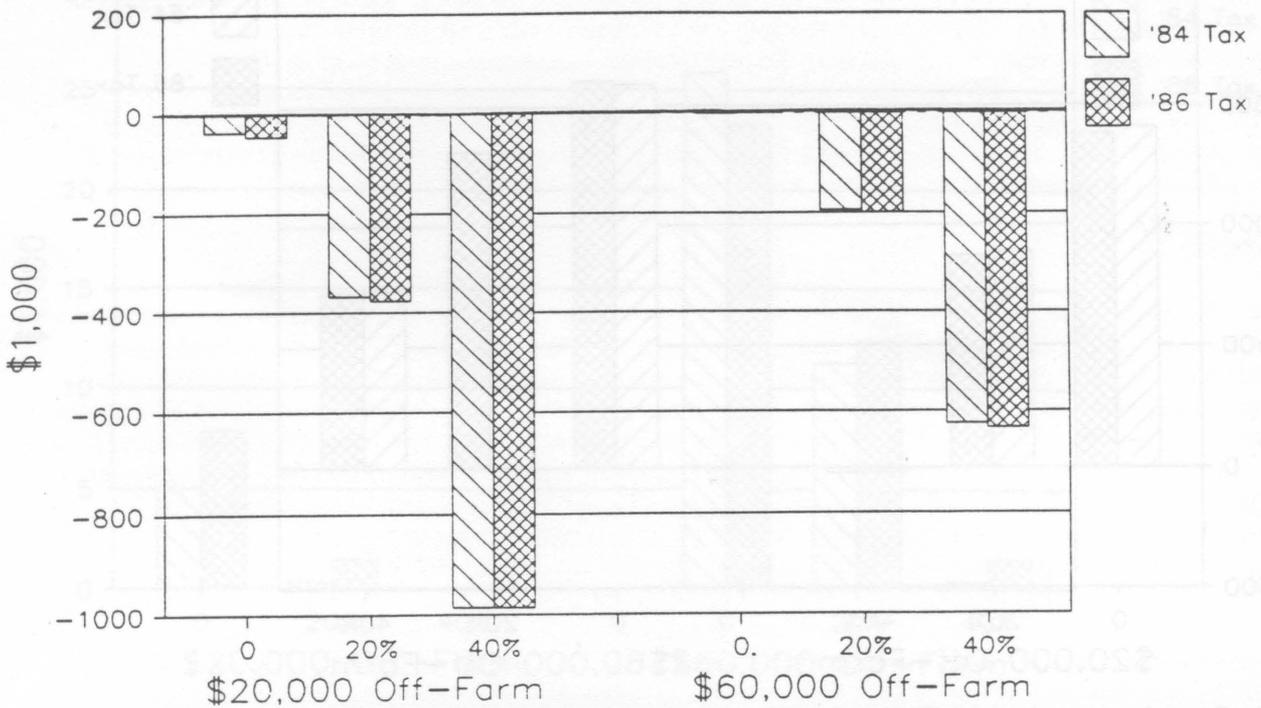


Figure 10. Average After-Tax Net Present Value for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

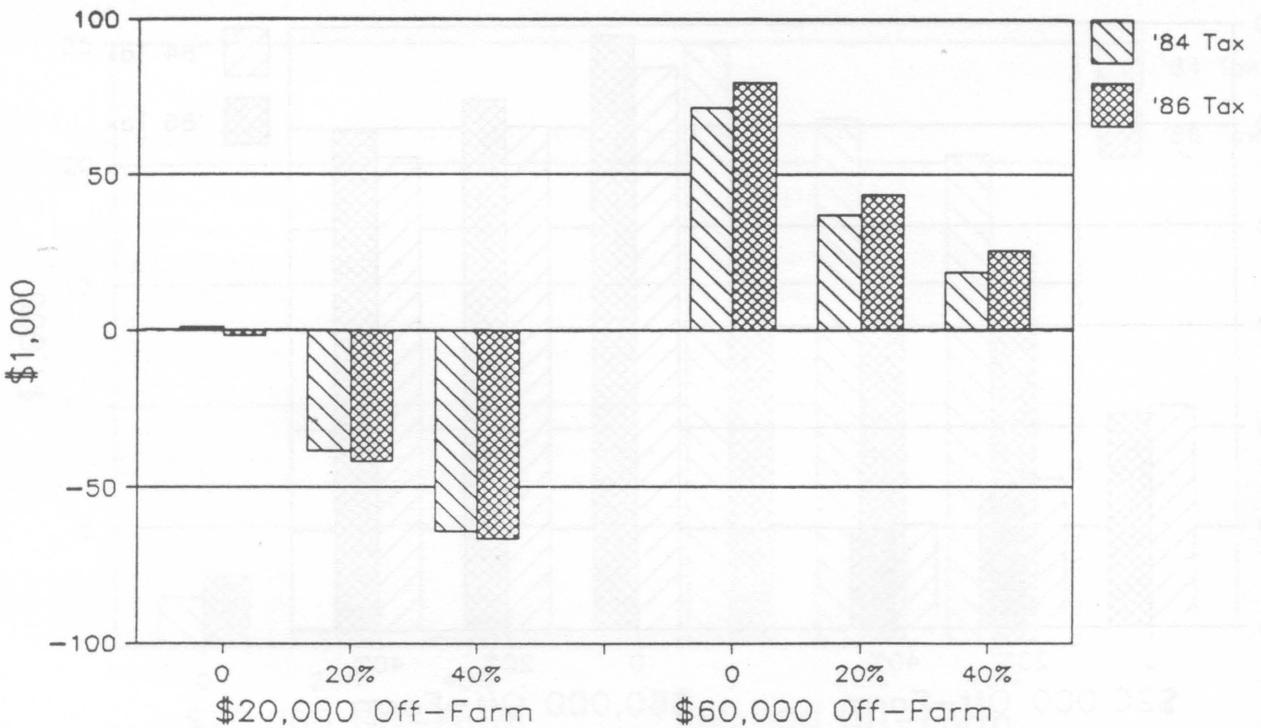


Figure 11. Average After-Tax Net Present Value for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, and Two Income Tax Acts.

directly affect average annual net cash income. Ranches with larger off-farm incomes do not have to borrow against equity to meet cash flow deficits. As a result, their interest requirements to service accumulated debts are much less, so the ranches have greater net cash incomes. Comparing the net cash incomes for the Rolling Plains ranch (assume 40 percent debt and TRA), one finds the ranch with higher off-farm incomes has \$48,570 greater average net cash income (Figure 2). Similar results are observed for ranches having 20 or 40 percent initial debt in both study areas.

Average annual taxable incomes and income taxes are considerably greater for the ranches which have \$60,000 per year of other income (Figures 4, 5, 6, and 7). The greatest impact, however, is on the ranches' ending net worth (Figures 8 and 9). The average present value of ending net worth is substantially greater for the ranches having \$60,000 of annual off-farm income. Off-farm income actually benefits the more highly leveraged ranches more than the ranches with no initial debt. For example, the Rolling Plains ranch with no initial debt and \$60,000 of annual off-farm income has a \$225,000 greater ending net worth, in 1987 dollars, than its counterpart with only \$20,000 of off-farm income. The same ranch with 40 percent initial debt and \$60,000 of off-farm income has a \$739,500 higher average ending net worth, in 1987 dollars, than its counterpart with \$20,000 of off-farm income. This same result is observed for the representative East Texas ranches.

Impacts of Land Prices. Reducing the rate of inflation in land values from 6 percent per year to 3 percent per year after 1990 represents a more pessimistic outlook for Texas land prices. Lower land values would reduce the chance of survival for moderate-debt Rolling Plains ranches from 24 percent to 2 percent (Tables A1 and A3). Probability of survival remains at 100 percent for the other five base situations. A slower rate of increase in land values, however, reduces the probability of success for the no-debt Rolling Plains ranches (\$20,000 and \$60,000 off-farm income) and the no-debt East Texas ranch with \$20,000 of annual off-farm income (Tables A5-A8). In the case of the no-debt Rolling Plains ranches with \$60,000 of annual off-farm income, the probability of success falls from 52 percent to only 2 percent (Tables A2 and A4). The explanation for this result is that highly leveraged firms benefit more from appreciation in land values if they can survive. Ranches with high debt and high off-farm incomes can survive and capture these benefits, whereas, those with low off-farm incomes actually experience losses in net worth.

Average annual net cash income was largely unaffected by the change in the inflation rate for farmland (Figures 12 and 13). This is because changing asset value does not directly affect cash receipts or cash expenses. Present value of ending net worth, on the other hand, is directly affected by changing land values. As indicated in Figures 14 and 15, the pessimistic land price scenarios drastically reduce the present value of ending net worth for the Rolling Plains ranch. Average present value of ending net worth is about \$150,000 lower under the pessimistic land price scenarios for the Rolling Plains ranch (Figure 14). The East Texas ranch experiences a much smaller reduction in average present value of ending net worth (\$10,000) due to the slower increase in land prices.

Impact on the Texas Cattle Feeding Industry

Current Status of the Industry

The Texas cattle feeding industry is characterized by large scale, highly specialized and mechanized commercial feedlot operations concentrated in the Texas Panhandle and South Plains

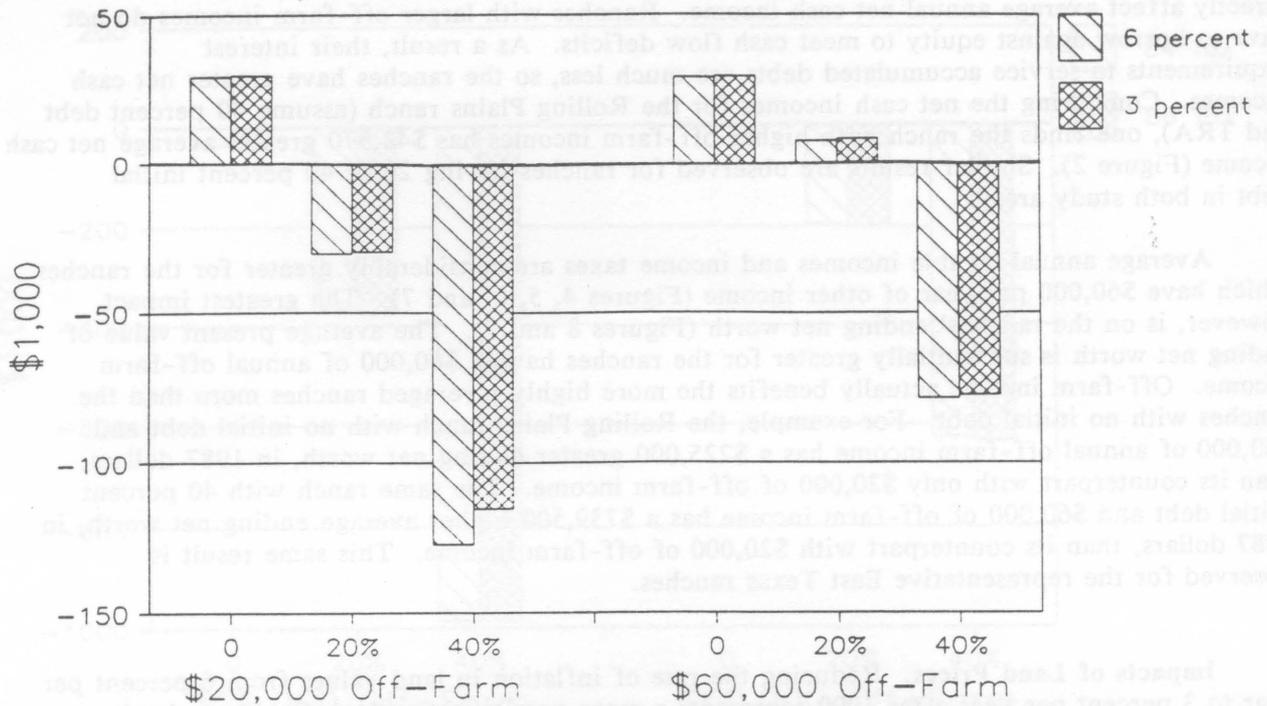


Figure 12. Average Annual Net Cash Income for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, Two Annual Inflation Rates for Land Prices, and the 1986 Tax Reform Act.

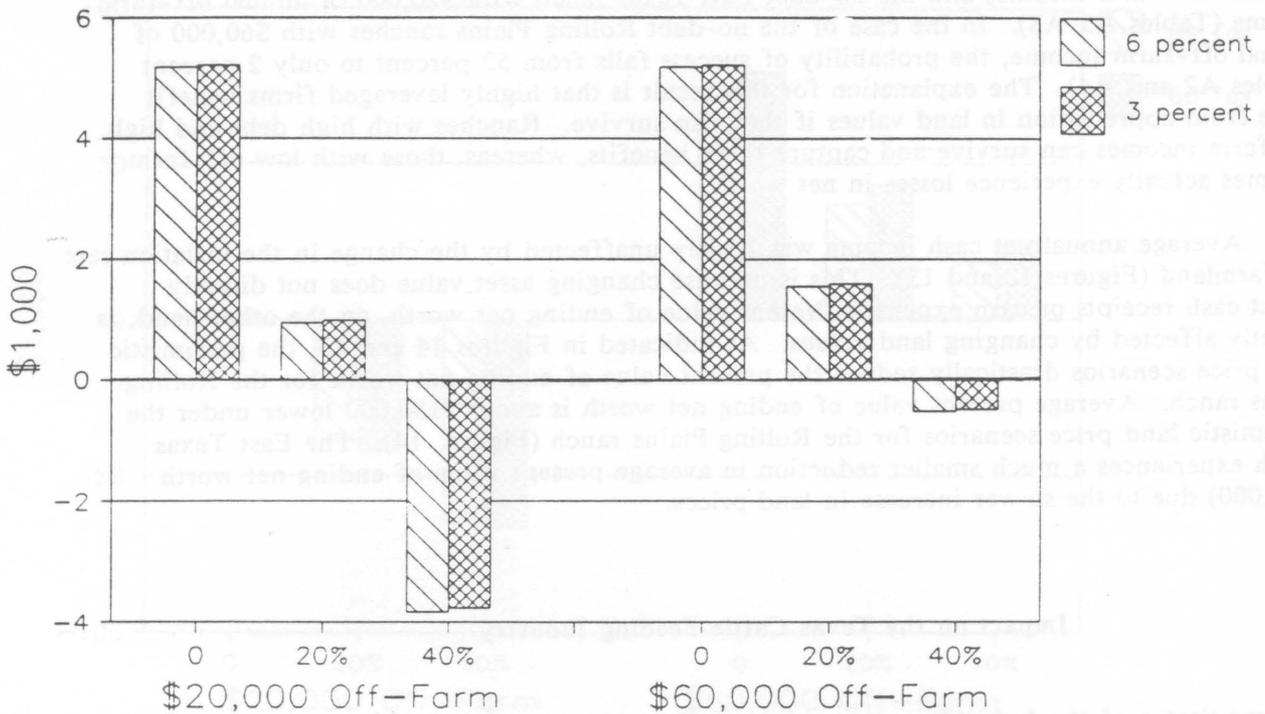


Figure 13. Average Annual Net Cash Income for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, Two Annual Inflation Rates, and the 1986 Tax Reform Act.

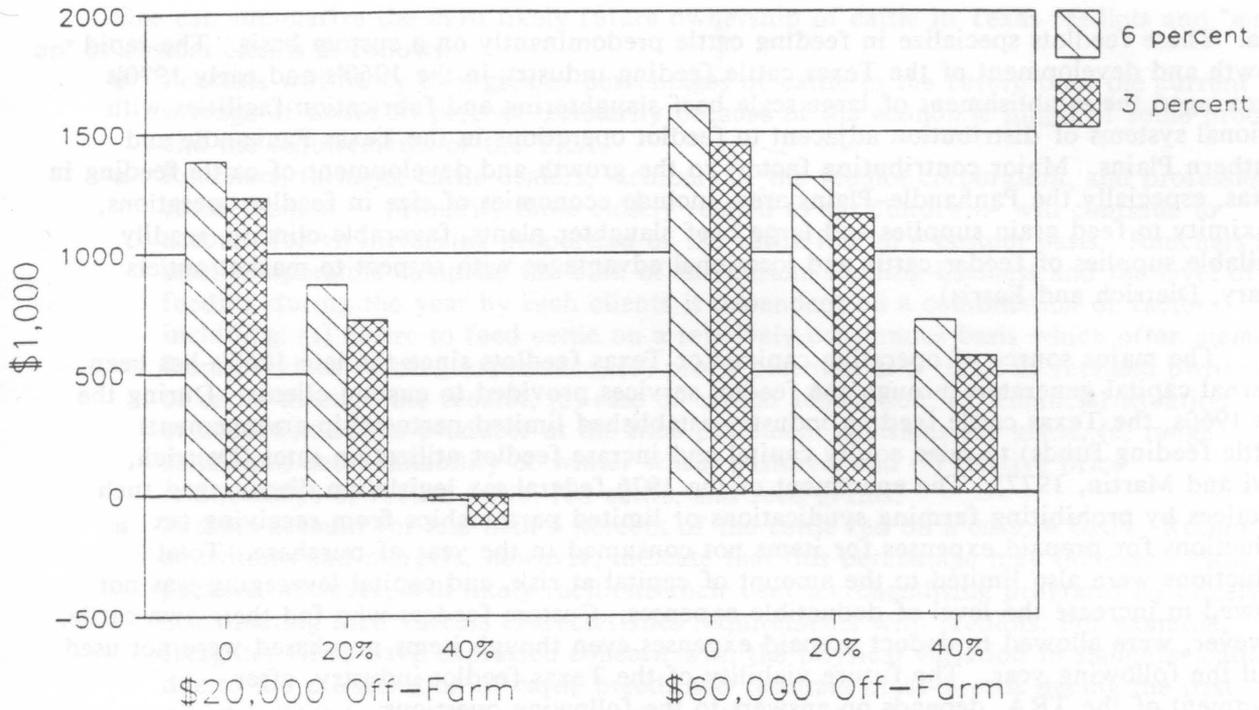


Figure 14. Average Present Value of Ending Net Worth for a Representative Rolling Plains Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, Two Annual Inflation Rates for Land Prices, and the 1986 Tax Reform Act.

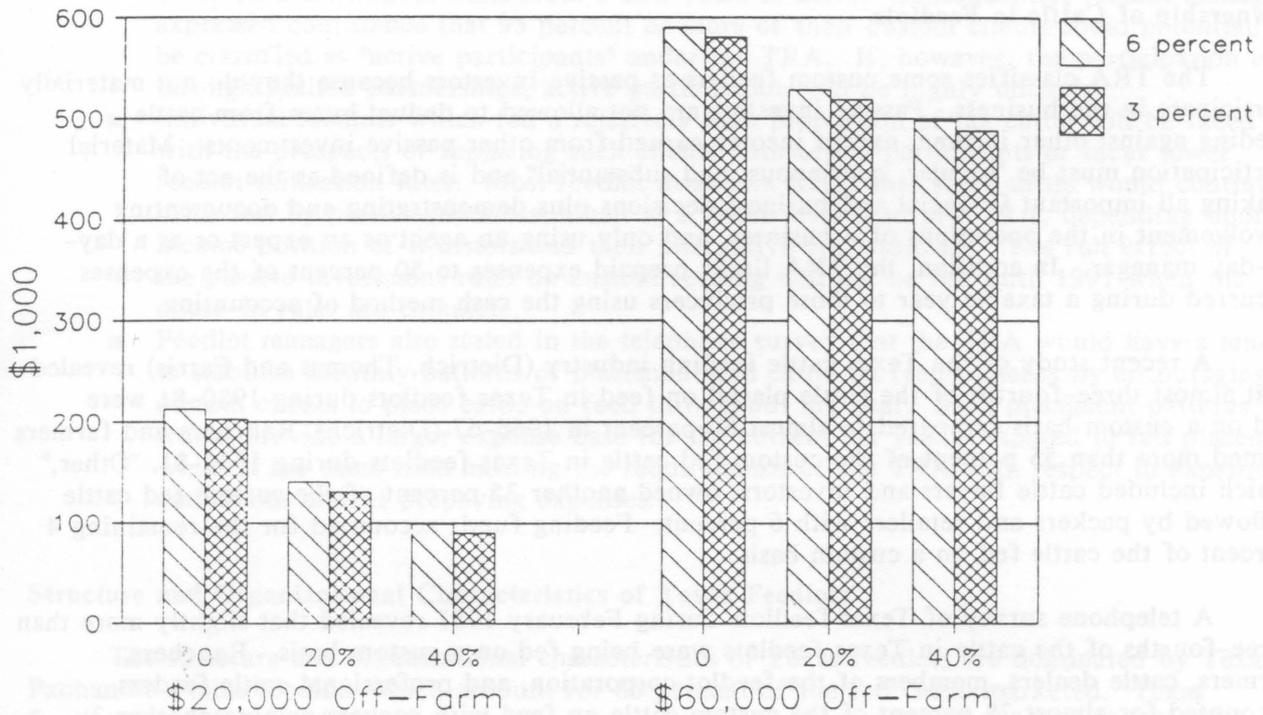


Figure 15. Average Present Value of Ending Net Worth for a Representative East Texas Ranch Under Three Alternative Initial Debt Levels, Two Levels of Off-Farm Income, Two Annual Inflation Rates for Land Prices, and the 1986 Tax Reform Act.

area. These feedlots specialize in feeding cattle predominantly on a custom basis. The rapid growth and development of the Texas cattle feeding industry in the 1960's and early 1970's encouraged the establishment of large scale beef slaughtering and fabrication facilities with national systems of distribution adjacent to feedlot operations in the Texas Panhandle and Southern Plains. Major contributing factors to the growth and development of cattle feeding in Texas, especially the Panhandle-Plains area, include economies of size in feedlot operations, proximity to feed grain supplies and large beef slaughter plants, favorable climate, readily available supplies of feeder cattle and locational advantages with respect to market outlets (Clary, Dietrich and Farris).

The major source of operating capital for Texas feedlots since the late 1960's has been internal capital generated through the feedlot services provided to custom clients. During the late 1960s, the Texas cattle feeding industry established limited partnership arrangements (cattle feeding funds) to raise equity capital and increase feedlot utilization rates (Deitrich, Levi and Martin, 1977). The enactment of the 1976 federal tax legislation discouraged such practices by prohibiting farming syndications or limited partnerships from receiving tax deductions for prepaid expenses for items not consumed in the year of purchase. Total deductions were also limited to the amount of capital at risk, and capital leveraging was not allowed to increase the level of deductible expenses. Custom feeders who fed their own cattle, however, were allowed to deduct prepaid expenses even though items purchased were not used until the following year. The future viability of the Texas feedlot industry, after enactment of the TRA, depends on answers to the following questions:

- Who will own the cattle in feedlots?
- How will feedlots be structured and organized?
- Will the competitive position of Texas cattle feeding change?

Answers to these questions are discussed in this section.

Ownership of Cattle in Feedlots

The TRA classifies some custom feeders as passive investors because they do not materially participate in the business. Passive investors are not allowed to deduct losses from cattle feeding against other income, except income earned from other passive investments. Material participation must be "regular, continuous, and substantial" and is defined as the act of making all important financial and business decisions plus demonstrating and documenting involvement in the operations of a business, and only using an agent as an expert or as a day-to-day manager. In addition, the TRA limits prepaid expenses to 50 percent of the expenses incurred during a taxable year to those producers using the cash method of accounting.

A recent study of the Texas cattle feeding industry (Dietrich, Thomas and Farris) revealed that almost three-fourths of the cattle placed on feed in Texas feedlots during 1980-81 were fed on a custom basis compared to almost 60 percent in 1966-67 (Dietrich). Ranchers and farmers owned more than 55 percent of the custom fed cattle in Texas feedlots during 1980-81. "Other," which included cattle buyers and investors, owned another 35 percent of the custom fed cattle followed by packers and retailers with 6 percent. Feeding funds accounted for the remaining 4 percent of the cattle fed on a custom basis.

A telephone survey of Texas feedlots during February 1987 revealed that slightly more than three-fourths of the cattle in Texas feedlots were being fed on a custom basis. Ranchers, farmers, cattle dealers, members of the feedlot corporation, and professional cattle feeders accounted for almost 78 percent of the custom cattle on feed with packers owning another 3 percent and "other" almost 2 percent. Custom fed cattle broadly classified as "tax" cattle represented about 17 percent of the custom fed cattle or almost 13 percent of the total cattle on feed.

One can summarize the most likely future ownership of cattle in Texas feedlots and "make-up" of custom clients as follows:

- Feedlots will likely own greater percentages of cattle in the future than the current average of about 25 percent, primarily because of the economic plight of some producers and the requirements of the TRA.
- Ranchers, farmers, cattle dealers, members of the feedlot corporation, and professional cattle feeders -- primarily those closely related to agriculture -- will continue to account for an increasing proportion of the cattle fed on a custom basis. Ranchers and stocker-operators comprise the bulk of the custom feeding business and the level of feeding during the year by such clients is dependent on a combination of factors including: (a) desire to feed cattle on a relatively continuous basis which often stems from previous feeding experience, (b) profit potential as a result of retained ownership of cattle through the feedlot, (c) ease of capital acquisition, (d) financial situation or condition of the producer at the time placement decisions are made, (e) range conditions and availability of winter wheat pastures, and (f) relative price relationships of feeder cattle, fed cattle, and feed grains.
- Packers account for less than 5 percent of the cattle fed on a custom basis. Recent acquisitions and mergers, however, indicate that this percentage may increase. Most packers, however, will likely facilitate their beef merchandising programs by closely coordinating their carcass characteristics requirements with feedlots. For example, slaughter firms have expressed concern with the physical variation in slaughter cattle due to the proliferation of cattle breeds and resultant cross-breeds during the past decade. This has created problems at the slaughter level with respect to uniformity of carcass size, quality grades and yield grades in fabricating beef carcasses to meet the specifications of established boxed beef and branded beef programs.
- Custom cattle currently fed for tax management represent less than 20 percent of the total custom cattle on feed. In a recent telephone survey, feedlot managers stated that a majority of the custom clients currently classified as "tax feeders" have been feeding cattle on a continuous basis from 3 to 5 years or more. Consequently, feedlot managers expressed confidence that 95 percent or more of their custom clients could potentially be classified as "active participants" under the TRA. If, however, the participation is through limited partnerships, active participation will be highly unlikely.
- Individual feedlots which fed a relatively high proportion of tax cattle will be faced with the prospects of replacing such clients with active participants or incur lower feedlot utilization rates. Most feedlot managers stated that some cattle would continue to be fed by passive investors, albeit at a lower level than pre-TRA, depending upon the income position of investors and their alternative opportunities. The full effect of the passive investment rules on custom feeding will not be felt until 1991 when the phase-in rules are complete.
- Feedlot managers also stated in the telephone survey that the TRA would have a tendency to stabilize monthly patterns of placement and cattle on feed patterns by encouraging custom clients to place cattle on feed throughout the year. Such placement patterns would provide a larger expense base for the current tax year compared to fall placements while at the same time meeting the requirements of the TRA with respect to expense deductions and/or prepaying expenses.

Structure and Organizational Characteristics of Texas Feedlots

The structure and organizational characteristics of Texas feedlots are dominated by Texas Panhandle-Plains feedlots which account for 85 percent of the fed cattle marketed. Texas feedlots have decreased in number while increasing in size from 1970 to 1986 (Table 5). The average one-time capacity of commercial feedlots in the Panhandle-Plains area during 1980 was more than 31,000 head, compared to almost 11,000 head in the Plateau-Pecos area, almost 9,500

Table 5. Number of Feedlots and Number of Fed Cattle Marketed, By Size of Feedlot; Texas, 1970 and 1986.

Item	Feedlot Capacity (Head)							Total	Total
	Under 1,000- 1,000	2,000- 1,999	4,000- 3,999	8,000- 7,999	16,000- 15,999	32,000 31,999	and over	1,000 or more	All Feedlots
Feedlots	----- (Number) -----								
1970	1,300	60	44	36	39	33	15	227	1,527
1986	852	8	10	19	38	40	33	148	1,000
Marketings	----- (1,000 Head) -----								
1970	98	53	112	281	727	915	952	3,040	3,138
1986	90	10	40	180	550	1,400	2,990	5,170	5,260

Source: *Cattle on Feed*, U.S. Department of Agriculture.

head in the Gulf Coast-Rio Grande Plains, and more than 3,000 in East Texas (Dietrich, Thomas and Farris).

In 1986, 73 Texas feedlots with 16,000 head or more one-time capacity accounted for 85 percent of the Texas fed cattle marketings (Table 5). Further, almost 60 percent of the fed cattle marketings were accounted for by 33 feedlots or those with 32,000 head or more one-time capacity. The latter size group accounted for 30 percent of the total marketings during 1970.

The predominant legal forms of ownership in Texas feedlots during 1980-81 were corporations with almost 75 percent of the total commercial lots, followed by partnerships with 20 percent of the total (Dietrich, Thomas and Farris). Texas feedlots, especially Panhandle-Plains feedlots, are becoming increasingly characterized by multi-lot ownership patterns. More than 50 percent of the one-time feedlot capacity in the Texas Panhandle-Plains feedlots is presently owned by firms which own from two to six feedlots. Such feedlot mergers are characteristic of an industry which underwent volatile economic conditions during the late 1970s and much of the 1980s. Multi-lot ownership facilitates, but does not guarantee, economies of size in some segments of feedlot operations such as management, acquisitions of inputs, marketing, and financial services. Firms with two or more feedlots offer custom clients an opportunity to feed cattle at different locations, thereby spreading the risk of such variables as gain, cost of gain, death loss, etc., within the same firm.

The TRA will likely have minimal impacts on the structure of the Texas feedlot industry. Recent studies have shown that feedlots with 16,000 head or more capacity enjoyed a cost advantage over smaller-size feedlot operations (Dietrich, Thomas and Farris). Feedlots under 16,000 head capacity will likely continue to decline in numbers as they exit the industry, expand feedlot operations or merge with larger feeding operations. Feedlot size will likely continue to increase in such areas as the Texas Panhandle-Plains due to the comparative advantages of feedlots in this area (Clary, Dietrich and Farris).

New income tax provisions under the TRA will not likely change present organizational arrangements of feedlots. Corporations and multi-lot ownership patterns will continue to be the preferred organizational arrangements, due to their advantages in acquiring equity capital and reducing risk.

Competitive Position of Texas Cattle Feeding

In assessing the impact of the TRA on the competitive position of the Texas cattle feeding industry, the impacts on several underlying forces must be considered. The TRA does not change the basic economic forces affecting interregional competition in cattle feeding. The Southern Plains cattle feeding industry, primarily Texas, and the Central Plains (Kansas, Nebraska and Colorado) area, for example, enjoy competitive advantages in cattle feeding due to proximity to feed grain and feeder cattle supplies, favorable location relative to market outlets and year-round climatic conditions, and economies of size associated with the feeding and slaughter industries. Further, the Southern and Central Plains' highly specialized commercial feedlots have acquired high levels of expertise in such areas as buying and selling cattle, purchasing feed, feeding cattle, health care, and financial and personnel management.

The TRA has very little impact on the quantity of feed grains produced in Texas, relative to other states (Lins, Richardson and Offut). The total quantity of feed grains supplied may increase slightly as a result of the TRA, reducing the after-tax incomes of large grain farms. Grain prices, however, will not likely fall because the level of stocks and the price support programs establish the price of feed grains.

Results of the firm-level simulations indicate that the TRA will increase the after-tax incomes and wealth of large-scale, profitable ranches. Since the number of large-scale ranch operations is greater in the Southwest than in the other regions of the United States, the relative availability of feeder cattle in Texas may increase slightly. In addition, the TRA did nothing to discourage stocker operators from buying calves in other states to graze small grain pastures in the Southwest. The availability of feeder cattle in Texas, relative to other states, will be about the same to slightly greater as a result of the TRA.

The TRA did not change the relative profitability of outlet markets in the Southwest relative to other cattle feeding regions. However, the tax rate schedule reduction in the TRA will likely give large-scale, efficient feedlots an advantage over smaller feedlots. To the extent that feedlots in Texas enjoy greater economies of size than feedlots in other regions, the TRA has increased the competitive advantage of Southwest feedlots.

Feedlot managers who hope to acquire additional operating capital or maintain current levels of operating capital from custom feeders will have to develop investment opportunities and/or strategies which have the potential to compete with alternative investments. Such investment strategies may entail programs specifically designed to minimize risk associated with input and output prices, gain, death loss, and other variables which adversely impact profits and stability of returns. Programs designed to minimize risk in cattle feeding impact all types of cattle feeding enterprises including custom clients, feedlot owned cattle, and other segments of the beef industry.

The Texas cattle feeding industry is dynamic and undergoing constant change as it adjusts to rapidly changing economic conditions to maintain its current competitive position in the United States cattle feeding industry. Cattle feeding will continue to be a high risk enterprise, and firms which minimize such risks through innovative management and investment programs will enjoy competitive advantages over firms which do not develop such programs. Large commercial feedlots, as in the Texas Panhandle-Plains, have the capability to access the most current and detailed commodity and wholesale-retail price information, adopt current computer technology, and employ consultants to assure that they are utilizing the most economical and efficient feedlot management, financial, and marketing practices possible.

Because of the structure of the Texas cattle feeding industry and the competitive and locational advantages the industry enjoys, Texas will continue to be one of the major cattle feeding and slaughter regions in the United States during the next decade. The industry, however, must assure that management, feeding, and marketing practices undergo continuous adjustments to realize maximum economic efficiencies in response to emerging technologies, industry structural changes, and changes in economic and resource situations, including changes in legislative and income tax reporting procedures.

Structural Aspects of the Industry

Over the past 2 to 3 decades, two trends in the structure of the agricultural industry have emerged and remained pervasive. First, and most pervasive, has been the trend toward increased concentration (fewer and larger firms). This trend has been fueled by several factors, including the need to spread equipment and managerial costs over more units of output, thereby lowering per-unit costs, and the need to increase the scale of production to allow farmers and ranchers to keep pace with increases in non-farm incomes.

The second trend has been toward increased vertical coordination and integration of marketing, processing, and production. The most often cited example of complete integration is

the poultry industry, but there are several other examples (almonds, pineapple, farm-raised catfish, wine, etc.) of highly integrated or closely coordinated industries. The primary incentives for vertical integration and/or coordination are increased control of quantity, quality, and uniformity of products supplied and reduced risk. As food markets become more segmented and specialized and as consumers continue to demand more quality and convenience, the need for more control over product quality and uniformity on the part of food processors and retailers will continue to grow.

The beef industry has not escaped these general trends. Current estimates indicate that in 1987 the four largest firms in the beef packing industry will market 70 percent of the total fed beef (Davis; Burke). Among Texas feedlots with more than 1,000 head capacity, the largest 48 feedlots produced 60 percent of the cattle on feed in 1970 (Table 5). By 1986, the 33 largest lots produced 57 percent of the fed cattle indicating considerable concentration has taken place since 1970. Furthermore, these 33 lots are owned by less than 33 corporations. Texas cattle producing firms (cow-calf and stockers) numbered 152,000 in 1984. In 1986 over 68 percent of the beef cows were owned by less than 17 percent of the cattle producers (Table 6). Furthermore, the largest 1.6 percent of the beef cattle herds accounted for almost 30 percent of the total cattle. Conversely, there are a large number of very small cattle producing firms in Texas; about 84 percent of the firms have less than 100 head and account for 31.6 percent of the total cattle in the state.

Table 6. Percent of Texas Cattle and Cattle Herds by Herd Size, July 1986.

Herd Size	% of Herds	% of Cattle
1-49	67.9	15.9
50-99	15.9	15.7
100-499	14.6	39.0
500+	1.6	29.4

Source: *Texas Crop and Livestock Reporting Service*

Beef has been much slower than some agricultural industries in adapting vertical integration. Nonetheless, some vertical integration has taken place in the beef production industry. For example, larger percentages of ranchers are maintaining ownership past the weaned calf stage into the stocker and feedlot phases. Conversely, three of the four largest meat packing firms own controlling interest in feedlots. The combined one-time capacity of these packer-owned feedlots is almost 750,000 head (Burke).

The trend toward increased vertical coordination is being forced, in large part, by competition with poultry and other competing meats. The poultry industry has been much more successful at moving poultry from a generic commodity to brand identified, specialized products. To compete, the beef industry must learn to market more beef as specialized products for carefully identified market segments. For this to be accomplished, meat processors must be able to control quality, uniformity and timing. In the beef production and processing business, this means that the genetic makeup as well as the length and type of growing and feeding periods must be coordinated with the intended use(s) of the meat product(s). In

addition, to insure that an adequate supply of the product(s) is available year round, a steady flow of calves will be required. This may result in changing some calving seasons. Forward contracts are likely to be the primary means of accomplishing such vertical coordination. To participate in this type of production-marketing endeavor, production firms will have to be capable of delivering uniform lots of cattle of a specified age, size, and genetic type at the specified time. Cattle producers with fewer than 100 brood cows will have difficulty in meeting the minimum quantity requirements of such contracts.

Those firms which continue to market relatively small, heterogeneous quantities of cattle through traditional channels will likely have to accept lower prices than those who can compete for the specialty product contract. This may ultimately result in more separation of ownership of cattle and land as larger, more efficient cattle producers lease land from several relatively small landowners. Small-scale operators may be able to compete by working together in formal or informal production and/or marketing associations; however, the trend toward fewer and larger ranch firms is likely to continue.

It should be noted that while the portion of beef produced and marketed under contract will likely increase, it will not preclude the continuation of individual firms producing cattle for open-market sales. Cow-calf operations are by necessity decentralized and operate in all 50 of the United States. Thus, commodity-type beef production and marketing will likely remain predominant in the industry for the foreseeable future. Integrated production and marketing will, however, continue to grow in importance.

Conclusions and Implications

Conclusions

Several conclusions can be drawn from the previous sections. They are summarized below in five categories:

1. Economic conditions have resulted in a sharp decline in land prices over the past three years. The TRA will likely help inhibit a reoccurrence of rapid inflation in land prices in the foreseeable future, even with improvement in the general economic conditions in the state. In the longer run, Texas ranch land prices should remain closer to their capitalized value as productive assets than has been the case over the past decade.
2. Economic conditions, including the cattle cycle, have put cattle in a position where real prices for the next 2 to 5 years should be higher than those of the past 6 years. While the TRA's impact on commercial cow and calf prices will be negligible, prices for registered breeding stock may be negatively impacted by the TRA because buying, raising, and selling mature breeding stock will no longer offer the significant tax deductions available in pre-TRA years.
3. The firm level simulation analyses indicate that the TRA will likely have little impact on the economic viability of ranches under the conditions studied. For ranches with outside income of \$60,000 per year or more, the reduction in the tax rates and increased expensing provided by the TRA more than off-set the losses in investment tax credit and changes in depreciation allowances (assuming that the \$60,000 is not "passive" relative to the ranch income). For ranches with less than \$60,000 per year in outside income the TRA will result in higher tax liabilities and relatively lower net worth over the next 10 years compared to levels that would be expected without the TRA. Ranching should, therefore, be less attractive to operators with low outside income.
4. The primary impact of the TRA on the Texas cattle feeding industry will be to shift

some of the ownership of cattle on feed to the feedlot operating companies and away from custom feeders. However, the overall impact of this shift will be slight. Custom feeding will continue as a major activity with ranchers and stocker operators as the primary owners of custom fed cattle. Packer ownership of cattle on feed, through custom feeding and packer ownership of feedlots, is likely to increase slightly over the next several years. However, expected changes in carcass characteristics demanded by packers will likely result in significant changes in feedlot operations during the next several years.

The dominant role of Texas' Panhandle-Southern Plains feedlots throughout the U.S. cattle feeding industry is likely to remain. Multi-lot ownership is likely to continue to increase, resulting in higher degrees of concentration.

5. Overall, the beef industry is becoming more concentrated and vertically integrated. The trend toward vertical integration is just beginning to exert itself and will increase in importance as the industry produces and markets more specialized, brand identified products. Packers are likely to expand the use of contracts which specify genetic make-up, age, and growing and finishing practices of the beef cattle in order to insure uniformity and quality for their meat products. Although commodity-type production and marketing will predominate for the foreseeable future, producers who can compete for the packer contracts will likely obtain premium prices for their cattle as compared to producers who continue to market a heterogeneous commodity.

Implications

As its developers intended, the TRA will discourage tax-motivated investments including investments in ranchland and beef cattle production. In the long run, however, the impact of the TRA on structure and production in the Texas beef cattle industry will be minimal and will be greatly overshadowed by the impacts of economic and market developments.

This study of the impacts of the TRA and recent economic developments indicates that the beef producing industry in Texas will be evolving toward a more concentrated and integrated industry over the next several years. This evolution implies the need for re-evaluation of research, education and public policy programs and priorities as they relate to the beef production industry.

The trend toward brand identified, specialized beef products will necessitate increased specifications of beef carcass characteristics beyond those incorporated in the current USDA yield and quality grade standards. Furthermore, it is likely that an array of different specifications will be stipulated to meet the requirements for different company brands and different products under the same brand. Once the specifications are delineated, efficient means of obtaining the beef carcasses with the specified characteristics must be developed. This will not be a simple task because several different meat products are produced from each carcass, and there are likely to be many alternative combinations of age, genetic make-up, and processing and production practices which would result in a high percentage of carcasses meeting the specified characteristics.

Research and education programs are needed to delineate, evaluate, and communicate to producers the relative efficiency of alternative combinations of breed, age, and production and processing practices which will meet the specified characteristics of finished beef carcasses. Also needed are research and education programs which provide producers and government agencies information on the efficiency and equity of alternative marketing institutions and practices which can be used to maintain the competitiveness and viability of ranchers, stocker operators, and feedlots faced with the new product specifications. Some of the issues which should be investigated include the possible role of marketing associations, pools and/or cooperatives as mechanisms for allowing smaller scale ranches to participate in contracts and/or otherwise

remain competitive, the role of USDA (AMS and PSA) in monitoring and regulating competition and pricing, including interpreting contract compliance and non-compliance penalties, and the relative magnitude and incidence of costs, returns, and risks associated with alternative beef cattle production and marketing practices and arrangements.

Implications

As its developers intended, the TRA will discourage tax-motivated investment including investment in ranchland and beef cattle production. In the long run, however, the impact of the TRA on structure and production in the Texas beef cattle industry will be minimal and will be greatly overshadowed by the impact of economic and market developments.

Conclusions

This study of the impact of the TRA and recent economic developments indicates that the beef production industry in Texas will be evolving toward a more concentrated and integrated industry over the next several years. This evolution implies the need for re-evaluation of

research, education and public policy programs and priorities as they relate to the beef production industry. It is recommended that the Texas A&M and Texas Tech

universities and other research institutions continue to monitor and

the trend toward integrated beef production with increased emphasis on

specialization of beef-cattle operations. Further, it is likely that an array of different

specialty products will be required to meet the requirements for different segments and

different products under the same brand. Once the production requirements are defined,

years of planning the beef business with the specified requirements must be developed.

This will not be a simple task because several different types of products are produced from each

cow, and there are likely to be many alternative combinations of age, genetic make-up, and

processing and production practices which would result in a high percentage of carcasses

meeting the specified requirements and others which are not suitable for the market.

Further, the current and future research and education programs and

the research and education programs are needed to address the needs and requirements of

producers in the various segments of the beef production and marketing industry.

Also, the research and education programs which provide producers and government agencies

information on the effects and opportunities of alternative production and marketing

practices should be used to monitor the economic and financial viability of producers, stock operators,

and factors faced with the new product requirements. Some of the issues which should be

investigated include the possible role of marketing associations, pools and/or cooperatives as

mechanisms for affecting market prices in alternative production and marketing

practices.

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Table A1. Simulation Results for a Representative Rolling Plains Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$20,000 of Annual Off-Farm Income and 6% Increase in Land Value After 1990.

	1984 Tax Act & Initial Debt of:			1986 Tax Act & Initial Debt of:		
	0%	20%	40%	0%	20%	40%
Probability of Survival (%)	100.0	100.0	24.0	100.0	100.0	24.0
Probability of Success (%)	32.0	0.0	0.0	22.0	0.0	0.0
Net Present Value (\$1000)						
Mean	-38.48	-368.83	-986.09	-46.52	-377.21	-986.47
Minimum	-158.63	-568.33	-1197.35	-165.32	-567.38	-1197.35
Maximum	188.04	-65.00	-550.37	183.73	-83.48	-558.26
Present Value Ending Net Worth(\$1000)						
Mean	1405.65	887.32	-22.14	1380.81	871.66	-22.87
Minimum	1328.78	697.24	-232.08	1310.66	698.77	-232.08
Maximum	1524.94	1152.21	413.17	1507.93	1116.51	398.59
Average Annual Cash Receipts (\$1000)						
Mean	118.76	118.76	118.12	118.76	118.76	118.12
Minimum	107.42	107.42	106.45	107.42	107.42	106.45
Maximum	139.07	139.07	139.07	139.07	139.07	139.07
Average Annual Net Cash Income (\$1000)						
Mean	29.17	-28.51	-126.99	29.17	-30.18	-127.07
Minimum	17.83	-57.33	-142.65	17.83	-57.14	-142.65
Maximum	49.48	11.20	-83.53	49.48	7.48	-85.10
Average Annual Depreciation (\$1000)						
Mean	27.77	26.76	26.66	28.62	27.10	27.08
Minimum	23.54	22.60	22.60	24.10	22.60	22.60
Maximum	30.27	29.28	29.06	31.16	29.66	29.59
Sum of I. T. C. for all Years(\$1000)						
Mean	17.71	15.49	15.22	0.00	0.00	0.00
Minimum	13.32	11.02	11.02	0.00	0.00	0.00
Maximum	20.09	17.87	17.76	0.00	0.00	0.00
Average Annual Taxable Income (\$1000)						
Mean	36.63	6.57	0.30	40.22	8.36	0.48
Minimum	22.80	0.10	0.00	26.02	0.22	0.00
Maximum	60.77	18.02	3.94	65.80	21.85	4.75
Average Annual Income Taxes (\$1000)						
Mean	4.95	0.34	0.00	7.83	1.47	0.09
Minimum	1.26	0.00	0.00	4.34	0.03	0.00
Maximum	12.86	1.99	0.04	14.27	4.41	1.18

Table A2. Simulation Results for a Representative Rolling Plains Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$60,000 of Annual Off-Farm Income and 6% Increase in Land Value After 1990.

	1984 Tax Act & Initial Debt of:			1986 Tax Act & Initial Debt of:		
	0%	20%	40%	0%	20%	40%
Probability of Survival (%)	100.0	100.0	100.0	100.0	100.0	100.0
Probability of Success (%)	50.0	2.0	0.0	52.0	2.0	0.0
Net Present Value (\$1000)						
Mean	-1.78	-196.22	-624.18	3.15	-200.77	-632.66
Minimum	-117.42	-333.39	-831.70	-117.04	-344.06	-830.53
Maximum	218.95	31.53	-285.36	237.85	31.27	-304.83
Present Value Ending Net Worth(\$1000)						
Mean	1590.36	1318.00	732.32	1605.68	1309.31	-716.63
Minimum	1533.43	1252.73	529.64	1536.49	1233.21	531.62
Maximum	1690.01	1424.87	1042.73	1738.88	1422.45	1011.61
Average Annual Cash Receipts (\$1000)						
Mean	118.76	118.76	118.76	118.76	118.76	118.76
Minimum	107.42	107.42	107.42	107.42	107.42	107.42
Maximum	139.07	139.07	139.07	139.07	139.07	139.07
Average Annual Net Cash Income (\$1000)						
Mean	29.17	9.19	-76.50	29.17	7.81	-78.18
Minimum	17.83	-8.36	-106.84	17.83	-10.81	-106.61
Maximum	49.48	34.90	-30.03	49.48	34.05	-33.60
Average Annual Depreciation (\$1000)						
Mean	27.77	27.19	26.79	28.62	27.70	27.12
Minimum	23.54	23.42	22.60	24.17	24.19	22.60
Maximum	30.27	29.64	29.28	31.16	29.93	29.66
Sum of I. T. C. for all Years(\$1000)						
Mean	17.71	17.11	15.51	0.00	0.00	0.00
Minimum	13.32	13.52	11.02	0.00	0.00	0.00
Maximum	20.09	19.12	17.87	0.00	0.00	0.00
Average Annual Taxable Income (\$1000)						
Mean	92.43	55.71	6.64	97.39	59.84	8.31
Minimum	79.75	40.31	0.18	83.09	42.98	0.10
Maximum	117.76	78.57	25.01	125.87	83.57	28.62
Average Annual Income Taxes (\$1000)						
Mean	25.86	11.28	0.35	23.26	12.40	1.46
Minimum	20.65	5.73	0.00	18.93	7.60	0.00
Maximum	37.10	20.06	2.61	30.23	19.59	5.41

Table A3. Simulation Results for a Representative Rolling Plains Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$20,000 of Annual Off-Farm Income and 3% Increase in Land Value After 1990.

	1984 Tax Act & Initial Debt of:			1986 Tax Act & Initial Debt of:		
	0%	20%	40%	0%	20%	40%
Probability of Survival (%)	100.0	100.0	2.0	100.0	100.0	2.0
Probability of Success (%)	2.0	0.0	0.0	2.0	0.0	0.0
Net Present Value (\$1000)						
Mean	-188.46	-518.03	-1080.72	-196.37	-526.40	-1085.27
Minimum	-308.25	-717.53	-1191.32	-315.14	-716.58	-1196.97
Maximum	37.79	-214.19	-699.57	33.59	-232.76	-707.46
Present Value Ending Net Worth(\$1000)						
Mean	1254.42	738.12	-118.36	1229.79	722.46	-123.21
Minimum	1178.77	548.04	-226.06	1160.10	549.57	-231.90
Maximum	1372.92	1003.02	263.97	1356.27	967.20	249.39
Average Annual Cash Receipts (\$1000)						
Mean	118.76	118.76	117.69	118.76	118.76	117.69
Minimum	107.42	107.42	106.45	107.42	107.42	106.45
Maximum	139.07	139.07	139.07	139.07	139.07	139.07
Average Annual Net Cash Income (\$1000)						
Mean	29.68	-27.87	-114.86	29.68	-29.54	-115.28
Minimum	18.34	-56.69	-127.37	18.34	-56.50	-127.37
Maximum	49.99	11.81	-82.89	49.99	8.08	-84.46
Average Annual Depreciation (\$1000)						
Mean	27.77	26.76	26.39	28.62	27.10	27.00
Minimum	23.54	22.60	22.60	24.10	22.60	22.60
Maximum	30.27	29.28	29.06	31.16	29.66	29.59
Sum of I. T. C. for all Years(\$1000)						
Mean	17.71	15.49	14.63	0.00	0.00	0.00
Minimum	13.32	11.02	11.02	0.00	0.00	0.00
Maximum	20.09	17.87	17.65	0.00	0.00	0.00
Average Annual Taxable Income (\$1000)						
Mean	37.15	6.57	0.30	40.72	8.36	0.48
Minimum	23.37	0.10	0.00	26.57	0.22	0.00
Maximum	61.23	18.05	3.94	66.25	21.88	4.75
Average Annual Income Taxes (\$1000)						
Mean	5.07	0.34	0.00	7.91	1.47	0.09
Minimum	1.33	0.00	0.00	4.42	0.03	0.00
Maximum	13.03	1.99	0.04	14.39	4.42	1.18

Table A4. Simulation Results for a Representative Rolling Plains Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$60,000 of Annual Off-Farm Income and 3% Increase in Land Value After 1990.

	1984 Tax Act & Initial Debt of:			1986 Tax Act & Initial Debt of:		
	0%	20%	40%	0%	20%	40%
Probability of Survival (%)						
Mean	100.0	100.0	100.0	100.0	100.0	100.0
Minimum	100.0	100.0	100.0	100.0	100.0	100.0
Maximum	100.0	100.0	100.0	100.0	100.0	100.0
Probability of Success (%)						
Mean	2.0	0.0	0.0	2.0	0.0	0.0
Minimum	0.0	0.0	0.0	0.0	0.0	0.0
Maximum	2.0	0.0	0.0	2.0	0.0	0.0
Net Present Value (\$1000)						
Mean	-152.00	-346.30	-773.39	-146.91	-350.66	-781.87
Minimum	-267.52	-483.31	-980.90	-267.01	-493.85	-979.73
Maximum	68.50	-118.77	-434.65	87.67	-118.89	-454.34
Present Value Ending Net Worth(\$1000)						
Mean	1438.34	1166.31	583.11	1454.03	1157.95	567.41
Minimum	1381.64	1101.14	380.44	1384.96	1082.08	382.42
Maximum	1537.51	1272.66	893.01	1587.01	1270.63	861.09
Average Annual Cash Receipts (\$1000)						
Mean	118.76	118.76	118.76	118.76	118.76	118.76
Minimum	107.42	107.42	107.42	107.42	107.42	107.42
Maximum	139.07	139.07	139.07	139.07	139.07	139.07
Average Annual Net Cash Income (\$1000)						
Mean	29.68	9.75	-75.86	29.68	8.37	-77.54
Minimum	18.34	-7.78	-106.20	18.34	-10.22	-105.97
Maximum	49.99	35.41	-29.41	49.99	34.57	-32.97
Average Annual Depreciation (\$1000)						
Mean	27.77	27.21	26.79	28.62	27.70	27.12
Minimum	23.54	23.42	22.60	24.17	24.19	22.60
Maximum	30.27	29.64	29.28	31.16	29.93	29.66
Sum of I. T. C. for all Years(\$1000)						
Mean	17.71	17.11	15.51	0.00	0.00	0.00
Minimum	13.32	13.52	11.02	0.00	0.00	0.00
Maximum	20.09	19.12	17.87	0.00	0.00	0.00
Average Annual Taxable Income (\$1000)						
Mean	92.91	56.16	6.65	97.89	60.31	8.32
Minimum	80.20	40.81	0.18	83.54	43.46	0.10
Maximum	118.27	79.05	25.63	126.40	84.06	29.25
Average Annual Income Taxes (\$1000)						
Mean	26.09	11.45	0.35	23.43	12.53	1.46
Minimum	20.84	5.91	0.00	19.08	7.72	0.00
Maximum	37.35	20.28	2.66	30.38	19.75	5.50

Table A5. Simulation Results for a Representative East Texas Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$20,000 of Annual Off-Farm Income and 6% Increase in Land Value After 1990.

	1984 Tax Act & Initial Debt of:			1986 Tax Act & Initial Debt of:		
	0%	20%	40%	0%	20%	40%
Probability of Survival (%)	100.0	100.0	100.0	100.0	100.0	100.0
Probability of Success (%)	56.0	0.0	0.0	34.0	0.0	0.0
Net Present Value (\$1000)						
Mean	1.39	-38.61	-64.24	-1.50	-41.51	-66.40
Minimum	-11.96	-54.04	-81.13	-14.79	-56.49	-82.51
Maximum	19.04	-19.88	-42.96	16.07	-22.42	-45.78
Present Value Ending Net Worth(\$1000)						
Mean	221.57	147.98	103.73	212.40	140.50	99.38
Minimum	209.99	133.62	87.26	200.98	127.43	84.12
Maximum	234.71	163.50	122.84	225.81	155.25	116.43
Average Annual Cash Receipts (\$1000)						
Mean	27.07	27.07	27.07	27.07	27.07	27.07
Minimum	26.22	26.22	26.22	26.22	26.22	26.22
Maximum	28.59	28.59	28.59	28.59	28.59	28.59
Average Annual Net Cash Income (\$1000)						
Mean	5.18	1.31	-3.41	5.18	0.93	-3.82
Minimum	4.33	-0.10	-5.50	4.33	-0.61	-5.78
Maximum	6.70	3.08	-0.68	6.70	3.04	-1.22
Average Annual Depreciation (\$1000)						
Mean	9.40	8.70	8.75	8.46	8.28	8.28
Minimum	8.77	8.19	7.90	7.71	7.52	7.47
Maximum	9.95	9.95	9.27	9.08	8.89	8.93
Sum of I. T. C. for all Years(\$1000)						
Mean	2.91	2.76	2.89	0.00	0.00	0.00
Minimum	2.73	2.69	2.65	0.00	0.00	0.00
Maximum	3.04	3.01	3.24	0.00	0.00	0.00
Average Annual Taxable Income (\$1000)						
Mean	21.10	12.78	8.25	19.84	11.05	7.08
Minimum	19.41	10.87	6.19	18.07	8.99	5.74
Maximum	23.72	15.09	11.10	22.71	14.17	9.36
Average Annual Income Taxes (\$1000)						
Mean	2.10	0.76	0.37	2.96	1.65	1.05
Minimum	1.75	0.57	0.22	2.70	1.34	0.85
Maximum	2.62	1.13	0.71	3.39	2.11	1.39

Table A6. Simulation Results for a Representative East Texas Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$60,000 of Annual Off-Farm Income and 6% Increase in Land Value After 1990.

	1984 Tax Act & Initial Debt of:			1986 Tax Act & Initial Debt of:		
	0%	20%	40%	0%	20%	40%
Probability of Survival (%)						
Mean	100.0	100.0	100.0	100.0	100.0	100.0
Minimum	100.0	100.0	100.0	100.0	100.0	100.0
Maximum	100.0	100.0	100.0	100.0	100.0	100.0
Probability of Success (%)						
Mean	100.0	100.0	100.0	100.0	100.0	100.0
Minimum	100.0	100.0	100.0	100.0	100.0	100.0
Maximum	100.0	100.0	100.0	100.0	100.0	100.0
Net Present Value (\$1000)						
Mean	71.45	36.95	18.94	79.67	43.72	25.52
Minimum	59.17	24.61	6.50	67.15	31.10	13.55
Maximum	88.28	53.92	36.08	96.30	60.45	41.85
Present Value Ending Net Worth(\$1000)						
Mean	558.17	501.20	471.40	590.19	528.34	497.83
Minimum	549.23	491.97	461.98	580.62	518.46	488.84
Maximum	567.86	511.66	482.36	600.20	538.59	509.03
Average Annual Cash Receipts (\$1000)						
Mean	27.07	27.07	27.07	27.07	27.07	27.07
Minimum	26.22	26.22	26.22	26.22	26.22	26.22
Maximum	28.59	28.59	28.59	28.59	28.59	28.59
Average Annual Net Cash Income (\$1000)						
Mean	5.18	1.55	-0.53	5.18	1.55	-0.53
Minimum	4.33	0.71	-1.38	4.33	0.71	-1.38
Maximum	6.70	3.08	0.99	6.70	3.08	0.99
Average Annual Depreciation (\$1000)						
Mean	9.40	9.40	9.40	9.48	9.48	9.48
Minimum	8.77	8.77	8.77	8.83	8.83	8.83
Maximum	9.95	9.95	9.95	10.05	10.05	10.05
Sum of I. T. C. for all Years(\$1000)						
Mean	2.91	2.91	2.91	0.00	0.00	0.00
Minimum	2.73	2.73	2.73	0.00	0.00	0.00
Maximum	3.04	3.04	3.04	0.00	0.00	0.00
Average Annual Taxable Income (\$1000)						
Mean	85.05	77.86	74.28	83.72	76.29	72.66
Minimum	83.68	76.50	72.91	82.25	74.81	71.36
Maximum	87.32	80.07	76.53	86.04	78.62	74.81
Average Annual Income Taxes (\$1000)						
Mean	24.89	21.83	20.34	19.82	17.44	16.17
Minimum	24.32	21.28	19.80	19.35	16.98	15.62
Maximum	25.73	22.63	21.15	20.56	18.18	16.97

Table A7. Simulation Results for a Representative East Texas Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$20,000 of Annual Off-Farm Income and 3% Increase in Land Value After 1990.

	1984 Tax Act & Initial Debt of:			1986 Tax Act & Initial Debt of:		
	0%	20%	40%	0%	20%	40%
Probability of Survival (%)	100.0	100.0	100.0	100.0	100.0	100.0
Probability of Success (%)	12.0	0.0	0.0	8.0	0.0	0.0
Net Present Value (\$1000)						
Mean	-8.21	-48.18	-73.77	-11.09	-51.07	-75.90
Minimum	-21.56	-63.58	-90.60	-24.39	-66.04	-92.00
Maximum	9.47	-29.44	-52.49	6.50	-31.98	-55.30
Present Value Ending Net Worth(\$1000)						
Mean	211.93	138.39	94.20	202.77	130.90	89.85
Minimum	200.35	124.05	77.76	191.35	117.84	74.59
Maximum	225.09	153.87	113.29	216.21	145.65	106.84
Average Annual Cash Receipts (\$1000)						
Mean	27.07	27.07	27.07	27.07	27.07	27.07
Minimum	26.22	26.22	26.22	26.22	26.22	26.22
Maximum	28.59	28.59	28.59	28.59	28.59	28.59
Average Annual Net Cash Income (\$1000)						
Mean	5.21	1.35	-3.36	5.21	0.97	-3.76
Minimum	4.36	-0.05	-5.45	4.36	-0.56	-5.73
Maximum	6.73	3.11	-0.73	6.73	3.08	-1.17
Average Annual Depreciation (\$1000)						
Mean	9.40	8.70	8.75	8.46	8.28	8.28
Minimum	8.77	8.19	7.90	7.71	7.52	7.47
Maximum	9.95	9.95	9.27	9.08	8.89	8.93
Sum of I. T. C. for all Years(\$1000)						
Mean	2.91	2.76	2.89	0.00	0.00	0.00
Minimum	2.73	2.69	2.65	0.00	0.00	0.00
Maximum	3.04	3.01	3.20	0.00	0.00	0.00
Average Annual Taxable Income (\$1000)						
Mean	21.14	12.83	8.30	19.88	11.10	7.09
Minimum	19.46	10.92	6.24	18.11	9.04	5.79
Maximum	23.76	15.13	11.15	22.75	14.21	9.41
Average Annual Income Taxes (\$1000)						
Mean	2.11	0.76	0.37	2.97	1.65	1.05
Minimum	1.76	0.57	0.22	2.70	1.34	0.86
Maximum	2.63	1.13	0.72	3.40	2.12	1.40

Table A8. Simulation Results for a Representative East Texas Cow/Calf Ranch Under 1984 and 1986 Income Tax Acts and Three Alternative Debt Levels, Assuming \$60,000 of Annual Off-Farm Income and 3% Increase in Land Value After 1990.

	1984 Tax Act & Initial Debt of:			1986 Tax Act & Initial Debt of:		
	0%	20%	40%	0%	20%	40%
Probability of Survival (%)	100.0	100.0	100.0	100.0	100.0	100.0
Probability of Success (%)	100.0	100.0	96.0	100.0	100.0	100.0
Net Present Value (\$1000)						
Mean	61.83	27.34	9.32	70.07	34.11	15.91
Minimum	49.56	14.99	-3.12	57.54	21.50	3.94
Maximum	78.69	44.33	26.49	86.71	50.87	32.27
Present Value Ending Net Worth(\$1000)						
Mean	548.46	491.50	461.71	580.52	518.67	488.16
Minimum	539.52	482.27	452.29	570.95	508.79	479.21
Maximum	558.18	501.99	472.69	590.50	528.94	499.36
Average Annual Cash Receipts (\$1000)						
Mean	27.07	27.07	27.07	27.07	27.07	27.07
Minimum	26.22	26.22	26.22	26.22	26.22	26.22
Maximum	28.59	28.59	28.59	28.59	28.59	28.59
Average Annual Net Cash Income (\$1000)						
Mean	5.21	1.59	-0.50	5.21	1.59	-0.50
Minimum	4.36	0.74	-1.35	4.36	0.74	-1.35
Maximum	6.73	3.11	1.02	6.73	3.11	1.02
Average Annual Depreciation (\$1000)						
Mean	9.40	9.40	9.40	9.48	9.48	9.48
Minimum	8.77	8.77	8.77	8.83	8.83	8.83
Maximum	9.95	9.95	9.95	10.05	10.05	10.05
Sum of I. T. C. for all Years(\$1000)						
Mean	2.91	2.91	2.91	0.00	0.00	0.00
Minimum	2.73	2.73	2.73	0.00	0.00	0.00
Maximum	3.04	3.04	3.04	0.00	0.00	0.00
Average Annual Taxable Income (\$1000)						
Mean	85.09	77.89	74.31	83.76	76.33	72.69
Minimum	83.72	76.53	72.95	82.29	74.85	71.39
Maximum	87.35	80.11	76.56	86.08	78.66	74.85
Average Annual Income Taxes (\$1000)						
Mean	24.90	21.85	20.36	19.83	17.46	16.18
Minimum	24.34	21.29	19.82	19.36	17.00	15.63
Maximum	25.75	22.65	21.16	20.57	18.19	16.98

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