THE ECONOMIC ANALYSIS OF ALTERNATIVE FINANCING METHODS FOR VALUE-ADDED BEEF FINISHING OPERATIONS IN NORTH DAKOTA

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ABSTRACT

Zutz, Christina Lynn; M.S.; Department of Agribusiness and Applied Economics; College of Agriculture, Food Systems, and Natural Resources; North Dakota State University; November 2002. The Economic Analysis of Alternative Financing Methods for Value-Added Beef Finishing Operations in North Dakota. Major Professor: Dr. Cole Gustafson.

Producer interest in value-added ventures is encouraging the development of North Dakota commercial finishing feedlots. The availability of excess grain and reasonably priced feeder cattle are major factors. However, unavailability of initial capital may constrain development.

It is possible to choose recommended loan arrangements depending on the measures the producer is most concerned about, for example, short- versus long-term results, the type of facility, or results based on the financial measure (i.e.,, net return). The purpose of this study is to demonstrate the economic impact alternative methods of financing have on the financial performance of a commercial finishing feedlot in North Dakota. Two types of lots in North Dakota, 1) earthen lot with a windbreak and 2) a concrete lot with a shed, will be compared. In addition, three different feedlot sizes, 1,500 head; 5,000 head; and 10,000 head, will be analyzed. For each level, feeders are purchased near 673 lbs. and sold at 1,155 lbs. Economic impacts will be analyzed using the variability of expected net return, expected return on farm equity, and expected net cash flows. A model is constructed to simulate financial performance under different loan arrangements. Loan terms differ by equity level and interest rates, and the prices of cattle bought and sold are stochastic.

Those feedlots that provided between 30% to 50% equity generated moderate to higher net returns in the long term. In addition, lower interest rates and lower equity requirements generally provided higher short- and long-term returns for a feedlot.

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I dedicate this thesis to my family, Ken, Bonnie, and Curt Zutz.

C.L.Z.

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CHAPTER 1

INTRODUCTION

Historically, cattle production has been an important part of North Dakota's agricultural economy. In the 1870s, the cattle industry spread rapidly northward from the Texas ranges to the Northern Great Plains. There were no cattle found in Dakota Territory, Montana, and Wyoming in 1860. By 1880, there were 140,815 head in Dakota Territory (Paulsen 1970).

Many two-year-old steers were trailed from the Southern Plains into the Northern Great Plains and North Dakota. Ranchers brought their cattle to the north to mature and grass fatten, after which the cattle were shipped as four- or five-year-olds to markets in the eastern United States (Paulsen 1970).

An important industry in North Dakota, cattle production is traditionally ranked second only to wheat farming as the most important sector in North Dakota's economy, resulting in enough beef to make 2 billion hamburgers produced by North Dakota farmers and ranchers (Johnson 2002a).

The North Dakota Agricultural Statistics Service notes that in 2000, North Dakota had 30,300 farms involving 39.4 million acres out of a state average of 44.2 million acres. Approximately 27.6 million of these acres are devoted to some aspect of crop production. Approximately 11.8 million acres are available for other farm production, principally beef and dairy production (Ringwall 2002a).

The availability of excess grain is promising for this type of facility, as well as many feasible locations for finishing feedlots in North Dakota. However, feedlot development is lacking in the finishing beef sector of North Dakota due to the

unavailability of initial capital. For example, western North Dakota ranchers are still working to establish their own packing plant, initially called Northern Plains Premium Beef (NPPB). In addition to a packing plant, this venture included a backgrounding livestock operation that raised calves to nearly 800 lbs.; however, the facility has been unable to establish itself due to the lack of capital financing (Saxowsky et al. 1998).

Difficulty in obtaining initial capital for livestock finishing operations can also be a current problem, as many cattle are shipped from North Dakota before they are finished. It is necessary to locate sources of credit or external capital for finishing operations in order to maximize producer returns and to support the beef industry in North Dakota.

Problem Statement

The purpose of this study is to demonstrate the impact of existing ways to finance the development and operation of a commercial finishing feedlot in North Dakota and analyze the financial implications of alternative credit arrangements. In order to cover the financial obligations for a finishing feedlot in North Dakota, there is a need to demonstrate the impact of different credit arrangements for financing by analyzing the variability of expected net return, expected return on farm equity, and expected net cash flows.

Commonly, lenders require between 40-60% equity to secure a loan. However, most private farmer feeders and cooperatives are only able to support 20-30% equity. Although there are many sources of capital (loans or leases from Farm Credit System, banks, and/or credit unions), finding a feasible source of capital with modest equity is difficult (Hardemeyer 2002).

Economists have noted the livestock industry is one of the top creators of new wealth within the state. Livestock producers could generate $59 million of additional net

income if they could borrow more money to purchase livestock (based on 16,300 livestock farms in North Dakota, with each producer generating an average of $19,491 in additional net income). The additional net income would generate $182 million in gross business activity and create over 2,100 full-time equivalent jobs (Baltezore and Gustafson and Gustafson 1993).

Background livestock feeding of calves until 700 lbs. is profitable in North Dakota; however, finishing feeder cattle through 1,200 lbs. can sometimes be less efficient in North Dakota due to high freight charges for hauling finished cattle to the slaughter plant. It has been common practice to background feeder cattle in North Dakota and finish them in other states in pursuit of economic efficiency. This process transports thousands of cattle out of state, taking with them lost profits and revenues from 1) beef consumers, 2) beef producers, 3) grain producers, and 4) feed producers of North Dakota.

The difficulty of obtaining equity capital is not due to the unavailability of financing. Nearly nine out of ten North Dakota livestock producers agreed that their financially feasible livestock investment proposals received financing (Baltezore and Gustafson and Gustafson 1993). Most of the capital requirements for fixed investments are usually obtained from a combination of three or four sources of capital (Uvacek 1983). In 1993, the primary source of financing for North Dakota livestock producers was commercial banks (nine out of ten producers had financing through commercial banks). Half of the producers had financing with Farm Credit Services (FCS), and 36% had financing with Farm Service Agency (FSA). Nearly 15% had financing with credit unions, and 12% had financing through private individuals. Primary uses of farm loans were 51% livestock and 28% were for other livestock operations, while the remaining 21% were for

other farm operations and investments (Baltezore and Gustafson and Gustafson 1993).

Farms can be especially vulnerable to alternative credit programs because they are highly capital intensive relative to their levels of sales and cash flows and there is a substantial lag between the purchase of inputs and the sale of outputs. For commercial feedlots, a time lag exists between the purchase of feed and supplies for the cattle and when the cattle are sold to slaughter, causing producers to simultaneously and jointly determine the optimal production and financing plans for the firm (Bierlen et al. 1998). This study delineates the impact of alternative loan provisions and their effects on the production decisions and the financing needed to construct and operate the feedlot.

Objectives

This study begins with construction of a model that will be used to simulate the financial performance of a finishing feedlot in North Dakota under three different sizes of operation: 1,500 head; 5,000 head; and 10,000 head. For each level, feeders are purchased near 673 lbs. and sold at 1,155 lbs. The purpose of this study is to demonstrate the impact of existing ways to finance the operation by analyzing respective financing constraints and changes that affect the operation. Objectives include

1) Develop a comprehensive set of financial statements and enterprise budgets for a cattle finishing feedlot, including investment and operating costs for varying sizes (1,500 head; 5,000 head; 10,000 head) and types of facilities (earthen lot with windbreak, concrete lot with shed).
2) Construct a model using enterprise budgets to simulate net returns, net cash flow, and return on farm equity with various combinations of interest rates, cattle prices, required equity, and loan arrangements.

3) Identify alternative methods for equity and external financing for a finishing feedlot.
4) Simulate alternative financing methods and identify constraints for the feedlot that impact profitability and effectiveness of operation. These methods include financing from commercial bank loans; loans from farm lending institutions like Farm Credit Services (FCS), Bank of North Dakota, and/or CoBank (St. Paul Banks for Cooperatives); financing from government programs like Farm Service Agency (FSA); credit unions; and leasing.
5) Identify the impacts of risk factors (i.e.,, cattle prices, interest rates) and necessary start-up equity on expected net cash flows, expected net return, and the expected return on farm equity ratio within each type of loan arrangement.

A 1,500 head feedlot would be representative of the type of operation an existing farmer feeder would add to their operation to more efficiently utilize homegrown feeds and labor that is available. A 5,000 head feedlot represents the start up of a commercial yard or family-operated small commercial yard with all inputs purchased. Finally, a 10,000 head feedlot is a larger commercial facility designed to capture greater economies of scale while still purchasing all inputs.

The model and data to be used include a balance sheet, cash flows statement, and income statement for three finishing feedlot sizes: 1,500; 5,000; and 10,000 head. In addition, for each size operation, two types of facilities will be considered: earthen lot with windbreak and concrete lot with shed. The values used in these financial statements are incorporated from the budgets of various finishing feedlots in North and South Dakota, Minnesota, Iowa, and Nebraska.

The following chapters of this thesis will review literature pertaining to the research

for this study, including the types of entities to be considered and information and examples of backgrounding and finishing feedlots in and surrounding North Dakota. Also, the financial intermediaries with their different forms of financing and the associated credit constraints will be analyzed.

The development of the model describes the formulation of the financial statements to be used and the methodology employed including discussion of key assumptions, estimates, financial measures, and the use of interest rates, cattle prices, and ratios to be used and compared within this model.

Hypothesis

To best compare the effects of alternative methods of financing, it is necessary to note the effects that the individual loan arrangements have on profitability and net cash flow over a short period of time (5 years). Thus, the null and alternative hypothesis are stated below.

1) H_o: Under currently available loan terms, finishing feedlots in North Dakota can generate positive net cash flows and annual profits within a 5-year time frame.
2) H_a: Under currently available loan terms, finishing feedlots in North Dakota cannot generate positive net cash flows and annual profits within a 5-year time frame.

Using the profitability measures, expected net return and expected return on farm equity, it is possible to determine the profitability of the feedlots analyzed in this study.

CHAPTER 2

REVIEW OF LITERATURE

Due to few options for financing and scarce equity capital, it is often difficult for ranchers to create value-added finishing operations unless they have sufficient private capital. This chapter will review current literature to discern the reasons ranchers have difficulty obtaining financing and review past efforts that ranchers have undertaken to develop economically feasible finishing feedlots in North Dakota.

Current Beef Industry in North Dakota

According to the 1998-2000 report of the Financial Characteristics of ND Farms, farms were classified as "livestock" if 70% or more of total sales were from livestock and "crops" if crop sales accounted for 70% or more of total sales. During 1998-2000, about 64% of all farms statewide were in the crop category, 20% were livestock, and about 16% were mixed enterprise farms. Most west region farms (47%) were classified as livestock in 2000 (Swenson 2001).

North Dakota had 30,300 farms in 2000 (Ringwall 2002a). Crop farms accounted for 27.6 million acres of agriculture production, whereas 11.8 million acres were utilized for other farm production, principally beef and dairy production. Due to the concentration of crops in the Red River Valley and other areas, the distribution of cattle across North Dakota is scattered, but primarily in the west. However, since counties vary by size, it may be a better measure to estimate cows per land unit, which would shift the epicenter of beef cows in North Dakota to the east. Figure 1 shows which counties of North Dakota are primarily livestock.

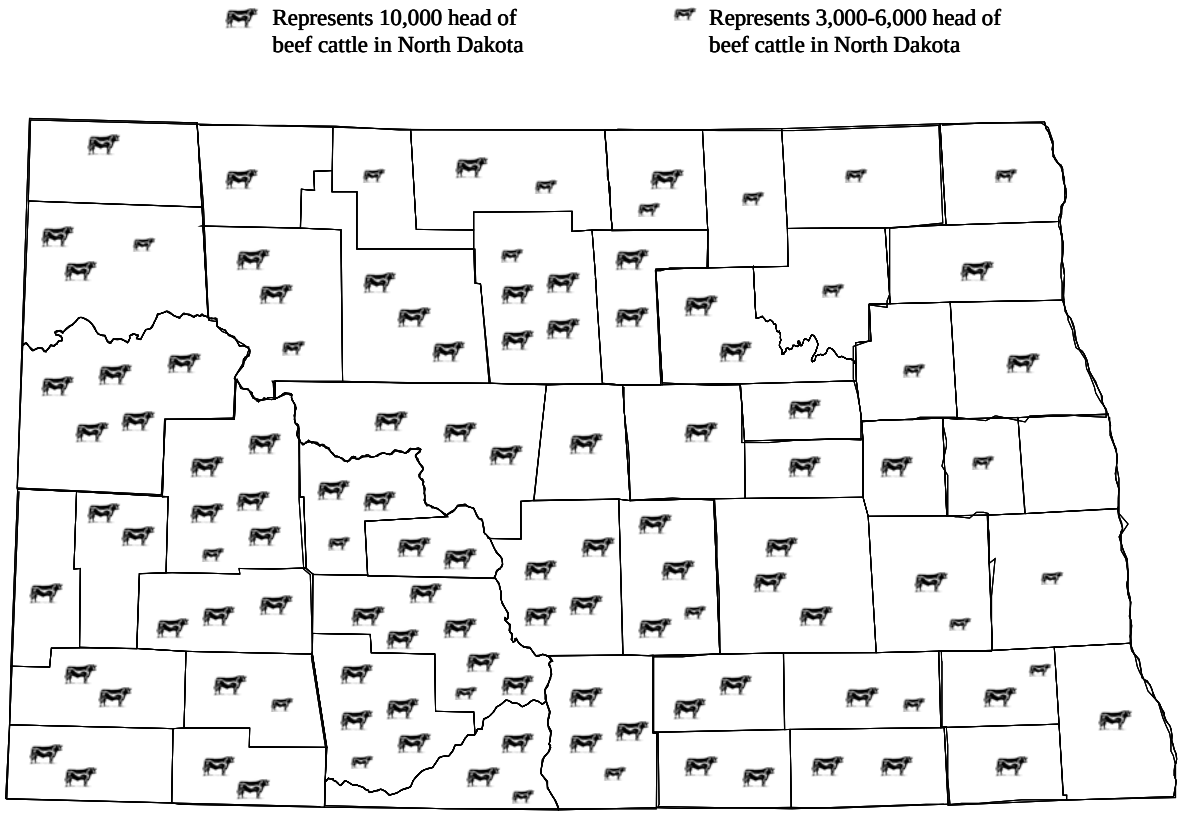


Figure 1. Map showing the number of beef cattle in North Dakota (NDASS 2001).

Currently, many regiments of North Dakota's beef industry take part in cow-calf operations through backgrounding. In 2001, there were 1,002,000 beef cows out of a total 1,413,000 cattle in North Dakota. Leading counties were Morton, Dunn, McKenzie, McHenry, and Grant counties (NDASS 2001). As of February 2002, there were 315,000 steers in North Dakota, which is up 2% from 2001 and up 17% from 2000. However, beef cow operations, 12,000, were down 2% from 2000 and down 6% from 1999 (NDASS 2002).

Most of the livestock operations shown in Figure 1 are cattle operations that consist of 1,000 head or less and are often financed through local banks and government institutions, for example, sole proprietors.

Backgrounding vs. Finishing

Backgrounding refers to the confined feeding of calves following weaning to prepare them for a finishing feedlot ration. Backgrounding feeder cattle is a common practice in North Dakota and is used to add value to home-raised feeds and calves by marketing feeds through the cattle. Finishing feedlots take 600-800 lb. backgrounded cattle and feed them to a finished weight of 1,100-1,300 lbs. This requires a different ration of feed and possibly some additional equipment than is required for backgrounding, but essentially, larger pens and bunks are the only physical measures that must be adjusted for finishing.

Currently, many North Dakota ranchers are considering finishing their backgrounded cattle to attain a greater share of the potential profits in the beef industry. Since there are 315,000 steers in North Dakota, as stated by the North Dakota Agricultural Statistics Service on February 1, 2002, it can be estimated that at the projected beef price of $64.00 cwt at 1,100 lbs., North Dakota's ranchers could realize additional revenues totaling over $221 million (USDA).

Since many operators currently ship backgrounded cattle out of state to commercial finishing lots closer to slaughter facilities, there may be a value-added opportunity available to those willing to make the effort and investment toward constructing finishing operations in North Dakota. However, lenders are sometimes reluctant to help finance those ranchers willing to take this move up the production ladder, since the economics of finishing in North Dakota are relatively unknown.

It has been documented by Saxowsky (1998) that from 2000-2003, a backgrounding feedlot was projected to earn a better rate of return on equity than finishing. However,

finishing feedlots are expected to earn a greater rate of return on equity after 2003. Combining these two activities may produce a more stable rate of return than either of the activities alone. But, since feeding to finish requires a high-energy ration, it would be necessary to locate such feedlots in areas of available corn and barley production, both crops produced largely in North Dakota (Duncan et al. 1997).

Table 1 shows the return to equity and risk, when assuming a transportation distance of 100 miles to ship calves and feeders to a backgrounding feedlot and then 150 miles to a local slaughter plant or 340 miles to a slaughter plant in Dakota City, Nebraska. Cattle shipping charges are calculated at $1.90 per mile freight charge for a 49,000-lb. load (Duncan et al. 1997).

Table 1 shows there are economies of scale in cattle feeding. For example, at 150 miles shipping to a slaughter plant with $2.50 corn and $70 cwt fed cattle, the 1,000 head feedlot loses $25.10 per head times the capacity or loss of $25,100 per year. If a 7% return on equity (the interest rate on long-term U.S. Treasury bonds) is assessed, the return to risk on a per head of capacity basis is a negative $58.13 (Duncan et al. 1997).

The finishing alternative has a higher risk than backgrounding and requires a larger capital investment in feedlots and slaughter plants. Feeding cattle to finish has proven to be unprofitable for extended periods in other parts of the Great Plains where substantial feeding occurs and extended shipping distances to slaughter exist (Duncan et al. 1997). Thus, it can be noted that it is necessary to combine the locations of feed, cattle, and slaughter to provide for a feasible value-added production of finished livestock.

North Dakota has many advantages when considering the access to feedstuffs, cattle, and land in the state. Demand for beef can be supplied efficiently when the

Table 1. Net return per head capacity to equity and risk for various feedlots (Duncan et al. 1997)

Cattle Price	Corn Price $/bu		
$/cwt	3.00	2.50	2.00
1,000 Head Feedlot			
150 miles shipping to Dakota			
75	-72.76	-3.81	65.14
70	-94.04	-25.10	43.85
65	-115.29	-46.34	22.61
340 miles shipping to Dakota City, NE			
75	-95.00	-26.05	42.90
70	-116.29	-47.34	21.61
65	-137.53	-68.58	0.37
5,000 Head Feedlot			
150 miles shipping to local slaughter plant			
75	-22.46	46.49	115.44
70	-43.74	25.19	94.15
65	-64.99	3.96	72.91
340 miles shipping to Dakota City, NE			
75	-44.70	24.25	93.20
70	-66.00	2.95	71.91
65	-87.23	-18.28	50.67
20,000 Head Feedlot			
150 miles shipping to local slaughter plant			
75	-8.81	60.14	129.09
70	-30.11	38.84	107.79
65	-51.34	17.61	86.56
340 miles shipping to Dakota City, NE			
75	-31.05	37.90	106.85
70	-52.35	16.60	85.55
65	-73.58	-4.63	64.32

7% return on equity has not been subtracted; $33.03 for the 1,000 head lot; $25.66 for the 5,000 head lot; and $23.71 for the 20,000 head lot. 100 miles shipping into lot.

commodity is fed and raised locally, given that prices are accommodating to ranchers.

Forecasters projected in January 2002 that the long-term average price of 1,100-1,300 lb. Nebraska Direct slaughter steers will rise higher than the historic average price of

$65.61 cwt for the years 1996-2000 and will remain steady at $73.80 cwt from 2002-2006, whereas backgrounded 600-700 lb. steers are expected to rise from the 1996-2000 historic average of $78.87 to a projected average of $94.40 cwt in 2002-2006 (Haugen et al. 2002). The economic research service outlook report for livestock, dairy, and poultry for June 25, 2002, predicts that Nebraska choice steers will yield $65-66, $62-66, and $70-76 cwt for the second, third, and fourth quarters of 2002, respectively. Additionally, for 2003, the first quarter is forecasted to be $71-77 and $72-79 cwt for the second quarter (USDA).

Corn prices are expected to rise from a historic average of $1.90 bu. to a projected long-term average through 2007 of $1.94. Oats are expected to rise from $1.14 to $1.18 bu, and short-term estimations show that alfalfa hay should stay close to $55 per ton (Haugen et al. 2002).

In a study by Hoppe et al. (1997), North Dakota calves finished with corn (ND-corn) or barley (ND-barley) were compared with those finished with a corn-based finishing diet in Kansas (KS-corn). The results of the study suggest that finishing North Dakota-born calves in North Dakota from October to May may have an economic advantage with lower feed costs per unit gained. For example, three-year average feed costs were $.517, .527, and .558 per pound of gain, while the breakeven price for ND-corn, ND-barley, and KS-corn was 63.40, 63.09, and 64.28 $/cwt, respectively.

In addition to obtaining reasonable prices for traditional feed for cattle, North Dakota ranchers have utilized a local market for more nontraditional feeds, like peas, naked oats, and millet, as well as coproduct feeds. Coproducts, the remnants of processing plants, like the corn used in ethanol fuel facilities, can also be utilized in the daily rations of beef finishing feedlots. In the recent 10-15 years, crop processing expansion has made available

significantly more coproducts in North Dakota. Some of these coproducts are wet and need to be fed close to the site of the processing plant (i.e.,, potatoes, corn), while other types of coproducts are dry and less costly, but incur costs to ship to another feeding region (i.e.,, wheat midds, barley malt, canola, soybeans, and sunflower meals) (Anderson 2002b).

Current Financing for Livestock Producers

As smaller ranchers expand facilities to develop their backgrounding and finishing enterprises, they face the need for additional financing. The most frequent source of financing for North Dakota livestock producers was commercial banks in 1993 (nine out of ten producers had financing through commercial banks) (Baltezore and Gustafson and Gustafson 1993). Collateral supporting their financing is primarily current buildings and equipment, in addition to any new cattle purchased.

Obtaining these loans in addition to current sources of debt adds an increasing amount of stress to the financial management of the operation. It also greatly impacts the likelihood of receiving additional financial assistance from lenders, as total available debt capital is limited.

According to Baltezore and Gustafson and Gustafson (1993), a typical North Dakota livestock producer had an average of 2.3 loans, with the average loan term for current loans at 9 years. It was also reported that the average number of loan proposals denied was 1.6. While the average dollar value of loans requested was $93,017, the primary reasons producers were denied financing were inadequate cash flow (58%), high debt-to-asset ratio (56%), or the proposal was too risky (24%).

Expected Profitability in Finishing Feedlots

Finishing feedlots are expected to earn a greater rate of return on equity after 2003

(Saxowsky et al. 1998). However, the most profitable approach would be to combine this feeding structure with the backgrounding of cattle as well. Larger lots, additional feed and additives, more labor, and further equipment will be necessary. Many North Dakota farmers and ranchers will require additional credit from lenders to expand into this type of livestock production.

This will also impact the local communities which would also benefit from this livestock expansion as producers demand more production inputs. Meeting the financial needs of the livestock operators who request supplementary financing would not only contribute to North Dakota's beef industry, but would also create additional economic activity and employment within the local, regional, and state economies.

Future Opportunities for Finishing

Economic projects for expanded cattle finishing operations in North Dakota are favorable due to many factors, including lower feed prices due to lack of demand, increased costs to ship elsewhere, cattle prices for high quality North Dakota beef carcasses, locations and space to construct large feedlots and dispose of waste, ability to accomodate weather conditions, and adequate knowledge and experience for raising backgrounded and finished beef in North Dakota.

Cattle and feed prices are found to have the greatest impact on the profitability of any type of feedlot. For this reason, it is necessary to consider the possibilities of upcoming cattle and feed projections that would impact the financial requirements for this study discussed earlier.

Current Efforts Underway to Expand Finishing in North Dakota

With this favorable outlook for expected feed costs and cattle prices, considerable

interest already exists in expanding a beef feedlot in North Dakota. Several large finishing operations are already under development in the state. In addition, existing operations in Nebraska or other regions have similar weather and environmental characteristics as those in North Dakota. A review of these feedlots can provide useful information on average income and expenses for North Dakota ranchers desiring expansion.

Dakota Prairie Beef

Some of the most comprehensive finishing feedlot budget information used in this study came from an operation that is currently functioning in southwest North Dakota. In operation for two years, Dakota Prairie Beef is a newly created finishing feedlot that is a closed cooperative business that began in response to Northern Plains Premium Beef efforts to construct a backgrounding livestock feeding operation in the southwestern region. Dakota Prairie Beef formed after numerous feasibility studies indicated that finishing cattle in North Dakota is possible. The challenge was to find a location for a progressed feedlot near the slaughter facilities and in an environmentally appropriate area. Financing was another major challenge that faced this new finishing operation looking to start in North Dakota.

Dakota Prairie Beef's objective is to provide income to farmers and ranchers through diversification and participation in an agricultural-related investment by finishing their feeder cattle and securing a market for finished cattle, thereby injecting new wealth into the area by adding value to locally produced feeder calves, job creation, and commercialization.

After Dakota Prairie Beef's equity drive in 1996 and 1997, the operation is now shared by 132 members in a closed cooperative located in Gascoyne, North Dakota.

Members were required to commit investment dollars through membership stock and equity stock. The financing provided by members was 40-60% of the capital requirements or about $1,000,000. Dakota Prairie Beef currently has seven full-time employees with over $210,000 paid annually in wages. For 2001, Dakota Prairie Beef finished 6,400 cattle from 800 lbs. to nearly 1,200 lbs. No specific breed or genetic line is preferred by Dakota Prairie Beef; however, last year the mixed pens of cattle accumulated 7.5 million lbs. sold, totaling $5.1 million (Bowman 2002).

Feedlots in Nebraska

In order to achieve higher profits, many of North Dakota's backgrounded feeder cattle are being shipped out of state to be finished in facilities closer to cattle slaughter facilities. These facilities vary in capacity from 100 head to incorporated feedlots of over 100,000 head. Similar to some locations in North Dakota, most offer high quality, low cost feedstuffs for preconditioning and fattening of cattle. Complete grower and finisher programs, some including rations formulated by a consulting nutritionist, are also available at a competitive cost of gain. In addition, hedging services and cattle and feed financing are available. Customers are kept informed of the weights and health of their cattle when they arrive, the progress of the cattle as they are fed, and individual carcass data when the cattle are ready for slaughter (Bejot 2002).

However, the greatest advantage is the distance to packers from these feedlots. In the case of Bejot Feed Lots, Ainsworth, Nebraska, there are five visiting packers within a 180 mile radius of their facility. The closest IBP slaughter facility in North Sioux City, South Dakota, is estimated to be over 500 miles away from Mandan, North Dakota. This distance can create huge cost disadvantages to North Dakota cattle ranchers, since not only

are transportation costs expensive, but shrinkage is also an inefficient factor to be considered.

Equity

Equity capital is the dominant source of capital for most individual farms, although much of the equity growth is attributed to unrealized capital gains on farm land. "Outside" equity has become increasingly important, particularly in cattle feeding. Such capital in the form of equity capital can be invested in farm operations by local nonfarmers as a joint venture or entity (Barry 1988).

An equity drive is necessary to collect start-up funds to be invested in facilities, livestock, and operating capital. An equity drive can be conducted in one or two steps: there can be an initial equity drive for members to indicate an interest and provide capital followed by a second drive during which a majority of equity will be raised, or there could be only one opportunity to invest (Saxowksy et al. 1998).

Many cattle feedlot operators indicate that they prefer to maintain $2 of equity in their business for every $1 of debt. This equity is often built into a feedlot business over an extended period of operation, or generated via equity drives. CoBank (2002) (Saint Paul Bank for Cooperatives) indicated that it can lend feedlot developers up to 50% of the cost of the feedlot and of the funding needed. This implies that a substantial amount of equity capital is required for a new feedlot (Duncan et al. 1997).

Accumulating enough equity is one of the first steps toward convincing lenders to finance a finishing feedlot. However, receiving financing for the operation is most beneficial when the farmers' financing needs and the lenders' credit constraints are both met.

Credit Constraints

Credit constraints are typically attributed to asymmetry of information between borrowers and lenders, and financial hierarchies in which internal funds are preferred to either outside debt or equity. Farms are vulnerable to credit constraints because 1) they are highly capital intensive relative to their levels of sales and cash flows; 2) farmers' assets are undiversified and inflexible, held almost exclusively in farm-specific capital, especially land; 3) there is a substantial lag between the purchase of inputs and the sale of outputs; and 4) debt is important as a source of investment funds due to a lack of well-developed equity markets. When farms are credit constrained, all investment becomes sensitive to internal finance and, in particular, inventory investment due to low liquidation and adjustment costs (Bierlen et al. 1998).

Cash flow is measured as the sum of cash sales, other agricultural income, refunds, and machinery sales less non-fixed costs. When the change in inventories is large relative to production, then cash flow and inventory investment are negatively related (Bierlen et al. 1998). Firms can absorb cash flow shocks through changes in inventory investment. The investments of firms judged to be credit constrained are more sensitive to movements in cash flow than are the investments of unconstrained firms. Small, closely held firms should be among the most credit constrained due to their lack of access to public debt and equity markets. Furthermore, inventory investment is more sensitive to cash flow during periods of weak farm economy performance than it is during periods of strong farm economy (Bierlen et al. 1997).

The major costs associated with feeding, namely feed, forage, and replacement steers, are variable and are typically financed with short-term borrowing. Feeder cattle,

feed, and forage typically have low liquidation and adjustment costs. Except for grazing, which is land based, fixed asset constraints are relatively unimportant. Due to these characteristics, the investment in feeder cattle inventories is expected to be highly sensitive to changes in cash flow and that feeder cattle inventories have high speeds of adjustment (Bierlen et al.).

Financial Intermediaries

Financial intermediaries in this study refer to the various banks and lending institutions that provide loans and leasing, as well as the government programs and credit unions that help finance operations like a finishing feedlot. North Dakota ranchers are often dependent on adequate financing or other sources of start-up equity, like member stock, to support the unprofitable early years that occur in many livestock operations, as well as other years when weather and the environment affect cattle and feed prices. Most often, ranchers first approach professional lenders and financial intermediaries to request financing through loans and leasing.

In a study done by Baltezore and Gustafson (1993), it was found that nearly eight out of ten North Dakota livestock producers had done business with one or two financial institutions in 1992. Of those whose loans were approved, the primary use of these farm loans were 51% livestock and 28% for livestock operating (Baltezore and Gustafson 1993). Thus, financial institutions have been and are currently a common source of financing for livestock ventures.

Currently, one of the most important concerns for ranchers is determining what percentage of assets will be needed in the form of equity to attain financing for a large feedlot facility. This amount often varies with the type of financial intermediary chosen to

finance the operation and their constraints, credit risk, servicing costs, and required returns on equity (Baltezore and Gustafson 1993).

When considering the type of entity, there are numerous goals to consider:

1) Limited liability of investors,
2) Legal structure that optimizes capital formation,
3) Compliance with anti-trust laws,
4) Exemption from securities registration (if possible), and
5) Compliance with corporate farming laws (for production enterprises) (Noack 2002).

Financing the feedlot industry can be divided into three areas: term loans for financing of the facilities, loans for operating capital, and loans in the form of a revolving line of credit. The most important factors are 1) the profitability of the industry at the time the financing is arranged and 2) the management experience of the ownership groups in the cattle industry (Duncan et al. 1997).

To get financing, a firm would need to have secure ownership and management experience, a well-developed business plan and corporation, cooperation from the department of commerce, and start-up equity (often 30-40%). The remaining required financing from local banks and other institutions will follow. There are several types of financial intermediaries that provide loans and services to farmers. Some sources of credit to be compared in this study include

1) Specialized farm lending institutions having corporate or cooperative organizations relying on money market sources of funds.
    a. Farm Credit Services (FCS).
    b. Bank of North Dakota.

c. CoBank (Banks for Cooperatives).

2) Commercial banks relying primarily on deposits for funds. Legal lending limits to any bank are based on the bank's equity capital. For nationally chartered banks, loans to an individual borrower cannot exceed 15% of the bank's unimpaired capital. However, the limit increases to 25% for loans to purchase livestock or marketable collateral. An example of a commercial bank to be used in this study would be Wells Fargo.

3) Government programs relying primarily on tax sources for funds.

   a. Farm Service Agency (FSA) is a government lending agency designated to lend to those with limited resources, or high-risk borrowers; as they become more established, they are expected to use commercial sources of financing (Barry 1988)

   b. The United States Department of Agriculture (USDA) offers rural development programs like the grants available for Value-added Agricultural Product Development (VADG). Their objective is to encourage producers of agricultural commodities to further refine agricultural commodities to increase their value.

4) Leases.

Leasing

A lease is a contract by which control over the right to use an asset is transferred from one party (the lessor) for a specified time in return for a rental payment to cover the lessor's costs of ownership. Leasing services can be provided by financial institutions such as commercial banks and Farm Credit Services. The following is a summary of two types of leasing that may be used in a livestock enterprise and their characteristics as depicted by Barry (1988).

Custom hiring is a form of leasing that combines the hiring of labor services with

the use of the tangible asset. Like the custom feeding of livestock in commercial feedlots, these specific functions are performed by individuals or firms that control the needed facilities that will supply the services of both the asset and their own labor. Custom hiring resembles other types of leasing in that it avoids the financial drain of capital investments and the obsolescence risk of owned capital; however, custom hiring may be cheaper than either owning or leasing an asset for a specialized task. Custom labor that is specialized to its tasks may perform more efficiently than other types of labor, thus improving the accuracy of cost estimates and facilitating projections of cash flows and short-term financing needs (Barry 1988).

Leveraged leasing has been developed to finance large capital expenditures and long economic lives. The difference in a leveraged lease, however, is that the lessor purchases and becomes owner of the asset by providing only part (20 to 40%) of the capital needed. In agriculture, leveraged leasing is illustrated by the CoBank (Banks for Cooperatives) participation as lenders in leasing arrangements between large agricultural cooperatives. Farmers and other agricultural producers who patronize and own these cooperatives benefit indirectly from the co-ops' use of leveraged leasing to finance their operations. Leasing may be a lower-cost method of financing than controlling assets through ownership and borrowing. However, leasing may not restrict a firm's borrowing capacity (Barry 1988).

Functions of Financial Intermediation

1) Limited funds must be supplemented by those institutions of metropolitan areas.
2) Farm lending funds must be aggregated into larger units than are provided by most savers, ex. cooperative. Moreover, funds must have unique time dimensions to be of

value to agriculture. Farmers must finance highly seasonal operating expenses. Their loans can be repaid only when the products are sold. Also, farmers need intermediate-term financing for acquisition of depreciable assets and long-term financing for real estate. The need for large blocks of funds with a unified time dimension to fit these special needs gives added emphasis to the need for intermediation.

3) Liquidity must be modified to satisfy most savers. Loans which must be repaid prior to achievement of the loan purpose are of little value to farmers. This feat is accomplished through the benefits of multilateral trade involving large numbers. In this case, large numbers of savers deposit their funds in a bank, with different time requirements, thus allowing the commercial bank to make 90- or 180-day loans based on demand deposits (Barry 1988).

Intermediate-term loans have maturities ranging from 1-10 years and are used to finance the purchase of many types of assets, such as livestock, farm machinery, and equipment. The primary sources of intermediate-term loans to farmers are local banks, the Farm Credit System (FCS), machinery dealers and manufacturers, and the Farm Service Agency (FSA 2002). Short-term loans are for one year or less and are mostly used to finance the purchase of operating inputs and to hold inventories or stored commodities (Barry 1988).

In particular, an FSA long-term loan is to provide financing to purchase farmland, construct or repair buildings and other fixtures, develop farmland to promote soil and water conservation, or refinance debt (FSA 2002). This real estate, or farm ownership, loan must be secured before consideration for lending can begin. To secure this loan, cost estimates must be provided by the rancher indicating adequate collateral. Collateral consists of real

estate or a combination of real estate and chattel property (FSA 2002). Next, evidence must be shown that all environmental requirements are and will be met, and finally, an appraisal must be conducted to determine the correct value of the operations' land, facilities, and improvements.

Limited resource loans are available to low-income farmers and ranchers or those that need low-interest rate loans to make essential adjustments to their operations. These reduced-rate loans are reviewed periodically, and the interest rate is adjusted based on the farmer's repayment ability (FSA 2002).

Consideration must be given to the criteria that the lender considers before financing a loan. In addition to meeting the eligibility criteria, the loan applicant must have a satisfactory credit history, demonstrate repayment ability, and provide sufficient security for the loan (FSA2002).

Availability of Financing for Livestock Production in North Dakota

Using a survey instrument to determine the availability of credit for North Dakota, an initial mailing to 1,900 livestock producers and a second mailing to 1,764 producers resulted in a response rate of 21% or 380 responses, 54% from the west (199), and 46% from the east (171). An additional follow-up mailing increased the number of responses, which helped to minimize possible no response bias (Baltezore and Gustafson 1993).

Livestock producers agreed that short-, intermediate-, and long-term credit were available. Most producers agreed that an adequate amount of credit was available. Producers agreed that loan applications were too time consuming and that collateral requirements were too excessive. Most importantly, nearly nine out of ten livestock producers with an opinion agreed that their financially feasible livestock investment

proposals received financing (Baltezore and Gustafson 1993).

Farm Credit Services (FCS)

Nearly 55% of the producers with livestock management experience had no difficulty obtaining financing. Difficulty decreased as years of raising livestock and net farm income increased as debt-to-asset ratio increased.

Bank of North Dakota

Four out of ten producers with livestock management experience had difficulty obtaining financing, often differing when there were significant differences among farm size and unmet financial needs. Eric Hardemeyer (2002), President of the BND, claimed in his presentation that there is a 25-30% success ratio of new agricultural ventures. The key is the management and business plan, including a backup plan, all of which will need to be presented to gain funding.

CoBank (Banks for Cooperatives)

As of July 1999, the St. Paul Bank for Cooperatives became CoBank, the nearest North Dakota office of which is located in Fargo. CoBank is part of the Farm Credit System and provides short-, intermediate-, and long-term financing at variable and fixed interest rates. Because of the market acceptance and attractiveness of Farm Credit securities sold in national and international money markets and the volume of funds raised, CoBank is able to offer competitive interest rates on their loans. CoBank may also purchase interests in loans made by other financial institutions when they are related to agribusiness, agricultural trade and other industries (CoBank 2002).

Commercial Banks

Banks are attracted to the industry because the primary collateral, the cattle, are

easily liquidated and their value can be determined at any given time (Duncan et al. 1997). Farms located in the east had significantly more difficulty obtaining financing than in the west. Difficulty obtaining financing decreased as years of raising livestock, farm size, and net farm income increased and increased as debt-to-asset ratio and percentage of livestock sales increased. Producers with unmet financial needs and outstanding loans had more difficulty obtaining financing from commercial banks than those without (Baltezore and Gustafson 1993).

Farm Service Agency (FSA)

Nearly one-third of the producers with livestock management experience indicated extreme difficulty in obtaining financing. Livestock producers in the east had more difficulty obtaining financing than in the west. Difficulty decreased as the number of years raising livestock increased.

Credit Unions

Six out of ten producers with experience had no difficulty obtaining financing. Difficulty decreased as farm size, farm sales, and net farm income increased. Again, producers with unmet financial needs and outstanding loans had more difficulty obtaining financing from commercial banks than those without.

Review of Financing Availability Study

Livestock producers with larger sized farms were more apt to go to FCS first, and then FSA, than those with smaller sized farms. Half of the producers had financing with Farm Credit Services (FCS), and 36% had financing with Farm Service Agency (FSA). Nearly 15% had financing with credit unions, and 12% had financing through private individuals (Baltezore and Gustafson 1993).

Additionally, over half of the livestock producers would go first to a commercial bank for additional money to support their livestock operations.

Requirements for farm loans often include a balance sheet 80% of the time and cash flow statements 75% of the time and slightly more than half of the livestock producers indicated that lenders required income tax returns (Baltezore and Gustafson 1993).

In conclusion, some producers can only finance their agricultural investments when farm cash flow is high. A relationship between the number of loans and profitable investment prospects does not exist, providing more evidence that producers are not investing when profitable opportunities are present.

CHAPTER 3

THEORETICAL MODEL DEVELOPMENT

This chapter is divided into three sections. The first section presents a stylized theoretical model of a feedlot manager's decision process. The economic foundation and terminology used in this model are defined, and key relationships are developed in the second section. Finally, risk in the form of uncertain livestock prices and interest rates are then added to the model.

Feedlot Decision Model

Let's assume the following three circumstances: 1) Three inputs *a, b,* and *K* are used in the production of a single product *Q* of a hypothetical feedlot. 2) The prices of both inputs P_a and P_b and the interest rate, *i*, are all beyond the control of the firm, as well as the output price *P*; hence they are denoted by P_{a0}, P_{b0}, *i,* and P_0, respectively, indicating that the expenses are paid at the beginning of the production process, time zero. 3) The production process of the finished cattle will take t_0 years to complete; thus the revenue from sales must be duly discounted before it can be correctly compared with the cost of production, which is incurred at the present time. The rate of discount, on a discrete basis, is assumed to be given at *r*. For the purposes of this model, it is assumed that r_0 and $t_o > 0$ and r_0 will also incur the weighted cost of capital (Chiang 1967).

Upon assumption 1, a general production function can be written as

$$Q = Q(a,b,K)$$

with marginal physical products Q_a, Q_b, and Q_K. Total cost in this model is a sum of direct *(a)* expenses (i.e.,, cattle purchases, feed, livestock supplies), overhead *(b)* expenses (i.e.,, hired labor, utilities) for the operation, and interest *(i)* multiplied by capital *(K)* paid,

$TC = aP_{a0} + bP_{b0} + iK$,

as described in assumption 2. Total revenue is then the price of cattle sold, P_0, multiplied by quantity Q:

$TR = P_0Q(a,b,K)$.

The discrete profit function can then be expressed after first discounting the revenue by multiplying it by the constant $\frac{1}{(1+r)^t}$. Thus, the deterministic profit function is

$$\pi = P_0Q(a,b,K)\frac{1}{(1+r)^t} - aP_{a0} - bP_{b0} - iK, \tag{1}$$

in which a and b are the only choice variables.

To maximize profit, it is necessary that the first partial derivatives of the profit function,

$$\pi_a (\equiv \frac{\partial \pi}{\partial a}) = P_0Q_a \frac{1}{(1+r)^t} - P_{a0},$$

$$\pi_b (\equiv \frac{\partial \pi}{\partial b}) = P_0Q_b \frac{1}{(1+r)^t} - P_{b0}, \text{ and} \tag{2}$$

$$\pi_K (\equiv \frac{\partial \pi}{\partial K}) = P_0Q_K \frac{1}{(1+r)^t} - i,$$

all need to be equal to zero. This means that

$$P_0Q_a \frac{1}{(1+r)^t} = P_{a0},\ P_0Q_b \frac{1}{(1+r)^t} = P_{b0} \text{ and } P_0Q_K \frac{1}{(1+r)^t} = i.$$

PQ_a (the price of the product times the marginal product of input a) represents the value of the marginal product of the input a (VMP_a). The first equation says that the present value of VMP_a should be equated to the given price of input a. The following equations are the

same strategy applied to input *b* and capital *K*. Note that, to fulfill the condition (2), the marginal physical products Q_a and Q_b must both be positive because P_0, P_{a0}, P_{b0}, and $\frac{1}{(1+r)^t} > 0$ (Chiang 1967).

The second-order condition considers the second-order partial derivatives of π, obtained from (1). Keeping in mind that Q_a, Q_b, and Q_K, being derivatives, are functions of the variables *a*, *b*, and *K*, thus finding $\pi_{aa}, \pi_{ab}, \pi_{aK} = \pi_{ba}, \pi_{bb}$, and π_{bK}, and then arranging them into a Hessian:

$$|H| = \begin{vmatrix} \pi_{aa} & \pi_{ab} & \pi_{aK} \\ \pi_{ab} & \pi_{bb} & \pi_{bK} \\ \pi_{aK} & \pi_{bK} & \pi_{KK} \end{vmatrix} = \begin{vmatrix} P_0 Q_{aa} \frac{1}{(1+r)^t} & P_0 Q_{ab} \frac{1}{(1+r)^t} & P_0 Q_{aK} \frac{1}{(1+r)^t} \\ P_0 Q_{ab} \frac{1}{(1+r)^t} & P_0 Q_{bb} \frac{1}{(1+r)^t} & P_0 Q_{bK} \frac{1}{(1+r)^t} \\ P_0 Q_{aK} \frac{1}{(1+r)^t} & P_0 Q_{bK} \frac{1}{(1+r)^t} & P_0 Q_{KK} \frac{1}{(1+r)^t} \end{vmatrix}.$$

For π to be a maximum (Chiang 1967), it is necessary that

$|H_1| < 0$ [that is, $\pi_{aa} < 0$, which can be obtained iff. $Q_{aa} < 0$],

$|H_2| = |H| > 0$ [that is, $\pi_{aa}\pi_{bb} > \pi_{ab}^2$, which can be obtained if and only if (iff.) $Q_{aa}Q_{bb} > Q_{ab}^2$],

$|H_3| < 0$ [that is, $\pi_{aa}\pi_{bb}\pi_{KK} < \pi_{ak}^2\pi_{bb}$, which can be obtained iff. $Q_{aa}Q_{bb}Q_{KK} < Q_{aK}^2 Q_{bb}$], and

$\pi_{aa}, \pi_{bb}, \pi_{KK} < 0$ [which can be iff. $Q_{aa}, Q_{bb}, Q_{KK} < 0$].

The symbol Q_{aa} denotes the rate of change of Q_a $(\equiv MPP_a)$ as input *a* changes

while input *b* is fixed; similarly, Q_{bb} denotes the rate of change Q_b $(\equiv MPP_b)$ as input *b* changes alone, the second-order condition indicates that the MPP of both inputs must be diminishing at the chosen input levels $\bar{a}$ and $\bar{b}$. Observe, however, that diminishing 1) MPP_a and 2) MPP_b do not guarantee the satisfaction of the second-order condition because the latter condition also implies that $Q_{ab} = Q_{ba}$, which measures the rate of change of MPP of one input as the amount of the other input varies (Chiang 1967).

To derive the comparative-static properties of this model, the general profit function, including several parameters (P_0, P_{a0}, P_{b0}, r, t, and i), is modified by removing the 0 subscripts from the variables r_0 and t_0, which are out of control of the firm. Collecting all terms in (2) to the left of the equals signs, and noting that Q_a, Q_b, and Q_K are all functions of endogeneous (choice) variables a, b, and K, the function can be rewritten with the first-order conditions as follows in (Chiang 1967):

$$F_a(a,b,K;P_0,P_{a0},P_{b0},r,t,i) = P_0 Q_a(a,b,K)\frac{1}{(1+r)^t} - P_{a0} = 0$$

$$F_b(a,b,K;P_0,P_{a0},P_{b0},r,t,i) = P_0 Q_b(a,b,K)\frac{1}{(1+r)^t} - P_{b0} = 0 \text{, and} \quad (3)$$

$$F_K(a,b,K;P_0,P_{a0},P_{b0},r,t,i) = P_0 Q_K(a,b,K)\frac{1}{(1+r)^t} - i = 0$$

where a = units of direct expenses,

b = units of overhead expenses,

P_0 = price for cattle finished per cwt,

P_a = price per unit of direct expense,

P_b = price per unit of overhead expense,

r = discount rate (weighted cost of capital),

t = time for production process,

i = interest rate, and

K = capital investment.

The functions F_a, F_b, and F_K are assumed to possess continuous derivatives. Thus, it is possible to apply the implicit function theorem only if the Jacobian of this system with respect to the endogeneous (choice) variables a, b, and K does not disappear at the initial equilibrium. However, the Jacobian described is really just the determinant of the Hessian for the π function (Chiang 1967):

$$|H| = \begin{vmatrix} \frac{\partial F^1}{\partial a} & \frac{\partial F^1}{\partial b} & \frac{\partial F^1}{\partial K} \\ \frac{\partial F^2}{\partial a} & \frac{\partial F^2}{\partial b} & \frac{\partial F^2}{\partial K} \\ \frac{\partial F^3}{\partial a} & \frac{\partial F^3}{\partial b} & \frac{\partial F^3}{\partial K} \end{vmatrix} = |J| . \tag{4}$$

Hence, if it can be assumed that the second-order condition for profit maximization is satisfied, then the $|H|$ must be positive, and so must be $|J|$, at the initial equilibrium or optimum when $Q_{aa}, Q_{bb}, Q_{KK} < 0$. In this event, the set of implicit functions can be written as (Chiang 1967):

$$\begin{aligned} \bar{a} &= \bar{a}(P_0, P_{a0}, P_{b0}, r, t, i) \\ \bar{b} &= \bar{b}(P_0, P_{a0}, P_{b0}, r, t, i) \quad \text{, and} \\ \bar{K} &= \bar{K}(P_0, P_{a0}, P_{b0}, r, t, i) \end{aligned} \tag{5}$$

To analyze the comparative statics of the model, first take the total differential of each identity in (3). For the time being, it is allowed that all exogeneous variables can vary, so that the result of total differentiation will involve $d\bar{a}, d\bar{b}, d\bar{K}$ as well as

$dP_0, dP_{a0}, dP_{b0}, dr, dt,$ and *di*. Next, all terms involving $d\bar{a}, d\bar{b}$ and $d\bar{K}$ can be placed on the left side of the equal sign,

$$P_0 Q_{aa} \frac{1}{(1+r)^t} d\bar{a} + P_0 Q_{ab} \frac{1}{(1+r)^t} d\bar{b} + P_0 Q_{aK} \frac{1}{(1+r)^t} d\bar{K} =$$

$$-Q_a \frac{1}{(1+r)^t} dP_0 + dP_{a0} - P_0 Q_a (1+r)^{-t-1} dr + P_0 Q_a \left(\frac{-\log(1+r)}{(1+r)^t} \right) dt \quad (6)$$

$$P_0 Q_{ab} \frac{1}{(1+r)^t} d\bar{a} + P_0 Q_{bb} \frac{1}{(1+r)^t} d\bar{b} + P_0 Q_{bK} \frac{1}{(1+r)^t} d\bar{K} =$$

$$-Q_b \frac{1}{(1+r)^t} dP_0 + dP_{b0} + P_0 Q_b (1+r)^{-t-1} dr + P_0 Q_b \left(\frac{-\log(1+r)}{(1+r)^t} \right) dt$$

$$P_0 Q_{aK} \frac{1}{(1+r)^t} d\bar{a} + P_0 Q_{bK} \frac{1}{(1+r)^t} d\bar{b} + P_0 Q_{KK} \frac{1}{(1+r)^t} d\bar{K} =$$

$$-Q_K \frac{1}{(1+r)^t} dP_0 + di + P_0 Q_K (1+r)^{-t-1} dr + P_0 Q_K \left(\frac{-\log(1+r)}{(1+r)^t} \right) dt,$$

where it can be noted that the first and second derivatives of *Q* are all to be evaluated at the equilibrium, i.e.,, at $\bar{a}$, $\bar{b}$, and $\bar{K}$. Also note that the coefficients of $d\bar{a}$, $d\bar{b}$, and $d\bar{K}$ on the left of the equal sign are essentially the same as the variables in the Jacobian in (4) (Chiang 1967).

In order to derive specific comparative-static derivatives, it is required to allow only a single exogeneous variable to change at a time. Suppose P_0, the price per cwt of finished cattle sold, is allowed to vary alone. Then $dP_0 \neq 0$, but $dP_{a0} = dP_{b0} = dr = dt = di = 0$, so that only the first term will remain on the right side

of each equation in (6). Dividing through by dP_0, and understanding that the ratio $d\bar{a}/dP_0$ is the comparative-static derivative $\left(\partial\bar{a}/\partial P_0\right)$, the matrix equation is now written as

$$\begin{bmatrix} P_0Q_{aa}\dfrac{1}{(1+r)^t} & P_0Q_{ab}\dfrac{1}{(1+r)^t} & P_0Q_{aK}\dfrac{1}{(1+r)^t} \\ P_0Q_{ab}\dfrac{1}{(1+r)^t} & P_0Q_{bb}\dfrac{1}{(1+r)^t} & P_0Q_{bK}\dfrac{1}{(1+r)^t} \\ P_0Q_{aK}\dfrac{1}{(1+r)^t} & P_0Q_{bK}\dfrac{1}{(1+r)^t} & P_0Q_{KK}\dfrac{1}{(1+r)^t} \end{bmatrix} \begin{bmatrix} \partial\bar{a}/\partial P_0 \\ \partial\bar{b}/\partial P_0 \\ \partial\bar{K}/\partial P_0 \end{bmatrix} = \begin{bmatrix} -Q_a\dfrac{1}{(1+r)^t} \\ -Q_b\dfrac{1}{(1+r)^t} \\ -Q_K\dfrac{1}{(1+r)^t} \end{bmatrix}. \quad (7)$$

The solution, by Cramer's rule, is then determined to be

$$\left(\frac{\partial\bar{a}}{\partial P_0}\right) = \frac{[Q_a(Q_{bb}Q_{KK} - Q_{bK}{}^2) - Q_b(Q_{ab}Q_{KK} - Q_{aK}Q_{bK})]P_0\left(\dfrac{1}{(1+r)^t}\right)^3}{|J|}$$

$$+ \frac{[Q_K(Q_{ab}Q_{bK} - Q_{aK}Q_{bb})]P_0\left(\dfrac{1}{(1+r)^t}\right)^3}{|J|}$$

$$\left(\frac{\partial\bar{b}}{\partial P_0}\right) = \frac{[Q_a(Q_{ab}Q_{KK} - Q_{aK}Q_{bK}) - Q_b(Q_{aa}Q_{KK} - Q_{aK}{}^2)]P_0\left(\dfrac{1}{(1+r)^t}\right)^3}{|J|}$$

$$+ \frac{[Q_K(Q_{aa}Q_{bK} - Q_{ab}Q_{aK})]P_0\left(\dfrac{1}{(1+r)^t}\right)^3}{|J|}$$

$$\left(\frac{\partial \overline{K}}{\partial P_0}\right) = \frac{[Q_a(Q_{ab}Q_{bK} - Q_{aK}Q_{bb}) - Q_b(Q_{aa}Q_{bK} - Q_{aK}Q_{ab})]P_0\left(\frac{1}{(1+r)^t}\right)^3}{|J|}$$

$$+ \frac{[Q_K(Q_{aa}Q_{bb} - Q_{ab}{}^2)]P_0\left(\frac{1}{(1+r)^t}\right)^3}{|J|}.$$

On the assumption that the second-order condition is satisfied, the Jacobian in the denominator must be positive. The second-order condition also implies that Q_{aa}, Q_{bb}, and Q_{KK} are negative, just as the first-order condition implies that Q_a, Q_b, and Q_K are positive. More importantly, the expression $P_0\frac{1}{(1+r)^t}$ is certainly positive.

Thus, if $Q_{ab} > 0$ (if increasing one input will raise the MPP of the other input), it can be concluded that both $\left(\partial \overline{a}/\partial P_0\right)$ and $\left(\partial \overline{b}/\partial P_0\right)$ will be positive, implying that an increase in the product price will result in increased employment of both inputs in equilibrium. If, however, $Q_{ab} < 0$, the sign of each derivative in (7) will depend on the relative strength of the negative force and the positive force in the parenthetical expression on the right (Chiang 1967).

The relationship between Q_{ab}, the rate of change of the marginal productivity of one input (i.e., *a*) as the other input (i.e., *b*) varies, and the sign of the derivatives in (6) is not a measure of substitution. Rather, there is a technical interrelationship between the factors of production, *a, b,* and *K*. Given $\pi = Q(a,b,K)$, there are three types of technical interrelationships possible described by Beattie and Taylor (1993).

1) If $\frac{\partial^2 \pi}{\partial a \partial b} \equiv \frac{\partial}{\partial a}\left(\frac{\partial \pi}{\partial b}\right) \equiv Q_{ab} = Q_{ba} > 0$, then *a* and *b* are technically complementary, meaning as the marginal productivity of *b* (Q_{bb}) is increased at all levels of production, then *a* (Q_{aa}) will also increase. Thus, it is concluded that both $\left(\partial \bar{a} / \partial P_0\right)$ and $\left(\partial \bar{b} / \partial P_0\right)$ will be positive, implying that an increase in the product price will result in increased use of both inputs in equilibrium.

2) If $Q_{ab} = 0$, then *a* and *b* are technically independent. That is, the marginal productivity of *b* is not affected by changes in the level of *a*.

3) If $Q_{ab} < 0$, then *a* and *b* are technically competitive. In this case, *a* and *b* are said to be competitive because increasing *a* reduces the marginal productivity of *b* for all levels of production (Beattie and Taylor 1993).

Thus, it can be concluded that both $\left(\partial \bar{a} / \partial P_0\right)$ and $\left(\partial \bar{b} / \partial P_0\right)$ will be negative, signifying that an increase in the product price will result in a decreased employment of both inputs in equilibrium, rather than a measure of substitution, the factors of production *a* and *b* are technically complementary.

For example, if $\frac{\partial^2 \pi}{\partial a \partial K} \equiv \frac{\partial}{\partial a}\left(\frac{\partial \pi}{\partial K}\right) \equiv Q_{aK} = Q_{Ka} < 0$, then *a* and *K* are technically competitive, where as the marginal productivity of capital Q_{KK} is decreased, *a* will increase. This same relationship occurs for Q_{bK}. When more units of overhead expense (*b*) are incurred in the production process, the marginal productivity of capital (Q_{KK}) is reduced for all levels of production. Thus, it is concluded that $\left(\partial \bar{K} / \partial P_0\right)$ will be negative, and this implies that an increase in the product price will result in decreased employment of capital, *K*, in equilibrium.

Next, allow the exogeneous variable r to vary alone. Then, all the terms on the right of (6) will disappear except for those involving *dr*. Dividing through by $dr \neq 0$, the following matrix equation is obtained:

$$\begin{bmatrix} P_0Q_{aa}\dfrac{1}{(1+r)^t} & P_0Q_{ab}\dfrac{1}{(1+r)^t} & P_0Q_{aK}\dfrac{1}{(1+r)^t} \\ P_0Q_{ab}\dfrac{1}{(1+r)^t} & P_0Q_{bb}\dfrac{1}{(1+r)^t} & P_0Q_{bK}\dfrac{1}{(1+r)^t} \\ P_0Q_{aK}\dfrac{1}{(1+r)^t} & P_0Q_{bK}\dfrac{1}{(1+r)^t} & P_0Q_{KK}\dfrac{1}{(1+r)^t} \end{bmatrix} \begin{bmatrix} \partial\bar{a}/\partial r \\ \partial\bar{b}/\partial r \\ \partial\bar{K}/\partial r \end{bmatrix} = \begin{bmatrix} -P_0Q_a(1+r)^{-t-1} \\ -P_0Q_b(1+r)^{-t-1} \\ -P_0Q_K(1+r)^{-t-1} \end{bmatrix}$$

with the solution

$$\left(\frac{\partial\bar{a}}{\partial r}\right) = \frac{[Q_a(Q_{bb}Q_{KK} - Q_{bK}{}^2) - Q_b(Q_{ab}Q_{KK} - Q_{aK}Q_{bK})[P_0Q_K(1+r)^{-t-1}]^2}{|J|}$$

$$\frac{+ Q_K(Q_{ab}Q_{bK} - Q_{aK}Q_{bb})][P_0Q_K(1+r)^{-t-1}]^2}{|J|}$$

$$\left(\frac{\partial\bar{b}}{\partial r}\right) = \frac{[Q_a(Q_{ab}Q_{KK} - Q_{aK}Q_{bK}) - Q_b(Q_{aa}Q_{KK} - Q_{aK}{}^2)[P_0Q_K(1+r)^{-t-1}]^2}{|J|}$$

$$\frac{+ Q_K(Q_{aa}Q_{bK} - Q_{ab}Q_{aK})][P_0Q_K(1+r)^{-t-1}]^2}{|J|}$$

$$\left(\frac{\partial\bar{K}}{\partial r}\right) = \frac{[Q_a(Q_{ab}Q_{bK} - Q_{aK}Q_{bb})[P_0Q_K(1+r)^{-t-1}]^2}{|J|}$$

$$- \frac{Q_b(Q_{aa}Q_{bK} - Q_{aK}Q_{ab}) + Q_K(Q_{aa}Q_{bb} - Q_{ab}{}^2)][P_0Q_K(1+r)^{-t-1}]^2}{|J|}.$$

Finally, let the exogeneous variable P_{a0}, the units of direct expenses, vary alone.

Then, all terms to the right of (7) will vanish except for those involving dP_{a0}. Then, $dP_{a0} \neq 0$, but $P_0 = dP_{bo} = dr = dt = di = 0$, so that only the first term will remain on the right side of the equation (6). Dividing through by dP_{a0}, and interpreting the ratio $d\bar{a}/dP_{a0}$ to be the comparative-static derivative $\left(\partial\bar{a}/\partial P_{a0}\right)$, the matrix equation can be written as

$$\begin{bmatrix} P_0Q_{aa}\dfrac{1}{(1+r)^t} & P_0Q_{ab}\dfrac{1}{(1+r)^t} & P_0Q_{aK}\dfrac{1}{(1+r)^t} \\ P_0Q_{ab}\dfrac{1}{(1+r)^t} & P_0Q_{bb}\dfrac{1}{(1+r)^t} & P_0Q_{bK}\dfrac{1}{(1+r)^t} \\ P_0Q_{aK}\dfrac{1}{(1+r)^t} & P_0Q_{bK}\dfrac{1}{(1+r)^t} & P_0Q_{KK}\dfrac{1}{(1+r)^t} \end{bmatrix} \begin{bmatrix} \partial\bar{a}/\partial P_{a0} \\ \partial\bar{b}/\partial P_{a0} \\ \partial\bar{K}/\partial P_{a0} \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}. \qquad (8)$$

The solution by Cramer's rule is then determined to be

$$\left(\frac{\partial\bar{a}}{\partial P_{a0}}\right) = \frac{[(Q_{bb}Q_{KK} - Q_{bK}{}^2) - (Q_{ab}Q_{KK} - Q_{aK}Q_{bK})](P_0\dfrac{1}{(1+r)^t})^2}{|J|}$$

$$+ \frac{[(Q_{ab}Q_{bK} - Q_{aK}Q_{bb})](P_0\dfrac{1}{(1+r)^t})^2}{|J|}$$

$$\left(\frac{\partial\bar{b}}{\partial P_{a0}}\right) = \frac{(Q_{ab}Q_{KK} - Q_{aK}Q_{bK})(P_0\dfrac{1}{(1+r)^t})^2}{|J|}$$

$$\left(\frac{\partial\bar{K}}{\partial P_{a0}}\right) = \frac{(Q_{ab}Q_{bK} - Q_{aK}Q_{bb})(P_0\dfrac{1}{(1+r)^t})^2}{|J|}.$$

Note that the results of these comparative-static derivatives will be similar in

appearance to those for the exogeneous variable P_{b0}, the price for units of overhead expenses. The sign restriction of the second-order condition when evaluated using comparative-static derivatives indicates that the signs of Q_{aa} and Q_{bb} are negative (Chiang 1967).

These signs are negative since Q_{aa} denotes the rate of change of Q_a $\left(\equiv MPP_a\right)$ as input *a* changes while input *b* is fixed. Thus, if $\frac{\partial^2 \pi}{\partial a \partial a} \equiv \frac{\partial}{\partial a}\left(\frac{\partial \pi}{\partial a}\right) \equiv Q_{aa} < 0$, realize that both $\left(\partial \bar{a} / \partial P_{a0}\right)$ and $\left(\partial \bar{b} / \partial P_{a0}\right)$ will be negative, implying that an increase in the price of input *a* will result in decreased employment of both inputs *a* and *b* in equilibrium. Similarly, Q_{bb} indicates the rate of change Q_b $\left(\equiv MPP_b\right)$ as input *b* changes alone; thus $\left(\partial \bar{a} / \partial P_{b0}\right)$ and $\left(\partial \bar{b} / \partial P_{b0}\right)$ will also be negative (Chiang 1967).

Again, if the second-order condition for profit maximization is assumed to be satisfied, then the sign of the Jacobian $|J|$ at the initial equilibrium or optimum will be positive.

Adding Risk to the Model

Given the profit function $\pi = Q(a, b, K)$

$$\pi = P_0 Q(a, b, K) \frac{1}{(1+r)^t} - aP_{a0} - bP_{b0} - iK,$$

the risk of output can be considered by assuming that the output price is $\tilde{P}_0 = P_0 + \varepsilon$ instead of P_0, where ε is a random variable distributed with mean zero and variance $\sigma_\varepsilon{}^2$. Under this assumption, profit π is written as

$$\tilde{\pi} = (P_0 + \varepsilon)Q(a,b,K)\frac{1}{(1+r)^t} - aP_{a0} - bP_{b0} - iK\,, \tag{9}$$

where the expected values of $\tilde{\pi}$, E($\tilde{\pi}$), and the variance of $\tilde{\pi}$, $\sigma^2(\tilde{\pi})$, are written, respectively, as

$$E(\tilde{\pi}) = P_0\, Q(a,b,K)\left(\frac{1}{(1+r)^t}\right) - aP_{a0} - bP_{b0} - iK$$

and

$$\sigma^2(\tilde{\pi}) = Q(a,b,K)^2\,\sigma_\varepsilon{}^2\left(\frac{1}{(1+r)^t}\right)^2.$$

E($\tilde{\pi}$) is next maximized at the certainty equivalent. The certainty equivalent is the level of return on a risky investment that is equivalent in terms of expected utility to a completely certain return. Thus, when E($\tilde{\pi}$) is maximized at the certainty equivalent, the certain amount of cash return will give the same utility as a risky amount of cash return.

The certainty equivalent model is then written as

$$\max_{a,b,K} \tilde{\pi}_{CE} = P_0 Q(a,b,K)\frac{1}{(1+r)^t} - aP_{a0} - bP_{b0} \tag{10}$$

$$- iK - \frac{\lambda}{2}Q(a,b,K)^2\sigma_\varepsilon{}^2\left(\frac{1}{(1+r)^t}\right)^2,$$

where λ is the coefficient of risk aversion. The first order conditions for *a*, *b*, and *K* are

$$P_0\, Q_a\left(\frac{1}{(1+r)^t}\right) - a - \lambda Q_a Q\sigma_\varepsilon{}^2\left(\frac{1}{(1+r)^t}\right) = 0\,, \tag{11}$$

$$P_0 \, Q_b \left(\frac{1}{(1+r)^t} \right) - b - \lambda Q_b Q \sigma_\varepsilon{}^2 \left(\frac{1}{(1+r)^t} \right) = 0 \text{, and} \tag{12}$$

$$\tilde{P}_0 \, Q_K \left(\frac{1}{(1+r)^t} \right) - K - \lambda Q_K Q \sigma_\varepsilon{}^2 \left(\frac{1}{(1+r)^t} \right) = 0 \text{.} \tag{13}$$

The relative input combinations are found from (11), (12), and (13) by taking *a* and *b* to the right-hand side and dividing the ratios. The result is

$$\frac{a}{b} = \frac{Q_a \left(\frac{1}{(1+r)^t} \right) (P_0 - \lambda Q \sigma_\varepsilon{}^2)}{Q_b \left(\frac{1}{(1+r)^t} \right) (P_0 - \lambda Q \sigma_\varepsilon{}^2)} = \frac{Q_a}{Q_b} \tag{14}$$

and

$$\frac{a}{K} = \frac{Q_a \left(\frac{1}{(1+r)^t} \right) (P_0 - \lambda Q \sigma_\varepsilon{}^2)}{Q_K \left(\frac{1}{(1+r)^t} \right) (P_0 - \lambda Q \sigma_\varepsilon{}^2)} = \frac{Q_a}{Q_K},$$

which is the same condition as a least-cost combination under certainty. This equation indicates that the ratio of inputs remains the same, regardless that the absolute level of inputs falls, since output falls for risk averters when risk is introduced into the model. Concluding, then, that because risk changes output levels, but leaves relative input ratios unaltered, production will still occur on the line of the least-cost combinations (Robison and Barry 1987).

Next, the derivatives of risk on input prices *(P_{a0}, P_{b0})* and interest *(i)* are considered. Then, the risk of output price, input price, and interest are respectively

assumed as output price is $\tilde{P}_0 = P_0 + \varepsilon$ instead of P_0, $\tilde{P}_{a0} = P_{a0} + u$ instead of P_{a0},

$\tilde{P}_{b0} = P_{b0} + v$ instead of P_{b0}, and $\tilde{i} = i + s$ instead of i, where $\varepsilon, u, v,$ and s are independently distributed random variables distributed with means zero and variances $\sigma_\varepsilon^2, \sigma_u^2, \sigma_v^2,$ and σ_s^2. Under this assumption, profit $\tilde{\pi}$ is written as

$$\tilde{\pi} = (P_0 + \varepsilon)Q(a,b,K)\frac{1}{(1+r)^t} - a(P_{a0} + u) - b(P_{b0} + v) - (i + s)K \text{ , (15)}$$

where the expected value of $\tilde{\pi}$, E($\tilde{\pi}$) remains the same, and the variance of $\tilde{\pi}$, $\sigma^2(\tilde{\pi})$, is written as

$$\sigma^2(\tilde{\pi}) = Q(a,b,K)^2 \sigma_\varepsilon{}^2 (\frac{1}{(1+r)^t})^2 + a^2 \sigma_u{}^2 + b^2 \sigma_u{}^2 - K^2 \sigma_u^2 .$$

The certainty equivalent model is then written as

$$\max_{a,b,K} \tilde{\pi}_{CE} = P_0\, Q(a,b,K)\frac{1}{(1+r)^t} - a\, P_{a0} - b\, P_{b0} - i\, K \qquad (10)$$

$$-\frac{\lambda}{2}[Q(a,b,K)^2 \sigma_\varepsilon{}^2 (\frac{1}{(1+r)^t})^2 - a^2 \sigma_u{}^2 - b^2 \sigma_v{}^2 - K^2 \sigma_s{}^2],$$

where λ is the coefficient of risk aversion. The first-order conditions for maximizing the certainty equivalent are

$$(14)\quad P_0\, Q_a \frac{1}{(1+r)^t} - a - \lambda\left[Q_a \sigma_\varepsilon^2 \left(\frac{1}{(1+r)^t} \right)^2 - 2a\sigma_u^2 \right] = 0, \tag{14}$$

$$(15)\quad P_0\, Q_b \frac{1}{(1+r)^t} - b - \lambda\left[Q_b \sigma_\varepsilon^2 \left(\frac{1}{(1+r)^t} \right)^2 - 2b\sigma_v^2 \right] = 0, \text{ and} \tag{15}$$

$$(16)\quad P_0\, Q_K \frac{1}{(1+r)^t} - K - \lambda\left[Q_K \sigma_\varepsilon^2 \left(\frac{1}{(1+r)^t} \right)^2 - 2K\sigma_s^2 \right] = 0. \tag{16}$$

The relative input combinations are then found from (14), (15), and (16) by taking *a* and *b* to the right-hand side and dividing the ratios. The result is

$$\frac{a}{b} = \frac{P_0\, Q_a \frac{1}{(1+r)^t} - \lambda\left[Q_a \sigma_\varepsilon^2 \left(\frac{1}{(1+r)^t} \right)^2 - 2a\sigma_u^2 \right]}{P_0\, Q_b \frac{1}{(1+r)^t} - \lambda\left[Q_b \sigma_\varepsilon^2 \left(\frac{1}{(1+r)^t} \right)^2 - 2b\sigma_v^2 \right]}. \tag{17}$$

Then, when solving for $\frac{a}{b}$ expansion path, we find that the result is not as simply definable as was shown previously for $P_0 + \varepsilon$ and does not offer an applicable ratio that can be utilized in this model. However, it is possible to review the interpretation of the first-order conditions. It is known that from (10), $P_0\, Q(a,b,K) \frac{1}{(1+r)^t}$ is the discounted marginal value of product ($MVP_{(a,b,K)}$), (*a,b,K)* is the marginal factor cost ($MFC_{(a,b,K)}$), and

$\lambda\left[Q(a,b,K)\sigma_{\varepsilon}^{2}\left(\frac{1}{(1+r)^{t}}\right)^{2} - 2(a,b,K)\sigma_{(u,v,s)}^{2} \right]$ is the change in the variance of profit $\lambda\left(\Delta\sigma_{\pi}^{2}\right)$. If $\lambda\left(\Delta\sigma_{\pi}^{2}\right) < 0$, then discounted $MVP_{(a,b,K)}$ plus the change in the variance of profit would represent the net marginal benefits of *a* when set equal to the marginal factor cost. However, if $\lambda\left(\Delta\sigma_{\pi}^{2}\right) > 0$, then the discounted $MVP_{(a,b,K)}$ would equal the $MFC_{(a,b,K)}$ plus the change in the variance of profit, which would then represent the marginal cost of *a*.

CHAPTER 4

METHODOLOGY

The purpose of this chapter is to describe the methodology that is used to develop the model of a finishing feedlot that will be used to evaluate the feasibility of the operation under different financing methods and constraints. In particular, the specific methods of determining total input quantities and associated costs will be presented.

Model Used for Feedlot Budget

Since there are few operating finishing feedlots in North Dakota in the sizes that this study is researching, a model budget is built to help represent the hypothetical financial statements of a large finishing feedlot in North Dakota.

The type of budget to be used in the model is one that performs the function of an income statement that annually shows revenue and expenses, as well as gross and net return of the finishing feedlot under different scenarios of the size of the feedlot and the type of facilities for the feedlot. A balance sheet is also incorporated to represent the assets, liabilities, and effects of the equity financing on the net farm income and solvency of the feedlot under similar scenarios. A cash flow statement is also incorporated into the model to indicate the time constraint of expenses due versus the sale of the cattle.

This type of model is used to best accommodate the financial constraints that an actual finishing feedlot in North Dakota might incur. In addition, it is possible to estimate the different forms of financing that the feedlot might obtain with these three statements.

Simulation

The simulated model is meant to be as similar to a real-life operation in North Dakota as can be possible on a computer spreadsheet. A simulated model produces new

results every time any input costs or figures are changed in the model.

This study simulates the financial performance of a feedlot and tests the profitability under different financial and cattle price environments. Utilizing @RISK with a computer spreadsheet, it is possible to simulate various net returns under different combinations of the uncertain variables (Winston 2001).

Using @RISK to capture the probabilistic dimensions of net return, net cash flow, and return on farm equity allows this study to analyze the effects of loan arrangements on three different size feedlot operations for two different types of facilities (earthen versus concrete lot). In a study done by Boehlje and Ray (1999), @RISK was used in a simulation consisting of four farrow-to-finish pork operations to accurately compare the effects of two different types of contract arrangements on return-on-assets and return-on-equity criteria (Boehlje and Ray 1999).

Financial Statements Used for Simulation

Income Statement

The model begins with a finishing feedlot income statement on a per head basis. Rather than to forecast the current prices for individual feed grains, this model uses an average amount of feed expenses found from current finishing feedlot budgets in the Midwest. An example of the income statement with return on farm equity for the 1,500; 5,000; and 10,000 head earthen and concrete feedlots are located in Appendix Tables A.4 through A.9.

For this study, there are three operation sizes to be considered. The number of head to be finished annually on the feedlot varies between 1,500; 5,000; and 10,000 head. @RISK allows the model to simulate the average minimum, maximum, mean, and standard

deviation of net return for each size by conducting 1,000 iterations of different combinations of inputs.

Finally, the feeder calf price per cwt in the beginning and the end fed-cattle price of the feedlot rotation must be considered. These prices are used to determine the expense of purchasing backgrounded cattle, and the revenue earned per head at the end of the finishing cycle, minus any death loss incurred. These values are drawn based on the distribution and correlation the backgrounded and finished cattle prices have with the chosen interest rate in each iteration.

The amount of feed consumed per head, direct expenses, and overhead expenses can be assessed based on information collected from finishing feedlot budgets published between 1998-2001 by Iowa, South Dakota, Minnesota, North Dakota (Barley Feeders, Dakota Prairie Beef), and Nebraska values obtained through the Dickinson Research Extension Center (Decatur County Feed Yard, Inc.; Decatur Beef Alliance). Using these per head averages, it is then possible to estimate the average feed expense per month per head for the income statement.

The remaining direct expenses like veterinary and livestock supplies, fuel and oil, repairs on machinery and buildings, custom hiring expenses, transportation (hauling and trucking), marketing, and bedding are all averages determined with the budgets of Minnesota (1998-2000), Iowa (2000), South Dakota, North Dakota's Barley Feeders, and Dakota Prairie Beef (2001). Operating interest is also listed here and is again an average of Minnesota (1998-2000) and South Dakota budgets.

The previously listed budgets (MN, IA, SD, ND) also allowed averages to be used for overhead expense values like custom hiring, hired labor, leases, retained earnings and

taxes, utilities, insurance, professional fees, depreciation, and any miscellaneous expenses (general and administration). The remaining cost values are determined from data received from the Dickinson Research Extension Center, Dickinson, North Dakota, where backgrounded steers are contracted to Decatur County Feed Yard, Inc. (DCFY), near Oberlin, Kansas. For example, the average beginning weight and average finishing weight are taken from data supplied by DCFY. In the model, the beginning and finished weights are varied by using a risknormal function with a standard deviation of 100 lbs.

The interest for the facilities, working capital, and revolving line of credit categorized under overhead expenses is taken from the amount of annual interest calculated based on the financial intermediary terms, which is then divided by the number of head in the operation.

Totals found after the cattle were slaughtered are provided by Decatur Beef Alliance. For example, the Decatur Beef Alliance provided the average daily rate of gain, the average days in feedlot, and the average death loss values. For this model, the daily rate of gain uses a risk-normal function of the Decatur Beef Alliance average with a mean 2.95 and a standard deviation of 1. The percentage death loss of the cattle uses a risk-normal with a mean 0.75 and a standard deviation of 0.25.

Balance Sheet

Appendix Tables A.10 through A.15 show examples of balance sheets for 1,500, 5,000, and 10,000 head earthen and concrete feedlots. The balance sheets are created based on twelve months of operation, ending December 31. The current assets consist of the cash value reported from the final month in the cash flow statement, the value of the feeder cattle in the feedlot at the end of the year, and, finally, the value added to the cattle in the

lot at year end.

The facilities, equipment, and environmental structures on the balance sheet are valued by the Iowa State University (ISU) Extension and Iowa Beef Center in their Beef Feedlot Systems Manual (Lawrence 2002b) for both the 1,500 and 5,000 head feedlots.

The initial start-up is considered to begin its first of two 180-day turns in January, with the year ending in December. The balance sheet shows the values for accumulated depreciation over a period of five years. Depreciation is calculated using a straight-line method. Facilities are depreciated over a 20-year life with a 10% salvage value. Environmental structures are depreciated over a 20-year life with a 10% salvage value. Equipment is depreciated over a 10-year life with a 10% salvage value.

Current liabilities are found totals from the cash flow statement for the revolving line of credit and the current portion of the long-term loan. Long-term liabilities are equal to the sum of the total long-term loan and working capital loan minus the amount of the loan paid off in the current year and the current portion due in the next year. Finally, equity is divided up evenly between equity stock, membership stock, and preferred stock, so that the total stockholder's equity equals the percentage of equity prior to running the model.

Dr. John Lawrence (2002a), ISU associate professor of economics, stated that most of the investment costs and many of the operating costs are linear beyond 5,000 head. However, for a 10,000 head feedlot, there may be some savings in feed and cattle handling equipment and office and general manager expenses. However, the land, bunks, fencing, and the environmental investment should not change drastically (Lawrence 2002a). It is estimated that these efficiency savings for the office and equipment, cattle handling

equipment, and the feed handling equipment would be near 6% to 8% (Anderson 2002a).

Cash Flow Statement

Cattle are purchased each month to replace those sold each month. However, in the first month, only one-quarter of the feedlots' 85% capacity are purchased. Then, in the following months, twice that number are purchased each month, until the feedlot is operating at 85% capacity in the fifth month of operation.

Equity is noted in the month prior to the start of the operation. The percentage of equity supplied to the feedlot is dependent on the percentage required by the lending arrangement chosen prior to running the model. The total initial investment amount required for each type and size of feedlot was provided by the Iowa Extension and Beef Center in their Beef Feedlot Systems Manual (Lawrence 2002b).

The revolving line of credit varies based on the size of the operation. A 1,500 head feedlot requires $325,000 in the first year, and $1,083,333 and $2,166,667 for the 5,000 head and 10,000 head feedlots, respectively. This amount is allocated as needed in order to keep the net cash flow greater than or equal to zero each month.

The cash disbursements recorded in the cash flow statement are referenced from the income statement, organized into per head direct and overhead expenses. These numbers are then divided by the total average days the cattle spent in the feedlot, then multiplied by 30 to result in a monthly per head expense.

The cash flow statement used in this simulation was built vaguely similar to that of the cash flow statement developed by Dakota Prairie Beef for their equity drive. An example of a cash flow statement for the first year of operation is shown in Appendix Table A.16.

Return on Farm Equity Ratio

The ratio of profitability used to analyze this model is the rate of return on farm equity (ROFE) that is calculated by taking the sum of the net return minus the value of operator and unpaid labor plus any other forms of net income divided by average equity. The value for operator and unpaid labor is assumed to be zero for all sizes of the feedlot, except for the 1,500 head lot which is valued at $27,500 as estimated by Swenson (2002). For this value, the higher the ratio, the more profitable the business.

Method of Computing Interest

This spreadsheet model is built to include the different variations in lending arrangements (interest rates and loan terms). Interest is computed by multiplying the principle amount by duration type by the interest rate applied. When the model simulates the three different sizes (1,500; 5,000; 10,000 head) of the feedlot operation, an "if" statement within Excel provides the dollar amount needed for each type of loan or lease needed (facilities, working capital, revolving line of credit). Based on this principle amount, interest can be computed using the inputted variables for each financing source presented above (i.e., rate, variable/fixed, length of term, etc.).

For example, if the model was simulating financing for Farm Credit Services and the principle loan amount needed for facilities after equity was $300,000, then the simulation would use the indicated interest rate for the Farm Credit Services, fixed at 8.75% for 7 years, to find total interest to be $183,750. However, if a different lender had an uncertain term for facilities, for example 7-10 years, and a variable rate of interest, 7% to 8.5%, then the computer spreadsheet could calculate the interest while still including the randomness in total interest incurred by this uncertainty.

To make the lenders more uniformly comparable, the same long-term interest rate for facilities is used for each lender. Additional modifications are later made when lower rates are available with different loan packages. This rate is drawn from a historical data set based on the correlation with the cattle price that is drawn from a similar historical data set. The *Wall Street Journal* indicates a yield curve for treasury bonds. Since many agricultural lenders obtain lending from public and quasi public services, this yield curve is assumed to be similar to the curve for agricultural loan interest rates. Thus, on November 6, 2002, this curve indicated that the spread between 10-15 year bond rates is approximately 1.25% above the bond rates with 3-5 year maturities, which are approximately 1.25% above treasury bonds with a 1 year maturity. These interest rate spreads make it possible to estimate the interest rates for the working capital loan (3-5 year) and revolving line of credit (1 year) when the long-term facilities (10-15 year) loan is drawn based on the cattle price in that period. Additionally, if a lender offers a variable rate for any of the three loans, then those rates are allowed to be drawn randomly from within 0.5% of the estimated interest rate that is calculated based on the spread. These nominal rates are then made real by subtracting the consumer price index percentage of inflation from the historical rates based on their respective year.

Equity Stock

Equity for a finishing feedlot can be composed of different sources and types of funds to accumulate the total amount needed to provide the necessary working capital and long-term loans needed for the facility to operate. In addition to financing from banks and organizations in the form of loans and leases, there can be several types of membership stock purchased when the operation is in the form of a corporation or cooperative.

Dakota Prairie Beef offers a convenient example of the uses of stock to be used to finance a finishing feedlot. Preferred stock is stock that can be held by nonmembers and members alike. There are an authorized number of shares, with a minimum number of shares to be purchased. It is commonly offered to certain qualified purchasers or lending institutions. The annual dividends can be paid based on a fixed rate, and owners of this stock are not entitled to participate either directly or indirectly in the profits of the cooperative. Preferred stock has the highest value of all securities, but does not give the purchaser any voter's rights or preemptive rights.

At the time of subscription, membership or equity stock can be purchased by the share, often available at different prices based on the class level, with a minimum number of shares to be purchased to be considered an eligible member. The highest class level (A) is generally common (membership) stock which is accompanied by one vote per member at meetings of the stockholders. The following class levels can signify the activity or participation of the member in the feedlot, but do not have any voting rights or preemptive rights. For example, Class B may entitle and obligate the member to deliver feeder cattle during the fourth and first quarter of the calendar year, whereas holders of Class C equity stock would be entitled to and obligated to deliver feeder cattle during the second and third quarter of the calendar year.

Equity stock is commonly only offered to eligible members during the initial offering period or until the minimum number of shares of equity stock has been sold. In addition, if the minimum amount of equity stock is not purchased by a given date, all subscriptions will be void and equity funds will be returned. The membership and equity stock is also subject to substantial restrictions which can restrict the payment of dividends

on the stock, prohibit the pledge of the stock, and prohibit transfer without the consent of the cooperative.

Assumptions and Estimates

1) The prices for finishing livestock production in Oberlin, Kansas (Decatur), are comparable to those found in North Dakota. It is possible that actual financial results found in North Dakota may have a greater or lesser profitability than are produced from the same figures in Kansas. However, it is possible that North Dakota's access to a variety of feedstuffs may provide advantages over feedlots in the Midwest that are more efficiently placed near packer plants. Another option that could be pursued would be to take current finishing operations in North Dakota of a smaller size and increase the expenses proportionally to a larger size operation. This option would not represent any economies of size that are currently utilized in larger feedlots in the Midwest.
2) These data have already been averaged for each states' private budgeting needs. Each budget has significant differences where, for example, feed costs have been organized differently, or another example would be where livestock supplies and veterinary supplies are not separated. Thus, for some values in our model budget, it has been necessary to combine several expenses into one (i.e., supplies) so that varying state budgets can be compared objectively. However, there exists an amount of error where some expense values have been combined and possibly compared incorrectly. A more accurate feeding budget could be arranged if a study could be focused primarily on financing where the nutritional and feeding practices could be varied.

Cattle Price

Since the result of this model depends largely on the net cash flows and net return of the feedlot, it is important to note that cattle price and interest rates are definitely a determining factor in the success or failure of any feedlot. Thus, correlations must be used to generate an accurate simulation model that includes the effects of both high and low cattle prices and interest rates.

In determining the price to be used for the purchase and sale of the cattle, it is necessary to take into consideration past trends and future projections for the beef industry. There is also a need to find the relationship that the interest rate may or may not have with the price of cattle, based on the distribution of each. Thus, it is necessary to consider this relationship in order to determine how to incorporate the cattle price and the interest rate into the model.

Most often, when consumers pay lower prices for goods and services, less income is likely to flow between the consumer and the producer. However, a decline in the price level does not always produce an income effect, where more of a product is purchased because the decline in the price leaves the consumer with more real income to spend (McConnell 2002). Instead of the substitution or income effect, the wealth and interest-rate effect best explain the down-sloping aggregate demand curve.

The wealth effect is the explanation for higher cattle prices when interest rates are low. A higher price level reduces the real value or purchasing power of the consumer. In particular, the real value of assets with fixed money values, such as bonds, diminishes. Because of the decrease in a consumer's purchasing power of these assets, the public will reduce its spending, thus negatively affecting the consumption of the good, in this case,

beef. Additionally, a decline in the price level will increase the purchasing power of a consumer and increase consumption spending and the bond rates (McConnell 2002).

The interest-rate effect suggests that as price levels rise, so do interest rates. A higher price level increases the demand for money. This increase in the demand for money drives up the price paid for its use, the interest rate. Thus, when there are increasing interest rates, there is a reduction in certain kinds of consumption and investment spending (McConnell 2002).

Given this information that describes a relationship between price and bond or interest rates, it is possible to estimate the relationship of cattle prices with bond rates. The cattle prices were collected from data available through the United States Department of Agriculture's (USDA) Economic Research Service (ERS) categorized under Cattle and Calves. Using these values, it is then possible to determine the correlation of the cattle price to bond rates.

The nominal historical bond rates were converted to a real basis by subtracting the consumer price index historical inflation rates. These values were then used to find the correlation between the real interest rates and the cattle prices. This value of 0.085 for finished cattle and 0.086 for backgrounded cattle indicates that cattle prices and the rates for a 30-year bond are not correlated; thus, there is no relationship between them. This relationship does not reinforce either the wealth or interest-rate effects between prices and rates.

However, this correlation can be used in a two-by-two matrix of bond rates versus cattle prices. The best fit distribution function (A-D and K-S) for the 30-year bond interest rate was risktriang with a minimum of 5.58%, a most likely value of 5.58%, and a

maximum of 14.68%. The most accurate distribution for the cattle prices was not a distribution that had parameters which could be easily adjusted. Thus, to provide for convenient sensitivity analysis of the finished cattle price distribution, risktriang was again used for the finished cattle price with a minimum of $21.57, a most likely value of $68.56, and a maximum of $101.65. Finally, the backgrounded cattle price distribution, again utilizing the risktriang, had a minimum of $15.46 and a most likely and maximum value of $111.44. The distributed variables for the cattle prices and bond rate can be used in the model to assist in the hypothetical simulation of the interest rate on the loan.

Forecasting the Cattle Price and Interest Rate

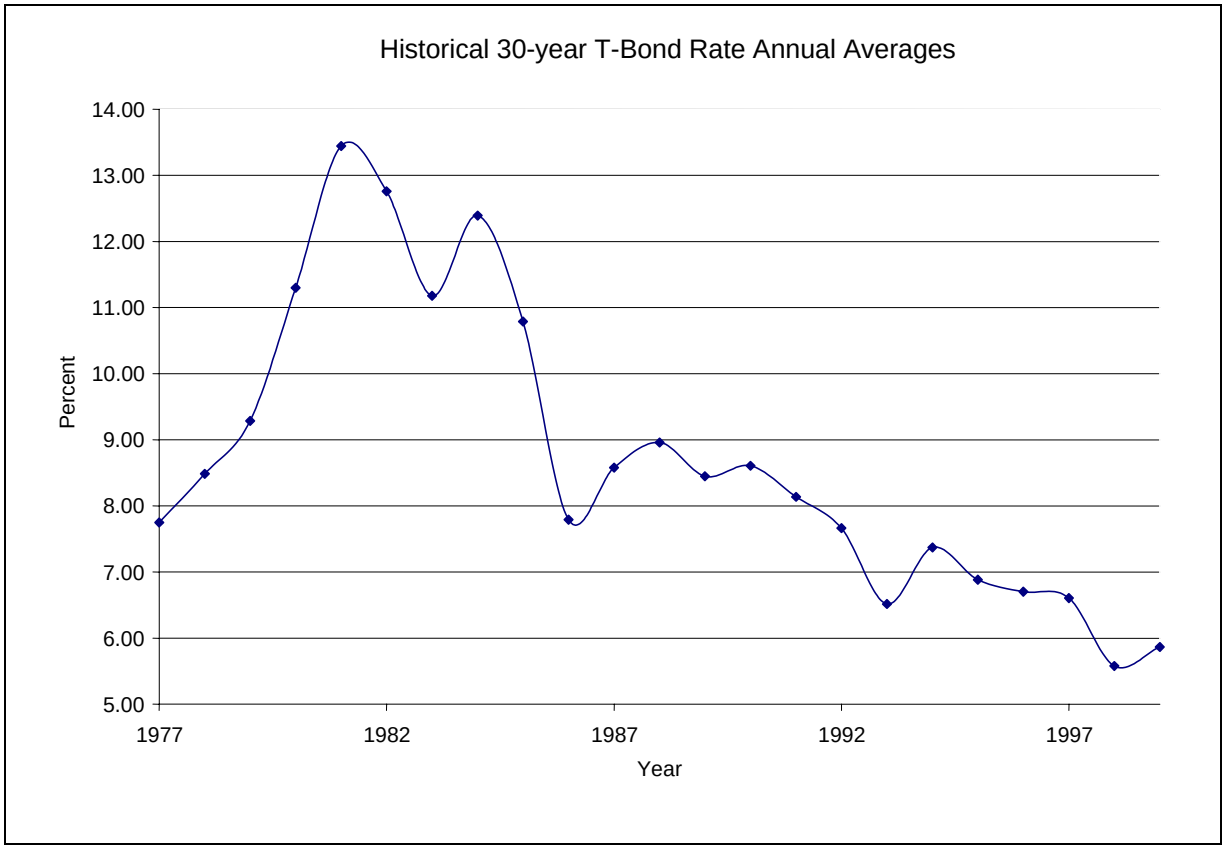
A first-order, autoregressive time-series model is used in this study to forecast the buy and sell prices for the cattle as well as the interest rates used for financing the feedlot. An autoregressive process expresses a variable as a function of past values for that variable. In this case, the price of cattle is dependent upon the price of cattle in the previous year, and similarly for the interest rate.

It is possible to regress the historical annual average prices for cattle 1,100-1,300 lbs. from Nebraska Direct with the annual average of a 30-year treasury bond. The treasury bond is analyzed in this study with intentions that this rate would closely reflect the same historical changes found with farm loan interest rates. Using this regression, it is possible to obtain a beta coefficient and intercept. These values can then be used to forecast the prices and interest rates used in the projected financial statements of the feedlot with a first-order autoregressive (AR) model.

Using this method of forecasting allows the cattle prices and interest rates to reflect the cyclical nature of their historical values. Thus, when @RISK chooses the initial price

to be used for buying and selling cattle, the price chosen for the next year will be reflective of the previous year's price and interest rate. In Tables 2 and 3, the cyclical nature of annual averages of cattle prices and interest rates are shown from 1977-1999.

Table 2. Annual averages of historical 30-year treasury bonds (Hummel 2002)

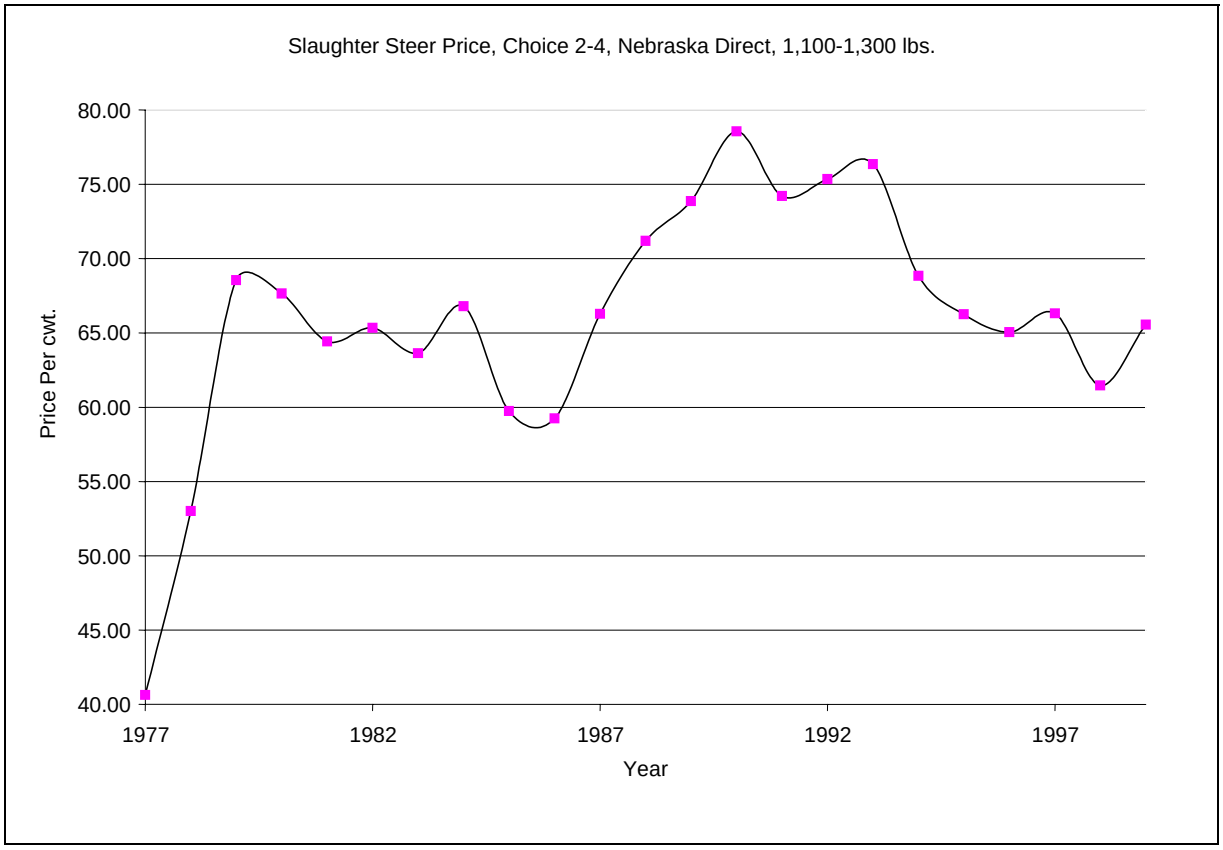


A first-order autoregressive (AR) model, or an AR(1) process, is used for this model when forecasting cattle prices and interest rates. This regression (17) shows lagged dependence:

$$y_t = \delta + y_{t-1}\theta_1 + e_t, \qquad (17)$$

where y_t is the variable for the current year being forecasted given time t = 1,2,3,4,5; δ is the intercept parameter that is related to the mean of y_t; y_{t-1} is the value from the previous

Table 3. Annual averages of historical cattle prices (ERS)



year; θ_1 is an unknown parameter that can be found through regression; and e_t is the forecast error for y_t that is to be assumed to be an uncorrelated random variable with mean zero and variance σ_e^2 (Griffiths et al. 1993). Solving for e_t,

$$e_t = y_t - \delta - y_{t-1}\theta_1. \tag{18}$$

In this model, e_t depends on the lagged value e_{t-1} plus another random variable that is independent and has a mean zero and a constant variance σ_e^2 (Griffiths et al. 1993).

Time-series models assume that the process that generates the outcomes y_t began in the infinite past and continue into the infinite future. Furthermore, it is assumed that the random variables generated for the past and future have the same mean and variance

because they all follow the same probability density functions $f(y_t)$ as those of the data set. In addition, note that the covariances between any two variables of y_t are assumed not to depend on time, but only on the lag between periods, in this case one year (Griffiths et al. 1993).

The Mean and Variance of an AR(1) Process

Since the mean of y_t and its variance must be the same for all time periods, then it can be implied that $E[y_t]=E[y_{t-1}]=\ldots=\mu$ or $\mu=\delta+\theta_1\mu$. Solving for the mean μ finds that $E[y_t]=\mu=\mu/(1-\theta_1)$. For convenience in determining other properties of an AR(1) process it can be assumed that the intercept parameter $\delta=0$. Thus, the mean of the time-series variables y_t is $\mu=0$. Setting $\delta=0$ is the same as measuring the y_t series in terms of deviations around its mean, or $(y_t-\mu)$. Meaning, this adjustment does not affect the variances or covariances of the time series model (Griffiths et al. 1993).

Taking the variance of both sides of (17) and then solving for σ_y^2, it can be found that the variance of an AR(1) process is

$$\sigma_y^2=\frac{\sigma_e^2}{1-\theta_1^2}, \tag{19}$$

since y_{t-1} and e_t are independent. Also, since y_{t-1} and e_t are uncorrelated, then $\text{cov}(y_t,y_{t-1})=\theta_1\sigma_y^2$ (Griffiths et al. 1993).

Forecasting with a First-Order Autoregression Model

Again using the AR(1) time-series model as described by Griffiths et al. (1993) (16), assume that the unknown parameters $\delta,\theta_1,$ and the error variance σ_e^2 have been determined. It is then possible to forecast the value of y_t, in the period forecasted $T+h$,

given that the collected data for cattle prices and interest rates are at time *T*. To develop this forecast, the *h* = 1 period ahead forecast must be found first, then the *h* = 2 period ahead forecast, etc.

To forecast the *h* = 1 period ahead, the following AR (1) representation is assumed to be correct:

$$y_{T+1} = \delta + \theta_1 y_T + e_{T+1}. \tag{20}$$

The minimum mean squared error forecast of y_{T+1}, denoted $\tilde{y}_{T+1}$, is its conditional expectation $E_T[y_{T+1}]$. To find the conditional expectation, it is necessary to assume that at time $t = T$, every term with a time subscript $t \leq T$ is known. Thus, when $t \leq T$,

$E_T[y_t] = y_t$

and $E_T[e_t] = e_t$,

and for time $t > T$,

$E_T[e_t] = E[e_t] = 0.$

Then, it is possible to take these results to find that the minimum mean squared error forecast is

$$\tilde{y}_{T+1} = E_T[y_{T+1}] = E_T[\delta + \theta_1 y_T + e_{T+1}] = \delta + \theta_1 y_T. \tag{21}$$

The forecast error, denoted $\tilde{e}_{T+1}$, is the difference between the value of y_t period $T+1$ and its forecasted value. That is

$$\tilde{e}_{T+1} = y_{T+1} - \tilde{y}_{T+1} = \delta + \theta_1 y_T + e_{T+1} - (\delta + \theta_1 y_T) = e_{T+1}.$$

Then, the variance of the forecast error is

$$\text{var}\left(\tilde{e}_{T+1}\right) = \text{var}\left(e_{T+1}\right) = \sigma_e^2. \qquad (22)$$

To forecast $h = 2$ periods ahead, it is necessary to take the given AR(1) model for the value y_{T+2}:

$$y_{T+2} = \delta + \theta_1 y_{T+1} + e_{T+2}.$$

Then, the minimum mean squared error forecast of y_{T+2} is

$$\tilde{y}_{T+2} = E_T[y_{T+2}] = \delta + \theta_1 E_T[y_{T+1}] = \delta + \theta_1 \tilde{y}_{T+1},$$

where $E_T[y_{T+1}]$ has been replaced by $\tilde{y}_{T+1}$, and $E_T[e_{T+1}]$ has been replaced by zero. Thus, the forecast error is

$$\begin{aligned}\tilde{e}_{T+2} &= y_{T+2} - \tilde{y}_{T+2} = \delta + \theta_1 y_{T+1} + e_{T+2} - (\delta + \theta_1 \tilde{y}_{T+1}) \\ &= e_{T+2} + \theta_1 (y_{T+1} - \tilde{y}_{T+1}) \\ &= e_{T+2} + \theta_1 \tilde{e}_{T+1} = e_{T+2} + \theta_1 e_{T+1},\end{aligned}$$

where it can be shown in the last step that the result is $\tilde{e}_{T+1} = e_{T+1}$. Finally, the forecast error variance is

$$\text{var}(\tilde{e}_{T+2}) = \text{var}(e_{T+2} + \theta_1 e_{T+1}) = \sigma_e^2 + \theta_1^2 \sigma_e^2 = \sigma_e^2 (1 + \theta_1^2).$$

Finally, to forecast for additional h periods ahead, the process is continued until the necessary forecast is achieved,

$$\tilde{y}_{T+h} = \delta + \theta_1 E_T[y_{T+h-1}] = \delta + \theta_1 \tilde{y}_{T+h-1},$$

with a forecast error variance of

$$\text{var}(\tilde{e}_{T+h}) = \sigma_e^2(1 + \theta_1^2 + \theta_1^4 + ... + \theta_1^{2(h-1)}).$$

First-Order Autocorrelation with Interest Rate

After regressing the 30-year treasury bond rates with 23 years of historical finished cattle sales prices (23) and backgrounded cattle purchase prices (24), the autoregressive model was

$$y_t = \delta + y_{t-1}\theta_1 + e_t = 30.02 + 0.59y_{t-1} + e_t \text{ and} \quad (23)$$

$$y_t = \delta + y_{t-1}\theta_1 + e_t = 32.35 + 0.61y_{t-1} + e_t, \quad (24)$$

where the random error e_t has a mean zero and variance 75.52 for (23) and variance 101.45 for (24). Since θ_1 = -0.0094, the autocorrelation function will appear to decline geometrically toward zero. The positive value of the parameter θ_1 will also tend to cause the value of the outcome variable y_t to be the same sign of y_{t-1} and vice versa (Griffiths et al. 1993).

Building, Equipment, and Livestock Requirements

The facilities and equipment necessary for this type of operation include the land, buildings, feed bunks, pens, fencing, and operating and feed equipment. From start-up, the facilities, equipment, and environmental structures are valued by the Iowa State University Extension and Iowa Beef Center in their Beef Feedlot Systems Manual for both the 1,500 and 5,000 head feedlots. Other costs that will be incurred initially include the necessary equipment that will need to be purchased and/or leased to operate the feedlot.

Buildings

The economy of scale provided by these facilities and state-of-the-art equipment creates distinct operating advantages for the feedlot. Of the five classifications studied by

the ISU Extension, the earthen lot with windbreak was the facility chosen for cost estimates in this model, followed by a concrete lot with shed.

Earthen Lot with Windbreak

It is known that any facility design that improves animal comfort also may improve cattle performance. The earthen lot with windbreak had the lowest initial investment of all of the facilities Iowa studied when comparing system and size per head. A larger feedlot is going to be able to spread the costs for structures over more cattle, thus reducing the per head costs. Adding a shed to the earthen lot would more than double the initial investment for large lots (Lawrence 2002b).

While the initial investment in these required structures appears large, the cost per head capacity when considered on an annual basis is less imposing. For yearling steers, these costs are divided by two turns per year. The overhead and operating costs per head of an earthen lot of 5,000 head are comparable to that of a concrete lot with a shed. However, the earthen lot has more runoff when compared to a concrete lot with a shed that has higher animal density; thus, the earthen lot has a higher cost of environmental compliance. The cost of overhead and operating costs, including facility, manure hauling, fuel and utilities, and labor, is the lowest for an earthen lot with a windbreak at $32.85 per head (Lawrence 2002b).

An 8-foot high windbreak fence provides some protection against adverse weather. The open lot allows 25 square feet of space per animal. Thirty square feet per head of mound space is provided as a sleeping and resting area. Diversions can be placed on the upper side of the feedlot to direct rainfall and runoff away from the lot, so only what falls on the lot must be handled. A settling basin and detention basin that is designed to handle

feedlot runoff and meets all current state and federal pollution control standards would need to be located on the lower side of the feedlot. Manure handling costs are included by estimating annual costs based on commercial manure hauling rates for both the liquid and runoff (when applicable) and solids scraped off the lot and collected in the settling basin (Lawrence 2002b).

Concrete Lot with Shed

The second facility that could be applicable in North Dakota would be the concrete lot with a shed. This type of facility was chosen because of several trends that occur when there are open lots with shelter provided, for example, reduced feed intake and improved efficiency. Based on earlier studies, it was assumed that cattle fed in open lots with shelter would be 5% more efficient than cattle fed in open lots without shelter. It is also assumed that confinement cattle consume 5% less feed, but are 2-3% more efficient than cattle fed in open lots. While the initial investment for the structure is large, it is estimated that the overhead and operating costs per head are less for 1,500 and 5,000 head lots that have concrete lots with a shed than an earthen lot with a shed (Lawrence 2002b).

This system utilizes a shed that provides 20 square feet per head and a paved lot that adds an additional 30 square feet per head. The shed has a concrete floor and roof design with gutters and down spouts that channel rainwater away from the pen area. The feed bunk is located outside, minimizing costs and improving feeding access. Manure is scraped once per week, or as needed, into a settling basin used for collecting solids. Liquid is drained into a detention basin for lots of over 1,000 AU. Because of the small lot size, these facilities handle much less runoff than earthen lots. Some “solid” manure handling is anticipated as manure setting on the lot surface is scraped frequently. Bedding is not

generally used in this system (Lawrence 2002b).

Land Costs

It is necessary to further estimate the cost for land for the facilities and waste disposal. This facility will need to be located near the crops required to support this type of operation for economic and efficiency reasons. According to Petry (2002), it can be estimated that the small amount of land necessary to operate a finishing feedlot in North Dakota would cost approximately $750 per acre.

Obtaining Information from Lenders

In order to obtain an accurate assessment of the types of financing available for the feedlot, each lender was contacted for assistance and sent identical financial statements for the three sizes (1,500; 5,000; and 10,000 head) of the feedlot financed with three different amounts of equity (35%, 50%, and 60%). Each lender was also told that in the financial statements received, they could assume that after equity, the remainder of the total loan amount was financed as follows: facilities at 8.75% for seven years, working capital at 7.5% for three years, and the revolving line of credit on a one-year term for 5.75%.

The lenders were then allowed time to review the information submitted to them in order to assess the situation and prepare an example of the type of financing that could be provided for the various feedlot arrangements. Each lender was asked to state the type of loans they had available, the equity required, the term and interest rate that would be used, individual loan conditions, and any other repayment terms or loan requirements.

The balance sheet in Appendix Table A.10 represents an example of a financial statement created for a 1,500-head earthen feedlot with a windbreak similar to the one presented to the lenders for assessment. Lenders chosen to participate in this study from

whom information was received were Farm Credit Services (FCS) on June 11, 2002; Bank of North Dakota (BND) on July 10, 2002; Farm Services Agency (FSA, formerly Farmers Home Administration (FHA)) on June 17, 2002; CoBank (Banks for Cooperatives) on August 29, 2002; Wells Fargo to represent the commercial banks on July 12, 2002; various credit unions; and leasing information was received again through Wells Fargo on September 6, 2002. For purposes deemed necessary, the names of the financial intermediaries have been omitted and named Lenders 1 through 8.

For each financing source, there is consideration of the length of term of the loan or lease, the type of rate (variable or fixed), the interest rate, the limiting amount of the loan or lease, the total principle used, and the accumulated interest for the entire term of the financing. Each of these variables is applied to three different types of financing necessary for a finishing feedlot, including facilities, working capital, and livestock.

Terms of Financial Intermediaries

Each lender in this section is described with their particular loan arrangement and constraints. A table of this information is found in the Appendix Tables A.1 through A.3.

Lender 1

Due to the lack of knowledge concerning the management and contract structure of the feedlot operation, Lender 1 presented a conservative financing package of three loans for this feedlot with few credit enhancements, given that there would be adequate cash flow to support their loan. More aggressive opportunities could also be provided if it was known that the cattle were contracted to a slaughter facility at the end of the cattle cycle.

Under the circumstances of seasonal effects due to two cycles of cattle being bought and sold within a year, Lender 1 would provide (1) a revolving seasonal loan that is

based on the current assets (cattle, feed, and receivables). The maximum for this status loan was proposed to be given 70% for receivables within a ninety-day period. Thus, the feedlot would need to provide 30% equity (minus the start-up losses) for their current asset requirements. This loan would be provided annually (one-year term) and have a variable rate near the prime rate plus one, estimated to be 5.75% as of June 12, 2002.

The working capital loan (2) would have a term of most likely three years, with five years at the maximum. A portion of this loan would be expected to be paid off rapidly near the beginning of the term. The rate for this loan would most likely be fixed at 7.5%.

Finally, the facilities (3) would be financed on a seven-year term (aggressively 10 years). The rate for this loan would most likely be fixed at 8.75%. Both the working capital (2) and facility (3) loan would require 50% of equity provided after start-up fees and were estimated with the prepayment penalty on June 12, 2002.

The rates given represent a spread over the cost of funds with the spread considering credit risk, servicing costs, and required returns on equity. These rates are potentially tied to various indexes (i.e., Prime, LIBOR, etc.). Given that Lender 1 is a GSE (government sponsored entity), Lender 1 bonds should mirror treasuries plus a relatively small spread (25 to 50 bps). The principle and interest of each loan are expected to be repaid in a monthly or quarterly payment schedule, depending on company cash flow and overall credit structure.

Lenders 2 and 3

The package presented by both of these lenders consisted of three loans: facilities and equipment, working capital, and a revolving line of credit. The facilities would be financed for a term of 15-20 years, and equipment would be financed for a term of 5-7

years.

For these loans, these lenders proposed two loan possibilities: Lender 2 arrangement and Lender 3 arrangement. The Lender 2 arrangement option requires that another "outside" bank finance the loan. Lender 2 would then finance that loan for 5% less than the rate financed by the previous bank. Another option would be the Lender 3 arrangement which is used for long-term financing like facilities, real estate, and equipment. Twenty-percent of the equity would be required. Then, of the necessary loan amount remaining, Lender 3 would provide 40%, followed by the remaining 60% financed by the "outside" bank. The rate used for the lender on July 10, 2002, for this loan was 7.02% for a five-year real estate loan. On July 10, 2002, Lender 3 arrangement rates for this loan were 7.02% for a ten-year loan and 7.24% for a twenty-year loan, which are quoted 2.25% greater than the federal home loan rates.

The working capital and revolving credit line for livestock would require 20-30% equity and would be financed on a one-year term at a variable rate of 5-6% as of July 10, 2002. These rates are also based upon current federal home loan rates. According to the amount of risk and hedging involved, the lender would consider equity of 10%.

The payment schedule would depend upon the amount of income being accrued by the feedlot. Monthly payments could be expected for the 5,000 and 10,000 head feedlots, and possibly quarterly to annual payments from the 1,500 head feedlot.

For application in the spreadsheet model, both the Lender 2 arrangement and Lender 3 arrangement were used as possible financing methods. For the Lender 2 arrangement example, Lender 7 was implemented as the primary lending facility for 75% of the principle needed for the facilities, working capital, and the revolving line of credit.

Lender 2 then financed the remaining principle (25%) at an interest rate 5% less than that of Lender 7. Equity requirements were 20% for facilities and working capital and 20-30% for the revolving line of credit.

Lenders 4 and 5

Lender 4 gave an overview of the possible financing available through their lending facility. After the loan is proven secure, Lender 4 proposed four options for the long-term loan:

1) The lender would offer their maximum amount available for a direct loan ($200,000). The remaining expense for the facilities, equipment, and environmental structures would need to be funded by a participating lender.
    a. Corporations, cooperatives, joint operations, and partnerships must meet the same eligibility requirements as sole proprietors, and the entity must be authorized to operate a farm or ranch in the state where the land is located (FSA 2000).
2) A commercial lender would finance 50% of the facilities, equipment, and environmental structures. Lender 4 would then finance the remaining 50%, up to their maximum lending limit of $200,000.
3) Obtain a loan guarantee after financing 100% of the loan by a participating lender. The lender would then guarantee all or a portion of the loan, up to $770,000. This portion can then be sold to a noncommercial lender, for example, Lender 2 or 3.
4) Lender 4 does not require any equity down for guaranteed loans.
    a. If this loan fails and the borrower suffers a loss, Lender 4 will reimburse the borrower with federal funds under terms and conditions specified in the guarantee.
    b. For most loans, the maximum guarantee is 90%; however, the guarantee percentage

will be determined by the lender based on the risk involved in the loan.

Repayment terms vary according to the type of loan made, the collateral securing the loan, and the producer's ability to repay. Operating loans are normally repaid within 7 years, and real estate loans cannot exceed 40 years. The rate for the Lender 5 arrangement, estimated near a variable 6% for the direct loan, is negotiated between the participating bank and the borrower depending on cash flow. The lender can then provide interest rate assistance of up to 4%.

Lender 4 arrangement for both ownership and operating purposes can also be made at reduced interest rates. For instance, if the cash flow statement is producing below 110%, then the borrower can access a limited resources variable rate of 5% for these types of loans.

The lender offers similar loan arrangements for the short (3-5 years) and intermediate (maximum of 7 years) term loans in the form of an operating chattel. Operating loans may be used to purchase items needed for a successful farm operation, including livestock, farm equipment, feed, seed, fuel, farm chemicals, repairs, insurance, and other operating expenses. The limiting factor on this chattel is that the lender can only offer $200,000 as a Lender 4 arrangement and $770,000 in the Lender 5 arrangement. The direct operating loan would have a rate near a variable rate of 6%. Again, the borrower could access a limited resources variable rate of 5% if indicated by the cash flow.

It is recommended that the borrower obtain as much financing from other lenders before negotiating their loan using Lender 4 and 5 arranged financing options, reserving the Lender 4 arrangement and Lender 5 arrangement for final financing options.

In the model, the Lender 4 option is used with all $200,000 available placed toward

financing of the facilities with 0% equity required. Lender 7 is then used as the participating lender to fund the remaining financing needed for the operation, requiring equity of 30% for facilities and 35% for both the working capital and the revolving line of credit.

However, for the Lender 5 arrangement, the maximum $700,000 available from the lender is used first for the facility loan, followed by working capital, and then, if available, for the revolving line of credit. This financing is available at interest rates 5% below those of the participating lender and requires no equity. The remainder of the loan is then financed by the participating lender, Lender 7, whose required equity is mentioned earlier.

Lender 6

Most importantly, Lender 6 responded to the hypothetical financing of the modeled feedlot that in order for financing to take place, the operation must present a positive net return. In addition, Lender 6 would require an audit of the financial statements at time zero in order to verify the inventory actually in possession of the feedlot.

Lender 6 is very conservative and very selective of their livestock production investments, and thus high risk investments would need to be very integrated. In order to avoid the smaller lending market, Lender 6 would only consider the financing of the 5,000 and 10,000 head feedlots, and even then, it would need to be proven that the marketing of the cattle from the feedlot would have prearranged contracting.

The term loan would require at least 50% equity to cover just the facilities, equipment, and environmental structures up to a maximum of $350,000 at a rate between 5.25% and 5.75%, as of September 26, 2002. The remaining amount needed for the feedlot would most likely be financed with a seasonal loan with no working capital due to

the high negative amount of accounts payable. However, if this amount does not fall to at least a negative $250,000, then it would be necessary for Lender 6 to finance the remaining debt of the feedlot with a working capital loan. If a working capital loan is needed, that amount would be equal to the value of the current assets for the feedlot for a term of about 5 years.

For the revolving line of credit, Lender 6 would suggest a cash management system where the revolving loan would serve the purposes of a business account for the feedlot where all income goes in to pay off the revolving line, but if needed, the feedlot can later borrow back funds up to the initial loan balance of the revolving line of credit. If there is any excess cash processed after the revolving line is paid, then those funds would be expected to go toward the working capital or term loan of the feedlot. The revolving seasonal loan would be financed with a variable rate of about one-half over the prime rate.

At the end of the first fiscal year, Lender 6 would require that a series of audits be conducted. First, a compilation of all financial records and statements would need to be produced by the borrower. Second, these records would be reviewed by an accountant, followed by another "qualified" audit that ensures that the initial accounting procedures follow general accepted accounting principles (GAAP). Finally, an "unqualified" audit would take place where all inventory and accounts receivables are tested to be accounted for and accurate.

Lender 7

The lender used in this model was a commercial bank which has dealt with livestock financing for over 25 years and took the opportunity to hypothetically finance a finishing feedlot with the financial records simulated in our model.

Facilities and real estate would be financed by Lender 7 with a long-term loan for 7-10 years and secured by the collateral available from the mortgage on the real estate. Otherwise, the entity would need to own the land to secure the financing for the facilities. The long-term loan would be financed at a 7-year fixed rate of 8.75% which is correlated with the bank's cost of money needed to purchase a CD to finance the loan. If the CD does not provide enough financing, then the rate would be correlated with the current federal reserve rate. Equity necessary to finance this loan would be at least 30% of the value of the secured facilities.

The equity required for the revolving line of credit depends mostly on the potential profitability. Fifty percent would be needed for feed (corn/barley) or more (75%) if, for example, most of the feed financed would be hay and/or silage, since it would be more difficult to liquidate if needed. Financing livestock would require at least 25% equity, or if feed and livestock are financed together, 35% equity would be needed. However, if the revolving line of credit and the working capital are financed using the same collateral, then the revolving loan would equal 65% of the value of the equipment minus $200,000.

The Lender 7 term note or capital note would facilitate the financing necessary to cover the working capital of an operation. The term for this note would probably be 3 years with a variable rate identical to that of the revolving line of credit (5.75%), or a fixed rate of approximately 7.5%. If the term of this loan would grow beyond 5 years, it would be very unlikely that a fixed rate would be available. The equity required for the working capital or capital note would be 35% or more depending on the value of the equipment, how specialized it is, and the ability of the equipment to be liquidated.

Annual or monthly payments for the working capital and facilities would be

expected depending on the size of the operation. If available, prepaying loans would always be accommodated. The revolving line of credit could be paid at anytime and would need to be renewed annually.

It was stated that there are several conditions that must be met and maintained within a loan covenance in order for lending to occur. Conditions of this loan covenance may include

1) A borrowing base certificate for the revolving line of credit must be submitted to the bank each month for privately owned cattle. This certificate would state the number of cattle in the current inventory and their weights, etc.
2) It would be required that capital purchases made by the borrower be limited to $20,000 without consent from the bank.
3) A covenant on the working capital loan would require that the current ratio remain greater than 1.20 and be reported to the bank monthly.
4) Current financial statements must be maintained and reported to the bank.
5) The operation must have adequate insurance. In the event that the operation fails, the bank must be listed first as the initial loss payee.
6) Seventy-five percent of the cattle must be hedged with futures contracts, or seventy-five percent of the cattle must be hedged with options.
7) Finally, the operation must have the ability and cash flow to be able to pay out at any time.

Lender 8

It is common for borrowers to pursue leasing on the buildings and equipment for their firm, but it is less likely that a borrower is going to find adequate financing for their

cattle without the assistance of another firm, for example, a sale barn. Leasing is often chosen for buildings and equipment primarily for the tax advantages that can be utilized. Not only is the sales tax required spread out over the term of the lease, but interest can be saved by writing off the debt of their purchases quicker. However, the drawback to leasing is that the lease payment must be made up front, whereas the down payment that is made at the beginning of the lease term is the first of the leasing payments.

Leases are usually obtained through a leasing firm for the original price of the equipment plus a leasing fee (ex. 2-3%). This lease is then sold to a commercial bank like Lender 7. By taking the original price plus the leasing fee, the bank will then choose a percentage (i.e., 10%) to be used as the buyout price that will be paid in the final year of the lease. The buyout amount is always a fixed value that is legally binding and must be arranged before the bank's leasing agreement is signed.

For example, if the value of the equipment with sales tax is $100,000, the leasing firm will add a fee for the lease, in this case 2% or $2,000. Then, a commercial bank will purchase this lease for $102,000 from the leasing firm. Ten percent of this amount is the fixed buyout price to be paid in the final year of the lease, $10,200. If the term of the lease is 5 years, then the remaining amount of the lease, $91,800, is divided into the other 4 years. Thus, the down payment and annual payments to be paid at the beginning of the year would be $22,950.

Leasing of buildings and property works in the same way, except that not all leasing companies will finance buildings because it is difficult to foreclose on a delinquent lease. Extra paperwork must also be obtained, such as severances and easements, for the security of the lender. A higher initial down payment may also be required (i.e., 20%) for a

building lease as well. However, building leases offer a huge tax benefit over loans. Since the depreciation schedule for a building loan may extend 20-30 years, a leasing schedule allows the borrower to write off the debt earlier with a 7-10 year payment schedule.

When the leasing of cattle does occur, it can be structured that the sale barn would purchase the steers at the sale barn and then lease those cattle to the farmer who is then responsible for all the feedlot expenses until the cattle are sold. At this point, the sale barn may be guaranteed its original investment in the cattle and possibly a percentage of the profits when the cattle are sold. However, the death loss expense usually has to be incurred by the farmer, and oftentimes sale barns may not purchase the highest quality steers to be finished by the lessor.

Credit Unions

The largest credit union in the state indicated that there was very little availability for financing feedlots in North Dakota. There is some financing available for cow-calf operations that contract their cattle to feedlots outside of North Dakota, for example, Minnesota, Nebraska, or Kansas, but currently, finishing operations in North Dakota do not meet the financial needs of the credit union for valid financing. In the rare occurrence that a credit union would choose to undergo financing of a very large finishing feedlot, it would be with great assistance of the Bank of North Dakota, previously mentioned in this paper (FCC).

CHAPTER 5

RESULTS OF BUDGET ANALYSIS

The methodology incorporates the data into an @RISK spreadsheet model structured to compute distributions for net cash flow (NCF), net return (NR), and return on farm equity (ROFE) for the years 1 through 5 of each simulation. The @RISK spreadsheet model includes the stochastic results given the real cattle prices for both backgrounded and finished cattle as well as real interest rates. These values were used to produce results in each simulation of a 1,500; 5,000; and 10,000 head finishing feedlot, for both an earthen lot with a windbreak and a concrete lot with a shed, for all eight of the loan arrangements (Appendix Tables A.17-A.28). The ranks given in this chapter are the medians reported by @RISK, since the mean values reported were distorted due to a skewed distribution.

Lender 1

Lender 1's loan arrangement requires 50% equity for the facilities (long term) and working capital loans. This method of financing only generated the highest ROE in the 1,500 head feedlot size. Lender 1's only other appearance was in the 5,000 and 10,000 head size, when Lender 1 had one of the three lowest ROFEs after five years of operation for both sizes.

The remaining results were noted when financing the 1,500 head earthen and concrete feedlots. Lender 1 had the highest NCF in both years 1 and 5. Net return results showed that Lender 1 had the lowest value after one year of operation, but resulted in the highest value after five years of operation. Alternatively, Lender 1 had the highest ROFE after one year of operation, and the lowest value after five years of operation.

Table 4 shows the rankings of each lender based on net cash flow, net return and

Table 4. Net cash flow (NCF), net return (NR), and return on farm equity (ROFE) mean rankings of Lenders 1 through 8 for 1,500-; 5,000-; and 10,000 head earthen and concrete feedlots

		1,500 earthen		1,500 concrete		5,000 earthen		5,000 concrete	
		Year 1	Year 5	Year 1	Year 5	Year 1	Year 5	Year 1	Year 5
NCF	High	1	1	1	1	5	5	5	5
	Low	8	8	8	8	6	6	6	6
NR	High	7	1	7	1	7	2	7	2
	Low	1	7	1	7	6	6	6	6
ROFE	High	1	8	1	8	6	8	6	8
	Low	8	1	8	1	4	1,2,5	4	1,2,5

		10,000 earthen		10,000 concrete	
		Year 1	Year 5	Year 1	Year 5
NCF	High	5	5	5	5
	Low	6	6	6	6
NR	High	7	2	7	2
	Low	6	6	6	6
ROFE	High	6	8	6	8
	Low	4	1,2,5	4	1,2,5

return on farm equity means.

Lender 2

Lender 2, which had a variable rate for the long-term loan and would only finance 25% of the needed amount, held the highest NR position for both the earthen and concrete 5,000 and 10,000 head feedlots after five years of operation. In addition, Lender 2 also was one of the lowest three lenders when ranked by their ROFE ratio for the 5,000 and 10,000 head earthen and concrete feedlots in year 5.

Lender 3

Lender 3, the loan arrangement with lower equity requirements, did not have either the highest or the lowest median value in either of the three ranks. However, Lender 3 had

the fourth highest NCF in both years 1 and 5 for the 5,000 and 10,000 head earthen and concrete feedlots. For net return, Lender 3 was the second lowest after one year of operation, and the fourth lowest in year 5 for both the earthen and concrete lots in both the 5,000 and 10,000 head sizes. Concerning ROFE, Lender 3 had the second highest ratio in year 1 and was one of the four lenders with the second highest ratio after five years of operation for the earthen and concrete 5,000 and 10,000 head feedlots.

Lender 4

The only ranking held by Lender 4 was found for the 5,000 and 10,000 head size lot, where it was ranked last after one year of operation for both the earthen and concrete feedlot. This result could be due to the $200,000 lending limit proposed by Lender 4.

Lender 5

Lender 5 was able to finance the operation with very low interest rates, which showed positive results with the highest NCF after both one and five years of operation for the two largest size feedlots, whether earthen or concrete. However, Lender 5 also was one of the three lowest lenders when ranked by their ROFE ratio for the 5,000 and 10,000 head earthen and concrete feedlots in year 5.

Lender 6

Uniquely, Lender 6 held the lowest positions in years 1 and 5 for the two largest earthen and concrete feedlot sizes for both net cash flow and net return. Alternatively, Lender 6, built without a working capital loan and requiring 50% equity for the long-term loan, had the highest ROFE in year 1 for the same size and type of conditions.

Table 5 shows the comparison of the means and standard deviations for the net cash flow values, the net returns, and the return on farm equity ratios for both Lenders 1 and 6

Table 5. Comparison of Lender 1 and Lender 6 means and standard deviations for a 5,000 head earthen and concrete feedlot

Lender 1 - 5,000 Head Feedlot						
Earthen	NCF		NR		ROFE	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Year 1	-1969355	1125077	-378820	839394	-0.95	18.77
Year 2	-2338257	2564666	-130415	1447841	9.99	878.48
Year 3	-2529080	4113769	47990	1551254	0.54	7.80
Year 4	-2637862	5751482	131512	1639630	0.46	13.15
Year 5	-2721907	7471894	154511	1723052	0.27	0.76
Concrete	NCF		NR		ROFE	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Year 1	-1976327	1125090	-385064	839407	-0.32	69.87
Year 2	-2352657	2564833	-136778	1447994	1.06	31.22
Year 3	-2551273	4114343	41627	1551659	0.19	26.59
Year 4	-2668185	5752741	125209	1640311	0.26	10.36
Year 5	-2760701	7474130	148300	1724024	0.33	13.72
Lender 6 - 5,000 Head Feedlot						
Earthen	NCF		NR		ROFE	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Year 1	-3315996	1126967	-427435	841190	-44.01	4843.69
Year 2	-3589894	2577339	-198003	1458562	1.32	44.40
Year 3	-3669482	4148864	-14720	1573511	0.49	4.02
Year 4	-3653499	5813108	76966	1666124	0.38	5.67
Year 5	-3602240	7560046	112974	1749712	0.27	6.40
Concrete	NCF		NR		ROFE	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Year 1	-3325066	1126969	-433684	841192	2.62	934.65
Year 2	-3608690	2577441	-204390	1458662	1.01	14.59
Year 3	-3698558	4149353	-21104	1573893	0.55	3.46
Year 4	-3693324	5814371	70722	1666890	0.37	2.95
Year 5	-3653256	7562490	106947	1750884	0.29	2.48

under the 5,000 head feedlot set-up.

Lender 7

For the 1,500 head earthen and concrete feedlots, Lender 7, a commercial bank that

offered a variable rate on the long-term facilities loan, had the highest NR in year 1, but also had the lowest NR in year 5.

Lender 8

Lender 8 also had some interesting results by having the lowest NCF in years 1 and 5 for the 1,500 head earthen and concrete feedlots, as well as the lowest ROFE in year 1. Otherwise, Lender 8 had the highest ROFE for both the 5,000 and 10,000 head earthen and concrete feedlots after five years of operation. This change from the lowest ROFE to the highest ROFE could be due to financing with a lease arrangement.

Earthen Lot vs. Concrete Lot

Tables A.23 through A.28 in the Appendix provide detailed comparative results. The ranks were exactly the same for the earthen and concrete lots for all three sizes of feedlots.

Net Cash Flow

As expected due to the lower start-up costs, the net cash flow values were always less negative with an earthen feedlot arrangement for all sizes than for a concrete lot. Thus, all lenders, no matter the size or type of feedlot simulated, had a higher NCF under the earthen lot with a windbreak set-up.

1,500 Head Feedlot. Lender 1, the loan arrangement that required 50% equity for the facilities (long term) and working capital loans, had the highest NCF for both the earthen and the concrete 1,500 head feedlot, whether after one or five years of operation. The same conditions apply to Lender 8, with the lowest NCF value.

In Figure 2, the mean net cash flows are compared for a 1,500 head earthen and concrete feedlot after 1 year and 5 years.

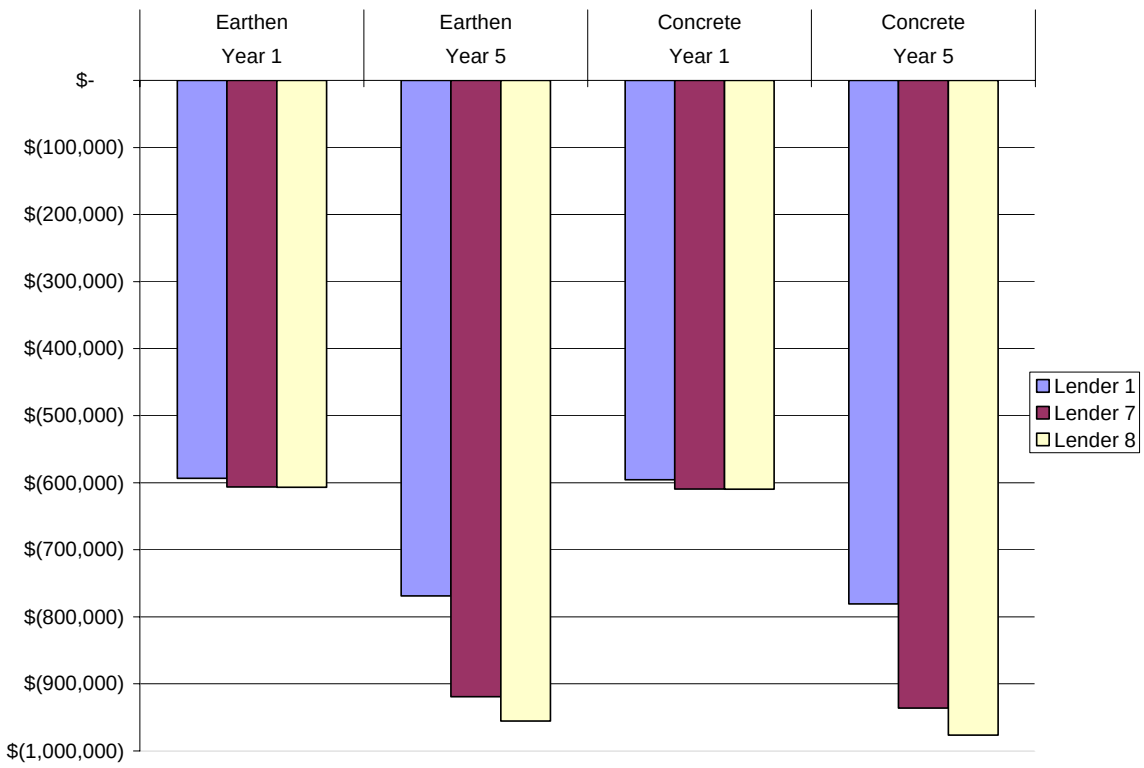


Figure 2. Net cash flow mean comparison for 1,500 head feedlot loan arrangements.

5,000 and 10,000 Head Feedlot. For the 5,000 and 10,000 head earthen and concrete feedlots, Lender 5 and Lender 6, whose only common trait was that they both had similar interest rates for the long-term and the revolving line of credit, were highest and lowest, respectively, for both year 1 and year 5 results.

@RISK also performed a sensitivity on each measured result in this study, shown in Appendix Tables A.29 and A.30. A sensitivity on the net cash flow results for a 5,000 head earthen feedlot financed by Lender 1 shows that after one year, the most influential factors for this investment were first, the beginning (-0.89) and the finished weight (0.458) following in second.

Figure 3 shows the comparison of mean net cash flows for a 5,000 head earthen and concrete feedlot over 5 years when financed by Lender 1.

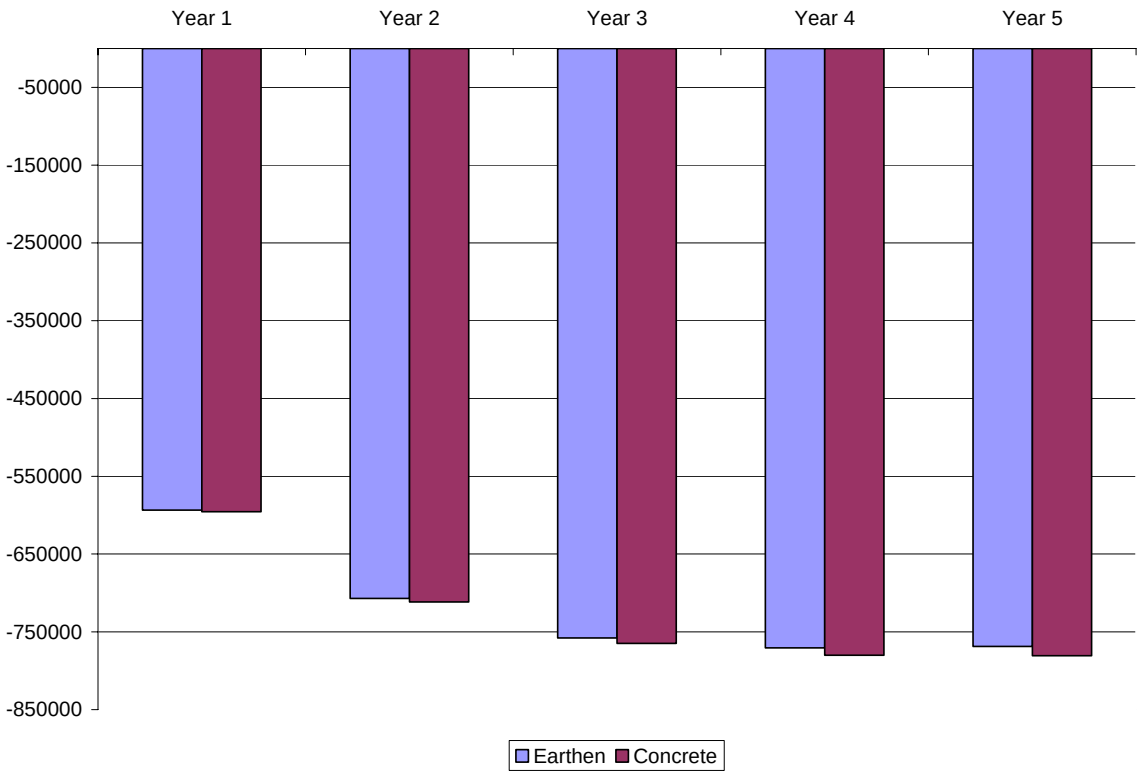


Figure 3. Net cash flow means for earthen and concrete 5,000 head feedlot under Lender 1.

Other important factors, although quite small, were the percentage of death loss (-0.013) and the interest rate on the revolving line of credit (-0.007). These results indicate that, for instance, as beginning weight increases by one unit, the net cash flow in this case would decline by 0.89.

After five years of operation, sensitivity results remain consistent with beginning weight (-0.791) being the most influential factor on NCF. Followed by finished weight (0.612), death loss (-0.018), and interest rate (-0.015).

Net Return

The same earthen/concrete lot comparisons applied to the NR results which were also higher under an earthen lot.

1,500 Head Feedlot. The earthen and concrete 1,500 head feedlot had the highest net

return after one year of operation with Lender 7, a commercial bank, offering a variable rate on the long-term facilities loan. The lowest net return was with financing by Lender 1, which required a higher than average equity on the long-term loan. However, after five years of operation, the opposite occurred for both the earthen and concrete 1,500 head lots, with Lender 1 the highest and Lender 7 returning the lowest NR of the eight lenders.

5,000 and 10,000 Head Feedlot. Lender 7 again had the highest one-year NR for both the 5,000 and 10,000 head earthen and concrete lots, although Lender 6 held the lowest NR for both the 5,000 and 10,000 head earthen and concrete lots. Alternatively, Lender 2, which had a variable rate for the long-term loan and would only finance 25% of the needed amount, had the highest five-year NR for both the 5,000 and 10,000 head earthen and concrete lots. Again, Lender 6 resulted in the lowest NR for both the 5,000 and 10,000 head earthen and concrete lots.

As shown in Figures 4 and 5, it is possible to identify the similarities and differences in the median net returns after one and five years of operations for an investment in an earthen lot with a windbreak or a concrete lot with a shed.

The sensitivities for the net return values for a 5,000 head earthen lot after one year when financed by Lender 1 are shown in Appendix Tables A.31 and A.32. These tables show that again the beginning weight (-0.79) of the cattle has the highest influence on net return. Thus, as the beginning weight increases by one unit, the net return declines by 0.79. The other major factors affecting the net return after one year of operation were the finished weight (0.614), death loss (-0.018), and variable rate (-0.01) on the revolving line of credit.

After five years of operation, the leading factor impacting net returns was the

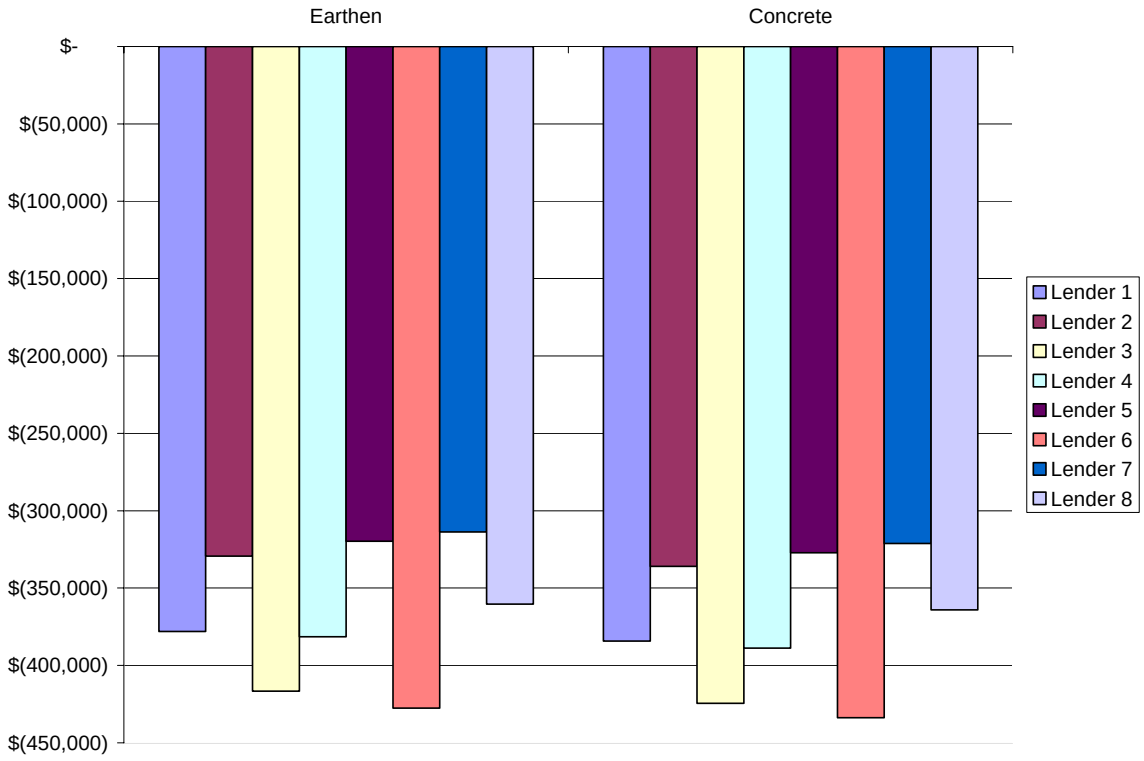


Figure 4. Net return means for 5,000 head feedlot loan arrangements after one year of operation.

beginning weight (-0.763), followed by the finished weight (0.614), then the death loss (-0.18), and finally the interest rate (-0.01).

Return on Farm Equity

All of the ROFE values were quite comparable between the earthen and concrete lot investments by being within 1% for the 1,500 head feedlot, regardless of the length of operation. For the 5,000 head feedlot, all lenders except for Lender 3, with its low equity requirements, had a higher ROFE under the earthen lot set-up after one year of operation. After five years of operation, all of the lenders had the exact same ROFE value for the 5,000 head earthen and concrete feedlots, but for the 10,000 head feedlots, all of the lenders except for Lenders 1, 2, and 8 had a higher ROFE ratio with an earthen lot after one

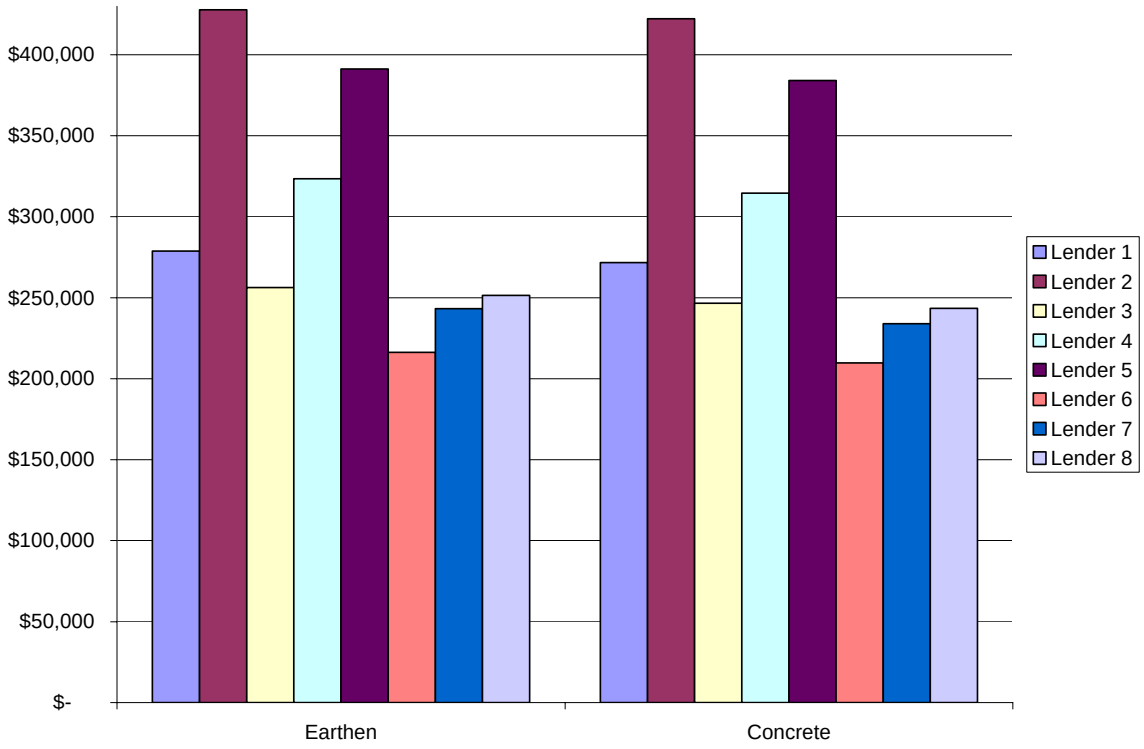


Figure 5. Net return means for 5,000 head feedlot loan arrangements after five years of operation.

year of operation. Otherwise, the lenders were again exactly the same ratio after five years of operation.

1,500 Head Feedlot. Although Lender 1 had the lowest NR after one year for both the earthen and concrete 1,500 head feedlots, it resulted in the highest ROFE for that same term, with Lender 8 having the lowest ratio. Again, similar to the NR results, the opposite rankings occurred after five years of operation, where Lenders 8 and 1 were highest and lowest, respectively, for both the earthen and concrete 1,500 head feedlots.

5,000 and 10,000 Head Feedlot For the 5,000 and 10,000 head earthen and concrete feedlots, Lender 6 held the highest ROFE value after one year of operation, even while holding the lowest NR value for one year of operation. The lowest ROFE was found with

Lender 4 for one year of operation under either an earthen or concrete 5,000 or 10,000 head set-up. After five years of operation, an earthen or concrete 5,000 or 10,000 head feedlot had the highest ratio with Lender 8, the lease arrangement. The lowest values were equally found with Lenders 1, 2, and 5 for the same conditions.

Recommendations

It is possible to choose recommended loan arrangements depending on the measures that the producer is most concerned about. First, the recommendation can be divided by the size of the feedlot. Then, within each size, the top performing lenders are compared based on the financial measures, net cash flow (NCF), net return (NR), and then return on farm equity (ROFE), after one year of operation and after five years of operation.

Due to high start-up costs, all of the lots, both earthen and concrete, for the 1,500; 5,000; and 10,000 head feedlots each had a negative median net return in the first two years of operation. In addition, all of the feedlots had negative median net cash flows for the entire five years simulated which continued to grow in debt until the fifth year when the amount of negativity decreased. The ranks were exactly the same for the earthen and concrete lots for all three size feedlots.

1,500 Head

One Year of Operation. NCF and ROFE had the same leading three lenders, beginning with Lender 1, then Lender 7, followed in third by Lender 8. However, for NR, the top three lenders were the opposite rank, beginning with Lender 7, then Lender 8 and Lender 1, respectively.

Five Years of Operation. After five years of operation, the NCF rank remained exactly the same as year 1. However, NR and ROFE values caused both ranks to reverse,

led by Lenders 1, 8, and 7 for NR and Lenders 8, 7, and 1 for ROFE.

5,000 and 10,000 Head

The same ranks were found for both the earthen and concrete lots, as well as for the two largest sizes, the 5,000 and the 10,000 head feedlots.

One Year of Operation. There were fewer similarities in rank in the two larger feedlots. For NCF, the highest three values were found with Lenders 5, 2, and 4, respectively. The highest value for NR was found with Lender 7 and was then followed closely second by Lender 5 and then Lender 2, with its cap amount on principle. Finally, ROFE values were highest with Lenders 6, 3, and 7, respectively, in first, second, and third.

Five Years of Operation. Alternatively, Lender 5 also had the highest NCF value after five years of operation, although compared to year 1, Lender 4 now ranked slightly above Lender 2 for second and third rank, respectively. For NR, Lenders 2 and 5 again were in the top three rank only after five years of operation, ranked as first and second, respectively, followed in third by Lender 4. Finally, Lender 8 had the highest ROFE after five years of operation, but Lenders 1, 2, and 5 tied for the second highest ratio. Additionally, Lenders 3, 4, 6, and 7 also tied for the third highest ROFE ratio.

Summary

This chapter has presented numerous versions of comparisons of the eight lenders whose loan terms were simulated in this model. It is possible for producers to consider what factors are most important as they plan to finance their value-added finishing feedlot in North Dakota. Different groups or individuals may place more emphasis on the short-term results (1 year) rather than the long-term results (5 year), on the type of facility (earthen lot with windbreak or concrete lot with shed), or, finally, on the financial measure

(net cash flow, net return, or return on farm equity). Thus, this chapter should provide the analysis of the effects these different loan terms have on the feedlot operation.

CHAPTER 6

SUMMARY AND CONCLUSIONS

Introduction

This chapter provides a summary of this thesis. The significance of the findings is reviewed as well as a discussion concerning the limitations of the application of these findings. Finally, suggestions for future research are discussed.

Summary of Thesis

The goal of this study was to demonstrate the impact of existing ways to finance the operation of a commercial finishing feedlot in North Dakota and analyze the financial implications of alternative credit arrangements. A stochastic simulation model was developed with @RISK to determine the varying effects different loan arrangements have on the net cash flow, net return, and return on farm equity. Eight different loan arrangements were used to analyze two types of finishing feedlots, an earthen lot with a windbreak and a concrete lot with a shed. Each type of feedlot was then analyzed under three different feedlot sizes: 1,500 head; 5,000 head; and 10,000 head. The model randomly draws the interest rate and the cattle price based on the correlation of the interest rate and finished cattle price, as well as the interest rate and backgrounded cattle price correlation. The net cash flow, net return, and return on farm equity for the first five years of the operation were then compared.

Each lender's terms were incorporated into the model, including the term of the loan, the type of interest rate (variable or fixed), the percentage of equity required, and the limit on principle available for a long-term facilities loan, an intermediate-term working capital loan, and short-term revolving line of credit. The interest rates were also modified

here if certain loan arrangements allowed for discounted rates with individual lenders. After the financial intermediary was chosen, the model then calculated the necessary equity and loan amount required by the borrower, and calculated the accumulated interest.

The cash flow statement considered the number of cattle to be finished in the feedlot over a 5 month period of time at 85% capacity. The previously calculated loan amounts and their payment schedule including interest due were then incorporated into the cash flow statement along with all the finishing costs per head and cattle purchasing costs. Different payment schedules were used based on lender preferences and also made an impact on the results of the simulation.

An income statement and a balance sheet were also simulated for each type and size of the finishing feedlot. For each simulation, 1,000 iterations in @RISK are used to estimate the minimum, maximum, mean, and standard deviation of the net return at the end of years 1 through 5; the accumulated net cash value at the end of December of years 1 through 5; and the return on farm equity calculated for years 1 through 5, per lender.

Results

Depending on the preference of the producer, various recommendations are made concerning the financing method; for example, some investors might have a greater interest in the effects per type of finishing facility, i.e., earthen lot versus concrete lot. However, the most relevant issues researched for this study are profitability (ROFE) and net cash flows.

Thus, an overview compares the individual lenders themselves. As shown in Table 4, Lender 1's loan arrangement requires 50% equity for the facilities (long-term) and working capital loans, but only ranked highest or lowest in the 1,500 head feedlot size with

Lenders 7 and 8. Lender 1 had the highest NCF in both years 1 and 5 for the 1,500 head earthen and concrete feedlots. Net return results showed that Lender 1 had the lowest value after one year of operation, but resulted in the highest value after five years of operation. Alternatively, Lender 1 had the highest ROFE after one year of operation and the lowest value after five years of operation.

Lender 2, which had a variable rate for the long-term loan and would only finance 25% of the needed amount, held the highest NR position for both the earthen and concrete 5,000 and 10,000 head feedlots after five years of operation. In addition, Lender 2 also was one of the lowest three lenders when ranked by their ROFE ratio for the 5,000 and 10,000 head earthen and concrete feedlots in year 5.

For net return, Lender 3 was the second lowest after one year of operation for both the earthen and concrete lots in both the 5,000 and 10,000 head sizes. Concerning ROFE, Lender 3 had the second highest ratio in year 1 and was one of the four lenders with the second highest ratio after five years of operation for the earthen and concrete 5,000 and 10,000 head feedlots.

The only ranking held by Lender 4 was found for the 5,000 and 10,000 head size lot, where it was ranked last after one year of operation for both the earthen and concrete feedlot, most likely due to the $200,000 lending limit proposed by Lender 4.

Lender 5 was able to finance the operation with very low interest rates, which showed positive results with the highest NCF after both one and five years of operation for the two largest size feedlots, whether earthen or concrete. However, Lender 5 also was one of the three lowest lenders when ranked by their ROFE ratio for the 5,000 and 10,000 head earthen and concrete feedlots in year 5.

Uniquely, Lender 6 held the lowest positions in years 1 and 5 for the two largest earthen and concrete feedlot sizes for both net cash flow and net return. Alternatively, Lender 6, built without a working capital loan and requiring 50% equity for the long-term loan, had the highest ROFE in year 1 for the same size and type of conditions.

For the 1,500 head earthen and concrete feedlots, Lender 7, a commercial bank that offered a variable rate on the long-term facilities loan, had the highest NR in year 1, but also had the lowest NR in year 5.

Lender 8 had the lowest NCF in years 1 and 5 for the 1,500 head earthen and concrete feedlots, as well as the lowest ROFE in year 1. Otherwise, Lender 8, the lease arrangement, had the highest ROFE for both the 5,000 and 10,000 head earthen and concrete feedlots after five years of operation.

Conclusions

Each loan arrangement has its benefits and downfalls, depending on the type of facility, size of operation, and the measurement used to compare the results of the simulation. Specific outputs of this model can be tailored to the interests of the investigating party; however, for the uses of this study, it is necessary to display most of the pertinent results calculated for each measurement and type/size of finishing feedlot operation.

After reviewing the @RISK sensitivities, it is noteworthy to mention the importance of the beginning and ending weights of the cattle in the feedlot. Net cash flow values remained consistent among the lenders; thus, if they were low in year 1 compared to the other lenders, they remained low in year 5. However, net return and return on farm equity values alternated; i.e., the lenders with higher values in year 1 became the lower

values after five years of operation.

Net cash flow values for all lenders were negative in year 1. Years 2, 3, and 4 continued to get increasingly negative as the duration of the term progressed, until in year 5, the operation began to cash flow and the net cash flow became less negative for the first time since the beginning of the operation.

In addition, the feedlots each performed well under certain financing conditions. Those lenders with lower equity requirements (less than 30% equity required) (i.e., Lender 3) had nearly the lowest one-year net return and a median net return after five years. Lenders with low to moderate equity requirements (30% to 50% equity required) (i.e., Lenders 2, 4, 7, and 8) resulted in median one-year net returns and high to moderate returns in year 5. Lenders 1 and 6 with the highest equity requirements (50% or higher) resulted in the some of the lowest net returns after one year of operation, and also some of the lowest net returns in year 5. However, Lender 6 had the highest ROFE ratio in year 1 and moderate ratios in year 5. The remaining ROFE ratios were too close to make any reasonable conclusions.

Interest rates for each lender were consistent for the majority of the financing. However, Lender 5 was able to finance the loan with much lower interest rates. These rates resulted in one of the least negative net returns after one year, and one of the most positive net returns after five years of operation.

Thus, those lenders that financed the feedlots while requiring between 30% to 50% equity resulted in moderate to higher net returns operating over a duration of five years. In addition, lower interest rates provided higher returns in the short and long term.

Limitations

Admittedly, some of the data sources in this study are based on expert opinion. For example, estimations were made on the value of unpaid operator labor for the 1,500 head feedlot, as well as the economies of scale that exist between the 5,000 head and 10,000 head feedlots.

In addition, due to the lack of finishing feedlot budgets from within North Dakota, many values for the financial statements were averaged from budgets of finishing feedlots in surrounding states.

Future Research

Different measurements could be used to compare the effects of the loan arrangements. For instance, the efficiency, liquidity, solvency, net capital, debt-to-asset, interest coverage ratio, and the current ratios were all neglected in this study due to preference and time. Also, building the model out to the length of the life of the facility or the term of the long-term loan may provide more accurate values for net cash flows, net returns, and return on farm equity.

Pertaining directly to this study, different sizes of operations, the inclusion of the cost benefits associated with local feedstuffs and labor, as well as different types of finishing feedlot facilities and organization types may want to be compared. For instance, entities that could be evaluated include Limited Liability Partnership (LLP), Limited Liability Limited Partnership (LLLP), Limited Partnership, General Partnership, Limited Liability Company (LLC), Closed Cooperative (or Open) (exempt or non-exempt), C-Corporation, and S-Corporation. Another important consideration which was not closely analyzed in this study was the imperative costs associated with transportation of the

finished cattle to the processing plant. Finally, the rotation and percentage of operation used in this model is meant to represent what is taking place on many, but not all, cattle finishing operations.

Other sources of equity that could be added in a later study might include

1) Farm-related trade or agribusiness firms which can be any open account that exists between a buyer and seller seasonally when frequent sales occur. The only security held by the seller is an account receivable based on delivery slips, ex. bank credit cards.
2) Intermediaries which perform important fiduciary or trust functions, ex. insurance companies, pension funds, and trust companies used for farm real estate loans.
3) Individuals, such as family lenders, or "money lenders" in developing economies. These loans often have 10-15 year terms and income tax benefits for the seller over a period of time due to sale of the asset, like land (Barry 1988).

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APPENDIX A

DATA AND RESULTS

Table A. 1. Loan terms for 1,500 head earthen feedlot

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 1	Term (yr)	7	3	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	50%	50%	30%
	Principle Used	$137,436	$168,750	$227,500
	Accumulated Interest	$78,978	$35,232	$16,970
Loan Arrangement 2	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	30%	35%	35%
	Principle Needed	$ -	$ -	$ -
	W.F. Principle (75%)	$ -	$ -	$ -
	Accumulated Interest	$ -	$ -	$ -
	Term (yr)	15	5	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	3.21%	2.0%	2.46%
	Equity Required	20%	25%	25%
	Principle (25% W.F.)	$ -	$ -	$ -
	Accumulated Interest	$ -	$ -	$ -
Loan Arrangement 3	Term (yr)	20	10	5
	Type of Rate	Fixed	Fixed	Variable
	Rate	7.21%	5.96%	5.96%
	Equity Required	20%	20%	20%
	Principle Available	$ -	$ -	$ -
	Principle Limit (40%)	$ -	$ -	$ -
	Accumulated Interest	$ -	$ -	$ -
	Term (yr)	15	5	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	20%	25%	25%
	Principle Available	$ -	$ -	$ -
	Principle Limit (60%)	$ -	$ -	$ -
	Accumulated Interest	$ -	$ -	$ -

Table A.1. (Continued)

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 4	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	30%	35%	35%
	Principle Needed	$ -	$ -	$ -
	W.F. Principle%	0%	0%	0%
	W.F. Principle	$(200,000)	$ -	$ -
	Accumulated Interest	$(114,931)	$ -	$ -
	Term (yr) (Max. 40)	15	7	3
	Type of Rate	Variable	Variable	Variable
	Rate	6.01%	8.2%	7.46%
	Equity Required	0.0%		
	FSA Principle%	0.0%		
	Principle Limit	$200,000		
	Accumulated Interest	$280,281		
Loan Arrangement 5	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	30%	35%	35%
	W.F. Principle Needed	$192,410	$219,375	$211,250
	W.F. Principle%	0%	0%	0%
	W.F. Principle Used	$ -	$ -	$ -
	Accumulated Interest	$ -	$ -	$ -
	Term (yr)	6	15	3
	Type of Rate	Fixed (BND)	Fixed (BND)	Variable (FSA)
	Rate	3.21%	1.96%	3.46%
	Equity Required	0.0%	0.0%	0.0%
	Principle Needed	$192,410	$219,375	$211,250
	FSA Principle%	100%	100%	100%
	Principle Limit	$192,410	$219,375	$211,250
	Accumulated Interest	$37,051	$64,476	$21,924

Table A.1. (Continued)

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 6	Term (yr)	5		1
	Type of Rate	Fixed		Variable
	Rate	8.21%		7.46%
	Equity Required	50.0%		
	Principle Limit	$0		$350,000
	Principle Used	$ -		$350,000
	Accumulated Interest	$ -		$26,108
Loan Arrangement 7	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	30%	35%	35%
	Principle Used	$192,410	$219,375	$211,250
	Accumulated Interest	$110,570	$45,801	$15,758
Loan Arrangement 8	Term (yr)	7	3	1
	Principle	$274,871		
	Leasing Fee	3%	Fixed	Variable
	Rate		7.0%	7.46%
	Equity Required	$281,743	35%	35%
	Fixed Buyout Price	$28,174		
	Annual Payment	$42,261		
	Principle Used		$219,375	$211,250
	Accumulated Interest		$45,801	$15,758

Table A.2. Loan terms for 5,000 head earthen feedlot

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 1	Term (yr)	7	3	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	50%	50%	30%
	Principle Used	$388,296	$562,500	$758,333
	Accumulated Interest	$223,137	$117,440	$56,567
Loan Arrangement 2	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	30%	35%	35%
	Principle Needed	$543,614	$731,250	$704,167
	W.F. Principle (75%)	$407,710	$548,438	$528,125
	Accumulated Interest	$234,293	$114,504	$39,395
	Term (yr)	15	5	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	3.21%	2.0%	2.46%
	Equity Required	20%	25%	25%
	Principle (25% W.F.)	$135,903	$182,813	$176,042
	Accumulated Interest	$65,425	$17,910	$4,330
Loan Arrangement 3	Term (yr)	20	10	5
	Type of Rate	Fixed	Fixed	Variable
	Rate	7.21%	5.96%	5.96%
	Equity Required	20%	20%	20%
	Principle Available	$621,273	$900,000	$866,667
	Principle Limit (40%)	$248,509	$337,500	$325,000
	Accumulated Interest	$358,319	$201,129	$96,840
	Term (yr)	15	5	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	20%	25%	25%
	Principle Available	$621,273	$843,750	$812,500
	Principle Limit (60%)	$372,764	$506,250	$487,500
	Accumulated Interest	$459,024	$176,159	$36,364

Table A.2. (Continued)

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 4	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	30%	35%	35%
	Principle Needed	$543,614	$731,250	$704,167
	W.F. Principle%	0%	0%	0%
	W.F. Principle	$343,614	$548,438	$528,125
	Accumulated Interest	$197,460	$114,504	$39,395
	Term (yr) (Max. 40)	15	7	3
	Type of Rate	Variable	Variable	Variable
	Rate	6.01%	8.2%	7.46%
	Equity Required	0.0%		
	FSA Principle%	0.0%		
	Principle Limit	$200,000		
	Accumulated Interest	$180,281		
Loan Arrangement 5	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	30%	35%	35%
	W.F. Principle Needed	$543,614	$731,250	$704,167
	W.F. Principle%	0%	69%	100%
	W.F. Principle Used	$ -	$504,864	$704,167
	Accumulated Interest	$ -	$105,406	$52,526
	Term (yr)	6	15	3
	Type of Rate	Fixed (BND)	Fixed (BND)	Variable (FSA)
	Rate	3.21%	1.96%	3.46%
	Equity Required	0.0%	0.0%	0.0%
	Principle Needed	$543,614	$731,250	$704,167
	FSA Principle%	100%	31%	0%
	Principle Limit	$543,614	$226,386	$ -
	Accumulated Interest	$104,680	$214,920	$73,079

Table A.2. (Continued)

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 6	Term (yr)	5		1
	Type of Rate	Fixed		Variable
	Rate	8.21%		7.46%
	Equity Required	50.0%		
	Principle Limit	$388,296		$350,000
	Principle Used	$388,296		$350,000
	Accumulated Interest	$159,383		$26,108
Loan Arrangement 7	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	30%	35%	35%
	Principle Used	$543,614	$731,250	$704,167
	Accumulated Interest	$312,391	$152,671	$52,526
Loan Arrangement 8	Term (yr)	7	3	1
	Principle	$776,591		
	Leasing Fee	3%	Fixed	Variable
	Rate		7.0%	7.46%
	Equity Required	$796,006	35%	35%
	Fixed Buyout Price	$79,601		
	Annual Payment	$119,401		
	Principle Used		$731,250	$704,167
	Accumulated Interest		$152,671	$52,526

Table A.3. Loan terms for 10,000 head earthen feedlot

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 1	Term (yr)	7	3	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	50%	50%	30%
	Principle Used	$773,301	$1,125,000	$1,516,667
	Accumulated Interest	$444,383	$234,879	$113,134
Loan Arrangement 2	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	30%	35%	35%
	Principle Needed	$1,082,621	$1,462,500	$1,408,333
	W.F. Principle (75%)	$811,966	$1,096,875	$1,056,250
	Accumulated Interest	$466,602	$229,007	$78,790
	Term (yr)	15	5	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	3.21%	2.0%	2.46%
	Equity Required	20%	25%	25%
	Principle (25% W.F.)	$270,655	$365,625	$352,083
	Accumulated Interest	$130,295	$35,820	$8,659
Loan Arrangement 3	Term (yr)	20	10	5
	Type of Rate	Fixed	Fixed	Variable
	Rate	7.21%	5.96%	5.96%
	Equity Required	20%	20%	20%
	Principle Available	$1,237,282	$1,800,000	$1,733,333
	Principle Limit (40%)	$494,913	$675,000	$650,000
	Accumulated Interest	$713,603	$402,258	$193,680
	Term (yr)	15	5	1
	Type of Rate	Fixed	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	20%	25%	25%
	Principle Available	$1,237,282	$1,687,500	$1,625,000
	Principle Limit (60%)	$742,369	$1,012,500	$975,000
	Accumulated Interest	$914,159	$352,319	$72,729

Table A.3. (Continued)

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 4	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	6.96%	7.46%
	Equity Required	30%	35%	35%
	Principle Needed	$1,082,621	$1,462,500	$1,408,333
	W.F. Principle%	0%	0%	0%
	W.F. Principle	$882,621	$1,096,875	$1,056,250
	Accumulated Interest	$507,204	$229,007	$78,790
	Term (yr) (Max. 40)	15	7	3
	Type of Rate	Variable	Variable	Variable
	Rate	6.01%	8.2%	7.46%
	Equity Required	0.0%		
	FSA Principle%	0.0%		
	Principle Limit	$200,000		
	Accumulated Interest	$180,281		
Loan Arrangement 5	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	30%	35%	35%
	W.F. Principle Needed	$1,082,621	$1,462,500	$1,408,333
	W.F. Principle%	0%	121%	100%
	W.F. Principle Used	$ -	$1,775,121	$1,408,333
	Accumulated Interest	$ -	$370,612	$105,053
	Term (yr)	6	15	3
	Type of Rate	Fixed (BND)	Fixed (BND)	Variable (FSA)
	Rate	3.21%	1.96%	3.46%
	Equity Required	0.0%	0.0%	0.0%
	Principle Needed	$1,082,621	$1,462,500	$1,408,333
	FSA Principle%	100%	-21%	0%
	Principle Limit	$1,082,621	$(312,621)	$ -
	Accumulated Interest	$208,473	$429,839	$146,159

Table A.3. (Continued)

	Type of Loan	Facilities	Working Capital	Revolving Line
Loan Arrangement 6	Term (yr)	5		1
	Type of Rate	Fixed		Variable
	Rate	8.21%		7.46%
	Equity Required	50.0%		
	Principle Limit	$773,301		$350,000
	Principle Used	$773,301		$350,000
	Accumulated Interest	$317,416		$26,108
Loan Arrangement 7	Term (yr)	7	3	1
	Type of Rate	Variable	Fixed	Variable
	Rate	8.21%	7.0%	7.46%
	Equity Required	30%	35%	35%
	Principle Used	$1,082,621	$1,462,500	$1,408,333
	Accumulated Interest	$622,136	$305,343	$105,053
Loan Arrangement 8	Term (yr)	7	3	1
	Principle	$1,546,602		
	Leasing Fee	3%	Fixed	Variable
	Rate		7.0%	7.46%
	Equity Required	$1,585,267	35%	35%
	Fixed Buyout Price	$158,527		
	Annual Payment	$237,790		
	Principle Used		$1,462,500	$1,408,333
	Accumulated Interest		$305,343	$105,053

Table A.4. Pro-forma income statement and return on farm equity ratios for 1,500 head earthen feedlot under loan arrangement 1 (in dollars)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
Revenue	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Finished Steers Sold (head)	1489	1751834	2958722	3049998	3103476	3134810
Purchase Cost (head)	1500	1959872	2084743	2109023	2123887	2132987
Adjustment Cattle Inventory		858697	13220	8093	4955	3033
GROSS RETURN		650660	887199	949068	984544	1004856
Direct Expenses						
Feed		213.52	213.52	213.52	213.52	213.52
Veterinary & Med. Supplies		8.52	8.52	8.52	8.52	8.52
Livestock Supplies		4.09	4.09	4.09	4.09	4.09
Fuel & Oil		4.14	4.14	4.14	4.14	4.14
Repairs		11.07	11.07	11.07	11.07	11.07
Hauling & Trucking		10.59	10.59	10.59	10.59	10.59
Marketing		8.60	8.60	8.60	8.60	8.60
Bedding		0.18	0.18	0.18	0.18	0.18
Total Dir. Exp. Per Hd.		260.70	260.70	260.70	260.70	260.70
Total Dir. Exp. for Operation		631527	757833	757833	757833	757833
Feedlot Ret. Over Dir. Exp.		19132	129366	191236	226711	247023

Table A.4. (Continued)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Overhead Expenses						
Custom Hire		1.12	1.12	1.12	1.12	1.12
Hired Labor		10.14	10.14	10.14	10.14	10.14
Machinery & Bldg. Leases		4.54	4.54	4.54	4.54	4.54
Ret. Earn. & Pers. Prop. Taxes		1.65	1.65	1.65	1.65	1.65
Farm Insurance		4.75	4.75	4.75	4.75	4.75
Utilities		3.35	3.35	3.35	3.35	3.35
Dues & Professional Fees		1.71	1.71	1.71	1.71	1.71
Miscellaneous		4.31	4.31	4.31	4.31	4.31
Total Overhead Expenses Per Hd.		31.57	31.57	31.57	31.57	31.57
Total Overhead Expenses for Op.		76485	91782	91782	91782	91782
Interest: Facilities & Work. Cap.		-5625	-4824	-4002	-3159	-2295
Interest: Revolving Line of Credit		26191	51873	61192	64213	61622
Depreciation		14934	14934	14934	14934	14934
Total Direct & Ovhd. Exp. for Op.		743512	911598	921738	925602	923876
FEEDLOT NET RETURN		-92852	-24399	27330	58942	80980
Rate of Return on Farm Equity (ROFE)		-0.53	-0.24	0.00	0.12	0.18

Table A.5. Pro-forma income statement and return on farm equity ratios for 5,000 head earthen feedlot under loan arrangement 1 (in dollars)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
Revenue	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Finished Steers Sold (head)	4963	5839446	9862406	10166659	10344921	10449365
Purchase Cost (head)	5000	6532905	6949143	7030076	7079624	7109957
Adjustment Cattle Inventory		2862325	44066	26978	16516	10111
Interest						
Other Income						
GROSS RETURN		2168865	2957329	3163561	3281814	3349519
Direct Expenses						
Feed		213.52	213.52	213.52	213.52	213.52
Veterinary & Med. Supplies		8.52	8.52	8.52	8.52	8.52
Livestock Supplies		4.09	4.09	4.09	4.09	4.09
Fuel & Oil		4.14	4.14	4.14	4.14	4.14
Repairs		11.07	11.07	11.07	11.07	11.07
Hauling & Trucking		10.59	10.59	10.59	10.59	10.59
Marketing		8.60	8.60	8.60	8.60	8.60
Bedding		0.18	0.18	0.18	0.18	0.18
Operating Interest						
Total Dir. Exp. Per Hd.		260.70	260.70	260.70	260.70	260.70
Total Dir. Exp. for Operation		2105091	2526109	2526109	2526109	2526109
Feedlot Ret. Over Dir. Exp.		63774	431220	637452	755705	823410

Table A.5. (Continued)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Overhead Expenses						
Custom Hire		1.12	1.12	1.12	1.12	1.12
Hired Labor		10.14	10.14	10.14	10.14	10.14
Machinery & Bldg. Leases		4.54	4.54	4.54	4.54	4.54
Ret. Earn. & Pers. Prop. Taxes		1.65	1.65	1.65	1.65	1.65
Farm Insurance		4.75	4.75	4.75	4.75	4.75
Utilities		3.35	3.35	3.35	3.35	3.35
Dues & Professional Fees		1.71	1.71	1.71	1.71	1.71
Miscellaneous		4.31	4.31	4.31	4.31	4.31
Total Overhead Expenses Per Hd.		31.57	31.57	31.57	31.57	31.57
Total Overhead Expenses for Op.		254949	305939	305939	305939	305939
Interest: Facilities & Work. Cap.		-15893	-13628	-11306	-8925	-6484
Interest: Revolving Line of Credit		86272	169928	199102	207139	196314
Depreciation		39252	39252	39252	39252	39252
Total Direct & Ovhd. Exp. for Op.		2469670	3027599	3059095	3069513	3061130
FEEDLOT NET RETURN		-300805	-70270	104466	212301	288390
Rate of Return on Farm Equity (ROFE)		-0.41	-0.10	0.14	0.25	0.29

Table A.6. Pro-forma income statement and return on farm equity ratios for 10,000 head earthen feedlot under loan arrangement 1 (in dollars)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
Revenue	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Finished Steers Sold (head)	9925	11678891	19724811	20333319	20689843	20898731
Purchase Cost (head)	10000	13065811	13898286	14060152	14159247	14219914
Adjustment Cattle Inventory		5724650	88132	53955	33032	20222
Interest						
Other Income						
GROSS RETURN		4337730	5914658	6327122	6563628	6699039
Direct Expenses						
Feed		213.52	213.52	213.52	213.52	213.52
Veterinary & Med. Supplies		8.52	8.52	8.52	8.52	8.52
Livestock Supplies		4.09	4.09	4.09	4.09	4.09
Fuel & Oil		4.14	4.14	4.14	4.14	4.14
Repairs		11.07	11.07	11.07	11.07	11.07
Hauling & Trucking		10.59	10.59	10.59	10.59	10.59
Marketing		8.60	8.60	8.60	8.60	8.60
Bedding		0.18	0.18	0.18	0.18	0.18
Operating Interest						
Total Dir. Exp. Per Hd.		260.70	260.70	260.70	260.70	260.70
Total Dir. Exp. for Operation		4210182	5052218	5052218	5052218	5052218
Feedlot Ret. Over Dir. Exp.		127548	862439	1274904	1511409	1646820

Table A.6. (Continued)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Overhead Expenses						
Custom Hire		1.12	1.12	1.12	1.12	1.12
Hired Labor		10.14	10.14	10.14	10.14	10.14
Machinery & Bldg. Leases		4.54	4.54	4.54	4.54	4.54
Ret. Earn. & Pers. Prop. Taxes		1.65	1.65	1.65	1.65	1.65
Farm Insurance		4.75	4.75	4.75	4.75	4.75
Utilities		3.35	3.35	3.35	3.35	3.35
Dues & Professional Fees		1.71	1.71	1.71	1.71	1.71
Miscellaneous		4.31	4.31	4.31	4.31	4.31
Total Overhead Expenses Per Hd.		31.57	31.57	31.57	31.57	31.57
Total Overhead Expenses for Op.		509898	611877	611877	611877	611877
Interest: Facilities & Work. Cap.		-31652	-27141	-22516	-17774	-12912
Interest: Revolving Line of Credit		172496	339715	397975	413952	392199
Depreciation		77911	77911	77911	77911	77911
Total Direct & Ovhd. Exp. for Op.		4938835	6054580	6117465	6138185	6121294
FEEDLOT NET RETURN		-601105	-139923	209657	425443	577745
Rate of Return on Farm Equity (ROFE)		-0.41	-0.10	0.14	0.25	0.29

Table A.7. Pro-forma income statement and return on farm equity ratios for 1,500 head concrete feedlot under loan arrangement 1 (in dollars)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
Revenue	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Finished Steers Sold (head)	1489	1751834	2958722	3049998	3103476	3134810
Purchase Cost (head)	1500	1959872	2084743	2109023	2123887	2132987
Adjustment Cattle Inventory		858697	13220	8093	4955	3033
Interest						
Other Income						
GROSS RETURN		650660	887199	949068	984544	1004856
Direct Expenses						
Feed		213.52	213.52	213.52	213.52	213.52
Veterinary & Med. Supplies		8.52	8.52	8.52	8.52	8.52
Livestock Supplies		4.09	4.09	4.09	4.09	4.09
Fuel & Oil		4.14	4.14	4.14	4.14	4.14
Repairs		11.07	11.07	11.07	11.07	11.07
Hauling & Trucking		10.59	10.59	10.59	10.59	10.59
Marketing		8.60	8.60	8.60	8.60	8.60
Bedding		0.18	0.18	0.18	0.18	0.18
Operating Interest						
Total Dir. Exp. Per Hd.		260.70	260.70	260.70	260.70	260.70
Total Dir. Exp. for Operation		631527	757833	757833	757833	757833
Feedlot Ret. Over Dir. Exp.		19132	129366	191236	226711	247023

Table A.7. (Continued)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Overhead Expenses						
Custom Hire		1.12	1.12	1.12	1.12	1.12
Hired Labor		10.14	10.14	10.14	10.14	10.14
Machinery & Bldg. Leases		4.54	4.54	4.54	4.54	4.54
Ret. Earn. & Pers. Prop. Taxes		1.65	1.65	1.65	1.65	1.65
Farm Insurance		4.75	4.75	4.75	4.75	4.75
Utilities		3.35	3.35	3.35	3.35	3.35
Dues & Professional Fees		1.71	1.71	1.71	1.71	1.71
Miscellaneous		4.31	4.31	4.31	4.31	4.31
Total Overhead Expenses Per Hd.		31.57	31.57	31.57	31.57	31.57
Total Overhead Expenses for Op.		76485	91782	91782	91782	91782
Interest: Facilities & Work. Cap.		-6072	-5206	-4319	-3410	-2477
Interest: Revolving Line of Credit		26352	52339	61952	65291	63042
Depreciation		15916	15916	15916	15916	15916
Total Direct & Ovhd. Exp. for Op.		744208	912662	923163	927411	926095
FEEDLOT NET RETURN		-93548	-25463	25906	57133	78761
Rate of Return on Farm Equity (ROFE)		-0.52	-0.24	-0.01	0.11	0.17

Table A.8. Pro-forma income statement and return on farm equity ratios for 5,000 head concrete feedlot under loan arrangement 1 (in dollars)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
Revenue	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Finished Steers Sold (head)	4963	5839446	9862406	10166659	10344921	10449365
Purchase Cost (head)	5000	6532905	6949143	7030076	7079624	7109957
Adjustment Cattle Inventory		2862325	44066	26978	16516	10111
Interest						
Other Income						
GROSS RETURN		2168865	2957329	3163561	3281814	3349519
Direct Expenses						
Feed		213.52	213.52	213.52	213.52	213.52
Veterinary & Med. Supplies		8.52	8.52	8.52	8.52	8.52
Livestock Supplies		4.09	4.09	4.09	4.09	4.09
Fuel & Oil		4.14	4.14	4.14	4.14	4.14
Repairs		11.07	11.07	11.07	11.07	11.07
Hauling & Trucking		10.59	10.59	10.59	10.59	10.59
Marketing		8.60	8.60	8.60	8.60	8.60
Bedding		0.18	0.18	0.18	0.18	0.18
Operating Interest						
Total Dir. Exp. Per Hd.		260.70	260.70	260.70	260.70	260.70
Total Dir. Exp. for Operation		2105091	2526109	2526109	2526109	2526109
Feedlot Ret. Over Dir. Exp.		63774	431220	637452	755705	823410

Table A.8. (Continued)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Overhead Expenses						
Custom Hire		1.12	1.12	1.12	1.12	1.12
Hired Labor		10.14	10.14	10.14	10.14	10.14
Machinery & Bldg. Leases		4.54	4.54	4.54	4.54	4.54
Ret. Earn. & Pers. Prop. Taxes		1.65	1.65	1.65	1.65	1.65
Farm Insurance		4.75	4.75	4.75	4.75	4.75
Utilities		3.35	3.35	3.35	3.35	3.35
Dues & Professional Fees		1.71	1.71	1.71	1.71	1.71
Miscellaneous		4.31	4.31	4.31	4.31	4.31
Total Overhead Expenses Per Hd.		31.57	31.57	31.57	31.57	31.57
Total Overhead Expenses for Op.		254949	305939	305939	305939	305939
Interest: Facilities & Work. Cap.		-17361	-14887	-12350	-9749	-7083
Interest: Revolving Line of Credit		86802	171460	201603	210685	200985
Depreciation		42479	42479	42479	42479	42479
Total Direct & Ovhd. Exp. for Op.		2471960	3031100	3063780	3075463	3068430
FEEDLOT NET RETURN		-303095	-73771	99781	206351	281090
Rate of Return on Farm Equity (ROFE)		-0.40	-0.10	0.13	0.24	0.28

Table A.9. Pro-forma income statement and return on farm equity ratios for 10,000 head concrete feedlot under loan arrangement 1 (in dollars)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
Revenue	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Finished Steers Sold (head)	9925	11678891	19724811	20333319	20689843	20898731
Purchase Cost (head)	10000	13065811	13898286	14060152	14159247	14219914
Adjustment Cattle Inventory		5724650	88132	53955	33032	20222
Interest						
Other Income						
GROSS RETURN		4337730	5914658	6327122	6563628	6699039
Direct Expenses						
Feed		213.52	213.52	213.52	213.52	213.52
Veterinary & Med. Supplies		8.52	8.52	8.52	8.52	8.52
Livestock Supplies		4.09	4.09	4.09	4.09	4.09
Fuel & Oil		4.14	4.14	4.14	4.14	4.14
Repairs		11.07	11.07	11.07	11.07	11.07
Hauling & Trucking		10.59	10.59	10.59	10.59	10.59
Marketing		8.60	8.60	8.60	8.60	8.60
Bedding		0.18	0.18	0.18	0.18	0.18
Operating Interest						
Total Dir. Exp. Per Hd.		260.70	260.70	260.70	260.70	260.70
Total Dir. Exp. for Operation		4210182	5052218	5052218	5052218	5052218
Feedlot Ret. Over Dir. Exp.		127548	862439	1274904	1511409	1646820

Table A.9. (Continued)

	Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Qty.	Year 1	Year 2	Year 3	Year 4	Year 5
Overhead Expenses						
Custom Hire		1.12	1.12	1.12	1.12	1.12
Hired Labor		10.14	10.14	10.14	10.14	10.14
Machinery & Bldg. Leases		4.54	4.54	4.54	4.54	4.54
Ret. Earn. & Pers. Prop. Taxes		1.65	1.65	1.65	1.65	1.65
Farm Insurance		4.75	4.75	4.75	4.75	4.75
Utilities		3.35	3.35	3.35	3.35	3.35
Dues & Professional Fees		1.71	1.71	1.71	1.71	1.71
Miscellaneous		4.31	4.31	4.31	4.31	4.31
Total Overhead Expenses Per Hd.		31.57	31.57	31.57	31.57	31.57
Total Overhead Expenses for Op.		509898	611877	611877	611877	611877
Interest: Facilities & Work. Cap.		-34588	-29659	-24605	-19423	-14110
Interest: Revolving Line of Credit		173555	342779	402977	421044	401541
Depreciation		84356	84356	84356	84356	84356
Total Direct & Ovhd. Exp. for Op.		4943403	6061572	6126824	61,50073	6135883
FEEDLOT NET RETURN		-605673	-146914	200298	413555	563156
Rate of Return on Farm Equity (ROFE)		-0.40	-0.10	0.13	0.24	0.28

Table A.10. Pro-forma balance sheet for 1,500 head earthen feedlot under loan arrangement 1 (in dollars)

	BALANCE SHEET (1,500 Head)				
Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS					
CURRENT ASSETS					
Cash and cash equivalents	0	0	0	0	0
Feeder cattle	681694	694914	703008	707962	710996
Value added to cattle in lot at year end	177003	177003	177003	177003	177003
Total Current Assets	858697	871917	880011	884965	887999
FACILITIES					
Land (acres)	11	11	11	11	11
Land cost	8475	8475	8475	8475	8475
Concrete	44444	44444	44444	44444	44444
Feed bunks	22500	22500	22500	22500	22500
Fencing	7370	7370	7370	7370	7370
Waterers	5,000	5,000	5,000	5,000	5,000
Earthwork	6750	6750	6750	6750	6750
Well	3750	3750	3750	3750	3750
Windbreaks	22500	22500	22500	22500	22500
Commodity storage sheds	19440	19440	19440	19440	19440
Bulk bin for supplement	1910	1910	1910	1910	1910
SUBTOTAL FACILITIES	142139	142139	142139	142139	142139
EQUIPMENT					
Gates	500	500	500	500	500
Office and equipment	8000	8000	8000	8000	8000
Cattle handling equipment	13500	13500	13500	13500	13500
Feed handling equipment	35,000	35,000	35,000	35,000	35,000
SUBTOTAL EQUIPMENT	57000	57000	57000	57000	57000
ENVIRO. STRUCTURES					
Settling basin earthwork	1110	1110	1110	1110	1110
Settling basin concrete	24113	24113	24113	24113	24113
Detention basin engineering	10,000	10,000	10,000	10,000	10,000
Detention basin earthwork	40509	40509	40509	40509	40509
SUBTOTAL ENVIRO. STRUCT.	75732	75732	75732	75732	75732
Less accum. depr. - facilities	6396	12793	19189	25585	31981
Less accum. depr. - enviro. struct.	3408	6816	10224	13632	17040
Less accum. depr. - equipment	5130	10260	15390	20520	25650
Total Prop. & Equip. Assets	259937	245003	230068	215134	200200
TOTAL ASSETS	1118634	1116920	1110079	1100100	1088199

Table A.10. (Continued)

Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
LIAB. AND PATRONS EQUITIES					
CURRENT LIABILITIES					
Revolving line of credit	607616	758621	851948	828447	780123
Current portion of notes payable (Long-term and work. cap.)	86059	85237	3159	2295	1409
Total current liabilities	693674	843858	855107	830742	781532
LONG-TERM LIABILITIES					
Notes payable (Long-term loan and working capital)	285937	200700	197541	195246	193838
TOTAL LIABILITIES	979612	1044558	1052648	1025988	975369
STOCKHOLDER'S EQUITY					
Equity stock (Patron's equity)	91379	91379	91379	91379	91379
Membership stock	91379	91379	91379	91379	91379
Preferred stock	91379	91379	91379	91379	91379
Retained earnings (Capital credit)	0	-92852	-117251	-89922	-30980
Current earnings	-92852	-24399	27330	58942	80980
Total stockholder's equity	181284	156885	184215	243157	324137
TOTAL LIABILITIES & EQUITY	1160896	1201443	1236863	1269145	1299506

Table A.11. Pro-forma balance sheet for 5,000 head earthen feedlot under loan arrangement 1 (in dollars)

	BALANCE SHEET (5,000 Head)				
Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS					
CURRENT ASSETS					
Cash and cash equivalents	0	0	0	0	0
Feeder cattle	2272315	2316381	2343359	2359875	2369986
Value added to cattle in lot at year end	590010	590010	590010	590010	590010
Total Current Assets	2862325	2906391	2933369	2949885	2959996
FACILITIES					
Land (acres)	35	35	35	35	35
Land cost	26250	26250	26250	26250	26250
Concrete	148148	148148	148148	148148	148148
Feed bunks	75,000	75,000	75,000	75,000	75,000
Fencing	23003	23003	23003	23003	23003
Waterers	16667	16667	16667	16667	16667
Earthwork	22500	22500	22500	22500	22500
Well	12500	12500	12500	12500	12500
Windbreaks	75,000	75,000	75,000	75,000	75,000
Commodity storage sheds	45360	45360	45360	45360	45360
Bulk bin for supplement	5040	5040	5040	5040	5040
SUBTOTAL FACILITIES	449468	449468	449468	449468	449468
EQUIPMENT					
Gates	1667	1667	1667	1667	1667
Office and equipment	8000	8000	8000	8000	8000
Cattle handling equipment	16000	16000	16000	16000	16000
Feed handling equipment	70000	70000	70000	70000	70000
SUBTOTAL EQUIPMENT	95667	95667	95667	95667	95667
ENVIRO. STRUCTURES					
Settling basin earthwork	6050	6050	6050	6050	6050
Settling basin concrete	80375	80375	80375	80375	80375
Detention basin engineering	10,000	10,000	10,000	10,000	10,000
Detention basin earthwork	135031	135031	135031	135031	135031
SUBTOTAL ENVIRO. STRUCT.	231456	231456	231456	231456	231456
Less accum. depr. - facilities	20226	40452	60678	80904	101130
Less accum. depr. - enviro. struct.	10416	20831	31247	41662	52078
Less accum. depr. - equipment	8610	17220	25830	34440	43050
Total Prop. & Equip. Assets	737339	698088	658836	619585	580333
TOTAL ASSETS	3599664	3604479	3592205	3569469	3540329

Table A.11. (Continued)

Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
LIAB. AND PATRONS EQUITIES					
CURRENT LIABILITIES					
Revolving line of credit	2006375	2485272	2770023	2663313	2471667
Current portion of notes payable (Long-term and work. cap.)	284412	282090	8925	6484	3981
Total current liabilities	2290787	2767362	2778948	2669796	2475648
LONG-TERM LIABILITIES					
Notes payable (Long-term loan and working capital)	836766	554676	545751	539268	535287
TOTAL LIABILITIES	3127553	3322038	3324699	3209064	3010935
STOCKHOLDER'S EQUITY					
Equity stock (Patron's equity)	297439	297439	297439	297439	297439
Membership stock	297439	297439	297439	297439	297439
Preferred stock	297439	297439	297439	297439	297439
Retained earnings (Capital credit)	0	-300805	-371075	-266610	-54309
Current earnings	-300805	-70270	104466	212301	288390
Total stockholder's equity	591512	521242	625708	838008	1126398
TOTAL LIABILITIES & EQUITY	3719065	3843280	3950407	4047073	4137333

Table A.12. Pro-forma balance sheet for 10,000 head earthen feedlot under loan arrangement 1 (in dollars)

	BALANCE SHEET (10,000 Head)				
Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS					
CURRENT ASSETS					
Cash and cash equivalents	0	0	0	0	0
Feeder cattle	4544630	4632762	4686717	4719749	4739971
Value added to cattle in lot at year end	1180020	1180020	1180020	1180020	1180020
Total Current Assets	5724650	5812782	5866737	5899769	5919991
FACILITIES					
Land (acres)	70	70	70	70	70
Land cost	52500	52500	52500	52500	52500
Concrete	296296	296296	296296	296296	296296
Feed bunks	1,5,0000	1,5,0000	1,5,0000	1,5,0000	1,5,0000
Fencing	46006	46006	46006	46006	46006
Waterers	33334	33334	33334	33334	33334
Earthwork	45,000	45,000	45,000	45,000	45,000
Well	25,000	25,000	25,000	25,000	25,000
Windbreaks	1,5,0000	1,5,0000	1,5,0000	1,5,0000	1,5,0000
Commodity storage sheds	90720	90720	90720	90720	90720
Bulk bin for supplement	10080	10080	10080	10080	10080
SUBTOTAL FACILITIES	898936	898936	898936	898936	898936
EQUIPMENT					
Gates	3334	3334	3334	3334	3334
Office and equipment	15440	15440	15440	15440	15440
Cattle handling equipment	30880	30880	30880	30880	30880
Feed handling equipment	135100	135100	135100	135100	135100
SUBTOTAL EQUIPMENT	184754	184754	184754	184754	184754
ENVIRO. STRUCTURES					
Settling basin earthwork	12100	12100	12100	12100	12100
Settling basin concrete	160750	160750	160750	160750	160750
Detention basin engineering	20000	20000	20000	20000	20000
Detention basin earthwork	270062	270062	270062	270062	270062
SUBTOTAL ENVIRO. STRUCT.	462912	462912	462912	462912	462912
Less accum. depr. - facilities	40452	80904	121356	161808	202261
Less accum. depr. - enviro. struct.	20831	41662	62493	83324	104155
Less accum. depr. - equipment	16628	33256	49884	66511	83139
Total Prop. & Equip. Assets	1468691	1390780	1312869	1234958	1157047
TOTAL ASSETS	7193341	7203562	7179606	7134727	7077038

Table A.12. (Continued)

Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
LIAB. AND PATRONS EQUITIES					
CURRENT LIABILITIES					
Revolving line of credit	4011854	4968497	5536757	5322000	4937268
Current portion of notes payable (Long-term and work. cap.)	568708	564083	17774	12912	7928
Total current liabilities	4580563	5532580	5554532	5334912	4945196
LONG-TERM LIABILITIES					
Notes payable (Long-term loan and working capital)	1668049	1103966	1086191	1073279	1065351
TOTAL LIABILITIES	6248612	6636546	6640723	6408191	6010547
STOCKHOLDER'S EQUITY					
Equity stock (Patron's equity)	594541	594541	594541	594541	594541
Membership stock	594541	594541	594541	594541	594541
Preferred stock	594541	594541	594541	594541	594541
Retained earnings (Capital credit)	0	-601105	-741027	-531370	-105927
Current earnings	-601105	-139923	209657	425443	577745
Total stockholder's equity	1182519	1042596	1252253	1677696	2255441
TOTAL LIABILITIES & EQUITY	7431131	7679142	7892976	8085887	8265989

Table A.13. Pro-forma balance sheet for 1,500 head concrete feedlot under loan arrangement 1 (in dollars)

	BALANCE SHEET (1,500 Head)				
Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS					
CURRENT ASSETS					
Cash and cash equivalents	0	0	0	0	0
Feeder cattle	681694	694914	703008	707962	710996
Value added to cattle in lot at year end	177003	177003	177003	177003	177003
Total Current Assets	858697	871917	880011	884965	887999
FACILITIES					
Land (acres)	3	3	3	3	3
Land cost	2175	2175	2175	2175	2175
Concrete	166667	166667	166667	166667	166667
Feed bunks	22500	22500	22500	22500	22500
Fencing	1778	1778	1778	1778	1778
Waterers	5,000	5,000	5,000	5,000	5,000
Earthwork	0	0	0	0	0
Well	3750	3750	3750	3750	3750
Windbreaks	0	0	0	0	0
Commodity storage sheds	19440	19440	19440	19440	19440
Bulk bin for supplement	1910	1910	1910	1910	1910
SUBTOTAL FACILITIES	223220	223220	223220	223220	223220
EQUIPMENT					
Gates	500	500	500	500	500
Office and equipment	8000	8000	8000	8000	8000
Cattle handling equipment	13500	13500	13500	13500	13500
Feed handling equipment	35,000	35,000	35,000	35,000	35,000
SUBTOTAL EQUIPMENT	57000	57000	57000	57000	57000
ENVIRO. STRUCTURES					
Settling basin earthwork	66	66	66	66	66
Settling basin concrete	2411	2411	2411	2411	2411
Detention basin engineering	10,000	10,000	10,000	10,000	10,000
Detention basin earthwork	3981	3981	3981	3981	3981
SUBTOTAL ENVIRO. STRUCT.	16458	16458	16458	16458	16458
Less accum. depr. - facilities	10045	20090	30135	40180	50225
Less accum. depr. - enviro. Struct.	741	1481	2222	2962	3703
Less accum. depr. - equipment	5130	10260	15390	20520	25650
Total Prop. & Equip. Assets	280762	264847	248931	233016	217100
TOTAL ASSETS	1139460	1136764	1128942	1117981	1105099

Table A.13. (Continued)

Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
LIAB. AND PATRONS EQUITIES					
CURRENT LIABILITIES					
Revolving line of credit	596868	711305	765242	718710	645577
Current portion of notes payable (Long-term and work. cap.)	73914	79463	20910	22693	24628
Total Current Liabilities	670782	790768	786152	741403	670205
LONG-TERM LIABILITIES					
Notes payable (Long-term loan and working capital)	174421	94958	74048	51355	26727
TOTAL LIABILITIES	845203	885726	860200	792758	696932
STOCKHOLDER'S EQUITY					
Equity stock (Patron's equity)	138196	138196	138196	138196	138196
Membership stock	138196	138196	138196	138196	138196
Preferred stock	138196	138196	138196	138196	138196
Retained earnings (Capital credit)	0	-120332	-163551	-145847	-89365
Current earnings	-120332	-43219	17704	56481	82944
Total Stockholder's Equity	294257	251038	268742	325224	408167
TOTAL LIABILITIES & EQUITY	1139460	1136764	1128942	1117981	1105099

Table A.14. Pro-forma balance sheet for 5,000 head concrete feedlot under loan arrangement 1 (in dollars)

	BALANCE SHEET (5,000 Head)				
Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS					
CURRENT ASSETS					
Cash and cash equivalents	0	0	0	0	0
Feeder cattle	2272315	2316381	2343359	2359875	2369986
Value added to cattle in lot at year end	590010	590010	590010	590010	590010
Total Current Assets	2862325	2906391	2933369	2949885	2959996
FACILITIES					
Land (acres)	7	7	7	7	7
Land cost	5400	5400	5400	5400	5400
Concrete	555556	555556	555556	555556	555556
Feed bunks	75,000	75,000	75,000	75,000	75,000
Fencing	5548	5548	5548	5548	5548
Waterers	16667	16667	16667	16667	16667
Earthwork	0	0	0	0	0
Well	12500	12500	12500	12500	12500
Windbreaks	0	0	0	0	0
Commodity storage sheds	45360	45360	45360	45360	45360
Bulk bin for supplement	5040	5040	5040	5040	5040
SUBTOTAL FACILITIES	721071	721071	721071	721071	721071
EQUIPMENT					
Gates	1667	1667	1667	1667	1667
Office and equipment	8000	8000	8000	8000	8000
Cattle handling equipment	16000	16000	16000	16000	16000
Feed handling equipment	70000	70000	70000	70000	70000
SUBTOTAL EQUIPMENT	95667	95667	95667	95667	95667
ENVIRO. STRUCTURES					
Settling basin earthwork	272	272	272	272	272
Settling basin concrete	8038	8038	8038	8038	8038
Detention basin engineering	10,000	10,000	10,000	10,000	10,000
Detention basin earthwork	13272	13272	13272	13272	13272
SUBTOTAL ENVIRO. STRUCT.	31582	31582	31582	31582	31582
Less accum. depr. - facilities	32448	64896	97345	129793	162241
Less accum. depr. - enviro. Struct.	1421	2842	4264	5685	7106
Less accum. depr. - equipment	8610	17220	25830	34440	43050
Total Prop. & Equip. Assets	805841	763361	720882	678402	635923
TOTAL ASSETS	3668165	3669752	3654250	3628287	3595919

Table A.14. (Continued)

Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
LIAB. AND PATRONS EQUITIES					
CURRENT LIABILITIES					
Revolving line of credit	1975882	2342584	2506478	2334251	2072032
Current portion of notes payable (Long-term and work. cap.)	237965	255745	59791	64888	70420
Total Current Liabilities	2213847	2598329	2566269	2399140	2142452
LONG-TERM LIABILITIES					
Notes payable (Long-term loan and working capital)	527268	271523	211732	146844	76424
TOTAL LIABILITIES	2741114	2869851	2778001	2545983	2218876
STOCKHOLDER'S EQUITY					
Equity stock (Patron's equity)	437220	437220	437220	437220	437220
Membership stock	437220	437220	437220	437220	437220
Preferred stock	437220	437220	437220	437220	437220
Retained earnings (Capital credit)	0	-384609	-511759	-435411	-229357
Current earnings	-384609	-127150	76349	206054	294739
Total Stockholder's Equity	927051	799901	876249	1082303	1377043
TOTAL LIABILITIES & EQUITY	3668165	3669752	3654250	3628287	3595919

Table A.15. Pro-forma balance sheet for 10,000 head concrete feedlot under loan arrangement 1 (in dollars)

	BALANCE SHEET (10,000 Head)				
Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS					
CURRENT ASSETS					
Cash and cash equivalents	0	0	0	0	0
Feeder cattle	4544630	4632762	4686717	4719749	4739971
Value added to cattle in lot at year end	1180020	1180020	1180020	1180020	1180020
Total Current Assets	5724650	5812782	5866737	5899769	5919991
FACILITIES					
Land (acres)	14	14	14	14	14
Land cost	10800	10800	10800	10800	10800
Concrete	1111112	1111112	1111112	1111112	1111112
Feed bunks	1,5,0000	1,5,0000	1,5,0000	1,5,0000	1,5,0000
Fencing	11096	11096	11096	11096	11096
Waterers	33334	33334	33334	33334	33334
Earthwork	0	0	0	0	0
Well	25,000	25,000	25,000	25,000	25,000
Windbreaks	0	0	0	0	0
Commodity storage sheds	90720	90720	90720	90720	90720
Bulk bin for supplement	10080	10080	10080	10080	10080
SUBTOTAL FACILITIES	1442142	1442142	1442142	1442142	1442142
EQUIPMENT					
Gates	3334	3334	3334	3334	3334
Office and equipment	15440	15440	15440	15440	15440
Cattle handling equipment	30880	30880	30880	30880	30880
Feed handling equipment	135100	135100	135100	135100	135100
SUBTOTAL EQUIPMENT	184754	184754	184754	184754	184754
ENVIRO. STRUCTURES					
Settling basin earthwork	544	544	544	544	544
Settling basin concrete	16076	16076	16076	16076	16076
Detention basin engineering	20000	20000	20000	20000	20000
Detention basin earthwork	26544	26544	26544	26544	26544
SUBTOTAL ENVIRO. STRUCT.	63164	63164	63164	63164	63164
Less accum. depr. - facilities	64896	129793	194689	259586	324482
Less accum. depr. - enviro. Struct.	2842	5685	8527	11370	14212
Less accum. depr. - equipment	16617	33235	49852	66469	83087
Total Prop. & Equip. Assets	1605704	1521348	1436992	1352635	1268279
TOTAL ASSETS	7330354	7334130	7303729	7252405	7188271

Table A.15. (Continued)

Data as of	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05
	Year 1	Year 2	Year 3	Year 4	Year 5
LIAB. AND PATRONS EQUITIES					
CURRENT LIABILITIES					
Revolving line of credit	4031384	5013147	5608467	5422857	5069525
Current portion of notes payable (Long-term and work. cap.)	571226	566172	19423	14110	8663
Total current liabilities	4602610	5579319	5627890	5436967	5078188
LONG-TERM LIABILITIES					
Notes payable (Long-term loan and working capital)	1787583	1221411	1201988	1187878	1179215
TOTAL LIABILITIES	6390193	6800730	6829878	6624846	6257403
STOCKHOLDER'S EQUITY					
Equity stock (Patron's equity)	601893	601893	601893	601893	601893
Membership stock	601893	601893	601893	601893	601893
Preferred stock	601893	601893	601893	601893	601893
Retained earnings (Capital credit)	0	-605673	-752587	-552289	-138734
Current earnings	-605673	-146914	200298	413555	563156
Total stockholder's equity	1200007	1053093	1253391	1666946	2230101
TOTAL LIABILITIES & EQUITY	7590200	7853823	8083269	8291791	8487504

Table A.16. Cash flow statement for 1,500 head earthen feedlot in year 1 under loan arrangement 1

	No. of Head	159	478	797	1116
CASH FLOW (Per Head)		2001	2001	2001	2001
Month	Dec	Jan	Feb	Mar	Apr
Beg. Cash Balance		709871	333574	129236	0
Cash Receipts					
Sales					
Paid-in Equity	403686				
Long-term Loans	137436				
Working Capital Loans	168750				
Operating Loans	0	0	0	92802	250627
TOTAL CASH RECEIPTS	709871	709871	333574	222038	250627
Operating Loan Balance	0	0	0	92802	333117
Long-term Interest		940	932	924	915
Working Capital Interest		979	954	929	905
Cash Disbursements					
Cattle Purchases		85212	170424	170424	170424
LT & W.C. Loan Payment		5445	5478	5511	5544
Operating Interest Payment		0	0	0	577
Operating Principle Payment		0	0	0	10311
Lease Payment		0			
Long-term Interest	0	940	932	924	915
Working Capital Interest	0	979	954	929	905
Cash Disbursements (Per Head)					
Direct Expenses		50	50	50	50
Overhead Expenses		6	6	6	6
TOTAL DISBURSEMENTS (per head)	0	56	56	56	56
Construction Costs		274871			
Total Disbursements	0	376297	204338	222038	250627
NET CASH BALANCE	709871	333574	129236	0	0

A.16. (Continued)

No. of Head	1275	1275	1275	1275
CASH FLOW (Per Head)	2001	2001	2001	2001
Month	May	Jun	Jul	Aug
Beg. Cash Balance	0	0	0	0
Cash Receipts				
Sales	116789	233578	233578	233578
Paid-in Equity				
Long-term Loans				
Working Capital Loans				
Operating Loans	175510	84626	98842	118722
TOTAL CASH RECEIPTS	292299	318204	332420	352300
Operating Loan Balance	466988	484901	502926	521064
Long-term Interest	907	898	889	881
Working Capital Interest	880	855	829	804
Cash Disbursements				
Cattle Purchases	170424	170424	170424	170424
LT & W.C. Loan Payment	5578	5611	5645	5679
Operating Interest Payment	2071	2903	3014	3126
Operating Principle Payment	41640	66713	80817	100585
Lease Payment				
Long-term Interest	907	898	889	881
Working Capital Interest	880	855	829	804
Cash Disbursements (Per Head)				
Direct Expenses	50	50	50	50
Overhead Expenses	6	6	6	6
TOTAL DISBURSEMENTS (per head)	56	56	56	56
Construction Costs				
Total Disbursements	292299	318204	332420	352300
NET CASH BALANCE	0	0	0	0

A.16. (Continued)

No. of Head	1275	1275	1275	1275
CASH FLOW (Per Head)	2001	2001	2001	2001
Month	Sep	Oct	Nov	Dec
Beg. Cash Balance	0	0	0	0
Cash Receipts				
Sales	233578	233578	233578	233578
Paid-in Equity				
Long-term Loans				
Working Capital Loans				
Operating Loans	148516	198134	297316	594746
TOTAL CASH RECEIPTS	382094	431712	530894	828324
Operating Loan Balance	539313	557677	576154	594746
Long-term Interest	872	863	854	845
Working Capital Interest	778	753	727	701
Cash Disbursements				
Cattle Purchases	170424	170424	170424	170424
LT & W.C. Loan Payment	5713	5748	5783	5817
Operating Interest Payment	3239	3352	3467	3581
Operating Principle Payment	130266	179771	278838	576154
Lease Payment				
Long-term Interest	872	863	854	845
Working Capital Interest	778	753	727	701
Cash Disbursements (Per Head)				
Direct Expenses	50	50	50	50
Overhead Expenses	6	6	6	6
TOTAL DISBURSEMENTS (per head)	56	56	56	56
Construction Costs				
Total Disbursements	382094	431712	530894	828324
NET CASH BALANCE	0	0	0	0

Table A.17. Minimum, maximum, mean, standard deviation, and median values for net cash flow, net return, and return on farm equity for 1,500 head earthen feedlot

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1 - Net Cash Flow	Min.	-1772712	-3479845	-5289526	-7227822	-9315370
	Max.	595372	1930445	3356989	4836786	6347575
	Mean	-594878	-709887	-771687	-809071	-839233
	Std. Dev.	337531	769497	1234465	1726179	2242873
	Med.	-593452	-707128	-757909	-770662	-768734
Lender 1 - Net Return	Min.	-1024765	-1630971	-1735250	-1864439	-2014727
	Max.	753509	1399797	1493973	1549367	1580986
	Mean	-118566	-44115	9406	34498	41451
	Std. Dev.	251826	434441	465612	492287	517483
	Med.	-118328	-40742	20080	56475	78187
Lender 1 - Return on Farm Equity	Min.	-551.04	-2160.39	-1933.00	-787.94	-359.91
	Max.	7083.16	8382.51	1435.75	2584.57	90.48
	Mean	0.02	2.21	0.38	0.67	0.22
	Std. Dev.	74.48	118.25	24.99	28.12	4.75
	Med.	-0.42	0.43	0.40	0.30	0.24
Lender 2 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 2 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 2 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a

n/a = This value could not be calculated because this lender would not finance this size of a feedlot.

Table A.17. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 3 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 3 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 3 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 4 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 4 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 4 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a

n/a = This value could not be calculated because this lender would not finance this size of a feedlot.

Table A.17. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 5 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 5 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 5 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 6 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 6 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 6 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a

n/a = This value could not be calculated because this lender would not finance this size of a feedlot.

Table A.17. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 7 - Net Cash Flow	Min.	-1785233	-3523241	-5366376	-7340919	-9467743
	Max.	582096	1887523	3284423	4734575	6215719
	Mean	-607759	-753604	-847930	-919372	-985097
	Std. Dev.	337541	769928	1236193	1730279	2250518
	Med.	-606411	-751572	-835216	-883592	-919134
Lender 7 - Net Return	Min.	-1005296	-1621801	-1737442	-1874165	-2026907
	Max.	771678	1409783	1495333	1546175	1578589
	Mean	-99671	-35069	8041	26936	33044
	Std. Dev.	251836	434857	466897	494643	521007
	Med.	-99708	-31928	17686	46896	66320
Lender 7 - Return on Farm Equity	Min.	-1385.86	-1587.26	-742.11	-148.82	-94.49
	Max.	8591.08	11017.54	4744.23	82.81	620.33
	Mean	0.42	2.24	1.44	0.34	0.33
	Std. Dev.	100.92	122.60	63.04	2.96	6.31
	Med.	-0.43	0.55	0.42	0.31	0.25
Lender 8 - Net Cash Flow	Min.	-1786683	-3533201	-5385556	-7370090	-9507738
	Max.	582391	1882411	3273903	4718647	6194383
	Mean	-607745	-761628	-864251	-944252	-1018830
	Std. Dev.	337567	770055	1236913	1732001	2253612
	Med.	-606808	-759057	-851757	-909323	-955578
Lender 8 - Net Return	Min.	-1018063	-1627853	-1735613	-1869200	-2025001
	Max.	760748	1407327	1501311	1555871	1585839
	Mean	-111720	-40316	11063	33528	37030
	Std. Dev.	251857	434957	467483	495636	522370
	Med.	-111538	-37428	20446	53082	69476
Lender 8 - Return on Farm Equity	Min.	-5076.29	-2282.26	-223.92	-68.84	-244.27
	Max.	2067.60	1110.81	6282.88	115.73	106.20
	Mean	-1.49	-0.22	1.11	0.34	0.24
	Std. Dev.	62.34	47.51	62.94	1.79	2.89
	Med.	-0.49	0.64	0.45	0.33	0.26

Table A.18. Minimum, maximum, mean, standard deviation, and median values for net cash flow, net return, and return on farm equity for 1,500 head concrete feedlot

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1 - Net Cash Flow	Min.	-1774839	-3484280	-5296462	-7237467	-9327951
	Max.	593297	1926317	3350808	4828552	6337288
	Mean	-596998	-714266	-778436	-818295	-851034
	Std. Dev.	337534	769547	1234638	1726559	2243548
	Med.	-595574	-711534	-764746	-780066	-780733
Lender 1 - Net Return	Min.	-1026670	-1632955	-1737316	-1866593	-2016976
	Max.	751655	1398068	1492355	1547869	1579620
	Mean	-120465	-46050	7470	32579	39560
	Std. Dev.	251829	434487	465734	492493	517777
	Med.	-120231	-42736	18017	54442	76027
Lender 1 - Return on Farm Equity	Min.	-758.92	-2474.77	-255.41	-145.24	-229.51
	Max.	206.59	1670.82	559.95	2279.06	135.70
	Mean	-1.08	0.05	0.49	0.67	0.26
	Std. Dev.	11.51	46.67	9.11	24.12	2.99
	Med.	-0.41	0.42	0.40	0.30	0.24
Lender 2 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 2 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 2 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a

n/a = This value could not be calculated because this lender would not finance this size of a feedlot.

Table A.18. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 3 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 3 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 3 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 4 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 4 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 4 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a

n/a = This value could not be calculated because this lender would not finance this size of a feedlot.

Table A.18. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 5 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 5 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 5 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 6 - Net Cash Flow	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 6 - Net Return	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a
Lender 6 - Return on Farm Equity	Min.	n/a	n/a	n/a	n/a	n/a
	Max.	n/a	n/a	n/a	n/a	n/a
	Mean	n/a	n/a	n/a	n/a	n/a
	Std. Dev.	n/a	n/a	n/a	n/a	n/a
	Med.	n/a	n/a	n/a	n/a	n/a

n/a = This value could not be calculated because this lender would not finance this size of a feedlot.

Table A.18. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 7 - Net Cash Flow	Min.	-1788181	-3529390	-5375991	-7354292	-9485186
	Max.	579147	1881657	3275638	4722873	6201099
	Mean	-610726	-759738	-857394	-932318	-1001677
	Std. Dev.	337546	769994	1236422	1730789	2251432
	Med.	-609419	-757738	-844775	-896554	-936103
Lender 7 - Net Return	Min.	-1007525	-1624142	-1739900	-1876749	-2029628
	Max.	769405	1407691	1493405	1544424	1577033
	Mean	-101937	-37389	5712	24624	30763
	Std. Dev.	251841	434918	467060	494922	521408
	Med.	-101947	-34345	15144	44288	63618
Lender 7 - Return on Farm Equity	Min.	-1316.58	-2147.21	-133.43	-1541.57	-336.75
	Max.	1144.44	3300.40	1005.65	201.44	65.05
	Mean	-0.91	1.11	0.73	0.17	0.25
	Std. Dev.	27.43	55.22	14.40	15.99	3.57
	Med.	-0.43	0.55	0.42	0.31	0.25
Lender 8 - Net Cash Flow	Min.	-1789746	-3540138	-5396690	-7385772	-9528348
	Max.	579467	1876141	3264286	4705685	6178075
	Mean	-610711	-768409	-875035	-959212	-1038144
	Std. Dev.	337574	770112	1237167	1732604	2254717
	Med.	-609766	-765906	-862580	-925009	-976382
Lender 8 - Net Return	Min.	-1019223	-1629369	-1737452	-1871390	-2027571
	Max.	759690	1406345	1,500330	1554890	1584857
	Mean	-112860	-41760	9433	31724	35047
	Std. Dev.	251863	435007	467678	495982	522870
	Med.	-112676	-38952	18647	51079	67100
Lender 8 - Return on Farm Equity	Min.	-137267.20	-1999.98	-12108.60	-290.39	-1414.43
	Max.	7191.54	1362.15	78.38	349.87	66.87
	Mean	-13.49	0.65	-0.75	0.31	0.14
	Std. Dev.	1379.34	30.12	121.17	5.75	14.19
	Med.	-0.50	0.64	0.45	0.33	0.26

Table A.19. Minimum, maximum, mean, standard deviation, and median values for net cash flow, net return, and return on farm equity for 5,000 head earthen feedlot

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1 - Net Cash Flow	Min.	-5895421	-11571080	-17587340	-24030970	-30970660
	Max.	1997863	6461252	11229550	16175350	21224460
	Mean	-1969355	-2338257	-2529080	-2637862	-2721907
	Std. Dev.	1125077	2564666	4113769	5751482	7471894
	Med.	-1964588	-2328880	-2482697	-2508655	-2483204
Lender 1 - Net Return	Min.	-3399435	-5419617	-5766692	-6196758	-6697108
	Max.	2527814	4681309	4994515	5178389	5282948
	Mean	-378820	-130415	47990	131512	154511
	Std. Dev.	839394	1447841	1551254	1639630	1723052
	Med.	-378081	-118795	84145	205880	278867
Lender 1 - Return on Farm Equity	Min.	-1168.39	-565.80	-514.50	-364.29	-46.64
	Max.	825.17	87610.84	238.36	1235.04	16.45
	Mean	-0.95	9.99	0.54	0.46	0.27
	Std. Dev.	18.77	878.48	7.80	13.15	0.76
	Med.	-0.33	0.51	0.43	0.32	0.26
Lender 2 - Net Cash Flow	Min.	-5645809	-10821520	-16026840	-21319680	-26734980
	Max.	2120660	6646564	11477370	16485690	21597320
	Mean	-1793704	-1981088	-1956365	-1813907	-1608336
	Std. Dev.	1103652	2464356	3880893	5333669	6814383
	Med.	-1789407	-1980425	-1936844	-1767009	-1522054
Lender 2 - Net Return	Min.	-3276504	-4996907	-5038107	-5098438	-5234034
	Max.	2521504	4664438	4972860	5187014	5283203
	Mean	-330805	-26979	180467	329724	382444
	Std. Dev.	818992	1369044	1418302	1453706	1481575
	Med.	-329293	-22282	194599	358016	427859
Lender 2 - Return on Farm Equity	Min.	-1781.97	-2989.47	-357.16	-13.86	-106.66
	Max.	1771.22	1071.20	1045.83	25.72	42.16
	Mean	-1.61	0.56	0.53	0.34	0.26
	Std. Dev.	44.05	39.58	11.33	0.36	1.35
	Med.	-0.33	0.61	0.45	0.34	0.26

Table A.19. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 3 - Net Cash Flow	Min.	-5915169	-11511210	-17441200	-23791360	-30629780
	Max.	2022407	6569493	11421480	16450980	21583790
	Mean	-1961322	-2241886	-2339455	-2350663	-2332925
	Std. Dev.	1125223	2563861	4109711	5741142	7451955
	Med.	-1952164	-2229145	-2286937	-2222783	-2067779
Lender 3 - Net Return	Min.	-3441715	-5465183	-5813874	-6238876	-6725578
	Max.	2490117	4636346	4940992	5122411	5232473
	Mean	-416662	-171812	2855	88146	120754
	Std. Dev.	839422	1446942	1548036	1633389	1713505
	Med.	-416648	-159048	42095	170978	256298
Lender 3 - Return on Farm Equity	Min.	-4296.40	-1026.64	-165.86	-254.07	-238.03
	Max.	14581.80	4271.83	29.03	11051.11	231.74
	Mean	2.06	0.99	0.49	1.44	0.27
	Std. Dev.	207.12	45.39	1.97	110.54	3.64
	Med.	-0.23	0.80	0.51	0.35	0.27
Lender 4 - Net Cash Flow	Min.	-5827905	-11293420	-17081980	-23278900	-29951270
	Max.	2063320	6722174	11685930	16827200	22071780
	Mean	-1902431	-2064799	-2038246	-1920113	-1767863
	Std. Dev.	1125017	2561778	4101989	5723431	7419679
	Med.	-1897531	-2053729	-1982552	-1770065	-1483300
Lender 4 - Net Return	Min.	-3401126	-5416468	-5755815	-6170643	-6646272
	Max.	2523091	4669039	4972704	5153133	5262203
	Mean	-381487	-131168	48365	137781	174431
	Std. Dev.	839330	1445041	1542431	1623458	1699015
	Med.	-381510	-117708	91409	227814	323421
Lender 4 - Return on Farm Equity	Min.	-38662.31	-3322.14	-99.23	-176.20	-25.31
	Max.	6374.64	1590.10	2039.64	41.47	112.49
	Mean	-4.20	0.74	0.70	0.34	0.28
	Std. Dev.	395.41	41.17	20.60	1.84	1.23
	Med.	-0.38	0.64	0.45	0.35	0.27

Table A.19. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 5 - Net Cash Flow	Min.	-5623272	-10831770	-16124090	-21560950	-27180710
	Max.	2167477	6740799	11619030	16674760	21833810
	Mean	-1756570	-1915770	-1867105	-1705158	-1484762
	Std. Dev.	1107778	2482778	3921989	5405077	6923729
	Med.	-1752252	-1913419	-1839695	-1635585	-1355347
Lender 5 - Net Return	Min.	-3282506	-5065308	-5168422	-5322797	-5509625
	Max.	2542207	4678389	4978780	5155515	5260428
	Mean	-321255	-33565	161809	269434	326500
	Std. Dev.	822918	1383328	1441036	1484150	1519738
	Med.	-319768	-26929	181752	309833	391272
Lender 5 - Return on Farm Equity	Min.	-2050.35	-2271.83	-39.39	-43.01	-9.62
	Max.	2845.07	2449.55	732.25	116.51	3029.32
	Mean	-1.16	0.66	0.58	0.35	0.56
	Std. Dev.	51.73	37.37	7.60	1.36	30.29
	Med.	-0.32	0.61	0.45	0.33	0.26
Lender 6 - Net Cash Flow	Min.	-7251610	-12847050	-18776370	-25125820	-31963450
	Max.	688173	5338023	10292780	15425040	20660610
	Mean	-3315996	-3589894	-3669482	-3653499	-3602240
	Std. Dev.	1126967	2577339	4148864	5813108	7560046
	Med.	-3312019	-3584951	-3641841	-3563011	-3423509
Lender 6 - Net Return	Min.	-3457598	-5501980	-5853708	-6281882	-6771894
	Max.	2516150	4705178	5007031	5185538	5292567
	Mean	-427435	-198003	-14720	76966	112974
	Std. Dev.	841190	1458562	1573511	1666124	1749712
	Med.	-427531	-193324	6163	131591	216318
Lender 6 - Return on Farm Equity	Min.	-483606.9	-204.12	-291.47	-230.42	-348.70
	Max.	24778.20	4426.96	184.69	405.95	421.22
	Mean	-44.01	1.32	0.49	0.38	0.27
	Std. Dev.	4843.69	44.40	4.02	5.67	6.40
	Med.	0.68	0.95	0.50	0.35	0.27

Table A.19. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 7 - Net Cash Flow	Min.	-5931895	-11704760	-17826340	-24384100	-31447440
	Max.	1959205	6329314	11004330	15856850	20812680
	Mean	-2006859	-2472743	-2765852	-2981710	-3177539
	Std. Dev.	1125102	2565997	4119153	5764305	7495841
	Med.	-2002112	-2465170	-2722571	-2859854	-2955117
Lender 7 - Net Return	Min.	-3332464	-5386766	-5771489	-6226423	-6734684
	Max.	2591061	4716918	5001039	5169372	5276176
	Mean	-313487	-97799	45946	108818	128975
	Std. Dev.	839421	1449132	1555273	1647018	1734108
	Med.	-313779	-86781	78701	177052	243247
Lender 7 - Return on Farm Equity	Min.	-1302.61	-1364.37	-228.89	-431.49	-32.61
	Max.	4765.28	384.40	339.11	237.97	438.30
	Mean	-0.65	0.18	0.48	0.30	0.32
	Std. Dev.	58.80	23.46	6.07	6.30	4.42
	Med.	-0.30	0.61	0.45	0.33	0.27
Lender 8 - Net Cash Flow	Min.	-5935970	-11732860	-17880460	-24466410	-31560310
	Max.	1960062	6314914	10974670	15811940	20752510
	Mean	-2006796	-2495285	-2811731	-3051662	-3272390
	Std. Dev.	1125181	2566471	4121375	5769407	7504859
	Med.	-2003230	-2485994	-2769346	-2932465	-3053811
Lender 8 - Net Return	Min.	-3381867	-5412220	-5769346	-6212389	-6729291
	Max.	2546849	4701618	5014899	5196766	5296658
	Mean	-360857	-120903	51538	127530	140329
	Std. Dev.	839485	1449523	1557000	1649877	1738004
	Med.	-360261	-110698	84043	193900	251434
Lender 8 - Return on Farm Equity	Min.	-98170.28	-2768.66	-528.82	-30.59	-112.88
	Max.	21397.89	9600.54	920.10	31.28	4.83
	Mean	-16.34	1.65	0.60	0.36	0.27
	Std. Dev.	1274.43	108.87	12.82	0.64	1.14
	Med.	-0.36	0.69	0.47	0.36	0.28

Table A.20. Minimum, maximum, mean, standard deviation, and median values for net cash flow, net return, and return on farm equity for 5,000 head concrete feedlot

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1 - Net Cash Flow	Min.	-5902417	-11585670	-17610150	-24062700	-31012050
	Max.	1991037	6447673	11209220	16148270	21190620
	Mean	-1976327	-2352657	-2551273	-2668185	-2760701
	Std. Dev.	1125090	2564833	4114343	5752741	7474130
	Med.	-1971567	-2343372	-2505191	-2539586	-2524385
Lender 1 - Net Return	Min.	-3405703	-5426145	-5773487	-6203844	-6704507
	Max.	2521715	4675620	4989193	5173464	5278454
	Mean	-385064	-136778	41627	125209	148300
	Std. Dev.	839407	1447994	1551659	1640311	1724024
	Med.	-384296	-125353	77603	199006	271760
Lender 1 - Return on Farm Equity	Min.	-1113.36	-1074.62	-2444.54	-987.59	-635.43
	Max.	6799.92	1047.44	603.92	191.62	1200.05
	Mean	-0.32	1.06	0.19	0.26	0.33
	Std. Dev.	69.87	31.22	26.59	10.36	13.72
	Med.	-0.33	0.49	0.42	0.32	0.26
Lender 2 - Net Cash Flow	Min.	-5651390	-10832860	-16044110	-21343070	-26764680
	Max.	2115081	6635419	11460660	16463420	21569470
	Mean	-1799292	-1992377	-1973439	-1836836	-1637188
	Std. Dev.	1103656	2464406	3881056	5334013	6814977
	Med.	-1795034	-1991817	-1954009	-1790812	-1550729
Lender 2 - Net Return	Min.	-3283026	-5003240	-5044223	-5104312	-5239638
	Max.	2514760	4658099	4966946	5181562	5278254
	Mean	-337422	-33334	174436	324062	377191
	Std. Dev.	818997	1369089	1418414	1453887	1481824
	Med.	-335910	-28815	188582	352282	422200
Lender 2 - Return on Farm Equity	Min.	-6272.48	-15647.31	-457.76	-2.76	-297.97
	Max.	4432.19	2784.78	891.85	25.21	21.60
	Mean	-1.04	-0.58	0.64	0.34	0.22
	Std. Dev.	81.13	164.07	13.20	0.32	3.01
	Med.	-0.34	0.60	0.45	0.34	0.26

Table A.20. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 3 - Net Cash Flow	Min.	-5921559	-11524540	-17462040	-23820340	-30667580
	Max.	2016172	6557089	11402910	16426240	21552880
	Mean	-1967691	-2255035	-2359707	-2378310	-2368263
	Std. Dev.	1125235	2564018	4110251	5742324	7454045
	Med.	-1958539	-2242372	-2307480	-2251849	-2105258
Lender 3 - Net Return	Min.	-3449583	-5473452	-5822568	-6248029	-6735229
	Max.	2482404	4628843	4933644	5115231	5225475
	Mean	-424509	-179927	-5426	79739	112233
	Std. Dev.	839433	1447086	1548416	1634028	1714410
	Med.	-424500	-167360	33538	161964	246666
Lender 3 - Return on Farm Equity	Min.	-4524.89	-737.34	-21.59	-62.11	-4679.15
	Max.	167875.50	1244.05	34.98	289.73	75.29
	Mean	17.63	0.98	0.52	0.39	-0.18
	Std. Dev.	1692.58	17.08	0.63	3.13	46.82
	Med.	-0.27	0.79	0.51	0.35	0.27
Lender 4 - Net Cash Flow	Min.	-5837615	-11313660	-17113620	-23322900	-30008660
	Max.	2053619	6702877	11657040	16788710	22023690
	Mean	-1912191	-2084936	-2069227	-1962355	-1821792
	Std. Dev.	1125036	2562033	4102858	5725314	7422986
	Med.	-1907424	-2073965	-2014051	-1812682	-1542245
Lender 4 - Net Return	Min.	-3408470	-5424170	-5763900	-6179144	-6655224
	Max.	2515614	4662158	4966360	5147375	5257084
	Mean	-388937	-138764	40816	130369	167198
	Std. Dev.	839349	1445274	1543041	1624468	1700434
	Med.	-388798	-125595	83361	219789	314544
Lender 4 - Return on Farm Equity	Min.	-1112.65	-1328.34	-786.65	-560.76	-9.56
	Max.	4944.87	110766.70	97.95	578.26	28.71
	Mean	-0.08	11.96	0.42	0.32	0.28
	Std. Dev.	64.43	1108.13	8.61	8.39	0.45
	Med.	-0.39	0.63	0.45	0.35	0.27

Table A.20. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 5 - Net Cash Flow	Min.	-5634212	-10854110	-16158300	-21607520	-27240150
	Max.	2156686	6719261	11586740	16631730	21780030
	Mean	-1767475	-1937891	-1900668	-1750357	-1541787
	Std. Dev.	1107791	2482919	3922445	5406040	6925387
	Med.	-1763154	-1935581	-1873572	-1681695	-1414082
Lender 5 - Net Return	Min.	-3289899	-5072826	-5176058	-5330552	-5517500
	Max.	2534963	4671524	4972267	5149372	5254675
	Mean	-328614	-40900	154601	262402	319668
	Std. Dev.	822931	1383455	1441350	1484656	1520434
	Med.	-327144	-34346	174521	302432	384158
Lender 5 - Return on Farm Equity	Min.	-5597.59	-1846.44	-187.15	-8.64	-8.49
	Max.	922.16	12098.27	294.30	420.53	15.05
	Mean	-1.62	1.70	0.57	0.40	0.27
	Std. Dev.	63.79	123.59	4.93	4.44	0.30
	Med.	-0.33	0.60	0.44	0.33	0.26
Lender 6 - Net Cash Flow	Min.	-7260705	-12866000	-18806010	-25167030	-32017210
	Max.	679289	5320369	10266350	15389850	20616650
	Mean	-3325066	-3608690	-3698558	-3693324	-3653256
	Std. Dev.	1126969	2577441	4149353	5814371	7562490
	Med.	-3321118	-3603678	-3671187	-3603897	-3476239
Lender 6 - Net Return	Min.	-3463871	-5508503	-5860494	-6288953	-6779273
	Max.	2510087	4699746	5002159	5181273	5288962
	Mean	-433684	-204390	-21104	70722	106947
	Std. Dev.	841192	1458662	1573893	1666890	1750884
	Med.	-433760	-199737	-429	125163	209759
Lender 6 - Return on Farm Equity	Min.	-34299.77	-187.97	-72.06	-142.43	-92.10
	Max.	81255.39	1409.20	218.43	149.77	153.34
	Mean	2.62	1.01	0.55	0.37	0.29
	Std. Dev.	934.65	14.59	3.46	2.95	2.48
	Med.	0.53	0.96	0.50	0.35	0.27

Table A.20. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 7 - Net Cash Flow	Min.	-5941593	-11724990	-17857970	-24428080	-31504820
	Max.	1949504	6310016	10975430	15818360	20764590
	Mean	-2016620	-2492914	-2796968	-3024267	-3232037
	Std. Dev.	1125120	2566218	4119920	5766001	7498870
	Med.	-2012004	-2485752	-2754226	-2904174	-3011360
Lender 7 - Net Return	Min.	-3339797	-5394467	-5779574	-6234923	-6743635
	Max.	2583584	4710038	4994695	5163614	5271057
	Mean	-320938	-105427	38296	101226	121488
	Std. Dev.	839438	1449334	1555815	1647941	1735435
	Med.	-321143	-94548	70818	168743	233992
Lender 7 - Return on Farm Equity	Min.	-5635.12	-975.61	-511.56	-85.13	-101.86
	Max.	2816.65	631.07	2099.35	35.99	1336.31
	Mean	-1.34	0.67	0.74	0.34	0.44
	Std. Dev.	72.64	23.96	23.57	1.29	13.79
	Med.	-0.31	0.60	0.45	0.33	0.27
Lender 8 - Net Cash Flow	Min.	-5946044	-11755670	-17917080	-24517990	-31628100
	Max.	1950442	6294289	10943040	15769300	20698870
	Mean	-2016551	-2517583	-2847174	-3100815	-3335830
	Std. Dev.	1125203	2566669	4122239	5771435	7508558
	Med.	-2013212	-2508589	-2805025	-2982453	-3122067
Lender 8 - Net Return	Min.	-3385683	-5417206	-5775396	-6219592	-6737744
	Max.	2543368	4698391	5011671	5193538	5293430
	Mean	-364605	-125645	46195	121620	133842
	Std. Dev.	839505	1449697	1557659	1651032	1739665
	Med.	-364004	-115739	78065	187272	243426
Lender 8 - Return on Farm Equity	Min.	-22648.43	-653.43	-1346.03	-6.66	-6.96
	Max.	3852.49	364.73	425.96	48.25	39.33
	Mean	-4.28	0.47	0.42	0.37	0.29
	Std. Dev.	261.54	15.36	14.90	0.65	0.49
	Med.	-0.36	0.68	0.47	0.36	0.28

Table A.21. Minimum, maximum, mean, standard deviation, and median values for net cash flow, net return, and return on farm equity for 10,000 head earthen feedlot

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1 - Net Cash Flow	Min.	-11790200	-23140830	-35172580	-48059030	-61937530
	Max.	3996352	12923750	22460960	32353180	42452020
	Mean	-3938070	-4675193	-5056124	-5272943	-5440257
	Std. Dev.	2250153	5129316	8227485	11502850	14943580
	Med.	-3928536	-4656430	-4963347	-5014472	-4962631
Lender 1 - Net Return	Min.	-6797998	-10838340	-11532460	-12392570	-13393240
	Max.	5056483	9363435	9989815	10357530	10566600
	Mean	-756771	-259951	96859	263898	309888
	Std. Dev.	1678787	2895668	3102471	3279197	3446015
	Med.	-755295	-236691	169184	412687	558734
Lender 1 - Return on Farm Equity	Min.	-3386.28	-1522.63	-3531.47	-459.42	-37.32
	Max.	564.83	892.53	172.09	865.91	18.32
	Mean	-1.29	0.18	0.19	0.41	0.27
	Std. Dev.	36.79	32.17	35.80	10.13	0.68
	Med.	-0.33	0.51	0.43	0.32	0.26
Lender 2 - Net Cash Flow	Min.	-11291110	-21642010	-32052090	-42637210	-53467240
	Max.	4241832	13294150	22956280	32973430	43197190
	Mean	-3586895	-3961139	-3911163	-3625710	-3214026
	Std. Dev.	2207303	4928708	7761771	10667310	13628710
	Med.	-3578299	-3959805	-3872089	-3531835	-3041453
Lender 2 - Net Return	Min.	-6552115	-9992937	-10075360	-10196040	-10467260
	Max.	5043922	9329753	9946557	10374820	10567160
	Mean	-660708	-53078	361783	660263	765666
	Std. Dev.	1637984	2738085	2836594	2907395	2963127
	Med.	-657683	-43668	390046	716864	856533
Lender 2 - Return on Farm Equity	Min.	-5467.98	-2210.26	-280.48	-3.19	-1358.24
	Max.	1061.19	6649.59	6313.44	259.12	22.87
	Mean	-2.86	1.18	1.07	0.37	0.12
	Std. Dev.	86.87	73.12	63.24	2.60	13.60
	Med.	-0.33	0.61	0.45	0.34	0.26

Table A.21. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 3 - Net Cash Flow	Min.	-11829750	-23021210	-34880490	-47580060	-61256080
	Max.	4045387	13140120	22844670	32904230	43170410
	Mean	-3922060	-4482566	-4677053	-4698790	-4662608
	Std. Dev.	2250445	5127708	8219373	11482180	14903720
	Med.	-3903744	-4457076	-4571989	-4442900	-4132044
Lender 3 - Net Return	Min.	-6882412	-10929310	-11626650	-12476620	-13449970
	Max.	4981238	9273677	9882954	10245780	10465880
	Mean	-832309	-342584	6767	177359	242585
	Std. Dev.	1678843	2893871	3096036	3266720	3426927
	Med.	-832279	-317037	85270	343078	513776
Lender 3 - Return on Farm Equity	Min.	-11821.78	-4130.11	-49.59	-36.66	-77.11
	Max.	20413.36	264.02	47.46	67.01	234.86
	Mean	-2.26	0.21	0.51	0.37	0.29
	Std. Dev.	288.63	43.28	0.88	1.21	2.89
	Med.	-0.23	0.80	0.51	0.35	0.27
Lender 4 - Net Cash Flow	Min.	-11672580	-22621790	-34218600	-46633780	-60001650
	Max.	4109373	13410,000	23320440	33585900	44057960
	Mean	-3821923	-4164799	-4130648	-3914067	-3629995
	Std. Dev.	2250066	5124001	8205496	11450150	14845140
	Med.	-3812507	-4143064	-4019518	-3613153	-3068634
Lender 4 - Net Return	Min.	-6805137	-10835970	-11514810	-12344610	-13296020
	Max.	5042245	9335718	9944582	10307130	10527130
	Mean	-766370	-265499	94191	273864	348144
	Std. Dev.	1678692	2890490	3085929	3248681	3400511
	Med.	-765921	-238893	179412	452758	643008
Lender 4 - Return on Farm Equity	Min.	-3383.94	-3423.41	-274.75	-16.72	-20.60
	Max.	24446.85	2392.65	541.30	318.86	152.53
	Mean	1.79	0.68	0.54	0.43	0.29
	Std. Dev.	260.30	56.53	6.60	4.33	1.57
	Med.	-0.38	0.64	0.45	0.35	0.27

Table A.21. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 5 - Net Cash Flow	Min.	-11269520	-21710460	-32320020	-43219700	-54486240
	Max.	4312293	13436370	23170250	33259160	43554680
	Mean	-3536040	-3877994	-3804692	-3505234	-3089276
	Std. Dev.	2215583	4965852	7844935	10812180	13850940
	Med.	-3527398	-3873378	-3750530	-3368042	-2834135
Lender 5 - Net Return	Min.	-6602406	-10167720	-10373540	-10681780	-11054800
	Max.	5047332	9321045	9923222	10278230	10489760
	Mean	-679833	-103849	287821	504205	619641
	Std. Dev.	1645863	2766922	2882732	2969363	3040937
	Med.	-676894	-90749	327658	584249	748592
Lender 5 - Return on Farm Equity	Min.	-2975.64	-1652.89	-174.83	-28.66	-487.63
	Max.	913.57	1709.89	264.50	25.27	37.21
	Mean	-1.75	0.74	0.55	0.34	0.22
	Std. Dev.	53.85	35.18	5.53	0.50	4.90
	Med.	-0.34	0.61	0.45	0.33	0.26
Lender 6 - Net Cash Flow	Min.	-14502390	-25692350	-37550020	-50247850	-63921980
	Max.	1377161	10677660	20587980	30853310	41325260
	Mean	-6631159	-7178065	-7336297	-7303345	-7199801
	Std. Dev.	2253935	5154668	8297683	11626100	15119870
	Med.	-6623204	-7168184	-7280991	-7122275	-6842210
Lender 6 - Net Return	Min.	-6914323	-11003070	-11706500	-12562820	-13542810
	Max.	5033151	9411150	10014810	10371760	10585760
	Mean	-854001	-395123	-28559	154801	226797
	Std. Dev.	1682380	2917116	3146987	3332177	3499317
	Med.	-854194	-385749	13227	264067	433533
Lender 6 - Return on Farm Equity	Min.	-3358.90	-958.41	-124.73	-203.79	-1337.07
	Max.	3399.77	1178.92	728.17	460.20	243.54
	Mean	0.41	1.06	0.59	0.39	0.12
	Std. Dev.	83.75	16.89	8.25	5.99	14.63
	Med.	0.68	0.95	0.50	0.35	0.27

Table A.21. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 7 - Net Cash Flow	Min.	-11862900	-23407670	-35649780	-48764160	-62889630
	Max.	3919299	12660400	22011310	31717230	41629780
	Mean	-4012822	-4943635	-5528850	-5959516	-6350080
	Std. Dev.	2250203	5131973	8238236	11528450	14991400
	Med.	-4003316	-4928452	-5442239	-5715642	-5905113
Lender 7 - Net Return	Min.	-6663960	-10772530	-11541940	-12451770	-13468250
	Max.	5183104	9434763	10002960	10339570	10553120
	Mean	-625994	-194601	92891	218628	258932
	Std. Dev.	1678841	2898246	3110497	3293952	3468095
	Med.	-626586	-172564	158413	355180	487672
Lender 7 - Return on Farm Equity	Min.	-2511.12	-2510.62	-185.50	-372.20	-30.00
	Max.	1736.92	335.81	576.68	73.93	47.02
	Mean	-1.50	-0.09	0.52	0.31	0.28
	Std. Dev.	49.05	33.60	7.34	4.12	0.70
	Med.	-0.30	0.61	0.45	0.33	0.27
Lender 8 - Net Cash Flow	Min.	-11871000	-23463590	-35757520	-48928030	-63114320
	Max.	3921018	12631740	21952280	31627830	41510,000
	Mean	-4012684	-4988498	-5620173	-6098763	-6538892
	Std. Dev.	2250359	5132923	8242669	11538620	1,5009370
	Med.	-4005532	-4969965	-5535365	-5860290	-6101287
Lender 8 - Net Return	Min.	-6763087	-10823690	-11537840	-12423820	-13457510
	Max.	5094313	9403829	10030390	10394120	10593910
	Mean	-721073	-241073	103864	255900	281551
	Std. Dev.	1678967	2899030	3113938	3299646	3475855
	Med.	-719881	-220635	168933	388689	503903
Lender 8 - Return on Farm Equity	Min.	-4930.07	-2687.25	-881.74	-19.94	-10.97
	Max.	5613.06	10040.35	236.44	100.61	61.12
	Mean	-0.27	1.72	0.34	0.37	0.28
	Std. Dev.	115.22	113.22	12.59	1.11	0.63
	Med.	-0.36	0.69	0.47	0.36	0.28

Table A.22. Minimum, maximum, mean, standard deviation, and median values for net cash flow, net return, and return on farm equity for 10,000 head concrete feedlot

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1 - Net Cash Flow	Min.	-11804190	-23170010	-35218210	-48122480	-62020300
	Max.	3982700	12896590	22420290	32299010	42384350
	Mean	-3952013	-4703992	-5100509	-5333589	-5517843
	Std. Dev.	2250179	5129650	8228634	11505370	14948060
	Med.	-3942493	-4685415	-5008309	-5076334	-5044992
Lender 1 - Net Return	Min.	-6810524	-10851380	-11546040	-12406730	-13408030
	Max.	5044297	9352069	9979181	10347690	10557630
	Mean	-769249	-272666	84144	251303	297476
	Std. Dev.	1678812	2895973	3103280	3280560	3447960
	Med.	-767715	-249797	156134	398948	544465
Lender 1 - Return on Farm Equity	Min.	-2826.82	-7263.76	-4251.08	-1689.17	-239.46
	Max.	1449.13	11811.25	1000.15	181.06	63.40
	Mean	-1.10	0.93	0.06	0.18	0.24
	Std. Dev.	33.66	142.96	44.64	17.17	3.05
	Med.	-0.33	0.49	0.42	0.32	0.26
Lender 2 - Net Cash Flow	Min.	-11302270	-21664680	-32086630	-42683990	-53526640
	Max.	4230674	13271860	22922860	32928870	43141,500
	Mean	-3598071	-3983719	-3945311	-3671569	-3271730
	Std. Dev.	2207312	4928807	7762096	10667990	13629900
	Med.	-3589551	-3982588	-3906447	-3579441	-3098827
Lender 2 - Net Return	Min.	-6565147	-10005590	-10087580	-10207780	-10478460
	Max.	5030445	9317085	9934740	10363930	10557270
	Mean	-673930	-65778	349731	648950	755170
	Std. Dev.	1637993	2738174	2836819	2907758	2963626
	Med.	-670906	-56723	378022	705395	845213
Lender 2 - Return on Farm Equity	Min.	-1356.17	-2621.06	-366.54	-2.59	-26.15
	Max.	4767.53	28996.44	3642.64	19.48	94.62
	Mean	-0.46	3.64	1.11	0.34	0.26
	Std. Dev.	56.90	294.22	45.10	0.25	1.06
	Med.	-0.34	0.60	0.45	0.34	0.26

Table A.22. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 3 - Net Cash Flow	Min.	-11842530	-23047860	-34922170	-47638030	-61331690
	Max.	4032916	13115320	22807520	32854750	43108590
	Mean	-3934797	-4508864	-4717556	-4754084	-4733284
	Std. Dev.	2250468	5128021	8220453	11484540	14907900
	Med.	-3916494	-4483531	-4613076	-4501031	-4207123
Lender 3 - Net Return	Min.	-6898138	-10945840	-11644030	-12494910	-13469270
	Max.	4965822	9258681	9868269	10231430	10451900
	Mean	-847991	-358803	-9786	160557	225554
	Std. Dev.	1678865	2894158	3096798	3267997	3428737
	Med.	-847973	-333651	68167	325062	494523
Lender 3 - Return on Farm Equity	Min.	-48478.10	-603.92	-25.89	-188.21	-1479.12
	Max.	12427.16	2094.98	74.63	65.67	107.45
	Mean	-8.17	1.11	0.52	0.33	0.16
	Std. Dev.	621.19	23.77	1.05	2.36	14.87
	Med.	-0.26	0.79	0.51	0.35	0.27
Lender 4 - Net Cash Flow	Min.	-11692000	-22662260	-34281880	-46721780	-60116430
	Max.	4089972	13371410	23262650	33508910	43961790
	Mean	-3841444	-4205077	-4192620	-3998573	-3737890
	Std. Dev.	2250104	5124507	8207226	11453910	14851740
	Med.	-3832293	-4183535	-4082613	-3698387	-3181640
Lender 4 - Net Return	Min.	-6819815	-10851360	-11530970	-12361600	-13313910
	Max.	5027302	9321968	9931905	10295620	10516900
	Mean	-781261	-280683	79096	259040	333672
	Std. Dev.	1678729	2890954	3087145	3250697	3403345
	Med.	-781119	-254987	163325	436192	625344
Lender 4 - Return on Farm Equity	Min.	-2468.50	-423.21	-307.92	-502.63	-64.53
	Max.	32622.07	1245.85	496.62	47.29	30.96
	Mean	2.01	1.15	0.56	0.32	0.27
	Std. Dev.	328.54	20.92	7.97	5.08	0.82
	Med.	-0.39	0.63	0.45	0.35	0.27

Table A.22. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 5 - Net Cash Flow	Min.	-11291400	-21755140	-32388440	-43312840	-54605120
	Max.	4290711	13393290	23105680	33173090	43447120
	Mean	-3557850	-3922239	-3871826	-3595650	-3203354
	Std. Dev.	2215609	4966129	7845840	10814090	13854240
	Med.	-3549195	-3917521	-3818284	-3461077	-2953565
Lender 5 - Net Return	Min.	-6617182	-10182750	-10388800	-10697280	-11070540
	Max.	5032852	9307324	9910206	10265960	10478270
	Mean	-694540	-118511	273410	490143	605977
	Std. Dev.	1645887	2767172	2883357	2970372	3042325
	Med.	-691637	-105573	312728	569614	733848
Lender 5 - Return on Farm Equity	Min.	-4984.34	-3190.89	-459.12	-14.06	-31.42
	Max.	720.61	1898.46	84.45	439.41	6.85
	Mean	-1.93	0.61	0.36	0.39	0.26
	Std. Dev.	59.64	39.97	6.99	4.43	0.47
	Med.	-0.35	0.60	0.45	0.33	0.26
Lender 6 - Net Cash Flow	Min.	-14520580	-25730260	-37609300	-50330280	-64029490
	Max.	1359392	10642360	20535130	30782920	41237330
	Mean	-6649301	-7215655	-7394450	-7382994	-7301832
	Std. Dev.	2253939	5154874	8298661	11628630	15124760
	Med.	-6641401	-7205637	-7339681	-7204071	-6947768
Lender 6 - Net Return	Min.	-6926860	-11016100	-11720060	-12576950	-13557560
	Max.	5021037	9400297	10005070	10363240	10578560
	Mean	-866488	-407887	-41316	142324	214754
	Std. Dev.	1682384	2917315	3147751	3333710	3501661
	Med.	-866643	-398591	54	251222	420425
Lender 6 - Return on Farm Equity	Min.	-5189.43	-346.14	-788.26	-137.86	-113.43
	Max.	1226.76	323.27	127.39	157.20	112.05
	Mean	-1.08	0.86	0.38	0.37	0.28
	Std. Dev.	104.77	6.25	10.62	2.95	2.36
	Med.	0.53	0.96	0.50	0.35	0.27

Table A.22. (Continued)

		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 7 - Net Cash Flow	Min.	-11882300	-23448120	-35713040	-48852130	-63004380
	Max.	3899898	12621800	21953520	31640250	41533600
	Mean	-4032344	-4983977	-5591080	-6044630	-6459073
	Std. Dev.	2250238	5132416	8239771	11531850	14997460
	Med.	-4023101	-4969616	-5505549	-5804283	-6017655
Lender 7 - Net Return	Min.	-6678615	-10787920	-11558100	-12468760	-13486140
	Max.	5168161	9421013	9990279	10328060	10542890
	Mean	-640885	-209848	77600	203456	243969
	Std. Dev.	1678875	2898650	3111580	3295797	3470748
	Med.	-641303	-188049	142682	338536	469131
Lender 7 - Return on Farm Equity	Min.	-3621.07	-1462.35	-1863.96	-53.21	-38.80
	Max.	5469.20	524.48	3530.63	46.84	64.57
	Mean	-0.92	0.44	0.64	0.35	0.28
	Std. Dev.	73.96	29.33	40.23	1.18	0.96
	Med.	-0.31	0.60	0.45	0.33	0.27
Lender 8 - Net Cash Flow	Min.	-11891150	-23509230	-35830760	-49031200	-63249900
	Max.	3901778	12590490	21889020	31542560	41402720
	Mean	-4032195	-5033094	-5691056	-6197066	-6665768
	Std. Dev.	2250404	5133319	8244398	11542680	15016770
	Med.	-4025497	-5015058	-5606785	-5960265	-6237799
Lender 8 - Net Return	Min.	-6770709	-10833650	-11549930	-12438210	-13474400
	Max.	5087362	9397383	10023940	10387680	10587460
	Mean	-728559	-250546	93188	244092	268590
	Std. Dev.	1679009	2899377	3115257	3301956	3479177
	Med.	-727357	-230707	156987	375442	487897
Lender 8 - Return on Farm Equity	Min.	-13298.64	-655.03	-291.74	-5.67	-48.93
	Max.	132529.40	366.62	5697.48	137.19	15.42
	Mean	12.98	0.47	1.14	0.39	0.28
	Std. Dev.	1341.90	15.35	57.59	1.60	0.53
	Med.	-0.36	0.68	0.47	0.36	0.28

Table A.23. Median values for net cash flow (NCF), net return (NR), and return on farm equity (ROFE) for a 1,500 head earthen feedlot

MEDIANS		1,500 Head Feedlot - Earthen Lot				
		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1	NCF	-593452	-707128	-757909	-770662	-768734
Lender 2	NCF	n/a	n/a	n/a	n/a	n/a
Lender 3	NCF	n/a	n/a	n/a	n/a	n/a
Lender 4	NCF	n/a	n/a	n/a	n/a	n/a
Lender 5	NCF	n/a	n/a	n/a	n/a	n/a
Lender 6	NCF	n/a	n/a	n/a	n/a	n/a
Lender 7	NCF	-606411	-751572	-835216	-883592	-919134
Lender 8	NCF	-606808	-759057	-851757	-909323	-955578
Lender 1	NR	-118328	-40742	20080	56475	78187
Lender 2	NR	n/a	n/a	n/a	n/a	n/a
Lender 3	NR	n/a	n/a	n/a	n/a	n/a
Lender 4	NR	n/a	n/a	n/a	n/a	n/a
Lender 5	NR	n/a	n/a	n/a	n/a	n/a
Lender 6	NR	n/a	n/a	n/a	n/a	n/a
Lender 7	NR	-99708	-31928	17686	46896	66320
Lender 8	NR	-111538	-37428	20446	53082	69476
Lender 1	ROFE	-0.42	0.43	0.40	0.30	0.24
Lender 2	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 3	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 4	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 5	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 6	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 7	ROFE	-0.43	0.55	0.42	0.31	0.25
Lender 8	ROFE	-0.49	0.64	0.45	0.33	0.26

n/a = This value could not be calculated because this lender would not finance this size of a feedlot.

Table A.24. Median values for net cash flow (NCF), net return (NR), and return on farm equity (ROFE) for a 5,000 head earthen feedlot

MEDIANS		5,000 Head Feedlot - Earthen Lot				
		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1	NCF	-1964588	-2328880	-2482697	-2508655	-2483204
Lender 2	NCF	-1789407	-1980425	-1936844	-1767009	-1522054
Lender 3	NCF	-1952164	-2229145	-2286937	-2222783	-2067779
Lender 4	NCF	-1897531	-2053729	-1982552	-1770065	-1483300
Lender 5	NCF	-1752252	-1913419	-1839695	-1635585	-1355347
Lender 6	NCF	-3312019	-3584951	-3641841	-3563011	-3423509
Lender 7	NCF	-2002112	-2465170	-2722571	-2859854	-2955117
Lender 8	NCF	-2003230	-2485994	-2769346	-2932465	-3053811
Lender 1	NR	-378081	-118795	84145	205880	278867
Lender 2	NR	-329293	-22282	194599	358016	427859
Lender 3	NR	-416648	-159048	42095	170978	256298
Lender 4	NR	-381510	-117708	91409	227814	323421
Lender 5	NR	-319768	-26929	181752	309833	391272
Lender 6	NR	-427531	-193324	6163	131591	216318
Lender 7	NR	-313779	-86781	78701	177052	243247
Lender 8	NR	-360261	-110698	84043	193900	251434
Lender 1	ROFE	-0.33	0.51	0.43	0.32	0.26
Lender 2	ROFE	-0.33	0.61	0.45	0.34	0.26
Lender 3	ROFE	-0.23	0.80	0.51	0.35	0.27
Lender 4	ROFE	-0.38	0.64	0.45	0.35	0.27
Lender 5	ROFE	-0.32	0.61	0.45	0.33	0.26
Lender 6	ROFE	0.68	0.95	0.50	0.35	0.27
Lender 7	ROFE	-0.30	0.61	0.45	0.33	0.27
Lender 8	ROFE	-0.36	0.69	0.47	0.36	0.28

Table A.25. Median values for net cash flow (NCF), net return (NR), and return on farm equity (ROFE) for a 10,000 head earthen feedlot

MEDIANS		10,000 Head Feedlot - Earthen Lot				
		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1	NCF	-3928536	-4656430	-4963347	-5014472	-4962631
Lender 2	NCF	-3578299	-3959805	-3872089	-3531835	-3041453
Lender 3	NCF	-3903744	-4457076	-4571989	-4442900	-4132044
Lender 4	NCF	-3812507	-4143064	-4019518	-3613153	-3068634
Lender 5	NCF	-3527398	-3873378	-3750530	-3368042	-2834135
Lender 6	NCF	-6623204	-7168184	-7280991	-7122275	-6842210
Lender 7	NCF	-4003316	-4928452	-5442239	-5715642	-5905113
Lender 8	NCF	-4005532	-4969965	-5535365	-5860290	-6101287
Lender 1	NR	-755295	-236691	169184	412687	558734
Lender 2	NR	-657683	-43668	390046	716864	856533
Lender 3	NR	-832279	-317037	85270	343078	513776
Lender 4	NR	-765921	-238893	179412	452758	643008
Lender 5	NR	-676894	-90749	327658	584249	748592
Lender 6	NR	-854194	-385749	13227	264067	433533
Lender 7	NR	-626586	-172564	158413	355180	487672
Lender 8	NR	-719881	-220635	168933	388689	503903
Lender 1	ROFE	-0.33	0.51	0.43	0.32	0.26
Lender 2	ROFE	-0.33	0.61	0.45	0.34	0.26
Lender 3	ROFE	-0.23	0.80	0.51	0.35	0.27
Lender 4	ROFE	-0.38	0.64	0.45	0.35	0.27
Lender 5	ROFE	-0.34	0.61	0.45	0.33	0.26
Lender 6	ROFE	0.68	0.95	0.50	0.35	0.27
Lender 7	ROFE	-0.30	0.61	0.45	0.33	0.27
Lender 8	ROFE	-0.36	0.69	0.47	0.36	0.28

Table A.26. Median values for net cash flow (NCF), net return (NR), and return on farm equity (ROFE) for a 1,500 head concrete feedlot

MEDIANS		1,500 Head Feedlot - Concrete Lot				
		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1	NCF	-595574	-711534	-764746	-780066	-780733
Lender 2	NCF	n/a	n/a	n/a	n/a	n/a
Lender 3	NCF	n/a	n/a	n/a	n/a	n/a
Lender 4	NCF	n/a	n/a	n/a	n/a	n/a
Lender 5	NCF	n/a	n/a	n/a	n/a	n/a
Lender 6	NCF	n/a	n/a	n/a	n/a	n/a
Lender 7	NCF	-609419	-757738	-844775	-896554	-936103
Lender 8	NCF	-609766	-765906	-862580	-925009	-976382
Lender 1	NR	-120231	-42736	18017	54442	76027
Lender 2	NR	n/a	n/a	n/a	n/a	n/a
Lender 3	NR	n/a	n/a	n/a	n/a	n/a
Lender 4	NR	n/a	n/a	n/a	n/a	n/a
Lender 5	NR	n/a	n/a	n/a	n/a	n/a
Lender 6	NR	n/a	n/a	n/a	n/a	n/a
Lender 7	NR	-101947	-34345	15144	44288	63618
Lender 8	NR	-112676	-38952	18647	51079	67100
Lender 1	ROFE	-0.41	0.42	0.40	0.30	0.24
Lender 2	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 3	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 4	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 5	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 6	ROFE	n/a	n/a	n/a	n/a	n/a
Lender 7	ROFE	-0.43	0.55	0.42	0.31	0.25
Lender 8	ROFE	-0.50	0.64	0.45	0.33	0.26

n/a = This value could not be calculated because this lender would not finance this size of a feedlot.

Table A.27. Median values for net cash flow (NCF), net return (NR), and return on farm equity (ROFE) for a 5,000 head concrete feedlot

MEDIANS		5,000 Head Feedlot - Concrete Lot				
		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1	NCF	-1971567	-2343372	-2505191	-2539586	-2524385
Lender 2	NCF	-1795034	-1991817	-1954009	-1790812	-1550729
Lender 3	NCF	-1958539	-2242372	-2307480	-2251849	-2105258
Lender 4	NCF	-1907424	-2073965	-2014051	-1812682	-1542245
Lender 5	NCF	-1763154	-1935581	-1873572	-1681695	-1414082
Lender 6	NCF	-3321118	-3603678	-3671187	-3603897	-3476239
Lender 7	NCF	-2012004	-2485752	-2754226	-2904174	-3011360
Lender 8	NCF	-2013212	-2508589	-2805025	-2982453	-3122067
Lender 1	NR	-384296	-125353	77603	199006	271760
Lender 2	NR	-335910	-28815	188582	352282	422200
Lender 3	NR	-424500	-167360	33538	161964	246666
Lender 4	NR	-388798	-125595	83361	219789	314544
Lender 5	NR	-327144	-34346	174521	302432	384158
Lender 6	NR	-433760	-199737	-429	125163	209759
Lender 7	NR	-321143	-94548	70818	168743	233992
Lender 8	NR	-364004	-115739	78065	187272	243426
Lender 1	ROFE	-0.33	0.49	0.42	0.32	0.26
Lender 2	ROFE	-0.34	0.60	0.45	0.34	0.26
Lender 3	ROFE	-0.27	0.79	0.51	0.35	0.27
Lender 4	ROFE	-0.39	0.63	0.45	0.35	0.27
Lender 5	ROFE	-0.33	0.60	0.44	0.33	0.26
Lender 6	ROFE	0.53	0.96	0.50	0.35	0.27
Lender 7	ROFE	-0.31	0.60	0.45	0.33	0.27
Lender 8	ROFE	-0.36	0.68	0.47	0.36	0.28

Table A.28. Median values for net cash flow (NCF), net return (NR), and return on farm equity (ROFE) for a 10,000 head concrete feedlot

MEDIANS		10,000 Head Feedlot - Concrete Lot				
		Year 1	Year 2	Year 3	Year 4	Year 5
Lender 1	NCF	-3942493	-4685415	-5008309	-5076334	-5044992
Lender 2	NCF	-3589551	-3982588	-3906447	-3579441	-3098827
Lender 3	NCF	-3916494	-4483531	-4613076	-4501031	-4207123
Lender 4	NCF	-3832293	-4183535	-4082613	-3698387	-3181640
Lender 5	NCF	-3549195	-3917521	-3818284	-3461077	-2953565
Lender 6	NCF	-6641401	-7205637	-7339681	-7204071	-6947768
Lender 7	NCF	-4023101	-4969616	-5505549	-5804283	-6017655
Lender 8	NCF	-4025497	-5015058	-5606785	-5960265	-6237799
Lender 1	NR	-767715	-249797	156134	398948	544465
Lender 2	NR	-670906	-56723	378022	705395	845213
Lender 3	NR	-847973	-333651	68167	325062	494523
Lender 4	NR	-781119	-254987	163325	436192	625344
Lender 5	NR	-691637	-105573	312728	569614	733848
Lender 6	NR	-866643	-398591	54	251222	420425
Lender 7	NR	-641303	-188049	142682	338536	469131
Lender 8	NR	-727357	-230707	156987	375442	487897
Lender 1	ROFE	-0.33	0.49	0.42	0.32	0.26
Lender 2	ROFE	-0.34	0.60	0.45	0.34	0.26
Lender 3	ROFE	-0.26	0.79	0.51	0.35	0.27
Lender 4	ROFE	-0.39	0.63	0.45	0.35	0.27
Lender 5	ROFE	-0.35	0.60	0.45	0.33	0.26
Lender 6	ROFE	0.53	0.96	0.50	0.35	0.27
Lender 7	ROFE	-0.31	0.60	0.45	0.33	0.27
Lender 8	ROFE	-0.36	0.68	0.47	0.36	0.28

Table A.29. Sensitivity on the net cash flow results of a 5,000 head earthen feedlot financed by Lender 1 after one year of operation

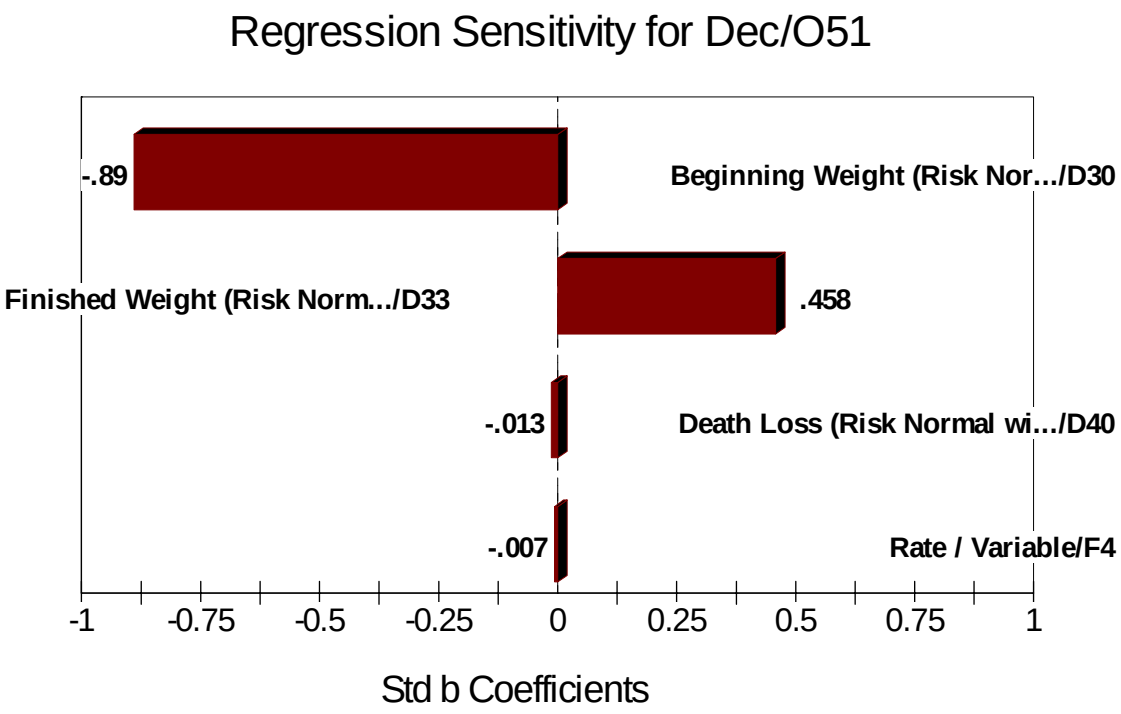

Table A.30. Sensitivity on the net cash flow results of a 5,000 head earthen feedlot financed by Lender 1 after five years of operation

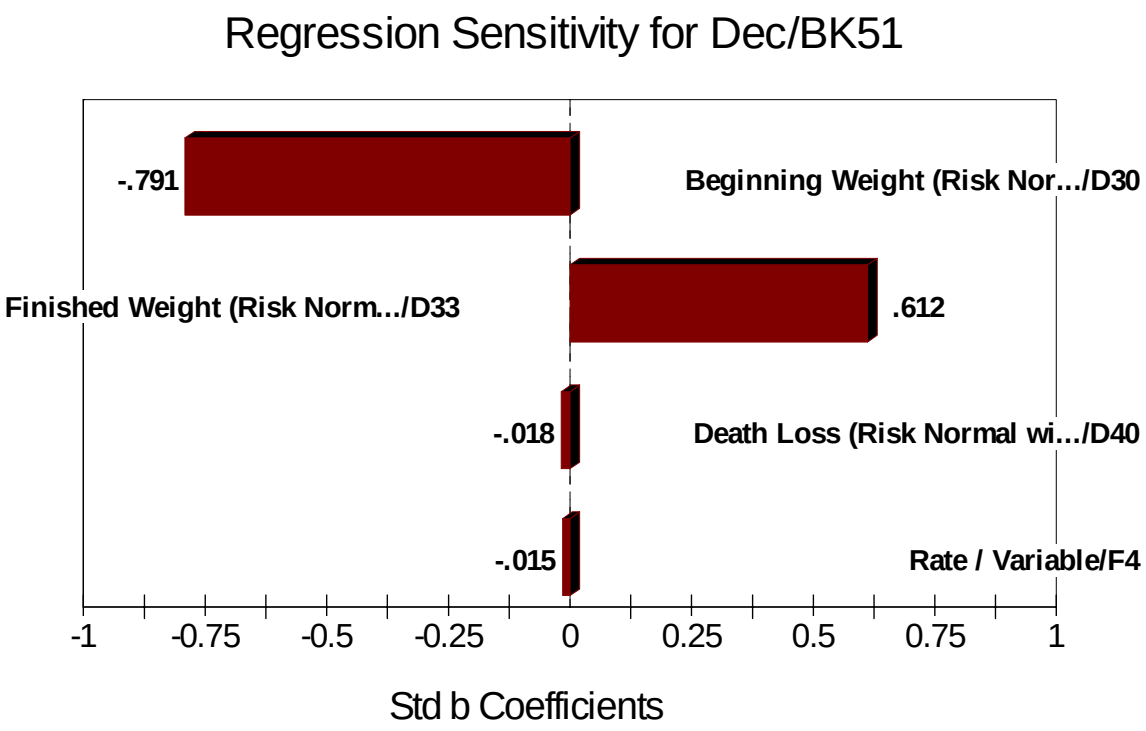

Table A.31. Sensitivity on the net return results of a 5,000 head earthen feedlot financed by Lender 1 after one year of operation

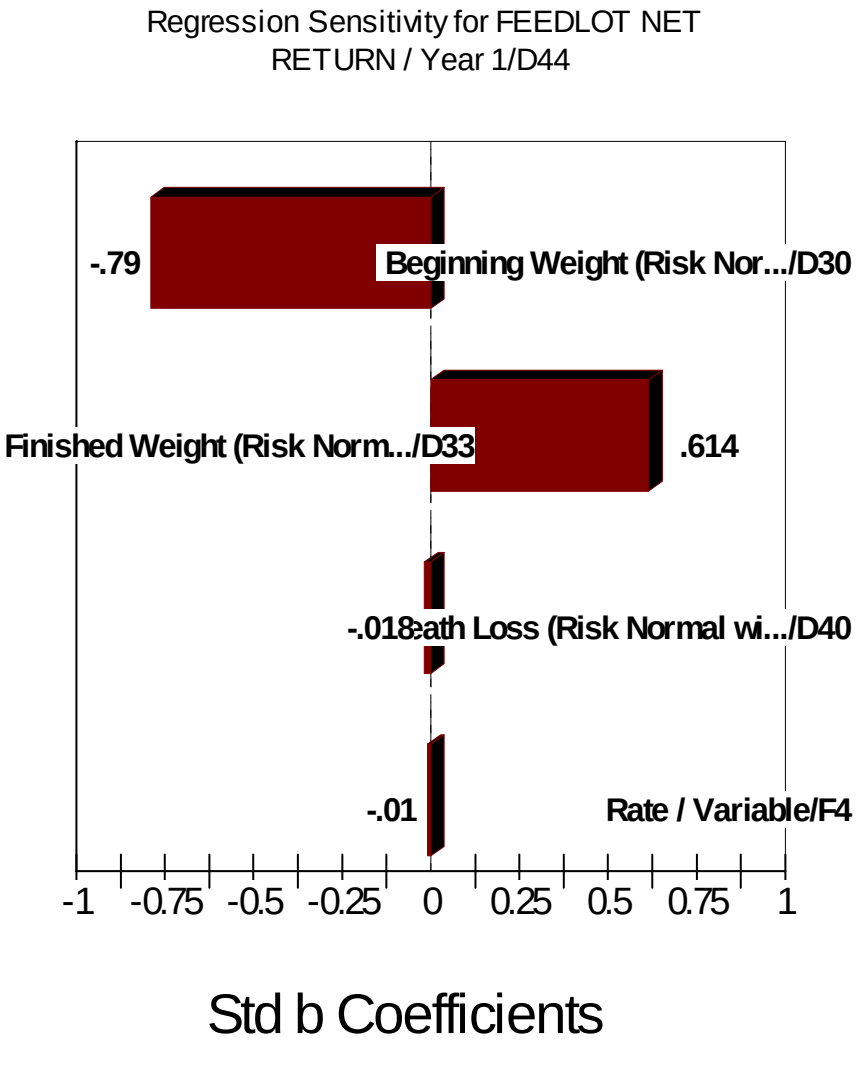

Table A.32. Sensitivity on the net return results of a 5,000 head earthen feedlot financed by Lender 1 after five years of operation