Production and Marketing Strategies for Oregon High Desert Rangeland Cattle Producers 1968 - 1978

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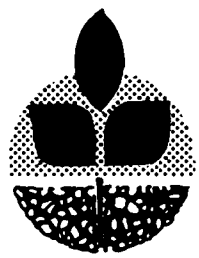

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ABSTRACT

The profitability of three production systems and alternative marketing strategies available to the high desert rangeland cattle producer in Oregon over the 1968 to 1978 cattle cycle, is examined in the study. A simulation model is used to examine the following production and marketing alternatives:

a) A cow-calf operation which always sells its calves at weaning;

b) A cow-yearling operation which always sells yearlings, rather than calves at weaning;

c) A cow-long yearling operation which always sells long yearlings; and

d) Two additional simulations which allow the beef operation to change production systems over time, given alternative assumptions about projected prices of inputs and animals.

During the 11 years, the long yearling operation netted $173,354 over the cow-calf system, and $119,304 over the yearling system. When the production systems were allowed to change, and when future prices were known with certainty, the producer was better off with a combination of systems. But, when today's price is used as the best prediction of future prices, the producer was better off producing long yearlings during the 1968-1978 period.

This report has the advantage of 20-20 hindsight. But, it does point out that substantial financial gains may be obtained by examining and employing alternative production and marketing strategies over the cattle cycle.

PRODUCTION AND MARKETING STRATEGIES FOR OREGON HIGH DESERT RANGELAND CATTLE PRODUCERS, 1968 - 1978

Carol Whitley and Carl O'Connor

I. INTRODUCTION

Cattle numbers and prices have occurred in definite cycles over time. The last cattle cycle extended 11 years, from 1968 through 1978. Two cycles frequently measured are the price of steer calves and the total number of cattle on farms. Figure 1 illustrates these two measures over the last cycle.

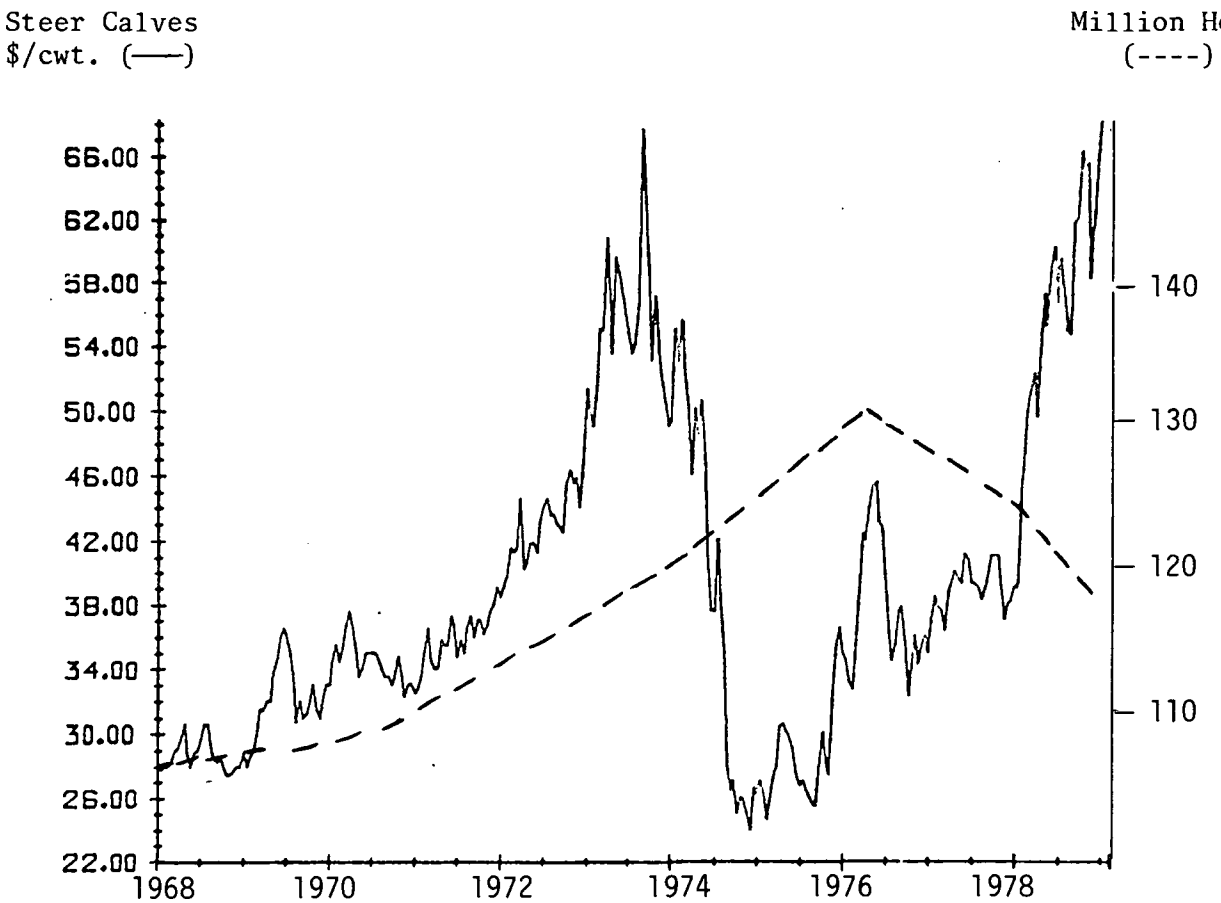

Figure 1. Price of Steer Calves (Portland, Oregon), and the number of cattle on farms (U.S.), 1968 - 1978.

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Price cycles tend to be the inverse of number cycles. Their turning points do not occur at the same time because of production lags and producer's price expectations. When cattle numbers are relatively low and prices rising, producers increase their cow herd by not selling heifers. This causes the inventory cycle to start increasing. The number slaughtered remains relatively stable or may even decrease by the number of heifers retained, and prices tend to rise. At this point, the inventory and price cycles are both rising. As the cattle inventory cycle stops its growth, slaughter numbers increase, and prices tend to decline. A lag of two years may occur between the inventory cycle and price cycle movements.

Pacific Northwest cattle producers have experienced a pattern of highly volatile revenues and expenses over the last cycle. To mitigate the economic effects of these volatile incomes, producers sought economic information concerning alternative beef production and marketing strategies which could reduce those cyclical vagaries.

This study examines the profitability of three production systems and alternative marketing strategies available to the high desert rangeland cattle producer in Oregon over the 1968 to 1978 cattle cycle. These production systems -- a cow-calf operation, a cow-yearling, and a cow-long yearling operation -- were simulated for a "typical" high desert ranch in the Burns area of Eastern Oregon.

A simulation model is used to examine the profitability of five beef production and marketing alternatives available to a high desert producer in Oregon:

a) A cow-calf operation which always sells its calves at weaning;

b) A cow-yearling operation which always sells yearlings, rather than calves at weaning;

c) A cow-long yearling operation which always sells long yearlings; and

d) Two additional simulations which allows the beef operation to change production systems over time, given alternative assumptions about projected prices of inputs and animals.

II. BEEF FORAGE SIMULATION MODEL

The simulation model utilizes detailed production data for all the relevant production alternatives and jobs on the ranch. Working in bi-weekly time periods, utilizing historical actual prices for inputs and outputs, the model evaluates each production alternative for periods of one to 10 years.

The user of the model communicates with it through an input form. It is possible to restrict the number of production alternatives or to alter many of the transformation coefficients or prices by making the appropriate insertions in the input form. Indexes related to specific managerial pro-

ficiencies can also be adjusted in several areas. A completed input form contains the following information:

1. Inventories of buildings, livestock, land, machines, products, and financial items with detail on type, capacity, amount, and age.

2. Permanent and seasonal labor supplies on a bi-weekly basis.

3. Prices for products and inputs.

4. Technical transformation rates, e.g., conception rates, rates of gain, crop yield, etc.

5. Production systems to be evaluated.

6. Consumption requirements.

7. Values for certain parameters to control operation of the model.

The output from the model is a set of tables that contain the following information:

1. Levels of production alternatives, e.g., number of cows, product sales volume, crop acreages, etc.

2. Inventories - capacity, type, and remaining value of assets and debts.

3. Financial situation - assets, debts, net worth, cash balance.

4. Resource flows - cash receipts and expenses, labor use, crop production and use, product sales, etc., by two-week periods.

The specific production alternatives for beef cattle used in this study are illustrated in Figure 2. 2/ These are:

1. Spring-born calves can be sold at weaning on August 27.

2. Spring-born calves can be maintained as yearlings until the following spring.

3. The following spring, yearlings can be sold at 600-750 pounds.

4. The following spring, yearlings can be pastured until fall and sold as 750-900 pound long yearlings.

2/ A complete description of these options, and a feedlot enterprise which is available in this model, may be found in A Technical Guide to a Beef-Forage-Grain Production Model for Eastern Oregon [29].

Five forage sources are available to the high desert producer:

1. Native 1 (unimprovable) - represents rough native pastures that are unimprovable because of topography, stones, soil type, etc., and can, therefore, be utilized only in their native state.

2. Native 2 (improvable) - includes pasture that is under native vegetative cover, but can be improved through clearing, breaking, reseeding, etc.

3. Improved (early season) - represents rangeland (Native 2) or cropland seeded to species particularly adapted to early-season use, such as crested wheatgrass.

4. Community pasture - represents pastures with an administered stocking rate and fixed per-head or animal-unit rental rate.

5. Stubble - includes cereal stubble available for grazing in the fall or winter, basically a salvage operation.

Five types of hay may be produced: native hay, cultivated perennial hay, cultivated perennial grass-legume hay, cereal hay, and straw. Eight harvesting methods may be used which combine the use of a swather, baler or loose hay stacker, and alternative hay-hauling equipment.

Budgeting of Production and Marketing Alternatives

Partial budgeting is used as a technique to guide the production and marketing decisions of a representative producer. Partial budgeting looks at the costs and returns that are expected to change under the proposed business change being evaluated. The partial budget has two classifications: debits and credits. Total credits equal the additional receipts received for products and services as a result of the change, plus reduced expenses which will no longer be incurred because of the change. Total debits equal the reduced receipts from products and services lost due to the change plus additional costs occurring because of the change. If total credits are greater than total debits, then the change should be made [2, p. 110].

This decision making tool was utilized to determine if and when production system changes should occur to increase profitability. When considering system changes, the producer must decide on August 27, the weaning date, whether to sell calves or continue to feed them to heavier weights. If the producer maintains possession of the animals, they must be sold the following April as yearlings, or the following August as long yearlings.

When partial budgeting these alternatives, two sets of costs and returns are used. One, the perfect knowledge set, assumes that all future costs and returns are known. Under perfect knowledge, the producer can make the optimal decision between calves, yearlings, and long yearlings at the time of weaning. While perfect knowledge is ideal, it does not exist in the real world. At the other extreme is the second set of costs and returns, the naive approach.

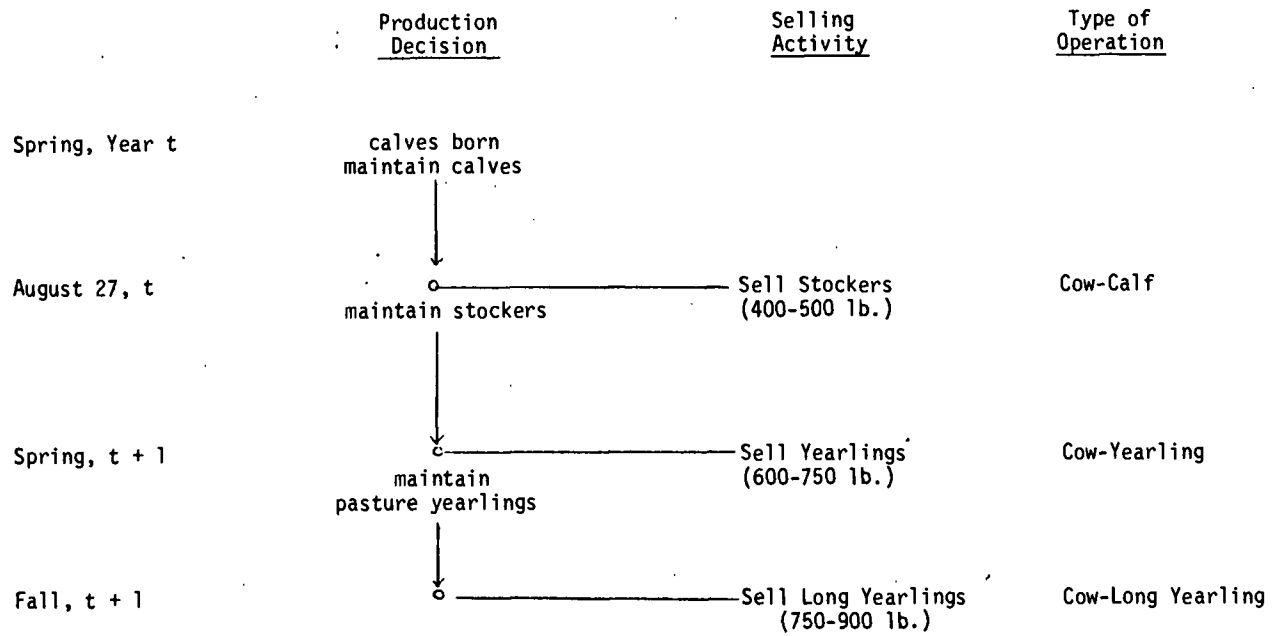

Figure 2. Production alternative decisions for beef cattle.

This assumes that current prices of inputs and outputs will prevail over the production period. As time progresses and new price information becomes available, this new information is used in decision making. Once animals have been sold, the decision is irreversible. For example, partial budgeting may be utilized twice, once at weaning and again in April, with April's prices used as a projection of prices in August to decide between the yearlings versus long yearlings alternative.

Partial budgeting, under the "perfect knowledge" or "naive" approach, only considers assumptions made concerning price projections. There was no difference in the producers knowledge of other variables, such as weather, feed conditions, etc., in the two simulations.

Measures of Financial Performance

Several accounting measures exist to evaluate financial performance. These measures can be used in any situation since the sources of land, labor, capital, or management have no effect on the measurement, and the contributions of the farmers, labor, and capital are all recognized. Three of these measures, used in this study, are as follows:

1. Net Farm Income -- the return to one operator for his labor, management, and equity investment. It is calculated as receipts minus expenses. Receipts include increases in inventory, profits on sale of capital items, all accrued income on sales of this year's products, and sales out of inventory. Expenses include decreases in inventory, losses on sale of capital items, all accrued operating expenses, property taxes, depreciation, value of unpaid labor except one operator, and interest on indebtedness.

2. Total Ending Equity -- calculated as total assets minus total debt on December 31.

3. Percent Return to Equity -- the return to one operator (minus family living allowances) for his labor, management and equity capital expressed as a percent of beginning equity.

Resources of the Model Firm

Personal interviews with Professor Robert J. Raleigh, superintendent of Eastern Oregon Agricultural Research Center, Squaw Butte at Burns, Oregon, and various records and publications maintained by the Squaw Butte Station, provided physical characteristics and production coefficients for the typical operation in that area. This geographical area is classified as a high desert region. Annual precipitation averages 11 inches, two-thirds of it occurring as snow, and one-third as rain. Native forage is sagebrush-bunchgrass; crested wheatgrass is the primary improved forage species.

The simulated firm's physical inventory includes 5,054 acres of owned rangeland. Forty percent is in Native 1 pasture, 53 percent in Native 2 pasture, and seven percent in improved (early season) pasture. Four hundred acres of

forage land produce 800 tons of grass-legume hay each year, which is used to winter cattle. Average pasture yields are 225 pounds of dry matter per acre for Native 1, 300 pounds for Native 2, and 715 pounds for improved (early season) pasture. Bureau of Land Management and Forest Service lands are leased in the spring and summer for grazing at $10.68 per animal unit per season, utilizing 1976 as a base price. The carrying capacity of the total resources equals 400 cows under a cow-calf system, and 300 cows under a yearling or long yearling system, with winter feed the limited factor.

The production coefficients of the operation are outlined as follows. Calving rates of 95 percent for mature cows, and 87 percent for the first-time heifers result in an average conception rate of 94.7 percent for the herd and an 85 percent calf crop. Calves from mature cows weigh 75 pounds at birth, calves from first-time heifers, 70 pounds. Male calves from mature cows from first-time heifers gain 1.5 pounds per day until weaning; females gain 1.38 pounds. Stocker steers gain 1.2 pounds per day; heifers 1.08 pounds. Yearling steers on pasture gain 1.5 pounds per day; females 1.275 pounds. The calving season starts March 6, and lasts 10 weeks. Cows are bred naturally with a 25:1 cow-bull ratio. Cows are pregnancy-tested in the fall, and if open, are culled.

The winter feeding season lasts from mid-November until mid-May. Cows are fed 90 percent hay and 10 percent grain during this time. For this same winter feeding period, stockers receive 70 percent hay and 30 percent grain. Before and after the winter feeding season, cows and stockers receive 80 percent pasture and 20 percent hay, during the summer, 100 percent pasture. The pasture yields utilized in the simulation model are calculated using an average yield obtained from prior studies completed by Squaw Butte Experiment Station personnel. An annual index of pasture yields adjusts the average yield for the individual year.

The land values used in the simulation are 1968 land prices. These are $15 per acre for Native 1 pasture, $20 per acre for Native 2 pasture, $30 per acre for improved (early season) pasture, and $500 per acre for hay land.

The simulated beef production operation is assumed to be managed by one producer with hired labor available by the hour when needed. It is assumed that the operator has a 30 percent debt on land and 40 percent debt on machinery, and no debt on cattle.

III. SIMULATION RESULTS

Given the resource base, optimal herd size differs between alternative production systems. Herd size is adjusted to maximize use of available hay and minimize use of purchased inputs. Although 400 cows is the optimal number under the cow-calf system, only 300 cows can be kept under a yearling or a long yearling system to utilize the forage available over the year. Additionally, it is assumed the producer has equal management skills relative to all systems.

By assuming a 30 percent debt on all land, a 40 percent debt on machinery, and no debt on livestock, the beginning equity differs among cow-calf, yearling, and long yearling systems. Beginning equity under a cow-calf system equals $325,828. Beginning equity of a yearling or a long yearling system equals $330,784. The difference can be attributed to the reduction of 100 cows and the addition of 211 calves.

Total net farm income is the sum of net farm income for each of the 11 years (1968-1978) It is a measure of the return to the producer for his labor, management, and equity capital. As shown in Table 1, total net farm income for the period was $218,292 for the cow-calf operation; $272,342 for the yearling operation, and $391,646 for the long yearling operation. The long yearling operation netted $173,354 over the cow-calf system, and $119,304 over the yearling system during the 11 years.

Ending equity in 1978 for the cow-calf system was $423,194, an increase of $97,366 over the 11 years. The yearling system's total equity increased $139,654 to $470,438. The long yearling system showed the greatest ended equity, $548,258, and the greatest increase, $217,474. Total equity by year is summarized in Table 2.

Table 3 summarizes the percent return on equity for each year. The average return for the long yearling was the highest of the three systems, 5.45 percent, and had the least variability, ranging from a high of 10.66 percent to a low of .11 percent. The cow-calf system, the lowest, averaged 3.48 percent, and ranged from 11.69 to -3.28 percent.

Production Systems Under Perfect Knowledge

The operation in 1967 was assumed to be a 400 cow, cow-calf system with a total equity of $325,828, at the end of the year. Partial budgeting was used to determine if the operation should change systems over time. Perfect knowledge, the ideal condition, assumes complete foresight as to costs and returns during the next production period. Each year, at weaning on August 27, the partial budget can be utilized to determine if calves should be sold or maintained over the winter to sell as yearlings or long yearlings the next year.

Once the decision to switch to yearlings or long yearlings was made, the herd was reduced by 100 cows, because of the forage resource limitations of the ranch. Additional income from liquidation of the cows will occur the year of the change. If the producer decides to switch back to the cow-calf production system, the herd may be held at 300 animals, or increased to 400 by retaining extra replacement heifers. This rebuilding phase takes three years between the decision to increase herd size and the increased calf production, because of the biological nature of the cow. The extra replacements do not have their calves until they are three years old. Receipts are reduced by the value of each extra replacement heifer kept the year the decision is made.

When the producer budgets 1968, he considers two changes: cow-calf to yearling and cow-calf to long yearling. These decisions are made at weaning,

Table 1. Net farm income for alternative production systems, 1968 through 1978

Production System	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total
	DOLLARS											
Cow-Calf (400 cows)	7,383	12,333	15,116	21,038	29,564	60,097	22,354	-8,003	23,954	8,251	26,155	218,292
Yearlings (300 cows)	7,548	19,153	15,493	24,316	36,990	50,170	11,635	3,121	25,526	15,714	62,676	272,342
Long Yearlings (300 cows)	12,511	26,486	22,792	36,519	50,770	75,330	6,427	14,689	32,818	27,534	85,770	391,646

Table 2. Total equity for alternative production systems, end of year 1968 through 1978.

Production System	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Ending
	DOLLARS											
Cow-Calf (400 cows)	328,081	330,284	335,270	346,158	363,846	406,347	418,571	400,438	414,262	412,383	423,194	423,194
Yearlings (300 cows)	333,202	342,225	347,170	361,217	385,686	418,822	419,002	411,992	427,338	432,921	470,438	470,438
Long Yearlings (300 cows)	338,110	352,556	362,382	384,231	416,763	460,175	455,667	460,226	479,825	493,621	548,258	548,258

Table 3. Percent return on equity for alternative production systems, 1968 through 1978.

Production System	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Ave.
	PERCENT											
Cow-Calf (400 cows)	.69	2.18	2.98	4.59	6.24	11.69	4.12	-3.28	4.54	.76	3.75	3.48
Yearlings (300 cows)	.73	4.10	2.86	5.27	7.64	9.11	1.24	- .49	4.76	2.44	11.62	4.48
Long Yearlings (300 cows)	2.17	5.52	4.09	6.99	9.01	10.52	.11	2.08	5.13	3.81	10.66	5.46

August 27, 1968. When partial budgeting the first alternative, cow-calf to yearling, extra receipts include liquidation of 76 cows, three bulls, 15 replacement heifers, and 15 bred heifers in 1969. Reduced receipts include those foregone by not selling the calves on August 27 and for the 14 fewer cull cows in 1969. Extra expenses include the cost of raising the yearlings, interest on the increased investment in calves minus decreased investment in the herd and interest on the cash foregone by holding animals 34 weeks longer, until sale. The second decision, cow-calf versus long yearlings, is budgeted in a similar manner with long yearling receipts and expenses taking the place of yearlings. Interest on cash foregone is taken for 50 weeks instead of 34. Extra receipts are added to reduced expenses to form total credits because of the change. Total debits are the sum of reduced receipts and extra expenses. If total credits are greater than total debits, then the change in net income from the change is positive and the change should be made.

In 1968, total credits from changing to yearlings were $77,547, and total debits were $56,893. The net result was a positive $20,654. Total credits for changing to long yearlings were $90,770, and total debits were $59,977. The net result on income was a positive $30,793. A change to either a yearling or a long yearling operation increased net farm income in 1968, but long yearlings increased it by $10,139 more. Therefore, the operation changed to long yearlings in 1968.

On August 27, 1969, the 1968 calves were sold as long yearlings and the decision concerning the 1969 calves was made through partial budgeting. Now a long yearling versus a cow-calf operation and a long yearling versus a yearling operation are examined. The switch to cow-calf resulted in reduced income of $7,558, and switching to yearlings reduced income by $6,455. Since both results were negative, the producer maintained a long yearling operation. In 1970-1972, long yearlings remained the most profitable; $8,591 in 1970, $15,631 in 1971, and $27,747 in 1972 would have been lost by switching to cow-calf, and $7,956 in 1970, $11,604 in 1971, and $23,465 in 1972 by switching to yearlings.

Partial budget results in 1973 show an increase in income of $26,975 by changing to cow-calf (keeping the herd at 300) and $7,873 by changing to yearlings. The operation sells calves in 1973. The partial budgets in 1974 show decreased income of $14,270, or $6,957 by changing to yearlings or long yearlings respectively, and the 1974 operation stays in cow-calf.

In 1975, a long yearling operation showed increased income of $2,533. A change to yearlings decreased it by $2,529. The operation switches back to long yearlings, holding 1975 calves over. In 1976, partial budgeting showed increased income of $4,879 by switching to cow-calf, and decreased income of $9,959 by switching to yearlings. In 1977, partial budgeting showed increased income of $1,007 by switching to yearlings, and $10,097 by switching back to long yearlings.

All partial budgeting results are summarized in Figure 3. The optimal operation under perfect knowledge as determined by partial budgeting is long yearlings in 1968-1972, cow-calf in 1973 and 1974, long yearlings in 1975, cow-calf in 1976, and long yearlings in 1977-1978.

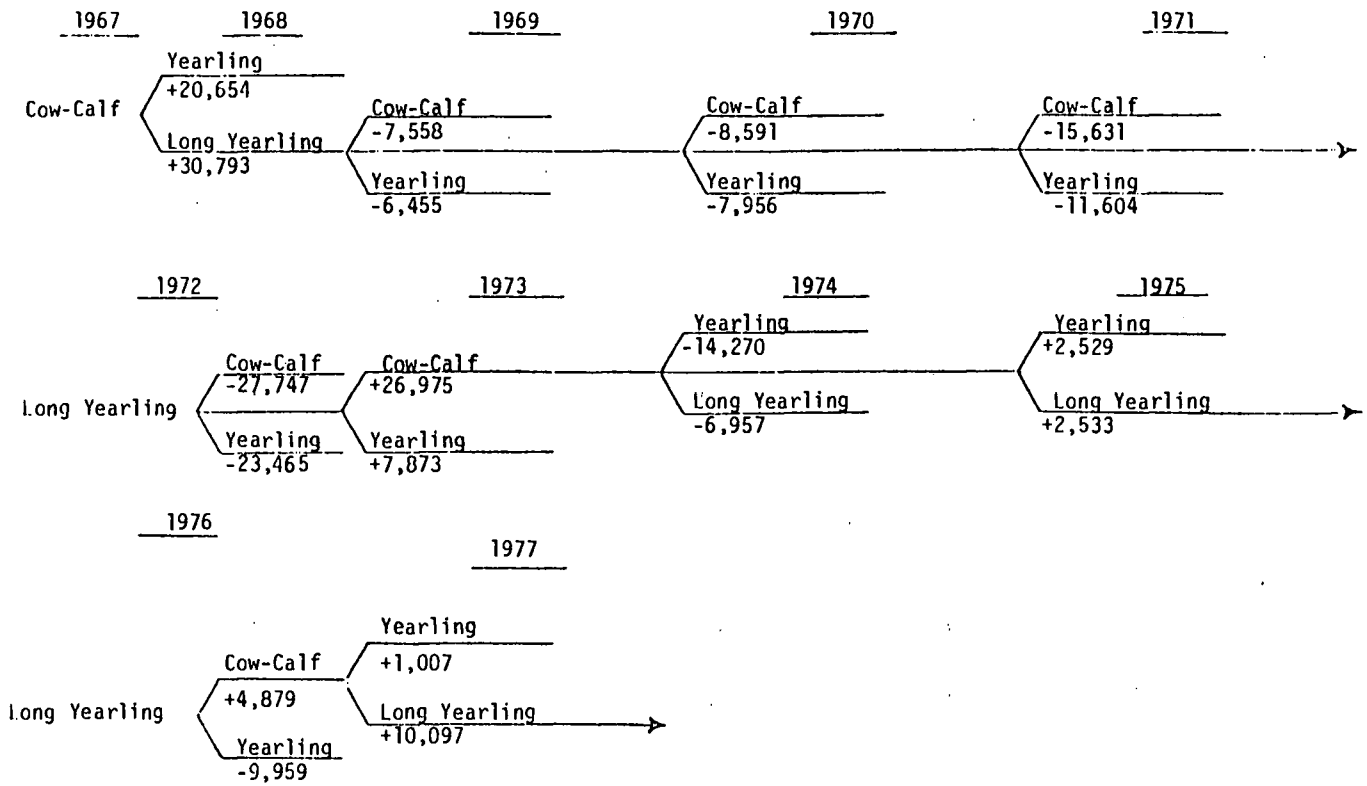

Figure 3. Schematic of partial budgeting decisions made at weaning under perfect knowledge.

Table 4 summarizes net farm income, total equity, and percent return on equity for this selection of production alternatives. Total net farm income was $433,868, ending equity, $567,282, and average return on equity is 5.58 percent. Total net farm income increased $42,222 over the straight long yearling operation, $161,526 over the straight yearling operation, and $215,576 over the straight cow-calf operation. Total ending equity is $19,024 greater than the straight long yearlings, $96,844 greater than the straight yearlings, and $144,088 greater than the straight cow-calves. Average percent return on equity is .12 percent greater than straight long yearlings, 1.10 percent greater than straight yearlings, and 2.10 percent greater than the straight cow-calf system.

Production Systems - The Naive Approach

The same partial budgeting technique was used to determine system changes using the naive approach. The only difference is that August 27 prices are assumed to prevail during the production period. All decisions involving cow-calf must be made on August 27 (weaning). But, price may be updated the following April, when yearlings are sold, if the decision involves yearling versus long yearling. Decisions of these types may be updated using any new information.

The same assumptions were made about the resource base in the naive approach as under perfect knowledge. In 1967, the operation was a 400 cow-calf system with ending equity of $325,828. In partial budgeting for 1968, extra receipts are received for herd liquidation. Partial budget results show an increase in income of $18,707 if yearlings are produced, and $26,293 if long yearlings are produced rather than calves.

In 1969 through 1973, the operation stays in long yearlings. Partial budgeting showed a decrease in income of $4,642 in 1969, $4,573 in 1970, $5,839 in 1971, $8,264 in 1972, and $1,328 in 1973, if the change to cow-calf were made. A reduction in income of $6,291 in 1969, $7,001 in 1970, $6,889 in 1971, $12,362 in 1972 and $5,027 in 1973 occurs if a change to yearlings were made.

In April 1974, prices were still holding, and selling yearlings shows profits decreased by $21,639 compared to holding the animals until August. By August 1974, prices had fallen and partial budgeting showed increased income of $12,308 by changing to a cow-calf system. In August 1974, then, the 1973 calves were sold as long yearlings and the 1974 calves were sold at weaning.

Partial budgeting for 1975, 1976, and 1977 showed decreased income of $16,305, $11,294, and $20,312, respectively, by changing to yearlings. Decreases of $4,800, $7,681, and $15,458, respectively, were budgeted for a change to long yearlings in 1975, 1976, and 1977. Figure 4 summarizes all the partial budgeting results.

Table 5 summarizes net farm income, total equity, and percent return on equity for the production alternatives chosen. Total net farm income equals $360,416 for the 11 years. This is $73,452 less than under perfect knowledge, and $31,230 less than straight long yearlings, $88,074 more than straight yearlings, and $142,124 more than straight calves.

Table 4. Summary of accounting measures for cattle operation systems under perfect knowledge, 1968 through 1978.

Accounting Measure	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	End.	Ave.
Production System	Long Yearling	Long Yearling	Long Yearling	Long Yearling	Long Yearling	Cow-Calf	Cow-Calf	Long Yearling	Cow-Calf	Long Yearling	Long Yearling			
Net Farm Income (Dollars)	10,779	26,749	21,915	35,159	49,654	97,745	33,756	14,465	44,383	32,033	67,231	433,868		
Total Equity (Dollars)	331,523	342,197	351,532	372,486	404,333	470,533	475,996	480,349	499,794	527,152	576,282		567,282	
Percent Return on Equity (Percent)	1.73	4.70	4.08	6.97	9.11	9.33	6.01	1.94	4.49	5.10	7.96			5.58

Total ending equity is $537,068, an increase of $211,240 over the 11 years. The ending equity is $30,214 less than under perfect knowledge, $11,190 less than straight long yearlings, $66,630 greater than straight yearlings, and $113,874 greater than straight calves.

The average percent return on equity over the 11 years is 5.20, .38 percent lower than under perfect knowlege, .26 percent lower than the straight long yearlings, .72 percent greater than straight yearlings, and 1.72 percent greater than straight calves.

Model Results

When comparing the results of the three production systems and the optimal system combinations under perfect knowledge and naive knowledge, it is important to keep the producer's goals in mind. If his goal is simply to maximize income, then total net farm income is the appropriate measure. Of the three straight systems, the long yearling operation with total net farm income of $391,646 far surpassed the yearling operation's net farm income of $272,342, and the cow-calf operation's net farm income of $218,292.

With perfect knowledge, total net farm income of $433,868 could be realized by the optimal system combination. In actuality, the producer does not have perfect knowledge, but he does have all the information used in the naive approach. The total net farm income for the optimal system combination under naive knowledge was $360,416.

By comparing the total net farm income figures, it can be seen that the producer was better off by changing systems when future prices are known with certainty. When only naive knowledge is known, that is, today's price is the best prediction of future prices, the producer was better off producing long yearlings during the 1968-1978 period.

If the producer's goal includes increasing his net worth, in addition to maximizing income, then the appropriate measure to examine is total ending equity. During the 1968-1978 period, total ending equity for the optimal system combinations is highest when future prices are known with certainty: $567,282. It is $548,258 for straight long yearlings, $470,438 for straight yearlings, and $423,194 for the straight cow-calf operation under the assumption of perfect knowledge. It is $537,068 for the naive system. If maximizing net worth is the goal, then a straight long yearling operation was better when today's price was taken as the best prediction of future prices. If any additional information is known, then system changes will increase equity, as shown by the perfect knowledge results.

The average percent return on equity measures the return to owner's investment. If the producer's goal is to earn a "fair" return on his investment, then the average percent return on equity can be compared to the return he would receive from an alternative investment. The highest return on equity was 5.58 percent return under the perfect knowlege system. The naive system combination returned 5.20 percent; straight long yearlings, 5.45 percent, straight yearlings, 4.48 percent; and straight calves 3.48 percent.

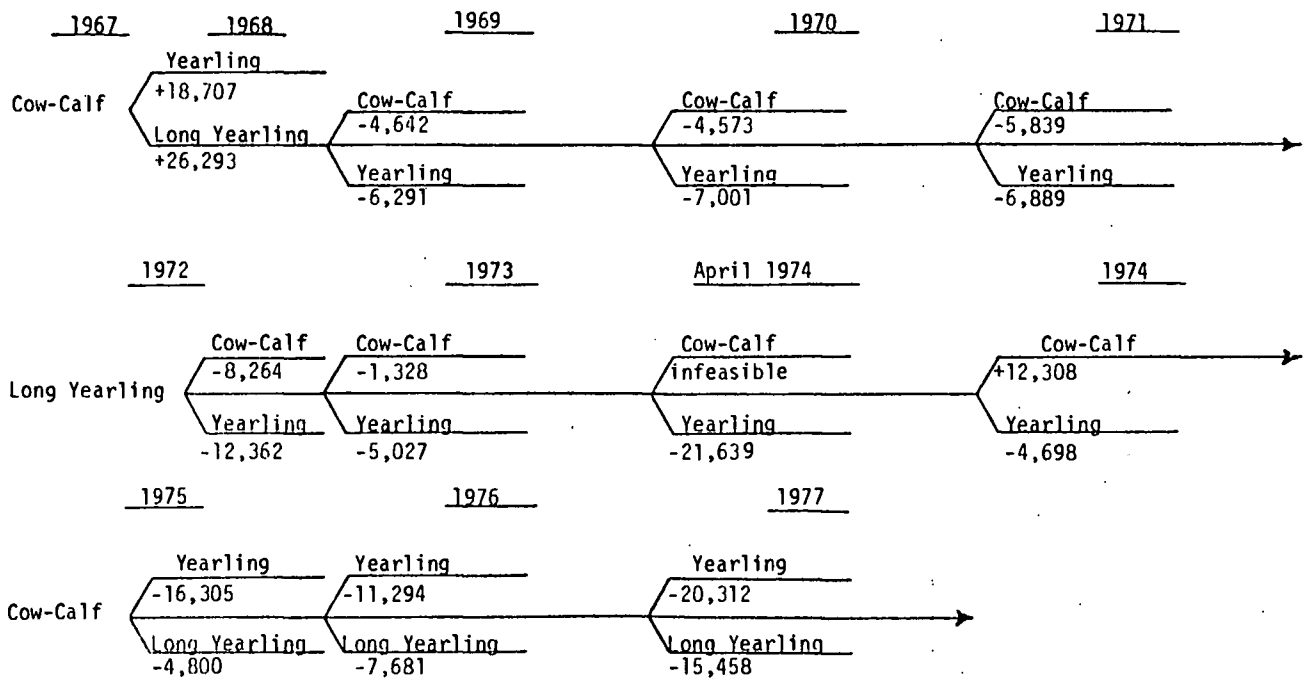

Figure 4. Schematic of partial budgeting decisions made at weaning, except as noted under the naive approach.

Table 5. Summary of accounting measures for cattle operation systems using the naive approach, 1968 through 1978

Accounting Measure	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	End.	Ave.
Production System	Long Yearling	Long Yearling	Long Yearling	Long Yearling	Long Yealing	Long Yearling	Cow-Calf	Cow-Calf	Cow-Calf	Cow-Calf	Cow-Calf			
Net Farm Income (Dollars)	10,779	26,748	21,915	35,159	49,654	73,154	28,409	12,760	39,258	31,354	31,226	360,416		
Total Equity (Dollars)	331,523	342,197	351,532	372,486	404,333	446,250	459,462	471,137	500,265	521,489	537,068		537,068	
Percent Return on Equity (Percent)	1.73	4.70	4.08	6.97	9.11	10.51	2.78	1.62	6.82	5.03	3.83			5.20

Implications

In 1968, cattle numbers were down and herd building was occurring. As heifers were held for herd expansion, fewer cattle went to slaughter and prices rose. Between 1968 and 1973, herd expansion occurred and prices rose. During this time, it paid to add weight on the ranch by being in long yearling production. Prices rose over the year the animals were held. Because of heavier animals and increased prices, profits were greater.

Herd growth had peaked by 1973, and slaughter numbers were up. Prices fell because of increased production. At this point, the producer should shift to calf production. Prices were expected to fall over the next production period so he'd receive a smaller price for added weight. When prices fell in 1973, herd liquidation quickly followed in 1974. Again, the producer should sell calves as prices were expected to fall more during the next year. In 1975, herd size was reduced once again, and rising prices reflected the reduced numbers slaughtered. The producer should now switch to long yearling production to take advantage of increased prices on greater weight. Over the cattle cycle, the producer depicted in this study should sell long yearlings during the building phase and calves during the liquidation phase. The cow-calf system should be utilized only during periods of falling prices.

Limitations

The results obtained in this study are meaningful only for a high desert eastern Oregon rangeland cattle producer. As the resource base, physical characteristics, and production coefficients differ in other geographical areas, the optimal system may vary. The optimal decisions and the economic conclusions reached from them are based on costs and returns during the 1968-1978 cycle and may differ in another cycle.

Furthermore, it was assumed that the producer had equal management ability for all production systems. We also assumed that our resource base was suitable during the year for all of the systems examined in this study. We realize that these assumptions may not be true for all managers or operators. Regardless of these limitations, substantial financial gain may be obtained by examining and employing alternative production and marketing strategies over the cattle cycle.

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