Utah Ranches—An Economic Snapshot

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A Continuing Problem

Traditionally, rates of return on ranch investments have been lower than rates on many other investment opportunities (Workman 1986). This applies to family-sized Utah cattle ranches (Workman 1981) and recent economic trends have made the situation worse. From 1979 to 1991 beef cattle prices increased by only 11% while the costs of ranch inputs went up by 59% (Table 1). Meanwhile, land appreciation that supplemented meager livestock profits (by providing opportunities to borrow against growing ranch equity) during the 1970's and early 1980's has been negative in recent years (Table 2). We used investments, costs, and returns for a representative family-sized ranch to assess the 1990 economic situation.

A Typical Utah Ranch

Data from 96 Utah cow-calf ranches with 100 to 300 brood cows (Evans 1992) were used to construct a profile of a 1990 typical ranch. A typical ranch ran 196 brood cows and replaced 14% of the cows annually. Replacement heifers were bred at 14 months of age to calve as 2-year olds. Eight bulls were used to breed the cows and yearling replacement heifers, a cow to bull ratio of 27:1. Calf crop (calves weaned divided by cows in the calving herd) was 77 percent. Thirty-six of the 150 calves weaned were retained for sale as yearlings. Death loss was 3.9 percent on mature cows and 2.3 percent on replacement heifers.

Private land holdings typically consist of 1,331 acres native foothill range, 30 acres desert range, 111 acres meadow grazing land, 545 acres foothill crested wheatgrass, 101 acres alfalfa hay, 15 acres grass hay, 31 acres barley, and 46 acres wheat. Grazing leases typically included 415 AUMs from the US Forest Service, 707 AUMs from the Bureau of Land Management, and 11 AUMs from the State of Utah.

The Current Situation

Just how bad is the current economic situation faced by Utah ranches? Table 3, a "modified" ranch income statement (Workman 1981) for a typical Utah ranch, helps answer this question. Costs and returns are reported in 1990 dollars, as are values of real estate (land, buildings, and improvements) and personal property (livestock and machinery).

Table 1. Beef cattle price index and prices paid index, 1964–1991[a].

Data Year	Beef Cattle Price Index (BCPI)[b]	Prices Paid Index (PPI)[c]
Indexes for Base Years		
1964–68	100	100
Indexes for 1964–1990		
1964	87	95
1965	94	97
1966	104	99
1967	105	103
1968	109	107
1969	123	113
1970	127	118
1971	134	124
1972	167	130
1973	195	140
1974	178	168
1975	160	198
1976	164	215
1977	163	230
1978	216	246
1979	294	275
1980	291	319
1981	268	359
1982	262	378
1983	256	387
1984	262	395
1985	243	397
1986	235	388
1987	272	381
1988	297	386
1989	306	402
1990	326	419
1991	327	436

[a]Source: Torell et al. (1989) and USDA, NASS (1989, 1990a, 1990b, 1991).
[b]The annual beef cattle price divided by the 1964–68 base price, $22.04/cwt., multiplied by 100.
[c]Index of prices paid by ranchers for beef production inputs as reported by USDA, NASS (1989, 1990a, 1990b, 1991).

Annual cash returns from livestock and crop sales totaled $71,334 (Table 3), which might appear to be a substantial return on $574,926 owned ranch capital ($452,000 real estate equity and $122,926 cattle and machinery equity) except that it represents a *gross* return before expenses are subtracted. Annual variable cash costs (costs that change with herd size and production level) were $54,791 for purchased feed, grazing fees, hired labor, gasoline, etc. The $16,543 that remained (net variable cash ranch income) is only about 3% of $574,926 ranch equity. We then subtracted the fixed costs (costs that do not change with herd size and production level) including $3,189 property taxes and $11,371 building and

Table 2. Index of changes in Utah real estate values for land, buildings, and improvements (base year 1977 = 100)[a].

Year	All Farm Real Estate
1960	28
1961	28
1962	29
1963	30
1964	30
1965	31
1966	33
1967	35
1968	37
1969	42
1970	47
1971	53
1972	60
1973	64
1974	75
1975	80
1976	90
1977	100
1978	106
1979	127
1980	169
1981	182
1982	189
1983	180
1984	181
1985	159
1986	141
1987	131
1988	122
1989	122
1990	116
1991	122

[a]Values derived from USDA/ERS (1985) and USDA/ERS (1991).

Table 3. Ranch income statement for a typical Utah ranch (196 brood cows), 1990.

Item		Dollars
Annual cash returns[a]		
Livestock[b]:	65,022	
Crops[c]:	6,312	
Total		71,334
Annual variable cash costs		−54,791
Net variable cash ranch income		16,543
Property taxes		− 3,189
Net cash ranch income		13,354
Depreciation		−11,371
Net ranch income		1,983
Loan service		
Real estate (30 year, 8%)	13,704	
Working capital (10 year, 10%)	16,725	
Total		−30,429
Net return available for family living expenses		−28,446
Land appreciation (1.15%/year, 1977–1990)		6,255
Payment to mortgage principal		
Real estate	5,879	
Working capital	9,433	
Total		15,312
Gross proceeds to ranch investment		−6,879
Value of operator and family labor		−15,000
Net proceeds to owned ranch capital		−21,879
Percent return on $574,926 owned ranch capital ($452,000 real estate equity + $122,926 working capital equity)		−3.81%

[a]Death loss removed.
[b]Prices from Cattle Fax Resources, Inc. (1988, 1989, 1990) weekly reports.
[c]Prices from Utah Department of Agriculture (1991).

machinery depreciation. The resulting net ranch income is only $1,983. We then subtracted loan service including a $13,704 principal and interest payment on the real estate loan and a $16,725 principal and interest payment on the working capital (livestock and machinery) loan to calculate the true net return, a *negative* $28,446.

Loan Service Calculations

The calculations of loan service, principal payment and real estate equity are shown in Table 4. Starting with the $543,952 real estate (land, buildings, and improvements) value for 1990 (Evans 1992), we calculated the real estate value at the time the typical ranch loan was initiated (1970) by multiplying $543,952 times the ratio of 1970 and 1990 real estate index values, 47/116 (Table 2). The resulting $220,394 represents the total real estate purchase price in 1970. Loan terms prevailing in 1970 were 30% down payment, 30 year life, and 8% interest, resulting in a typical ranch loan of $154,276 in 1970.

Next we calculated the loan service (principal and interest) payment by applying the present worth of one per period (PWOP) for 30 years at 8 percent, 11.258 (Workman, 1986, p. 128). Loan service represents an annual annuity, R, calculated for the typical loan as $\frac{154,276}{11.258} = \$13,704$.

We then partitioned the 1990 loan service payment into principal and interest. After the 1989 loan payment, the remaining loan balance was $97,833 (the present value at 8% of *11* more payments of $13,704 per year). Similarly, after the 1990 loan payment, the remaining loan balance was $91,954 (the present value at 8% of *10* more payments of $13,704 per year). The difference between the two years, $97,833 − $91,954 = $5,879, represented the *principal* portion of the 1990 payment. Subtracting this amount from the total loan payment resulted in a 1990 *interest* portion of $7,825.

Finally, real estate equity (the owned portion of land, buildings, and improvements) was calculated as the difference between 1990 real estate value ($543,952) and 1990 loan balance ($91,954) or $451,998.

How Do Ranchers Stay In Business?

Given the $28,446 *negative* net return for family living (Table 3), how do ranchers stay in business? Clearly, they could not if this negative return occurred every year. But in better economic times there have been modest *positive* returns (Workman 1981). And even if net return for family living was *temporarily* zero, the typical Utah ranch could survive. There are several perquisites ("perks") associated with owning and managing a ranch, including home-grown food (meat, milk, eggs), housing, and most important, the fact that some of the annual variable cash

Table 4. Calculation of loan service, principal payment, and real estate equity, typical Utah ranch, 1990.

Land, buildings, and improvements value (1990): $543,952
($3,775/brood cow)

1970 value: 1970 $\longleftarrow$ $::::::$ 47/116[a] $::::$ 1990
           $220,394 $543,952

1970 loan: (30% down, 30 years, 8%)

    $220,394
     * 0.70
    $154,276

Loan service payment: $R = PV/PWOP^b_{(30\ yr,\ 8\%)}$
                            = $154,276/11.258
                            = $13,704/year

Real estate mortgate principal:

Loan balance 1989 (year 19, 11 years remaining)

  $PV = R * PWOP_{(11\ yr,\ 8\%)}$
       = $13,704 * 7.139
       = $97,833

Loan balance 1990 (year 20, 10 years remaining)

  $PV = R * PWOP_{(10\ yr,\ 8\%)}$
       = $13,704 * 6.710
       = $91,954

Year 20 principal payment:
    $97,833 − $91,954 = $5,879

Year 20 interest payment:
    $13,704 − $5,879 = $7,825

Real estate equity in year 20 (1990):
    $543,952 1990 value
   −$91,954 1990 loan balance
    $451,998 1990 equity

[a]Index values from Table 2.
[b]PWOP = Present Worth of One per Period (Workman 1986, p. 128).

costs in Table 3 are family living expenses (home utilities, family auto expenses). Similarly, depreciation of the machinery and improvements is an accounting technique that converts future replacement expenses into more manageable annual costs. However, depreciation costs can be temporarily *postponed* (the ranch family can "live on depreciation") by delaying replacement of some items. Table 3 also fails to include any off-ranch job earnings by family members. Finally, when real estate values are increasing, as in 1961–1982 of Table 2, ranch owners may refinance the ranch ("borrow against equity") to raise needed cash.

Why Continue Ranching?

Faced with the *negative* net return for family living and the need to subsidize the ranch with off-ranch income, why would a rational investor *want* to own a cattle ranch? Table 3 helps answer this question. Land appreciation for 1990 ($6,255 in increased ranch equity) was based on the 1.15% average annual increase in Utah land value for 1977–1990 when land values first increased and then decreased (Table 2). Mortgage principal payments ($5,879 real estate mortgage and $9,433 working capital loan) also add to equity. These amounts are actually payments from the landowner to her/himself ($1 paid to principal reduces debt by $1 and thus adds $1 to owned ranch

capital). Together, land appreciation and principal payments reduce negative net return from −$28,446 to −$6,879. Finally, we subtracted the value of operator and family labor ($15,000) to obtain net proceeds to owned ranch capital (−$21,879). This amount is the net return due strictly to ranch ownership and may be expressed as a rate of return on owned ranch capital (−3.81%).

Back to our original question: Why would anyone *want* to own an asset that generates a net *loss?* Clearly they would not if this 3.81% loss was viewed as a *permanent* situation. But net return on owned ranch capital has sometimes reached a *positive* 8% (Workman 1981). Even if net return was only one-half of that rate (4%), it would be better than some alternative investments (e.g., certificates of deposit that currently earn 3%).

Summary

Rates of return earned in ranching have traditionally been lower than those offered by other investment opportunities. Lagging cattle prices, increased operating costs, and declining land values combined to make the 1990 economic picture for Utah ranches especially bleak. However, perquisites, temporary depreciation deferment, off-ranch income, land appreciation, and mortgage principal payments allow Utah ranches to survive during most years and to be viewed as economically rational investments during some.

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