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The 1992 Grazing Fee Review and Evaluation Report Update

Data and Methods

Kenneth H. Mathews, Jr.
Kenneth E. Nelson

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Abstract

This report summarizes the assumptions, indexing procedures, and data used by the Economic Research Service to update to 1990 figures 3.3, 5.3, 5.4, 5.6, 5.7, and 6.6 of the 1986 *Grazing Fee Review and Evaluation* as mandated by Congress in 1991. This report is a follow-up explanatory document to the 1992 updated report and assumes the reader is familiar with both the 1986 grazing fee report and the 1992 updated report.

Keywords: *1986 Grazing Fee Review and Evaluation*, indexing, Forest Service, Bureau of Land Management, animal-unit-month (AUM)

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The 1992 Grazing Fee Review and Evaluation Report Update

Data and Methods

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Background and Assumptions

This report summarizes the assumptions, indexing procedures, and data used by the Economic Research Service (ERS) to update to 1990 figures 3.3, 5.3, 5.4, 5.6, 5.7, 5.8, and 6.6 (see appendix tables 1-6) of the 1986 *Grazing Fee Review and Evaluation* as mandated by Congress in 1991.¹ This report is a follow-up explanatory document to the 1992 updated report and assumes the reader is familiar with both the 1986 grazing fee report and the 1992 updated report.

The original 1986 *Grazing Fee Review and Evaluation* was mandated in the 1978 Public Rangelands Improvement Act (PRIA). The 1986 report summarized a series of studies costing an unofficial estimate of \$3-\$4 million and requiring approximately 76 staff years over a 4-year period.

The conference report on the 1992 Interior and Related Agencies Appropriations Act directed an update of the 1986 *Grazing Fee Review and Evaluation* report by the Secretary of Agriculture and the Secretary of the Interior. The update, for which no funds were appropriated, was to be completed by April 30, 1992. This time frame gave the Bureau of Land Management (BLM), Forest Service (FS), National Agricultural Statistics Service (NASS), and ERS 6 months to complete the update.

Time and funding constraints did not allow a new survey from which to obtain new estimates of technical coefficients for the update. As a result, we assumed that technical production coefficients, for example, cattle sale weights, average animal-unit-months (AUM's), hay produced or purchased, and so on, were unchanged from 1982 to 1990.² We explicitly assumed, with only one important exception, that only prices changed from 1982 to 1990. The important exception to this assumption was the average debt/asset ratio used in figure 5.4 of the 1986 report. The Forest Service requested that the debt/asset ratio be updated to reflect a more current 10-percent debt/asset ratio. The debt/asset ratios actually used in figure 5.4 of the 1986 report were 13-14 percent, not 20 percent as mentioned in footnote 1 for figure 5.4 of the 1986 report.

¹Figure 6.2 of the updated report is figure 6.6 in the 1986 report.

²The Forest Service defines an AUM as "The amount of forage required by a 1,000-pound cow, or the equivalent, for 1 month." Forest Service AUM's are converted to animal months (AM's) for billing purposes because one Bureau of Land Management AUM is equivalent to one Forest Service AM for billing purposes. The conversion of Forest Service AUM's to Forest Service AM's is accomplished by dividing Forest Service AUM's by 1.2.

These assumptions imply that estimates of the various measures of net returns may not exactly reflect 1990 net returns. In fact, changes in observed beef cattle production technologies and sale weights suggest that the net returns may be underestimated in the update. This conservative result comes about for two reasons. First, higher average cattle sale weights for U.S. producers in 1990 than in 1982, combined with the higher observed prices, would mean higher gross revenues than those estimated in the update. Second, cost efficiency measures that producers could have incorporated since 1982 were not accounted for in the update, and these also would have worked to widen the gross revenue-cost spread. However, some activities may also have increased costs, so that no definite statement about possible cost changes from technological changes is possible.

Data and Data Sources

Most data for indexing and otherwise updating the 1986 report were obtained from published secondary sources. NASS publications were the primary source of indexes and price data used in indexing the 1982 numbers to 1990. ERS publications were the next most common data source. Some data came from the Forest Service and Bureau of Land Management, primarily internal unpublished data sources and personal communications. Item-by-item sources for index numbers are summarized in table 2. The 1990 debt/asset ratio came from an internal unpublished tabulation of the 1990 Farm Costs and Returns Survey.

The PRIA and Net Returns Indexes, Figure 3.3

A table of the Net Returns Index numbers graphed in figure 3.3 was in Brokken and McCarl's 1984 version of "A Theoretical Evaluation of Fees [Sic] Systems for Private Grazing on Federal Lands" (table 8, problem set 1A, p. 90). Their table 7 (p. 88) included data which were used along with their equation (3.3) (p. 80) to derive their problem set 1A column of table 8. Their equation (3.3) minus one term was apparently used to calculate the Net Returns Index numbers for figure 3.3 of the 1986 report. We used the following form of Brokken and McCarl's equation (3.3) minus one term for the Net Returns Index in the update of the 1986 grazing fee report:

$$R_t = P_{y_0} BI_t Y_0 - P_{h_0} PHI_t H_0 - P_{g_0} PGI_t G_0 - P_{x_0} X_0 PXI_t.$$

P_{y_0} is the 1964-base year beef price, BI_t is the beef price index, Y_0 is the base quantity of beef sales, P_{h_0} is the 1964-base year hay price, PHI_t is the hay price index, H_0 is the base hay quantity, P_{g_0} is the 1964-base year grain price, PGI_t is the grain price index, G_0 is the base grain quantity, $P_{x_0} X_0$ is other costs for the 1964-base year, and PXI_t is the PRIA Producer Price Index (divided by 95). The Net Returns Index for year t then becomes

$$NRI_t = (R_t/R_0)100.$$

We were unable to exactly duplicate either Brokken and McCarl's 1966-82 annual net returns or their index numbers. We attributed at least part of this slight discrepancy to subsequent revisions in the index numbers and prices since figure 3.3 was originally constructed. The Net Returns Index numbers graphed in the update's figure 3.3 consist of their original 1966-82 numbers plus our calculations of the 1983-90 index numbers.

Figures 5.3, 5.4, 5.7, and 5.8

Kerry Gee began in 1983 with 500 individual cattle and sheep budgets from National Forest and Bureau of Land Management resource areas, then aggregated these budgets into State budgets. There

were 427 individual cow/calf/yearling budgets from which 13-State cow/calf budgets were estimated. Likewise, for sheep, there were 73 budgets aggregated into 9-State sheep budgets.

Generally, we updated 1982 costs and returns by multiplying average 1982 State prices or expenses by the ratio of the 1990 index number (price) divided by the 1982 index number (price):

1990 steer calf price =

$$\frac{\text{1990 NASS steer/heifer calf price}}{\text{1982 NASS steer/heifer calf price}} \times \text{1982 steer calf price.}$$

For veterinary expenses, hauling, marketing, and repairs, the index numbers were weighted sums of two index or price ratios.³ For instance, the index number for veterinary expenses was 70 percent of the labor wage rate ratio plus 30 percent of the agricultural chemical index ratio. The problem of mixing wage rates with index numbers was avoided by adding the ratios rather than the numbers themselves.

Interest expenses on land and nonland capital included in all costs in figure 5.4 of the update were indexed to adjust for both (1) the changes in asset values and (2) the changes in interest rates. The changes in this case are multiplicative rather than additive. Interest expenses were asset values in dollars times the interest rate (decimal):

1990 interest expense =

$$\text{1982 asset value} \times \frac{\text{1990 asset index}}{\text{1982 asset index}} \times$$

$$\text{1982 interest rate} \times \frac{\text{1990 interest index}}{\text{1982 interest index}}$$

Rearranging this equation conveniently eliminates the need for knowing actual 1982 asset values:

1990 interest expense

$$= \text{1982 asset value} \times \text{1982 interest rate} \times$$

$$\frac{\text{1990 asset index}}{\text{1982 asset index}} \times \frac{\text{1990 interest index}}{\text{1982 interest index}}$$

$$= \text{1982 interest expense} \times$$

$$\frac{\text{1990 asset index}}{\text{1982 asset index}} \times \frac{\text{1990 interest index}}{\text{1982 interest index}}$$

³An index ratio can be either the ratio of two index numbers or the ratio of two dollar amounts. In the case of repairs, the overall index is the sum of 70 percent of the ratio of farm and motor supplies indexes, the 1990 number divided by the 1982 number, plus 30 percent of the ratio of wage rates, the 1990 wage rate divided by the 1982 wage rate: $0.7(154/152) + 0.3(5.01/4.50) = 1.04$ (table 3, numbers for Nevada). The 1.04 in this example was multiplied by the 1982 repair cost of \$6.83 in Nevada to get the 1990 repair costs of \$7.10. The actual budget number is \$7.13 (table 5). Calculations for several line items using data in this report may not be exactly the same as reported in the grazing fee report update. In the update, the costs for the average whole herd in a State were indexed, then divided by the average number of cows per herd for that State, so there is some difference due to rounding. On the other hand, in this support document, only summary per-cow State data are reported.

This mathematical rearrangement was useful because neither the original interest rates nor the values for the assets were known for updating land and nonland capital interest expenditures. Table 5.4 of the updated report contains incorrect dollar amounts. The correct amounts are in appendix table 2 of this report.

Figure 5.6

Gee also developed summary budgets for three different sizes of cattle operations, small (less than 100 cows), medium (100 to 499 cows), and large (500 or more cows). These summary budgets were updated by indexing each size budget with the proportional changes in 1982 and 1990 13-State averages for each line item (table 6).

Figure 6.6

Figure 6.6 was updated (and renumbered as figure 6.2) by using the proportional change from 1982 to 1990 in the 13-State average costs and returns for permittees (table 6). Nonpermittee costs and revenues were indexed using the proportional change from 1982 to 1990 in preliminary estimates of western costs of production published in the *Economic Indicators of the Farm Sector* series (summarized in table 7).⁴ These proportional changes in gross returns, cash costs, and capital replacement were applied to the 1982 figure 6.6 numbers to obtain updated 1990 numbers.

⁴The 1990 preliminary numbers were not released or published at the time the update was completed, so 1990 cost of production numbers used in the update may not match the 1990 estimates published in the *Economic Indicators* series.

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Table 1—Indexes and returns used in figure 3.3 of the 1992 update

Data year	Fee year	PRIA index ¹	BCPI index ²	PPI index ³	Net returns ⁴	Net returns index ⁵
1966	1967	100	100	100	6.66	100.00
1967	1968	105	107	103	6.73	101.05
1968	1969	110	115	107	7.57	113.66
1969	1970	115	123	113	9.63	144.59
1970	1971	127	134	118	10.32	154.95
1971	1972	121	134	124	10.31	154.80
1972	1973	151	167	130	13.04	195.80
1973	1974	180	195	140	15.66	235.14
1974	1975	169	178	168	1.29	19.37
1975	1976	120	160	198	-2.43	-36.49
1976	1977	124	164	215	-0.5	-7.51
1977	1978	126	163	230	1.04	15.62
1978	1979	165	216	246	15.37	230.78
1979	1980	225	294	275	26.9	403.90
1980	1981	188	291	319	15.64	234.83
1981	1982	151	268	359	13.19	192.58
1982	1983	113	262	378	10.14	148.01
1983	1984	111	256	387	7.00	102.15
1984	1985	110	262	395	8.08	117.97
1985	1986	76	243	397	7.47	109.01
1986	1987	69	235	388	9.70	141.64
1987	1988	125	272	381	18.61	271.80
1988	1989	151	297	386	19.72	288.00
1989	1990	147	306	402	20.12	293.80
1990	1991	160	326	419	23.60	344.62

¹The Public Rangelands Improvement Act index is the Forage Value Index plus BCPI minus the Producer Price Index.

²BCPI is the Beef Cattle Price Index, 100 times a weighted-average price of cattle sold during November-October divided by the 1964-68 average beef cattle price.

³The Producer Price Index is an index of selected components of the National Index of Prices Paid by Farmers with weights based on the 1976 Cost of Production budget for cow-calf operations in the western region.

⁴Original net returns numbers were used for 1966-82, then our calculated numbers were used for 1983-90.

⁵One hundred times the ratio of net returns for the data year divided by the net returns for 1966.

Table 2—Data sources of indexes and prices used to update State budgets for operations with public grazing used in figures 5.3, 5.4, 5.6, 5.7, 5.8, and 6.2

Sales:

Steer calves	<i>Agricultural Prices</i> , 1983, 1990 Summaries (p. 36, A-40)
Heifer calves	<i>Agricultural Prices</i> , 1983, 1990 Summaries (p. 36, A-40)
Yearling steers	<i>Agricultural Prices</i> , 1983, 1990 Summaries (p. 36, A-40)
Yearling heifers	<i>Agricultural Prices</i> , 1983, 1990 Summaries (p. 36, A-40)
Cull cows	<i>Agricultural Prices</i> , 1983, 1990 Summaries (p. 36, A-40)

Cash costs:

National Forest/Bureau of Land Management	Forest Service-Bureau of Land Management
Private pasture lease, other pasture lease, and State landlease	"Cash rents for farms, cropland, and pasture, 1960-1989" (p. 43, 1982 Private Grazing Land Lease Rates by State) and <i>Agricultural Prices</i> , 1990 Summary (p. B-60, PGLLR by State)
Irrigated pasture	<i>Agricultural Prices</i> , 1990 Summary (Farm services & cash rent, p. B-12)
Hay produced and hay purchased	<i>Agricultural Prices</i> , 1983, 1990 Summaries (p. 30, A-24)
Protein supplement	<i>Agricultural Prices</i> , 1982, 1990 Summaries (44% meal, p. 126, B-36)
Grain	<i>Agricultural Prices</i> , 1983, 1990 Summaries (Corn, prices received, p. 29, A-22)
Other feed	<i>Agricultural Prices</i> , 1983, 1990 Summaries (Corn, prices received, p. 29, A-22)
Salt and mineral	<i>Agricultural Prices</i> , 1983, 1990 Summaries (p. 128, B-36)
Veterinary and medicine	<i>Agricultural Prices 1990 Summary</i> (30% agricultural chemicals + 70% wage rate, p. B-8, 12)
Hired trucking	<i>Agricultural Prices 1990 Summary</i> (30% farm and motor supplies + 70% wage rate)
Marketing	<i>Agricultural Prices</i> , 1990 Summary (Production items of nonfarm origin, p. B-13)
Hired labor	<i>Farm Labor</i> , SP SY 8 (11-91) (Wage rates livestock, p. 16, personal communication with Tom Kurtz, 1982)
Fuel and lubricants	<i>Agricultural Prices</i> , 1990 Summary (Fuel and energy, p. B-9)
Repairs	<i>Agricultural Prices 1990 Summary</i> and <i>Farm Labor</i> SP SY 8 (11-91) (70% farm and motor supplies (<i>Agricultural Prices</i> p. B-9) + 30% wage rates (<i>Farm Labor</i> , p. 12))

Continued—

Table 2—Data sources of indexes and prices used to update State budgets for operations with public grazing used in figures 5.3, 5.4, 5.6, 5.7, 5.8, and 6.2—Continued

Cash costs:—Continued

General farm overhead	<i>Agricultural Prices, 1990 Summary</i> (Items used for production, p. B-6)
Taxes	<i>Agricultural Prices, 1990 Summary</i> (Taxes, p. B-12)
Insurance	<i>Agricultural Prices, 1990 Summary</i> (Items used for production, p. B-6)
Interest on operating capital	<i>Agricultural Prices, 1990 Summary</i> (Interest, p. B-12)

Other costs:

Family labor	<i>Farm Labor, SP SY 8 (11-91)</i> (Wage rates livestock, p. 16)
Capital replacement	<i>Agricultural Prices, 1990 Summary</i> (33% autos and trucks + 33% building and fencing materials + 16.5% tractors and self-propelled machines + 16.5% other machines, p. B-10 & B-11)
Interest on investment other than land	<i>Agricultural Outlook and Agricultural Income and Finance Situation and Outlook</i>
Interest on land	<i>Agricultural Outlook and Agricultural Income and Finance Situation and Outlook</i>

Component indexes:

Change in nonreal estate assets	<i>Agricultural Outlook</i> (12-91), p. 61)
Change in real estate assets	<i>Agricultural Outlook</i> (12-91), p. 61)
Change in average onfarm nonreal estate interest rates	<i>Agricultural Income and Finance Situation and Outlook</i> (2-92) p. 45)
Change in average onfarm real estate interest rates	<i>Agricultural Income and Finance Situation and Outlook</i> (2-92) p. 46)

Table 3—Price and index data used to update State budgets for operations with public grazing used in figures 5.3, 5.4, 5.6, 5.7, 5.8, and 6.2¹

Item	Arizona		California		Colorado	
	1982	1990	1982	1990	1982	1990
Sales:						
Steer calves	61.70	91.90	55.70	89.40	64.60	99.80
Heifer calves	61.70	91.90	55.70	89.40	64.60	99.80
Yearling steers	63.60	76.50	61.10	76.40	63.50	80.00
Yearling heifers	63.60	76.50	61.10	76.40	63.50	80.00
Cull cows	37.60	51.30	39.70	50.60	38.50	53.10
Cash costs:						
National Forest	1.86	1.81	1.86	1.81	1.86	1.81
Bureau of Land Management	1.86	1.81	1.86	1.81	1.86	1.81
Private pasture lease	9.29	7.79	9.23	9.81	9.04	10.20
Other pasture lease	9.29	7.79	9.23	9.81	9.04	10.20
State land lease	9.29	7.79	9.23	9.81	9.04	10.20
Irrigated pasture	169.00	166.00	169.00	166.00	169.00	166.00
Hay produced	73.50	96.50	86.50	109.00	66.00	79.50
Hay purchased	73.50	96.50	86.50	109.00	66.00	79.50
Protein supplement	20.33	17.13	19.38	18.50	14.21	17.13
Grain	3.24	3.15	3.42	3.05	2.78	2.35
Other feed	3.24	3.15	3.42	3.05	2.78	2.35
Salt and mineral	4.90	3.08	6.71	3.48	4.59	3.08
Veterinary and medicine ²		1.22		1.22		1.22
Hired trucking ²		1.17		1.17		1.17
Marketing	166.00	175.00	166.00	175.00	166.00	175.00
Hired labor	4.04	5.01	4.72	6.56	4.50	5.01
Fuel and lubricants	210.00	204.00	210.00	204.00	210.00	204.00
Repairs ²		1.08		1.13		1.04
General farm overhead	153.00	171.00	153.00	171.00	153.00	171.00
Taxes	124.00	157.00	124.00	157.00	124.00	157.00
Insurance	153.00	171.00	153.00	171.00	153.00	171.00
Interest on operating capital	242.00	174.00	242.00	174.00	242.00	174.00
Other costs:						
Family labor	4.04	5.01	4.72	6.56	4.50	5.01
Capital replacement	150.65	192.39	150.65	192.39	150.65	192.39
Interest on investment other than land ²		0.94		0.94		0.94
Interest on land ²		0.81		0.81		0.81
Component indexes:						
Farm motor supplies	152.00	154.00	152.00	154.00	152.00	154.00
Agricultural chemical index	119.00	139.00	119.00	139.00	119.00	139.00
Assets—						
Nonreal estate	195.60	220.90	195.60	220.90	195.60	220.90
Real estate	750.00	614.40	750.00	614.40	750.00	614.40
Interest rates—						
Nonreal estate	12.61	10.48	12.61	10.48	12.61	10.48
Real estate	9.58	9.52	9.58	9.52	9.58	9.52

See notes at end of table.

Continued—

Table 3—Price and index data used to update State budgets for operations with public grazing used in figures 5.3, 5.4, 5.6, 5.7, 5.8, and 6.2¹—Continued

Item	Idaho		Montana		Nebraska	
	1982	1990	1982	1990	1982	1990
Sales:						
Steer calves	58.90	93.10	60.30	95.30	63.50	100.00
Heifer calves	58.90	93.10	60.30	95.30	63.50	100.00
Yearling steers	60.00	73.70	58.80	83.30	62.90	80.00
Yearling heifers	60.00	73.70	58.80	83.30	62.90	80.00
Cull cows	38.80	49.10	37.40	51.00	38.70	52.00
Cash costs:						
National Forest	1.86	1.81	1.86	1.81	1.86	1.81
Bureau of Land Management	1.86	1.81	1.86	1.81	1.86	1.81
Private pasture lease	7.98	8.42	8.90	9.61	13.80	15.78
Other pasture lease	7.98	8.42	8.90	9.61	13.80	15.78
State land lease	7.98	8.42	8.90	9.61	13.80	15.78
Irrigated pasture	169.00	166.00	169.00	166.00	169.00	166.00
Hay produced	69.50	84.00	50.00	65.50	46.00	58.00
Hay purchased	69.50	84.00	50.00	65.50	46.00	58.00
Protein supplement	17.17	17.13	14.71	17.13	12.50	11.68
Grain	2.75	2.70	2.36	2.50	2.85	2.30
Other feed	2.75	2.70	2.36	2.50	2.85	2.30
Salt and mineral	4.33	3.08	4.27	3.08	3.85	2.55
Veterinary and medicine ²		1.22		1.22		1.22
Hired trucking ²		1.17		1.17		
Marketing	166.00	175.00	166.00	175.00	166.00	175.00
Hired labor	3.52	4.59	3.52	4.59	3.85	5.19
Fuel and lubricants	210.00	204.00	210.00	204.00	210.00	204.00
Repairs ²		1.10		1.10		1.11
General farm overhead	153.00	171.00	153.00	171.00	153.00	171.00
Taxes	124.00	157.00	124.00	157.00	124.00	157.00
Insurance	153.00	171.00	153.00	171.00	153.00	171.00
Interest on operating capital	242.00	174.00	242.00	174.00	242.00	174.00
Other costs:						
Family labor	3.52	4.59	3.52	4.59	3.85	5.19
Capital replacement	150.65	192.39	150.65	192.39	150.65	192.39
Interest on investment other than land ²		0.94		0.94		0.94
Interest on land ²		0.81		0.81		0.81
Component indexes:						
Farm motor supplies	152.00	154.00	152.00	154.00	152.00	154.00
Agricultural chemical index	119.00	139.00	119.00	139.00	119.00	139.00
Assets—						
Nonreal estate	195.60	220.90	195.60	220.90	195.60	220.90
Real estate	750.00	614.40	750.00	614.40	750.00	614.40
Interest rates—						
Nonreal estate	12.61	10.48	12.61	10.48	12.61	10.48
Real estate	9.58	9.52	9.58	9.52	9.58	9.52

See notes at end of table.

Continued—

Table 3—Price and index data used to update State budgets for operations with public grazing used in figures 5.3, 5.4, 5.6, 5.7, 5.8, and 6.2¹—Continued

Item	Nevada		New Mexico		Oregon	
	1982	1990	1982	1990	1982	1990
Sales:						
Steer calves	59.60	90.40	62.60	96.80	56.10	88.80
Heifer calves	59.60	90.40	62.60	96.80	56.10	88.80
Yearling steers	56.00	76.30	57.50	77.30	55.50	79.10
Yearling heifers	56.00	76.30	57.50	77.30	55.50	79.10
Cull cows	36.10	47.70	36.60	52.10	37.00	49.10
Cash costs:						
National Forest	1.86	1.81	1.86	1.81	1.86	1.81
Bureau of Land Management	1.86	1.81	1.86	1.81	1.86	1.81
Private pasture lease	9.29	7.79	6.26	6.66	7.70	8.28
Other pasture lease	9.29	7.79	6.26	6.66	7.70	8.28
State land lease	9.29	7.79	6.26	6.66	7.70	8.28
Irrigated pasture	169.00	166.00	169.00	166.00	169.00	166.00
Hay produced	86.50	100.00	75.00	111.00	75.00	91.50
Hay purchased	86.50	100.00	75.00	111.00	75.00	91.50
Protein supplement	16.00	17.13	16.79	17.13	17.21	18.50
Grain	3.10	2.80	2.91	2.65	3.00	2.75
Other feed	3.10	2.80	2.91	2.65	3.00	2.75
Salt and mineral	5.30	3.08	5.84	3.08	6.62	3.48
Veterinary and medicine ²		1.22		1.22		1.22
Hired trucking ²		1.17		1.17		1.17
Marketing	166.00	175.00	166.00	175.00	166.00	175.00
Hired labor	4.50	5.01	4.04	5.01	3.53	6.21
Fuel and lubricants	210.00	204.00	210.00	204.00	210.00	204.00
Repairs ²		1.04		1.08		1.24
General farm overhead	153.00	171.00	153.00	171.00	153.00	171.00
Taxes	124.00	157.00	124.00	157.00	124.00	157.00
Insurance	153.00	171.00	153.00	171.00	153.00	171.00
Interest on operating capital	242.00	174.00	242.00	174.00	242.00	174.00
Other costs:						
Family labor	4.50	5.01	4.04	5.01	3.53	6.21
Capital replacement	150.65	192.39	150.65	192.39	150.65	192.39
Interest on investment other than land ²		0.94		0.94		0.94
Interest on land ²		0.81		0.81		0.81
Component indexes:						
Farm motor supplies	152.00	154.00	152.00	154.00	152.00	154.00
Agricultural chemical index	119.00	139.00	119.00	139.00	119.00	139.00
Assets—						
Nonreal estate	195.60	220.90	195.60	220.90	195.60	220.90
Real estate	750.00	614.40	750.00	614.40	750.00	614.40
Interest rates—						
Nonreal estate	12.61	10.48	12.61	10.48	12.61	10.48
Real estate	9.58	9.52	9.58	9.52	9.58	9.52

See notes at end of table.

Continued—

Table 3—Price and index data used to update State budgets for operations with public grazing used in figures 5.3, 5.4, 5.6, 5.7, 5.8, and 6.2¹—Continued

Item	South Dakota		Utah		Washington	
	1982	1990	1982	1990	1982	1990
Sales:						
Steer calves	64.10	101.00	59.70	93.90	53.80	88.60
Heifer calves	64.10	101.00	59.70	93.90	53.80	88.60
Yearling steers	62.30	81.60	57.10	76.80	63.50	77.20
Yearling heifers	62.30	81.60	57.10	76.80	63.50	77.20
Cull cows	40.70	52.00	36.90	50.90	37.60	49.30
Cash costs:						
National Forest	1.86	1.81	1.86	1.81	1.86	1.81
Bureau of Land Management	1.86	1.81	1.86	1.81	1.86	1.81
Private pasture lease	11.09	12.53	11.09	12.53	6.67	7.82
Other pasture lease	11.09	12.53	11.09	12.53	6.67	7.82
State land lease	11.09	12.53	11.09	12.53	6.67	7.82
Irrigated pasture	169.00	166.00	169.00	166.00	169.00	166.00
Hay produced	38.50	62.50	66.00	81.50	77.00	90.50
Hay purchased	38.50	62.50	66.00	81.50	77.00	90.50
Protein supplement	12.63	11.68	16.00	17.13	20.54	18.50
Grain	2.50	2.05	3.10	2.80	3.00	2.75
Other feed	2.50	2.05	3.10	2.80	3.00	2.75
Salt and mineral	4.82	2.55	4.86	3.08	7.26	3.48
Veterinary and medicine ²		1.22		1.22		1.22
Hired trucking ²		1.17		1.17		1.17
Marketing	166.00	175.00	166.00	175.00	166.00	175.00
Hired labor	3.85	5.19	4.50	5.01	3.53	6.21
Fuel and lubricants	210.00	204.00	210.00	204.00	210.00	204.00
Repairs ²		1.11		1.04		1.24
General farm overhead	153.00	171.00	153.00	171.00	153.00	171.00
Taxes	124.00	157.00	124.00	157.00	124.00	157.00
Insurance	153.00	171.00	153.00	171.00	153.00	171.00
Interest on operating capital	242.00	174.00	242.00	174.00	242.00	174.00
Other costs:						
Family labor	3.85	5.19	4.50	5.01	3.53	6.21
Capital replacement	150.65	192.39	150.65	192.39	150.65	192.39
Interest on investment other than land ²		0.94		0.94		0.94
Interest on land ²		0.81		0.81		0.81
Component indexes:						
Farm motor supplies	152.00	154.00	152.00	154.00	152.00	154.00
Agricultural chemical index	119.00	139.00	119.00	139.00	119.00	139.00
Assets—						
Nonreal estate	195.60	220.90	195.60	220.90	195.60	220.90
Real estate	750.00	614.40	750.00	614.40	750.00	614.40
Interest rates—						
Nonreal estate	12.61	10.48	12.61	10.48	12.61	10.48
Real estate	9.58	9.52	9.58	9.52	9.58	9.52

See notes at end of table.

Continued—

Table 3—Price and index data used to update State budgets for operations with public grazing used in figures 5.3, 5.4, 5.6, 5.7, 5.8, and 6.2¹—Continued

Item	Wyoming	
	1982	1990
Sales:		
Steer calves	64.40	101.00
Heifer calves	64.40	101.00
Yearling steers	61.40	86.30
Yearling heifers	61.40	86.30
Cull cows	41.70	57.30
Cash costs:		
National Forest	1.86	1.81
Bureau of Land Management	1.86	1.81
Private pasture lease	8.46	9.64
Other pasture lease	8.46	9.64
State land lease	8.46	9.64
Irrigated pasture	169.00	166.00
Hay produced	56.00	75.50
Hay purchased	56.00	75.50
Protein supplement	14.71	17.13
Grain	2.61	2.40
Other feed	2.61	2.40
Salt and mineral	3.90	3.08
Veterinary and medicine ²		1.22
Hired trucking ²		1.17
Marketing	166.00	175.00
Hired labor	3.52	4.59
Fuel and lubricants	210.00	204.00
Repairs ²		1.10
General farm overhead	153.00	171.00
Taxes	124.00	157.00
Insurance	153.00	171.00
Interest on operating capital	242.00	174.00
Other costs:		
Family labor	3.52	4.59
Capital replacement	150.65	192.39
Interest on investment other than land ²		0.94
Interest on land ²		0.81
Component indexes:		
Farm motor supplies	152.00	154.00
Agricultural chemical index	119.00	139.00
Assets—		
Nonreal estate	195.60	220.90
Real estate	750.00	614.40
Interest rates—		
Nonreal estate	12.61	10.48
Real estate	9.58	9.52

NA = Not applicable. ¹See table 2 for sources. ²Ratio: composed of more than one index or price (see table 2).

Table 4—Receipts and costs per cow, by State, 1982

Item	Arizona	California	Colorado	Idaho	Montana
<i>Dollars per head</i>					
Sales:					
Steer calves	74.87	57.52	61.86	55.65	87.38
Heifer calves	34.96	22.11	32.29	22.99	38.68
Yearling steers	41.40	74.54	95.14	81.70	62.78
Yearling heifers	24.38	38.66	59.66	43.48	33.06
Cull cows	35.46	59.03	39.91	43.11	53.98
Total sales	211.07	251.86	288.85	246.93	275.88
Cash costs:					
National Forest	12.78	5.11	3.04	2.00	1.38
Bureau of Land Management	4.11	1.96	3.58	3.82	1.48
Private pasture lease	8.13	37.99	13.79	12.52	15.53
Other pasture lease	0	3.45	0	0	0
State land lease	0.92	0.07	0.38	2.09	4.12
Irrigated pasture	0	1.51	4.90	3.15	2.15
Hay produced	2.38	26.80	64.41	40.38	47.43
Hay purchased	2.25	10.63	17.32	25.00	15.07
Protein supplement	6.98	18.92	9.53	5.38	6.96
Grain	0	0	0.07	0	0.17
Other feed	0	0	0	0	0
Salt and mineral	1.75	3.49	1.66	1.58	1.51
Veterinary and medicine	3.60	5.22	5.86	8.38	6.13
Hired trucking	2.97	3.73	3.62	2.96	3.16
Marketing	2.99	2.29	2.64	3.06	2.79
Hired labor	36.02	25.02	31.66	30.49	27.56
Fuel and lubricants	9.64	6.37	8.30	11.58	8.57
Repairs	8.82	7.74	11.65	11.01	10.37
Total variable expenses	103.34	160.30	182.41	163.42	154.37
Fixed expenses:					
General farm overhead	8.85	8.09	7.61	13.22	18.31
Taxes	3.10	9.36	5.07	6.18	6.90
Insurance	4.42	4.38	4.96	4.65	5.00
Interest on operating capital	9.33	14.57	15.37	14.47	14.72
Total fixed expenses	25.69	36.41	33.02	38.53	44.93
Total cash expenses	129.03	196.71	215.42	201.95	199.30
Other costs:					
Family labor	16.10	18.50	24.25	25.68	20.05
Capital replacement	36.01	26.85	36.32	29.76	30.91
Interest on investment other than land	95.64	91.00	94.97	94.35	92.60
Interest on land	116.40	213.57	265.12	251.48	226.59
Total other costs	264.15	349.91	420.65	401.28	370.14
Total all costs	393.18	546.62	636.08	603.23	569.45
Return above cash costs	82.04	55.14	73.43	44.98	76.58
Number of head represented (thousands)	174	327	285	497	879

Continued—

Table 4—Receipts and costs per cow, by State, 1982—Continued

Item	Nebraska	Nevada	New Mexico	Oregon	South Dakota
<i>Dollars per head</i>					
Sales:					
Steer calves	70.26	55.97	84.09	48.64	104.40
Heifer calves	34.13	30.01	40.25	23.23	59.54
Yearling steers	104.23	67.71	48.71	89.52	20.01
Yearling heifers	57.66	35.85	22.62	43.87	2.82
Cull cows	38.74	25.25	41.83	47.29	44.18
Total sales	305.03	214.79	237.50	252.53	230.96
Cash costs:					
National Forest	3.03	2.27	4.86	1.52	3.03
Bureau of Land Management	0	8.74	7.48	4.47	0
Private pasture lease	29.38	4.39	14.36	10.97	17.40
Other pasture lease	0	0	0	0	0
State land lease	0	0	2.04	0.35	0
Irrigated pasture	0	4.69	0	5.35	0
Hay produced	38.07	46.22	2.37	46.49	52.11
Hay purchased	12.05	14.12	8.49	12.40	13.89
Protein supplement	13.47	6.78	18.10	6.39	9.92
Grain	0	0	0	0.51	0
Other feed	0	0	0	0	0
Salt and mineral	1.35	7.56	2.09	2.15	1.69
Veterinary and medicine	5.50	6.26	3.41	5.81	4.78
Hired trucking	2.58	2.05	3.09	2.35	2.52
Marketing	2.39	2.10	2.96	2.67	2.07
Hired labor	31.98	28.40	30.48	17.37	7.72
Fuel and lubricants	6.36	5.76	9.01	8.38	24.89
Repairs	8.17	6.83	9.64	7.69	17.48
Total variable expenses	154.32	146.17	118.38	134.86	157.50
Fixed expenses:					
General farm overhead	5.62	7.72	9.32	14.81	7.69
Taxes	8.97	7.28	2.50	5.38	10.86
Insurance	4.52	4.36	4.94	4.42	5.60
Interest on operating capital	14.88	13.93	9.15	11.13	16.27
Total fixed expenses	33.99	33.29	25.91	35.73	40.42
Total cash expenses	188.30	179.46	144.29	170.59	197.92
Other costs:					
Family labor	26.68	16.05	18.86	11.98	22.75
Capital replacement	25.18	26.30	36.56	24.95	44.16
Interest on investment other than land	87.09	86.79	101.15	89.65	107.63
Interest on land	364.33	262.26	148.45	238.78	275.04
Total other costs	503.28	391.39	305.04	365.36	449.59
Total all costs	691.58	570.85	449.32	535.95	647.50
Return above cash costs	116.72	35.33	93.22	81.94	33.04
Number of head represented (thousands)	63	291	290	417	62

Continued—

Table 4—Receipts and costs per cow, by State, 1982—Continued

Item	Utah	Washington	Wyoming
<i>Dollars per head</i>			
Sales:			
Steer calves	86.80	72.44	71.19
Heifer calves	36.28	26.20	36.76
Yearling steers	32.84	85.16	71.59
Yearling heifers	23.04	45.49	46.65
Cull cows	41.40	54.34	40.49
Total sales	220.36	283.64	266.66
Cash costs:			
National Forest	3.27	3.34	2.32
Bureau of Land Management	6.18	0.05	3.37
Private pasture lease	10.18	9.14	7.89
Other pasture lease	0	0	0
State land lease	0.46	2.40	0.82
Irrigated pasture	4.05	1.84	0.00
Hay produced	45.82	46.85	48.52
Hay purchased	3.05	23.85	15.10
Protein supplement	10.00	12.87	12.58
Grain	0	0	0
Other feed	0	0	0
Salt and mineral	1.77	2.55	1.38
Veterinary and medicine	4.92	6.65	5.47
Hired trucking	3.05	3.92	3.36
Marketing	2.53	2.96	3.25
Hired labor	27.92	21.92	25.46
Fuel and lubricants	11.62	14.74	9.37
Repairs	12.24	12.60	12.08
Total variable expenses	147.06	165.69	150.96
Fixed expenses:			
General farm overhead	12.47	13.61	9.80
Taxes	6.49	8.21	5.23
Insurance	4.86	4.47	4.64
Interest on operating capital	12.04	16.53	13.63
Total fixed expenses	35.86	42.82	33.29
Total cash Expenses	182.92	208.51	184.25
Other costs:			
Family labor	23.56	33.55	16.19
Capital replacement	39.15	30.65	41.77
Interest on investment other than land	98.19	93.75	90.36
Interest on land	233.23	235.65	261.68
Total other costs	394.13	393.59	410.00
Total all costs	577.05	602.10	594.25
Return above cash costs	37.44	75.13	82.41
Number of head represented (thousands)	210	58	432

Source: Gee, 1984.

Table 5—Receipts and costs per cow, by State, update to 1990

Item	Arizona	California	Colorado	Idaho	Montana
<i>Dollars per head</i>					
Sales:					
Steer calves	111.52	92.32	95.57	87.97	138.10
Heifer calves	52.06	35.49	49.88	36.34	61.13
Yearling steers	49.80	93.20	119.86	100.35	88.94
Yearling heifers	29.33	48.35	75.16	53.41	46.83
Cull cows	48.38	75.23	55.04	54.55	73.61
Total sales	291.09	344.59	395.51	332.62	408.61
Cash costs:					
National Forest	12.43	4.97	2.96	1.95	1.34
Bureau of Land Management	4.00	1.91	3.48	3.72	1.44
Private pasture lease	6.82	40.38	15.56	13.21	16.77
Other pasture lease	0	3.67	0	0	0
State land lease	0.77	0.08	0.43	2.21	4.44
Irrigated pasture	0.00	1.49	4.82	3.10	2.12
Hay produced	3.12	33.77	77.59	48.81	62.13
Hay purchased	2.96	13.39	20.86	30.22	19.74
Protein supplement	5.87	18.07	11.48	5.37	8.10
Grain	0	0	0.06	0	0.18
Other feed	0	0	0	0	0
Salt and mineral	1.10	1.81	1.11	1.13	1.09
Veterinary and medicine	4.39	6.36	7.15	10.21	7.47
Hired trucking	3.48	4.37	4.25	3.47	3.70
Marketing	3.16	2.42	2.78	3.23	2.94
Hired labor	44.67	34.77	35.25	39.76	35.93
Fuel and lubricants	9.37	6.19	8.06	11.24	8.33
Repairs	9.54	8.71	12.16	12.12	11.42
Total variable expenses	111.67	182.34	207.98	189.73	187.14
Fixed expenses:					
General farm overhead	9.90	9.05	8.50	14.78	20.46
Taxes	3.92	11.86	6.42	7.83	8.74
Insurance	4.93	4.90	5.55	5.20	5.59
Interest on operating capital	6.71	10.48	11.05	10.41	10.58
Total fixed expenses	25.46	36.27	31.53	38.21	45.37
Total cash expenses	137.13	218.62	239.50	227.95	232.51
Other costs:					
Family labor	19.96	25.71	27.00	33.49	26.14
Capital replacement	45.99	34.29	46.38	38.01	39.47
Interest on investment other than land	89.77	85.41	89.13	88.56	86.92
Interest on land	94.76	173.86	215.83	204.73	184.46
Total other costs	250.48	319.26	378.34	364.78	336.98
Total all costs	387.61	537.88	617.84	592.73	569.49
Return above cash costs	153.96	125.97	156.01	104.67	176.10
Number of head represented (thousands)	174	327	285	497	879

Continued—

Table 5—Receipts and costs per cow, by State, update to 1990—Continued

Item	Nebraska	Nevada	New Mexico	Oregon	South Dakota
<i>Dollars per head</i>					
Sales:					
Steer calves	110.65	84.89	130.03	76.99	164.50
Heifer calves	53.75	45.52	62.25	36.76	93.82
Yearling steers	132.57	92.25	65.48	127.58	26.21
Yearling heifers	73.33	48.84	30.41	62.53	3.70
Cull cows	52.05	33.37	59.55	62.75	56.45
Total sales	422.36	304.87	347.71	366.61	344.68
Cash costs:					
National Forest	2.94	2.21	4.73	1.48	2.94
Bureau of Land Management	0	8.50	7.28	4.35	0
Private pasture lease	33.60	3.68	15.27	11.79	19.66
Other pasture lease	0	0	0	0	0
State land lease	0	0	2.17	0.38	0
Irrigated pasture	0	4.60	0	5.25	0
Hay produced	48.00	53.44	3.51	56.72	84.60
Hay purchased	15.19	16.33	12.56	15.12	22.54
Protein supplement	12.58	7.25	18.46	6.86	9.18
Grain	0	0	0	0.47	0
Other feed	0	0	0	0	0
Salt and mineral	0.90	4.39	1.10	1.13	0.90
Veterinary and medicine	6.70	7.62	4.15	7.08	5.82
Hired trucking	3.02	2.40	3.62	2.75	2.96
Marketing	2.52	2.22	3.12	2.82	2.18
Hired labor	43.11	31.62	37.80	30.57	10.41
Fuel and lubricants	6.18	5.60	8.76	8.14	24.18
Repairs	9.09	7.13	10.43	9.52	19.47
Total variable expenses	183.83	156.99	132.96	164.42	204.83
Fixed expenses:					
General farm overhead	6.28	8.63	10.42	16.55	8.59
Taxes	11.35	9.22	3.17	6.81	13.75
Insurance	5.06	4.87	5.52	4.94	6.26
Interest on operating capital	10.70	10.01	6.58	8.00	11.70
Total fixed expenses	33.39	32.73	25.68	36.30	40.30
Total cash expenses	217.21	189.72	158.64	200.72	245.13
Other costs:					
Family labor	35.97	17.87	23.39	21.08	30.67
Capital replacement	32.16	33.58	46.70	31.86	56.40
Interest on investment other than land	81.74	81.46	94.94	84.15	101.02
Interest on land	296.59	213.50	120.85	194.38	223.91
Total other costs	446.46	346.40	285.88	331.47	411.99
Total all costs	663.67	536.12	444.52	532.19	657.12
Return above cash costs	205.15	115.15	189.07	165.89	99.55
Number of head represented (thousands)	63	291	290	417	62

Continued—

Table 5—Receipts and costs per cow, by State, update to 1990—Continued

Item	Utah	Washington	Wyoming
<i>Dollars per head</i>			
Sales:			
Steer calves	136.53	119.30	111.64
Heifer calves	57.06	43.15	57.64
Yearling steers	44.17	103.54	100.62
Yearling heifers	30.98	55.31	65.56
Cull cows	57.11	71.25	55.63
Total sales	325.86	392.55	391.10
Cash costs:			
National Forest	3.18	3.25	2.26
Bureau of Land Management	6.02	0.05	3.28
Private pasture lease	8.53	10.72	8.99
Other pasture lease	0	0	0
State land lease	0.38	2.81	0.93
Irrigated pasture	3.98	1.80	0.00
Hay produced	56.58	55.07	65.41
Hay purchased	3.77	28.03	20.35
Protein supplement	10.71	11.59	14.64
Grain	0	0	0
Other feed	0	0	0
Salt and mineral	1.12	1.22	1.09
Veterinary and medicine	5.99	8.10	6.67
Hired trucking	3.58	4.59	3.94
Marketing	2.67	3.12	3.42
Hired labor	31.09	38.56	33.19
Fuel and lubricants	11.29	14.32	9.11
Repairs	12.77	15.59	13.29
Total variable expenses	161.65	198.84	186.58
Fixed expenses:			
General farm overhead	13.94	15.21	10.96
Taxes	8.22	10.40	6.62
Insurance	5.43	5.00	5.18
Interest on operating capital	8.65	11.88	9.80
Total fixed expenses	36.25	42.49	32.55
Total cash expenses	197.90	241.32	219.13
Other costs:			
Family labor	26.23	59.02	21.12
Capital replacement	49.99	39.14	53.35
Interest on investment other than land	92.16	88.00	84.81
Interest on land	189.87	191.83	213.02
Total other costs	358.25	377.98	372.29
Total all costs	556.15	619.30	591.43
Return above cash costs	127.96	151.22	171.97
Number of head represented (thousands)	210	58	432

Table 6—Line item indexing data for figures 5.6 and 6.6, 13-State averages

Item	1982	1990
<i>Dollars per head</i>		
Total sales	254.65	364.14
Cash costs:		
National Forest	2.99	2.91
Bureau of Land Management	3.74	3.64
Private pasture lease	14.22	15.10
Other pasture lease	0.28	0.30
State land lease	1.57	1.69
Irrigated pasture	2.48	2.44
Hay produced	40.59	51.29
Hay purchased	14.15	17.94
Protein supplement	9.67	10.27
Grain	0.10	0.09
Other feed	0	0
Salt and mineral	2.27	1.40
Veterinary and medicine	5.82	7.10
Hired trucking	3.04	3.57
Marketing	2.75	2.90
Hired labor	27.06	35.11
Fuel and lubricants	9.16	8.89
Repairs	10.06	11.09
Total variable expenses	149.96	175.73
Fixed expenses:		
General farm overhead	12.20	13.64
Taxes	6.17	7.82
Insurance	4.71	5.27
Interest on operating capital	13.44	9.67
Total fixed expenses	36.53	36.39
Total cash expenses	186.49	212.12
Other costs:		
Family labor	19.64	25.64
Capital replacement	32.22	41.14
Interest on investment other than land	93.09	87.38
Interest on land	231.98	188.85
Total other costs	376.93	343.01
Total all costs	563.42	554.26
Return above cash costs	68.16	152.02
Return above all costs:		
20-percent debt/asset ratio	(48.71) ¹	30.49
10-percent debt/asset ratio	(16.21)	57.62

¹Numbers in parentheses indicate loss.

Table 7—Line item indexing data for nonpermittee portion of figure 6.6

Item	1982	1990	Proportional increase
	----- Dollars per head -----		Ratio
Gross value of production	280.01	410.06	1.464
Total cash expenses	265.85	296.03	1.114
Capital replacement	53.84	61.62	1.145
Receipts above cash costs	14.16	114.03	—
Receipts above cash costs and capital replacement	(39.68) ¹	52.41	—

— = Not available.

¹Number in parentheses indicates loss.

Appendix table 1—Figure 5.3, changes in returns above variable cash costs for an average livestock operation at different fee levels, 1990

State	Gross income	Returns above cash costs at different fee levels ¹					
		\$0 ²	PRIA 1990, \$1.81	Updated PRIA, \$2.93	Modified market, \$4.68	Combined market value, \$4.88	NASS 1990 private lease rate, \$9.19
<i>Dollars per cow</i>							
Cattle:							
Arizona	291	171	154	143	126	124	83
California	345	133	126	121	114	114	96
Colorado	396	163	156	152	145	144	128
Idaho	333	111	105	101	95	94	80
Montana	409	179	176	174	171	171	164
Nebraska	422	208	205	203	200	200	192
Nevada	305	127	115	108	97	96	69
New Mexico	348	202	189	181	169	167	137
Oregon	367	172	166	162	156	155	141
South Dakota	345	103	100	98	95	94	87
Utah	326	138	128	122	113	111	88
Washington	393	155	151	149	146	145	137
Wyoming	391	178	172	168	163	162	148
13-State average	364	159	152	148	141	140	124
<i>Dollars per ewe</i>							
Sheep: ³							
California	58	19	18	17	16	16	13
Colorado	61	23	22	21	19	19	15
Idaho	61	27	26	25	23	23	19
Montana	57	19	18	17	16	16	12
Nevada	58	32	30	28	26	26	21
New Mexico	53	18	15	14	12	11	6
Oregon	61	7	6	5	4	4	1
Utah	58	25	23	21	19	18	13
Wyoming	59	20	19	18	17	17	14
9-State average	59	24	22	21	20	20	16

¹Cash costs do not include value of family labor, capital replacement allowance (depreciation), or interest on intermediate or long-term debt.

²Assumes free grazing.

³Sheep budgets were not prepared for Arizona, Nebraska, South Dakota, or Washington due to low numbers of sheep grazing public lands in these States.

Appendix table 2—Figure 5.4, changes in returns above all costs for an average livestock operation at different fee levels, 1990

State	Gross income	Returns above cash costs at different fee levels ^{1 2 3}					
		\$0 ⁴	PRIA 1990, \$1.81	Updated PRIA, \$2.93	Modified market, \$4.68	Combined market value, \$4.88	NASS 1990 private lease rate, \$9.19
<i>Dollars per cow</i>							
Cattle:							
Arizona	291	87	70	59	42	40	-1
California	345	47	40	36	28	28	10
Colorado	396	59	52	48	41	40	24
Idaho	333	10	4	0	-6	-6	-21
Montana	409	86	83	82	79	78	71
Nebraska	422	102	99	97	94	94	86
Nevada	305	46	34	27	16	15	-12
New Mexico	348	110	97	90	77	76	45
Oregon	367	91	85	81	75	75	60
South Dakota ⁵	345	-17	-20	-22	-25	-25	-33
Utah	326	33	24	18	8	7	-16
Washington	393	29	25	14	11	10	2
Wyoming	391	74	68	64	58	58	44
13-State average	364	65	58	53	47	46	29
<i>Dollars per ewe</i>							
Sheep: ⁶							
California	58	2	1	1	0	-1	-3
Colorado	61	8	6	5	4	4	0
Idaho	61	9	7	6	5	4	1
Montana	57	0	-2	-2	-4	-4	-7
Nevada	58	14	11	10	8	8	2
New Mexico	53	-4	-6	-7	-10	-10	-15
Oregon	61	-18	-19	-20	-21	-21	-24
Utah	58	7	4	3	1	0	-6
Wyoming	59	3	1	0	-1	-1	-4
9-State average	59	5	3	2	1	1	-3

¹All costs include standard cash costs, interest on intermediate and long-term debt, value of family labor, and capital replacement (depreciation).

²In the update of the budgets, the quantities of inputs (for example, amount of fuel purchased) and outputs (for example, pounds of steer calves sold) were held constant (that is, no technical changes).

³Returns are adjusted for a 10-percent debt/asset ratio. This ratio is based on data from beef cattle operations in the 13 Western States with gross sales of \$40,000 or more (at least one-half of which are from beef cattle sales) who reported leased grazing on an animal-unit-month (AUM) basis (Source: 1990 Farm Costs and Returns Survey).

⁴Assumes free grazing.

⁵South Dakota sold fewer pounds of beef than other States and had relatively higher hay costs.

⁶Sheep budgets were not prepared for Arizona, Nebraska, South Dakota, or Washington due to low numbers of sheep grazing public lands in these States.

Appendix table 3—Figure 5.6, impacts of alternative grazing fee levels on cattle enterprise's return above variable cash costs of public rangeland permittees, 1990¹

Grazing fee	Combined FS/BLM		
	Small	Medium	Large
<i>Dollars per cow</i>			
\$1.81 (1990 PRIA fee)	138	150	189
\$2.93 (updated PRIA)	133	144	184
\$4.68 (modified market)	124	136	177
\$4.88 (combined market value)	123	135	176
\$9.19 (private lease rate ²)	101	114	158

¹Cash costs do not include value of family labor, capital replacement allowance (depreciation), or interest on intermediate or long-term debt.

²1990 \$/AUM (National Agricultural Statistics Service).

Appendix table 4—Figure 5.7, comparison of grazing fee costs for an average cattle operation at different dependency and grazing fee levels, 1990

State	Dependency ¹	\$1.81 fee			\$4.00 fee		
		Fee cost ²	Cash cost ³	Percentage of cash cost	Fee cost	Cash cost	Percentage of cash cost
	<i>Percent</i>	<i>Dollars per cow</i>		<i>Percent</i>	<i>Dollars per cow</i>		<i>Percent</i>
Arizona	60	16	121	14	37	142 ⁴	26
Montana	11	3	230	1	6	233	3
Idaho	23	6	222	3	13	230	6

¹Dependency is animal-unit-month (AUM) of feed provided by Federal rangeland divided by total annual AUM's required by the entire livestock herd.

²Total number of Federal AUM's per cow multiplied by fee. Arizona example: 9 AUM's per cow x \$1.81 = \$16.43 (\$16 rounded).

³Cash costs exclude value of family labor, capital replacement allowance (depreciation), and interest on intermediate or long-term debt.

⁴Amount is more than the increase in fee cost due to inclusion of interest on operating capital.

Appendix table 5—Figure 5.8, comparison of gross income and costs of livestock production at \$1.81 grazing fee, 1990

Item	Arizona	Idaho ¹	Montana
<i>Dollars per cow</i>			
Gross income	291	333	409
Total cash costs	137	228	233
Feed costs	37	110	117
Grazing fees	16	6	3
Return above cash costs	154	105	176
<i>Percent</i>			
Federal forage dependency ²	60	23	11

¹Median for 13 Western States.

²Percentage public rangeland forage is to the 12-month feed requirement for the livestock herd.

Appendix table 6—Figure 6.2, comparison of cash receipts, costs, and receipts less cash costs for Federal permittees and western livestock industry producers, 1990

Item	Federal permittee livestock producer (fee at \$1.81)	Western livestock industry producer	Net difference (permittee to industry)	Ratio of Federal permittee to industry
<i>Dollars per cow</i>				
Cash receipts	364.14	408.35	-44.21	.892
Federal fee	6.55	—	—	—
Other cash costs	205.56	—	—	—
Cash costs	212.12	246.52	-34.41	.860
Capital replacement	41.14	28.07	13.07	1.465
Receipts less cash costs	152.02	161.82	-9.80	.939
Receipts less cash costs and capital replacement	110.88	133.75	-22.87	.829

— = Not applicable.

Percent Federal fees are of cash costs: 3.09.

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