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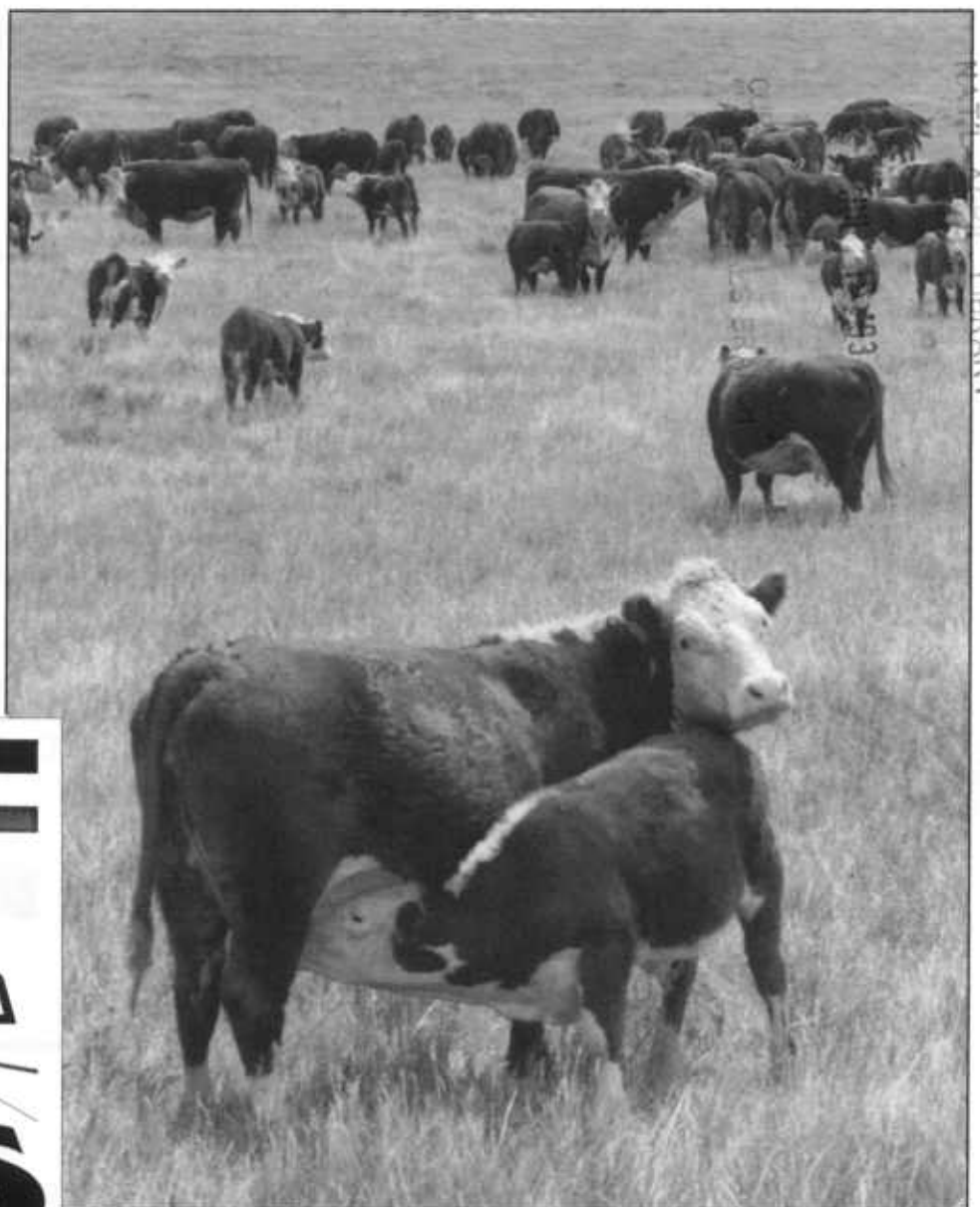
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Cow/Calf Costs of Production, 1990-91

Hosein Shapouri
Kenneth H. Mathews, Jr.
Pat Bailey



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Cow/Calf Costs of Production, 1990-91. Hosein Shapouri, Kenneth H. Mathews, Jr., and Pat Bailey. Commodity Economics Division, Economic Research Service, U.S. Department of Agriculture. Agriculture Information Bulletin No. 670.

Abstract

Net returns above both cash and economic costs improved for cow/calf producers for both 1990 and 1991. Returns above cash costs were near breakeven for several subgroups (size groups or regions), but returns to management, unpaid labor, and risk were positive for only the 500-999 size group in 1991. Cash receipts were the highest since 1972 in nominal terms. Feed costs constituted 26-38 percent of total cash costs for subgroups.

Keywords: Variable costs, cash costs, economic costs, capital replacement, Farm Costs and Returns Survey (FCRS), costs of production (COP), estimates, indexing.

Contents

	<i>Page</i>
Summary	v
Introduction	1
U.S. Costs and Returns, 1990-91	1
Regional Costs and Returns Varied	6
References	8
Appendix	
I—Cow/Calf Costs of Production Methodology and Procedures	9
II—Cow/Calf Production Budget Terms and Definitions	11

Summary

U.S. beef cow/calf producers had lower production costs in 1991 than in 1990, leading to a better bottom line, according to the U.S. Department of Agriculture's Economic Research Service. Producers' variable cash costs were down by about \$20 per cow in 1991, while their cash receipts were up by more than \$15. Despite those improvements, net cash returns (including capital expenditures) nationwide averaged out to a loss of more than \$2 per cow. Both costs and returns varied widely by region and by the size of the operation.

Variable cash costs were lowest in the North Central region and for the largest operations (1,000 or more cows). Net cash returns were highest in the North Central region (\$33.89 per cow) and the Great Plains (\$27.39). Producers in the West and South averaged losses for the year. By size of operation, net cash returns were best (\$80.76 per cow) for producers with 500-999 head. Producers with fewer than 100 head reported losses on a national average.

Regional differences depended on other agricultural activities in the regions. Feed in the North Central region was largely homegrown (feed costs can run up to half of a producer's total variable cash costs). Land charges were greater in the West and Great Plains because of more acres per cow. Cow herds were larger in the West and Great Plains, too. The South had the lowest cash receipts of all regions, partly because producers there sold fewer pounds of yearling cattle per cow.

Those estimates of costs and returns are based on operations with 20 or more cows that were surveyed with the cow/calf version of the 1990 Farm Costs and Returns Survey. Just over 98 percent of all U.S. beef cows were represented in the survey. The report includes national estimates as well as estimates for four regions and four size groups. In addition to reporting variable cash costs and net cash returns, the report also includes other accounting measures (such as cash expenses and capital expenditures, total economic costs, and residual returns) to help show a more complete picture of the overall income statement of cow/calf producers in 1990 and 1991.

Beef cow/calf operations costs and returns, 1991

Item	United States	Size of operation (beef cows)			
		Fewer than 100	100-499	500-999	1,000 or more
<i>Dollars per cow</i>					
Cash receipts	447.65	428.07	487.96	447.99	369.49
Change from 1990	15.63	15.46	15.06	17.14	13.80
Variable cash costs	243.86	248.05	243.94	228.03	224.67
Change from 1990	-19.53	-20.85	-20.15	-12.17	-11.90
Cash costs and capital expenditures	450.03	475.19	446.52	367.23	344.28
Change from 1990	-16.14	-16.81	-17.77	-6.57	-9.32
Net cash returns	-2.38	-47.12	41.44	80.76	25.21
Change from 1990	31.77	32.27	32.83	23.71	23.23
Economic costs	524.88	550.88	525.46	429.71	400.32
Change from 1990	-13.38	-14.82	-13.70	-3.64	-8.73
Residual returns	-77.23	-122.81	-37.50	18.28	-30.83
Change from 1990	29.01	30.28	28.76	20.78	22.53
<hr/>					
	West	Great Plains	North Central	South	
<hr/>					
<i>Dollars per cow</i>					
Cash receipts	444.27	489.75	438.13		396.62
Change from 1990	14.63	15.04	13.76		19.52
Variable cash costs	256.17	259.60	214.54		234.96
Change from 1990	-20.14	-22.35	-20.48		-14.52
Cash costs and capital expenditures	477.57	462.36	404.24		446.75
Change from 1990	-15.97	-20.65	-15.17		-11.31
Net cash returns	-33.30	27.39	33.89		-50.13
Change from 1990	30.60	35.69	28.93		30.83
Economic costs	546.25	556.95	455.38		519.90
Change from 1990	-19.04	-9.57	-18.02		-10.41
Residual returns	-101.98	-67.20	-17.25		-123.28
Change from 1990	33.67	24.61	31.78		29.93

Cow/Calf Costs of Production, 1990-91

Hosein Shapouri
Kenneth H. Mathews, Jr.
Pat Bailey

Introduction

Estimated total economic costs of beef cow/calf production in the United States were \$538.26 per cow in 1990 and \$524.88 in 1991. Cow/calf operators' net returns per cow improved in 1991 because calf prices averaged higher than in 1990 and feed prices were lower. Despite improvement, both net cash receipts and residual returns to management, unpaid labor, and risk per cow remained negative in 1991. Because cash receipts were high relative to other years, producers spent more on capital than in previous years, making net cash returns lower. Also, higher capital expenditures combined with land charges that do not reflect landownership as a separate enterprise result in lower residual returns to management, unpaid labor, and risk.¹

Costs and returns estimates for beef cow/calf production were based on the beef cow/calf costs of production (COP) version of the 1990 Farm Costs and Returns Survey (FCRS) of cow/calf operations, those operations with 20 or more beef cows during all of 1990. In February and March of 1991, 821 beef cattle operations in 31 States, representing just over 98 percent of U.S. beef cows, were surveyed. The term "U.S. beef cow/calf operations" used in this report means the 98 percent of beef cows represented in the survey data. Hawaii, Alaska, and the Northeast were not surveyed and are not represented. These FCRS-COP data, along with secondary data from the National Agricultural Statistics Service (NASS) and other data sources, were used to estimate per-cow costs and returns in four regions and four size groups. These estimates established a 1990 national costs and returns base from which production costs were estimated in 1991.

¹Accounting and other terms are defined in the appendices.

The estimates reflect average costs and returns of producing beef cattle in 1990 for surveyed U.S. cow/calf operations. The estimates do not represent a specific producer, they are not meant to represent a "typical" cow/calf operation, and they do not reflect "best" management practices, a common goal of State extension service planning budgets. Individual farms may have different production costs and returns due to different mixes of inputs and commodity products.

Data needs and uses change in the 3- to 5-year interlude between surveys for a specific commodity. The methods used to estimate costs or expenditures are in turn determined by the types of information collected from producers. Changes in the estimation procedures for cow/calf production costs since the last cow/calf cost of production (COP) survey, conducted in 1980, are noted in appendix table 1. U.S. and regional cow/calf production costs and returns for 1990 and 1991 are displayed in tables 1-4.

U.S. Costs and Returns, 1990-91

Higher cattle prices and lower costs increased per-cow cash returns in 1991. Cash receipts less cash expenses per cow averaged \$75.74 in 1990, compared with \$110.81 in 1991 (tables 1 and 2). However, U.S. cow/calf operators' net cash returns and returns to management, unpaid labor, and risk were both negative, averaging -\$34.15 and -\$106.24 in 1990 and -\$2.38 and -\$77.23 per cow in 1991. Feed and forage accounted for 52 percent of total per-cow cash variable costs in 1991.

Expenditures for nonland capital for beef cow/calf production were much higher per cow in 1990 and 1991 than 1980-based capital replacement costs reported in previous *Economic Indicators* (see

Table 1—Cow/calf production cash and economic costs and returns, United States, by size of operation, per cow, 1990

Item	United States	Size of operation (beef cows)			
		Fewer than 100	100-499	500-999	1,000 or more
<i>Dollars per cow</i>					
Cash receipts:					
Steer calves	61.37	72.07	48.45	44.25	64.84
Heifer calves	51.30	58.81	40.91	37.74	64.06
Yearling steers	127.32	110.97	147.50	158.26	113.06
Yearling heifers	72.12	67.39	86.85	57.33	41.79
Other cattle	119.91	103.37	149.19	133.27	71.94
Total	432.02	412.61	472.90	430.85	355.69
=====					
Cash expenses:					
Feeder cattle	18.36	21.98	18.66	3.93	0.93
Feed—					
Grain	8.34	9.57	8.51	4.29	0.87
Protein supplements	20.79	21.50	18.55	22.29	26.49
Byproducts	5.55	5.38	3.44	6.17	19.70
Harvested forages	66.94	71.79	68.34	56.56	25.93
Pasture	47.14	44.85	47.78	48.19	62.59
Total feed costs	148.76	153.09	146.62	137.50	135.58
Other—					
Veterinary and medicine	11.91	11.99	13.26	8.43	7.13
Livestock hauling	1.78	1.25	2.19	2.97	2.58
Marketing	7.13	7.39	7.84	3.56	4.68
Custom feed mixing	0.43	0.34	0.67	0.26	0.01
Fuel and lube	15.44	16.80	15.71	10.00	7.90
Machinery and building repairs	29.55	34.54	27.21	15.20	15.94
Hired labor	23.92	14.90	26.87	47.76	59.35
Miscellaneous	6.11	6.62	5.06	10.59	2.47
Total, variable cash expenses	263.39	268.90	264.09	240.20	236.57
General farm overhead	36.66	40.80	34.77	22.46	28.05
Taxes and insurance	13.78	16.09	11.37	8.31	14.34
Interest (nonreal estate)	12.47	13.74	11.85	8.72	9.26
Interest (real estate)	29.98	26.61	37.30	28.45	16.97
Total, fixed cash expenses	92.89	97.24	95.29	67.94	68.62
Total cash expenses	356.28	366.14	359.38	308.14	305.19
Cash receipts less cash expenses	75.74	46.47	113.52	122.71	50.50
Capital expenditures	109.89	125.86	104.91	65.66	48.41
Total cash expenses and capital expenditures	466.17	492.00	464.29	373.80	353.60
Net cash returns	-34.15	-79.39	8.61	57.05	1.98

Economic (full ownership) costs:					
Variable cash expenses	263.39	268.90	264.09	240.20	236.57
General farm overhead	36.66	40.80	34.77	22.46	28.05
Taxes and insurance	13.78	16.09	11.37	8.31	14.34
Capital expenditures	109.89	125.86	104.91	65.66	48.41
Operating capital	9.82	10.03	9.85	8.96	8.82
Other nonland capital	37.04	44.28	30.77	25.87	23.31
Land	67.68	59.74	83.40	61.89	49.55
Total, economic costs	538.26	565.70	539.16	433.35	409.05
Residual returns to management, unpaid labor, and risk	-106.24	-153.09	-66.26	-2.50	-53.36

Table 2—Cow/calf production cash and economic costs and returns, United States, by size of operation, per cow, 1991

Item	United States	Size of operation (beef cows)			
		Fewer than 100	100-499	500-999	1,000 or more
<i>Dollars per cow</i>					
Cash receipts:					
Steer calves	69.14	81.18	54.50	52.79	72.60
Heifer calves	53.82	61.68	42.88	42.29	65.94
Yearling steers	127.84	111.02	148.40	157.96	113.52
Yearling heifers	72.80	67.79	87.79	56.53	43.03
Other cattle	124.06	106.40	154.39	138.41	74.40
Total	447.65	428.07	487.96	447.99	369.49
=====					
Cash expenses:					
Feeder cattle	18.31	22.12	18.34	3.99	0.97
Feed—					
Grain	7.97	9.15	8.13	4.17	0.84
Protein supplements	20.39	20.90	18.29	22.73	26.30
Byproducts	5.28	5.09	3.32	6.34	18.18
Harvested forages	51.36	55.40	52.05	43.29	19.97
Pasture	42.10	40.06	42.47	44.84	55.01
Total feed costs	127.10	130.59	124.25	121.37	120.31
Other—					
Veterinary and medicine	12.62	12.65	14.10	8.88	7.67
Livestock hauling	1.79	1.24	2.19	3.06	2.50
Marketing	7.23	7.47	7.97	3.70	4.79
Custom feed mixing	0.43	0.33	0.67	0.26	0.01
Fuel and lube	15.42	16.82	15.70	9.88	7.74
Machinery and building repairs	29.22	34.19	26.92	15.09	15.83
Hired labor	25.56	15.90	28.72	51.27	62.29
Miscellaneous	6.16	6.73	5.08	10.54	2.57
Total, variable cash expenses	243.86	248.05	243.94	228.03	224.67
General farm overhead	37.06	41.28	35.05	23.23	28.26
Taxes and insurance	13.86	16.14	11.55	8.45	14.42
Interest (nonreal estate)	12.47	13.79	11.72	8.99	9.49
Interest (real estate)	29.60	26.19	36.29	30.37	17.12
Total, fixed cash expenses	92.99	97.39	94.61	71.04	69.28
Total cash expenses	336.85	345.44	338.55	299.08	293.95
Cash receipts less cash expenses	110.81	82.64	149.40	148.91	75.54
Capital expenditures	113.18	129.75	107.97	68.15	50.33
Total cash expenses and capital expenditures	450.03	475.19	446.52	367.23	344.28
Net cash returns	-2.38	-47.12	41.44	80.76	25.21

Economic (full ownership) costs:					
Variable cash expenses	243.86	248.05	243.94	228.03	224.67
General farm overhead	37.06	41.28	35.05	23.23	28.26
Taxes and insurance	13.86	16.14	11.55	8.45	14.42
Capital expenditures	113.18	129.75	107.97	68.15	50.33
Operating capital	6.63	6.75	6.64	6.20	6.11
Other nonland capital	37.52	44.92	31.26	26.30	23.64
Land	72.76	64.00	89.05	69.34	52.87
Total, economic costs	524.88	550.88	525.46	429.71	400.32
Residual returns to management, unpaid labor, and risk	-77.23	-122.81	-37.50	18.28	-30.83

Table 3—Regional cow/calf production cash and economic costs and returns per cow, 1990

Item	West	Great Plains	North Central	South
<i>Dollars per cow</i>				
Cash receipts:				
Steer calves	46.46	56.76	49.23	94.29
Heifer calves	38.73	44.20	32.73	91.72
Yearling steers	146.39	143.23	133.06	79.31
Yearling heifers	68.02	90.78	86.33	34.63
Other cattle	130.04	139.74	123.02	77.15
Total	429.64	474.71	424.37	377.10
Cash expenses:				
Feeder cattle	23.25	22.92	2.26	21.84
Feed—				
Grain	4.05	8.11	14.83	6.77
Protein supplements	15.46	28.80	18.15	16.40
Byproducts	3.30	4.68	5.11	9.48
Harvested forages	75.63	71.47	66.35	52.15
Pasture	52.50	50.43	47.40	36.71
Total feed costs	150.94	163.49	151.84	121.51
Other—				
Veterinary and medicine	12.15	11.76	14.10	9.83
Livestock hauling	3.06	1.52	0.59	2.03
Marketing	6.87	7.18	5.46	8.87
Custom feed mixing	0.33	0.76	0.25	0.23
Fuel and lube	17.76	14.09	12.85	17.66
Machinery and building repairs	26.29	28.72	28.36	35.09
Hired labor	30.78	24.89	14.03	25.07
Miscellaneous	4.88	6.62	5.28	7.35
Total, variable cash expenses	276.31	281.95	235.02	249.48
General farm overhead	43.54	35.06	33.90	34.98
Taxes and insurance	13.44	11.77	12.28	18.55
Interest (nonreal estate)	14.29	14.92	11.28	8.11
Interest (real estate)	44.60	24.75	27.97	25.48
Total, fixed cash expenses	115.87	86.50	85.43	87.12
Total cash expenses	392.18	368.45	320.45	336.60
Cash receipts less cash expenses	37.46	106.26	103.92	40.50
Capital expenditures	101.36	114.56	98.96	121.46
Total cash expenses and capital expenditures	493.54	483.01	419.41	458.06
Net cash returns	-63.90	-8.30	4.96	-80.96
Economic (full ownership) costs:				
Variable cash expenses	276.31	281.95	235.02	249.48
General farm overhead	43.54	35.06	33.90	34.98
Taxes and insurance	13.44	11.77	12.28	18.55
Capital expenditures	101.36	114.56	98.96	121.46
Operating capital	10.31	10.52	8.77	9.31
Other nonland capital	31.59	33.14	41.06	44.49
Land	88.74	79.52	43.41	52.04
Total, economic costs	565.29	566.52	473.40	530.31
Residual returns to management, unpaid labor, and risk	-135.65	-91.81	-49.03	-153.21

Table 4—Regional cow/calf production cash costs and returns per cow, 1991

Item	West	Great Plains	North Central	South
<i>Dollars per cow</i>				
Cash receipts:				
Steer calves	51.55	64.20	56.18	106.21
Heifer calves	40.18	46.63	33.98	96.88
Yearling steers	147.51	142.92	134.56	78.95
Yearling heifers	68.91	92.62	87.07	34.32
Other cattle	136.11	143.39	126.33	80.27
Total	444.27	489.75	438.13	396.62
=====				
Cash expenses:				
Feeder cattle	23.87	22.07	2.38	21.95
Feed—				
Grain	3.89	7.70	14.24	6.52
Protein supplements	15.38	28.20	17.70	15.85
Byproducts	3.25	4.53	4.80	8.89
Harvested forages	58.24	54.35	50.62	40.68
Pasture	47.20	44.80	42.23	32.77
Total feed costs	127.96	139.57	129.59	104.72
Other				
Veterinary and medicine	12.99	12.44	14.99	10.34
Livestock hauling	3.11	1.49	0.61	2.02
Marketing	6.93	7.24	5.58	9.09
Custom feed mixing	0.34	0.74	0.23	0.23
Fuel and lube	17.49	14.06	13.01	17.73
Machinery and building repairs	25.95	28.36	28.24	34.69
Hired labor	32.58	27.00	14.65	26.63
Miscellaneous	4.94	6.62	5.26	7.56
Total, variable cash expenses	256.17	259.60	214.54	234.96
General farm overhead	43.81	35.35	34.65	35.27
Taxes and insurance	13.57	11.82	12.40	18.65
Interest (nonreal estate)	14.48	14.49	11.68	8.11
Interest (real estate)	44.51	23.81	28.18	25.13
Total, fixed cash expenses	116.36	85.47	86.91	87.16
Total cash expenses	372.53	345.07	301.45	322.11
Cash receipts less cash expenses	74.71	144.68	136.68	74.51
Capital expenditures	105.04	117.29	102.79	124.64
Total cash expenses and capital expenditures	477.57	462.36	404.24	446.75
Net cash returns	-33.30	27.39	33.89	-50.13

Economic (full ownership) costs:				
Variable cash expenses	256.17	259.60	214.54	234.96
General farm overhead	43.81	35.35	34.65	35.27
Taxes and insurance	13.57	11.82	12.40	18.65
Capital expenditures	105.04	117.29	102.79	124.64
Operating capital	6.97	7.06	5.84	6.39
Other nonland capital	32.18	33.52	41.69	45.06
Land	88.52	92.31	43.47	54.94
Total, economic costs	546.25	556.95	455.38	519.90
Residual returns to management, unpaid labor, and risk	-101.98	-67.20	-17.25	-123.28

Capital Replacement Estimates Differ

The reader should be aware that capital replacement estimates in this report were calculated differently than previous published estimates, making comparisons of capital replacement estimates between this and other reports inappropriate. The 1990 cow/calf version of the Farm Costs and Returns Survey did not yield sufficient information to use more conventional depreciation methods of calculating capital replacement costs, especially for breeding herds. However, actual capital expenditures were available and provided an alternate means of estimating capital replacement. The resulting estimates are higher than estimates based on the 1980 survey, likely reflecting tax management strategies that may have been used in 1990, a high-income year for cow/calf producers, and higher values for breeding livestock than depreciation methods rely on. Further evidence that this was the case is the fact that the 1980's was a period in which depreciation exceeded actual capital expenditures by a large margin in some years (see *Agricultural Outlook*, May 1991, pp. 24-25).

References) series estimates. There are two reasons why 1990-based capital expenditure estimates were higher than capital replacement estimates. First, capital expenditures were calculated directly from expenditures reported in FCRS in 1990 for purchases of new equipment, fences, and buildings, shares of which were allocated to the cow/calf enterprise, and purchases of breeding stock (see box). Second, 1990 was a relatively good year for cattle producers, compared with 1980, the survey year on which previous estimates were based, and producers spent more for machinery, equipment, buildings, and other capital, a common strategy when incomes are higher. Capital expenditures accomplished two things for producers: it allowed them to both replenish capital stocks and reduce taxes by reducing taxable income.

Receipts per cow were highest for the 100- to 499-cow and the 500- to 999-cow operations, which sold the most pounds of all cattle (table 5), and lowest for the 1,000 or more cow operations. Total per-cow variable cash expenses, total fixed cash costs, and capital expenditures decreased as

the size of operations increased. Total per-cow feed costs also decreased with size, but to a much smaller extent.

Quantities of grain and forages fed decreased and protein quantity increased as size of enterprise increased (table 5). Acres grazed were greatest for the 500- to 999-cow operations. The 1,000-and-over-cow group was fed the largest quantities of byproducts, but many of the larger herds were in the South, where a variety of byproducts were readily available.

Regional Costs and Returns Varied

Regional differences depended on other agricultural activities in the regions. Feed in the North Central region was usually homegrown. Land charges were greater in the West and Great Plains because more land was required per cow. Also, cow herds were larger in the West and Great Plains.

West (CA, CO, ID, MT, NM, OR, UT, WA, and WY): Higher average prices for cattle sold increased cash receipts by almost \$15 per cow in 1991. Total cash expenses per cow in the West were highest and cash receipts were second highest for any region. Western expenditures for harvested forages and pasture dropped almost \$23 per cow in 1991 because forage prices and most State and private grazing fees were lower (Federal fees went up). This caused average feed expenses per cow to decline from \$150.94 to \$127.96 from 1990 to 1991. Other per-cow variable and fixed expenses changed very little in the West from 1990 to 1991.

Cow herds averaged larger in the West than in any other region, although many of the largest herds were in the South (table 5). Western cow/calf producers fed the least amounts of grains, byproducts, and harvested forages of any region. They also had more pasture grazed per cow (over twice the acreage for the next closest region) and grazed more land on an animal-unit-month (AUM) basis.²

²An AUM is the amount of forage required for a 1,000-pound cow or her equivalent for 1 month.

Table 5—Characteristics of surveyed cow/calf operations, 1990

Item	Unit	United States	West	Great Plains	North Central	South	Size of operation (beef cows)			
							Fewer than 100	100-499	500-1,000	More than 1,000
Cows	head	68	125	81	48	51	42	166	672	2,466
Cattle sold:										
Calves—										
Steers	lbs	60	46	55	48	94	71	48	44	64
Heifers	lbs	59	45	49	39	105	67	47	43	72
Yearlings—										
Steers	lbs	145	168	161	150	93	126	167	181	131
Heifers	lbs	88	84	109	104	43	82	106	70	51
Other—										
Cattle	lbs	164	205	175	154	115	145	190	204	122
Feed:										
Grain	lbs	254	102	242	492	195	295	256	112	33
Protein	lbs	139	102	216	93	103	142	125	159	181
Forage	tons	2.0	1.7	2.1	2.4	1.8	2.5	2.0	1.4	0.7
Byproducts	lb	107	65	118	117	121	116	75	104	225
Grazing—										
Acres	acres	11.8	26.41	12.3	4.1	4.2	7.1	14.3	29.9	17.6
AUM's	AUM's	0.5	1.9	0.1	*	0	0.1	0.9	1.0	0.8

*less than 0.05 units.

Great Plains (KS, NE, ND, OK, SD, and TX):

The Great Plains had the highest cash receipts per cow in 1990 and 1991. This region also had the highest feed expenses per cow, especially for protein supplement, which was fed in quantities over twice as great as for any other region. Great Plains cow/calf operators fed the second greatest quantities of harvested forages and grazed the second most acres of any region. Net cash returns were negative in 1990, and residual returns to management, unpaid labor, and risk per cow were negative in both years. Net cash returns increased from -\$8.30 per cow in 1990 to \$27.39 in 1991.

North Central (IL, IN, IA, MN, MO, and OH):

The North Central region had the second lowest cash receipts per cow, but the lowest cash expenses per cow. The North Central region had the second highest cash receipts less cash costs per cow in both 1990 and 1991, with net cash receipts per cow improving enough in 1991 to become not only positive but the highest of any region. This region had the lowest total economic costs per cow of any region in both 1990 and 1991, primarily due to

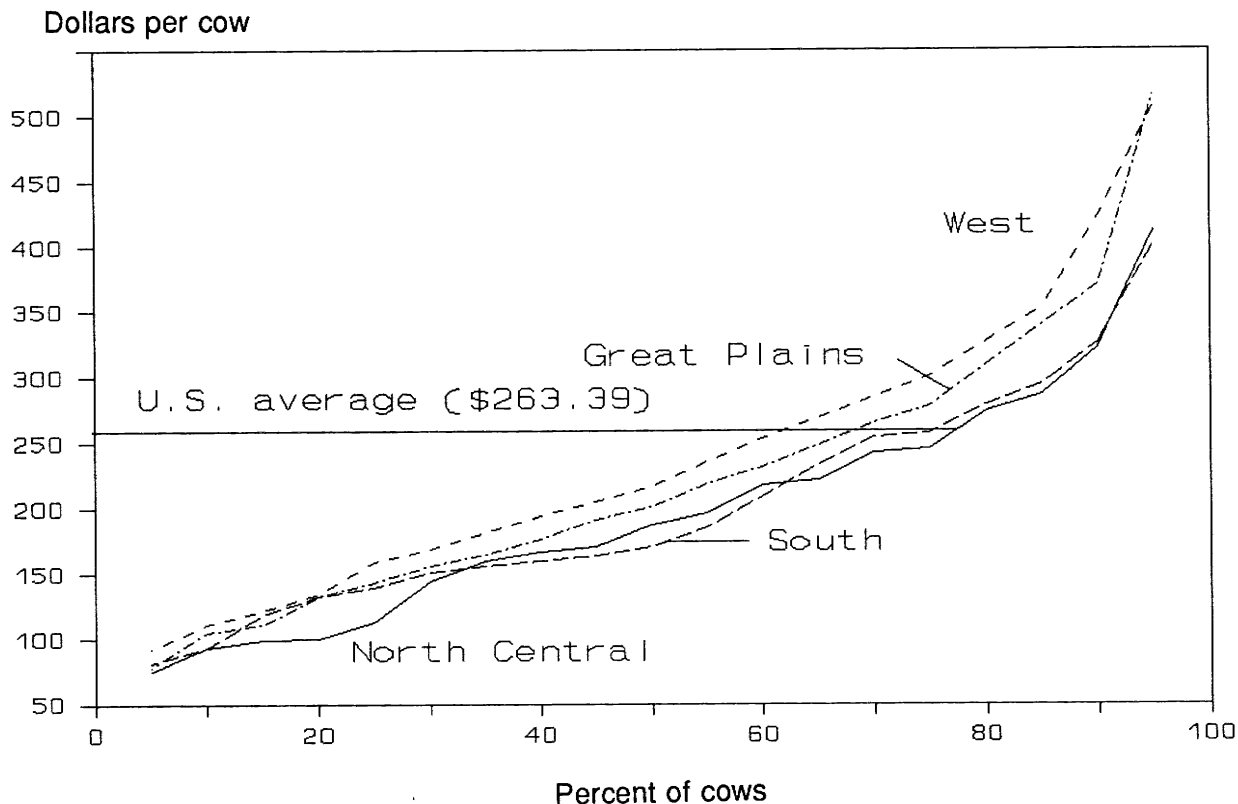
much lower per-cow feed costs and land charges. Operators in this region fed over twice the amount of grain as the next heaviest grain feeding region and the most hay, while still feeding almost as much protein feed and byproducts. Residual returns to management, unpaid labor, and risk also improved, but remained negative.

South (AL, AR, FL, GA, KY, LA, MS, NC, TN, and VA): Cash receipts per cow were lowest in the South. This region had the highest capital expenditures per cow. Fewer pounds of yearling cattle were sold per cow in contrast to other regions. More than twice the pounds of steer and heifer calves were sold per cow in the South compared with those sold in either the North Central region or the West. Although the South's cash receipts per cow were lowest among the regions, they covered total cash costs per cow in 1990. Total feed costs per cow were lowest in the South because of lower harvested forage and pasture costs. Southern cow/calf producers fed the second lowest quantity of harvested forages for any region, but fed the most byproducts by a slight margin.

Figure 1

Regional cumulative distributions of total variable cash costs per cow, 1990

Costs in regions with larger average cow herds were higher.



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Appendix I—Cow/Calf Costs of Production Methodology and Procedures

The Economic Research Service (ERS) develops cost of production data in the form of an enterprise budget that summarizes all operator and landlord costs and returns associated with beef cattle production. Production costs are calculated on a per-cow basis. Although categories are consistent across budgets prepared for all commodities by ERS, estimation procedures sometimes differ according to data collected on the Farm Costs and Returns Survey (FCRS).

Costs and returns data are separated into three categories: cash receipts, cash expenses, and economic (full ownership) costs.

(1) Cash receipts include the value of steer and heifer calves, feeder steers and heifers, and all other cattle, including cull beef cows, cull bulls, breeding stock, and market-ready fed cattle sold.

(2) Cash expenses include variable cash, fixed cash, and cash capital expenditures. Variable expenses include feeder cattle purchased, feed, veterinary services and medicine, beef cattle hauling, marketing, custom feed mixing, fuels, machinery and building repairs, hired labor, and miscellaneous. Miscellaneous expenses include expenses for bedding and litter, fence maintenance and repairs, and rented/leased machinery and livestock. Fixed cash expenses include general farm overhead, taxes and insurance, and reported cash interest paid on farm real estate and nonreal estate debt.

(3) Economic costs are long-term opportunity costs for all production inputs, without regard to ownership or equity positions of operators. Economic costs

include variable cash expenses, fixed cash expenses (excluding total interest expenses), capital expenditures, and opportunity costs. Opportunity costs associated with owned inputs during the production process are (A) imputed costs of capital invested in other nonland capital including beef cattle breeding herd (including replacement heifers), machinery, and equipment and (B) imputed cost of land. These opportunity costs cannot be determined during the production period through market transactions, so they must be imputed.

The opportunity cost of unpaid labor was excluded from total economic costs because the yearly operator and other unpaid labor for small operations resulted in inordinately high per-cow dollar estimates when this labor was valued at the regional wage rate. For example, it seemed unreasonable to value full-time labor spent on a 20-cow herd at the market rate. Such labor is considered overvalued; that is, the opportunity cost of labor so used is considerably under the average wage rate. The residual returns to management and risk also include the return to unpaid labor.

Some estimation procedures used in 1980 are changed for the 1990 cow/calf estimates. Whole farm expenses for inputs not specifically associated with cow/calf production, such as fuels, machinery and building repairs, capital expenditures, taxes and insurance, and interest, are allocated to the cow/calf enterprise using either the cow/calf share of total farm value of production or FEDS-based allocation (see below) shares. A combination of direct costing and allocating to the cow/calf enterprise a share of whole-farm expenses is used instead of the ERS budget generator, which relied on engineering equations for the above expenses. Appendix table 1 highlights some of the changes made from the 1980 database to the 1990 database. For detail on the pre-1990 estimates, see *Economic Indicators of the Farm Sector, Costs of Production—Livestock and Dairy, 1990*.

Appendix table 1—Estimation procedure differences in cow/calf production costs and returns

1980 cow/calf survey	1990 cow/calf survey
<p>Cash expenses</p> <p>Feed costs:</p> <p>Purchased grains, forages, and byproducts—quantities fed multiplied by market price or average cost.</p> <p>Homegrown grains, forages, and byproducts—grain quantities fed multiplied by market prices. Forage quantities fed multiplied by variable cost of forage production. Byproduct quantities fed multiplied by market prices.</p> <p>Fuel, lube, and electricity:</p> <p>ERS budget generator.</p> <p>Machinery and building repairs:</p> <p>ERS budget generator.</p> <p>Paid labor:</p> <p>Includes expenses for contract labor, cash wages, cash and noncash expenses paid to family members and others.</p> <p>Taxes and insurance:</p> <p>ERS budget generator.</p> <p>Capital replacement:</p> <p>ERS budget generator.</p> <p>Economic (full ownership) costs</p> <p>Return to nonland capital:</p> <p>ERS budget generator.</p> <p>Unpaid labor:</p> <p>Imputed expenses for cow/calf share of unpaid operator and other unpaid labor hours spent on cow/calf enterprise, valued at the annual average hourly wage rate for all hired farmworkers.</p>	<p>Cash expenses</p> <p>Feed costs:</p> <p>Purchased grains, forages, and byproducts—quantities fed multiplied by market price or average cost.</p> <p>Homegrown grains, forages, and byproducts—grain quantities fed multiplied by market prices. Forage quantities fed multiplied by variable cost of forage production. Byproduct quantities fed multiplied by market prices.</p> <p>Fuel and lube:</p> <p>Cow/calf share of total farm fuel and lube expenditures during 1990 calendar year.</p> <p>Machinery and building repairs:</p> <p>Cow/calf share of total building, machinery, and equipment repair expenditure during 1990 calendar year.</p> <p>Paid labor:</p> <p>Includes expenses for contract labor, cash wages, cash and noncash expenses paid to family members and others. Excludes paid operator labor.</p> <p>Taxes and insurance:</p> <p>Cow/calf share of total farm real estate and property taxes and crop insurance expenses during 1990 calendar year.</p> <p>Capital expenditures:</p> <p>Dollars spent for beef breeding stock, plus cow/calf share of total annual farm expenditures for buildings, machinery, and equipment.</p> <p>Economic (full ownership) costs</p> <p>Return to nonland capital:</p> <p>Value of beef breeding herd plus cow/calf share of total value of capital invested in machinery and equipment, multiplied by the calculated 10-year average real rate of return to agricultural assets.</p> <p>Unpaid labor:</p> <p>Not calculated, but left in residual returns.</p>

Appendix II—Cow/Calf Production Budget Terms and Definitions

The 1990 beef cow/calf version of the Farm Costs and Returns Survey (FCRS) yielded 821 completed questionnaires from the 31 States surveyed.

Cash receipts: These were based on State average values of primary and secondary products produced per cow, not on actual receipts. Primary products for the beef cow/calf enterprise were per-cow cwt of steer calves, heifer calves, feeder steers, and feeder heifers sold during calendar year 1990. The questionnaires were screened to eliminate operations with more than 10 percent of sales from feedlot operations and/or dairy operations. Secondary products for cow/calf operations were cwt of other cattle sold, including cull cows and bulls, breeding cows, bulls, and replacement heifers, and beef cattle fattened on the operation or in a custom feedlot. The number of cows, replacement heifers, and bulls sold were reported in the 1990 FCRS. Cwt of breeding herd animals sold per cow were estimated by multiplying the number of head by assumed weights of 950 pounds (cows) and 1,200 pounds (bulls).

Prices received for primary and secondary products were from secondary data, while quantities of products sold in 1990 per cow were from the 1990 FCRS. Pounds of primary and secondary products sold per cow were valued at prices based on average annual estimates of weekly averages of daily quotations for steers and heifers (nine markets), slaughter cattle, and canner and cutter cows and bulls (eight markets) from *Livestock Meat Wool Market News* and from *Agricultural Prices* to estimate cash receipts.

Between surveys, the quantities of primary and secondary products produced per cow were held constant. For nonsurvey-year updates, the base-year cash receipts for the primary and secondary products were indexed with changes from the base year in prices of feeder steer calves, feeder heifer calves, feeder steers, feeder heifers, and cows.

Feeder cattle purchases: Some operations purchased feeder cattle in 1990. Expenses for feeder cattle were taken directly from the FCRS. Average feeder cattle prices and an assumed average weight

of 700 pounds per head were used to impute the total weight and number of feeder cattle purchased per observation. Feeder cattle expenses were indexed from 1990 to 1991 by the change in State feeder cattle prices (*Livestock Meat Wool Market News*).

Feed for the cow/calf enterprise: Feed expenses were divided into grazed feed and supplemental feed. Grazed feed included public grazing, private grazing, and grazed cropland. Public grazing included grazing on public land such as State lands, Bureau of Land Management (BLM) lands, Forest Service forest lands, Forest Service national grasslands, Indian lands, railroad lands, and other Federal lands (Fish and Wildlife, Defense, Energy, Reclamation).

Expenses for grazing public land were calculated by multiplying number of acres or AUM's grazed by beef cattle times the rental fee per acre or AUM. Both grazing units and grazing fees were reported for public lands in the 1990 FCRS. Nonsurvey-year public grazing expenses were updated by the change in the rental fee per AUM reported by BLM and Forest Service.

Private grazing included pasture leased or owned by grazing associations, range or native pasture, improved nonirrigated pasture, and irrigated pasture and meadow. Private pasture grazed by beef cattle was owned and/or leased.

Expenses for grazing rented private pasture were calculated from total area grazed, percentage of pasture rented or leased and amount of rent per acre or AUM, and percentage of pasture grazed by beef cattle reported in the 1990 FCRS. Nonsurvey-year expenses were indexed by changes in the rental price of pasture as reported in *Agricultural Resources: Agricultural Land Values*.

Expenses for grazing owned private pasture refer to nonnative pasture, including cropland and improved pasture. Expenses for grazing cropland pasture by beef cattle included small grains pasture (wheat, oats, rye, and rye grass mixtures), crop residue (including sugar beets, corn stalks), set-aside, acreage reduction program acres, conservation reserve program

(CRP) acres (only when allowed), and grazed forages other than those listed above. ERS forage budgets were the source for estimated expenses for grazing owned nonnative pasture. The ERS pasture budgets can be used only for reported acreages, not for AUM's. Capital expenditures and land costs were added to the capital expenditures and land expense line items. In nonsurvey years and depending on the specific forage source, expenses were indexed by the change in grazing fee rates, the change in ERS forage (pasture) budgets, and/or by the change in hay prices for all hay from the base year.

Expenses for grazing leased cropland pasture were calculated from total acreage grazed, percentage rented or leased, rental rate per acre, and percentage of cropland pasture grazed by beef cattle reported in the 1990 FCRS. Nonsurvey-year expenses were indexed by the change in the price of all hay or the annual grazing fee (*Agricultural Prices*).

Grain and concentrates included grains (corn, barley, sorghum, wheat, oats, and grains other than those listed above) and concentrates (commercial mix, protein supplements less than 30 percent, protein supplements greater than 30 percent, cake and cubes, soybean meal, cottonseed meal, fishmeal, and protein blocks). All grains and concentrates fed to beef cattle were assumed purchased. For the base year, the quantities of each type of grain fed to beef cattle were multiplied by annual averages of NASS State prices to estimate grain costs. Quantities of concentrates fed, from the 1990 FCRS, were multiplied by regional prices to estimate concentrates expenses. Prices paid for dairy concentrate, 16-percent protein, were used to estimate the expenses for commercial mix. Prices paid for beef concentrates, 32- to 36-percent protein, were used to estimate the prices for protein supplements both more or less than 30 percent. Prices paid for soybean meal, 44-percent protein, were used to estimate expenses for cake and cubes. Prices paid for soybean meal and cottonseed meal were used to estimate expenses for soybean meal and cottonseed meal. Fishmeal prices (*Feedstuffs*) were used to calculate expenses for fishmeal. Prices paid

for 32- to 36-percent protein beef concentrates were used to impute protein blocks expenses. Changes in corn prices between years were used as proxies for other grain prices to update nonsurvey-year expenses. Changes in prices of 32- to 36-percent protein beef concentrates were used to update other nongrain, nonforage feeds from the base year.

Harvested forage and harvested crop residue: Harvested forage and harvested crop residues included alfalfa hay and legume hay, hay other than alfalfa and legume hay, haylage other than alfalfa, silage including corn, harvested crop residue, green chop, and harvested forages other than those listed above. Harvested forages used by beef cattle were either purchased or produced on the operation.

Expenses for purchased forages were calculated by multiplying quantities of forage purchased times their prices. Amounts fed to beef cattle, percentage purchased, and average prices paid for each type of harvested forage were reported in the FCRS. Nonsurvey-year updates were indexed by changes in the price of all hay as reported in *Agricultural Prices*.

Expenses for homegrown harvested forages fed to beef cattle: Amounts of homegrown forages fed were reported in the FCRS. ERS annually updates the forage budget for alfalfa hay, other hay, other haylage, corn silage, green chop, and pasture for seven regions. These forage budgets were used to estimate the variable costs, capital replacement, and land charges for forages fed to beef cattle. Variable costs of producing forages were included in cash costs for forages. Capital replacement and land charges for producing forages were included in those line items of the beef cow/calf budgets. Nonsurvey-year expenses were indexed by changes in the cost of production of homegrown forages or by changes in the all-hay prices reported in *Agricultural Prices*.

Expenses for byproducts and miscellaneous products fed to beef cattle: These expenses were estimated by multiplying quantities fed

times price paid (*Agricultural Prices*). NASS prices paid were also used for molasses, salt, and minerals. Quantities of urea and pulps fed reported in the FCRS were multiplied by prices in *Feedstuffs*. Expenses for poultry litter, straw, and all other purchased byproducts were estimated by multiplying quantities fed times purchase prices reported in the FCRS. Expenses for farm-produced poultry litter, straw, and other byproducts fed to beef cattle were estimated by multiplying quantities fed times a State average of prices reported by cow/calf operators (FCRS).

Veterinary and medicine expenses: Veterinary and medicine expenses were based on operator-reported expenses for veterinary services or miscellaneous livestock and poultry medical services and supplies (FCRS). These expenses included growth hormones, artificial insemination, and pregnancy testing, but were not listed separately in the published ERS budgets. These expenses were updated in nonsurvey years by 20 percent of the change in prices paid for fuels and energy, 30 percent of the change in prices paid index for autos and trucks, and 50 percent of the change in the wage rate index (*Agricultural Prices*).

Livestock hauling expenses: Livestock hauling expenses were based on operator-reported expenses for hauling items to the operation, to market, or between operations (FCRS). Nonsurvey-year updates were indexed by 30 percent of the change in the prices paid index for fuels and energy and 70 percent of the change in the prices paid index for farm and motor supplies (*Agricultural Prices*).

Marketing costs: Marketing costs included commissions, yardage, inspection, insurance, feed, beef cattle checkoff, and auction fees paid for beef cattle purchased or sold that were reported in the FCRS. Nonsurvey-year updates were estimated using the prices paid index for all production items of nonfarm origin.

Custom fed processing and mixing: Custom fed processing and mixing expenses for beef cattle were reported in FCRS. Nonsurvey-year updates were estimated by an index consisting of 50 percent of the change in the index of prices paid for wage rate and 50 percent of the change in the

prices paid index for farm motor supplies (*Agricultural Prices*).

Miscellaneous expenses: Miscellaneous expenses included bedding and litter expenses, fence repair and maintenance, and rented and leased machinery and livestock.

Bedding and litter expenses for beef cattle were based on operator-reported expenses (FCRS). Nonsurvey-year updates were estimated by indexing with the change in other hay prices (*Agricultural Prices*).

Fence maintenance and repair expenses were based on operator-reported expenses for the costs of maintaining and repairing fences for beef cattle (FCRS). Nonsurvey-year updates were base-year costs indexed by 50 percent of the change in the prices paid index for production items with nonfarm origin and 50 percent of the change in the prices paid index for farm wage rate (*Agricultural Prices*).

Renting and leasing machinery (tractors, trucks, cars, irrigation equipment, and storage structures) was reported in the FCRS for the whole farm. Then, a share was allocated to the cow/calf enterprise according to the enterprise share of 1990 FEDS-based repairs (see *Economic Indicators of the Farm Sector: Costs of Production—Livestock and Dairy, 1990* for a detailed description of FEDS-based enterprise allocation). Nonsurvey-years were updated by the change in the price index for farm service and cash rent (*Agricultural Prices*).

Renting and leasing livestock expenses were taken directly from the FCRS. Updates were 1990 amounts indexed by the price index for farm service and cash rent (*Agricultural Prices*).

Fuel and lube: Fuel and lube expenses and electricity for irrigation were taken directly from the FCRS and were allocated to the beef cattle enterprise according to the enterprise share of the 1990 FEDS-based fuel, lube, and electricity costs for the operation. Nonsurvey-year updates were base-year costs indexed by the change in the prices paid index for fuels and energy (*Agricultural Prices*).

Machinery and building repairs: Machinery and building repairs were based on the repair expenses for the farm reported on the FCRS. Total repair costs for the operation were allocated to the cow/calf enterprise according to the beef cattle share of FEDS-based repairs. Nonsurvey-year updates were base-year costs indexed by 50 percent of the change in the prices paid index for farm and motor supplies and 50 percent of change in the prices paid index for farm services and cash rent (*Agricultural Prices*).

Hired labor expenses: Hired labor expenses included payments to contract labor, cash wages, other cash and noncash benefits paid to workers, and paid management labor as reported in the FCRS. Paid-operator labor was excluded from hired labor expenses and does not appear directly as a line item in the budgets, except that returns to management, unpaid labor, and risk include paid operator labor. Total labor expenses were allocated to the cow/calf enterprise according to the percentage of paid labor time spent on beef cattle reported in the FCRS. Nonsurvey-year updates were base-year costs indexed by regional changes in the wage rates plus employers' share of Social Security taxes (*Farm Labor*).

General farm overhead (GFO): Expenses reported on the FCRS for general business operations were those paid for the whole farm and were allocated to the cow/calf enterprise based on the beef cattle share of total farm receipts. These expenses included those for electricity (excluding irrigation electricity), telephone, water (excluding irrigation water), farm share of motor vehicle, liability, and blanket insurance policies, registration and license fees for motor vehicles, general business expenses, office equipment purchases, farm supplies and hand tools, accessories for motor vehicles and machinery, farm shop power equipment, damages paid for loss or injury connected with the operation that were not covered by insurance, expenses not recorded elsewhere, and expenses for farm improvements including land, drainage, irrigation, and facilities to improve productivity. For each observation, the cow/calf share of general farm overhead was estimated by multiplying total farm GFO by the ratio of beef cash receipts to adjusted gross farm income. Nonsurvey-year updates were base-year costs indexed by the index of prices paid for all production items (*Agricultural Prices*).

Taxes and insurance costs: Taxes and insurance costs were based on expenses reported on the FCRS for all real estate and property taxes, Federal crop insurance, and all other crop and livestock insurance. Total tax and insurance costs for the whole farm were allocated to the beef cattle enterprise according to the beef cattle share of FEDS-based repair costs. We used the beef cattle share of FEDS-based repair costs to allocate taxes and insurance costs because repairs and taxes and insurance amount to approximately the same percentage of asset purchase prices. Nonsurvey-year updates were base-year costs indexed by 65 percent of the change in the prices paid index for taxes (*Agricultural Prices*) and 35 percent of the change in FCRS livestock farm insurance per farm expense (*Farm Production Expenditures*, annual summaries).

Interest expenses: Interest expenses included interest and service fees on farmland, buildings, and other real estate debt and interest and service fees on operating loans reported for whole farm operations on the FCRS. For each observation, since interest was paid on the total farm operation, the cow/calf share of interest expenses was estimated by multiplying the total interest expenses by the ratio of beef cash receipts to adjusted gross farm income. Nonsurvey-year updates were estimated by indexing the real estate interest and non-real estate interest expenses by the changes in the average on farm real estate interest and average on farm nonreal estate interest rates (*Agricultural Income and Finance: Situation and Outlook Report*).

Capital expenditures: Capital expenditures were the amounts spent in 1990 on new breeding stock and new or remodeled machinery, equipment, fences, and buildings. Expenditures for beef cattle operations were estimated by multiplying capital expenditures for each asset type as reported in FCRS for buildings (actual FCRS expenditures multiplied by FEDS-based beef cattle share of repair costs), machinery and equipment (actual FCRS expenditures multiplied by FEDS-based beef cattle share of repair costs) net of machinery and equipment sold, replacement livestock (actual FCRS expenditures for beef cattle replacement breeding stock), and new fences for beef cattle. Nonsurvey-year updates were base-year costs

indexed by changes in the value of total farm assets (*Agricultural Outlook*).

This method of using FCRS-reported actual expenditures and average age of buildings, machinery, and equipment gave better estimates of the actual base-year expenditures to replace assets used in the beef cattle operation. Research shows that depreciation has been much higher than capital expenditures since about 1980 (*Agricultural Outlook*, May 1991), suggesting that depreciation for that period overestimated actual expenditures for replacing worn-out capital. Only in recent years have the two measures of capital consumption converged again.

Economic cost of operating capital: Economic cost of operating capital was the opportunity cost of capital used to purchase variable production inputs used for the beef cattle operation in 1990. This opportunity cost of capital was the estimated return to capital had it been placed in a savings account or similar financial investment for the same period of time. The 6-month Treasury bill rate was multiplied by total variable cash expenses, assuming operating capital for the beef cattle operation was borrowed for 6 months.

Economic cost of other nonland capital: Economic cost of other nonland capital was the opportunity cost of capital invested in cows, including heifers, other heifers that have calved, bulls and heifers weighing 500 pounds and over, machinery, equipment, and buildings used in the beef cattle enterprise. The expected returns to the above investment were estimated by taking the beef cattle share of (1) investment on trucks, autos, tractors, machinery, tools, equipment, and implements owned, and (2) all farm buildings, plus the estimated market value as of December 31, 1990, of beef cattle inventory on the farm (FCRS), all multiplied by a longrun real rate of return to production assets in the farm sector. In nonsurvey-year updates, the base-values were indexed by changes in the value of farm assets (*Agricultural Outlook*) compounded with changes in the longrun real rate of return to production assets in the farm sector (*Economic Indicators of the Farm Sector: National Financial Summary*).

Economic cost of land: Land used in cow/calf operations included all pasture used by beef cattle

(FCRS), land used to produce homegrown harvested forages, and land on which there were beef cattle barns, sheds, corrals, and feed storage facilities. Capital invested in pastureland was estimated by multiplying number of acres of pasture by State average pastureland value per acre. Land charges for harvested forage (per acre or per ton) were calculated by ERS forage budgets. Expected returns to land were estimated (1) by multiplying the value of owned pastureland and owned land used in the beef cattle operation (2 acres per operation) times longrun real rate of return to agricultural assets plus (2) land charges for homegrown harvested forages using the ERS forage budgets. Nonsurvey-year updates were base-year values indexed by changes in State land values (*Agricultural Resources: Agricultural Land Values*), updated forage budget land charges, and changes in the longrun real rate of return to agricultural assets (*Economic Indicators of the Farm Sector: National Financial Summary*).

Economic costs of unpaid labor: Economic costs of unpaid labor were removed from the economic costs and returns for beef cattle and included in the residual returns. Costs of unpaid labor were excluded because distortions from small herds in which all farm unpaid labor was apparently spread over a few cows gave extremely high costs. In these cases, the labor may indeed be spent on the cow herd, but valuing such labor at the State average wage rates created a distortion.

Residual returns to management, unpaid labor, and risk: Residual returns to management, unpaid labor, and risk indicated the extent to which longrun production costs were covered by average cash receipts. This return was dollars per cow remaining after subtracting total economic costs from cash receipts. Returns to management, unpaid labor, and risk are usually expected to be positive in the long run for most enterprises because these resources must be paid their value in production. However, to the extent that a "landownership" enterprise is also part of an operation, charging all the land charge to a specific enterprise, beef cow/calf, results in longrun average costs at or below zero.

The beef cattle enterprise represents a case in which the commodity enterprise may be a supplementary enterprise to a "landownership" enterprise.

The business titles of some of the "land and cattle companies" suggest a "landownership" enterprise. The landowner may not expect cattle to cover all longrun costs of owning land, but rather hopes land appreciation combined with cattle raising will produce longrun wealth accumulation, or at least pay some of the costs of owning land.

Regional differences depended on other agricultural activities in the regions. Feed in the North Central region was largely homegrown. Land charges were greater in the West and Great Plains because each cow unit required more land for which there were generally fewer alternative uses. Cow herds were larger in the West and Great Plains, too. There was no public grazing reported in the South.

SUMMARY OF REPORT

U.S. Farm Sector Continues Financial Recovery

Number 4, December 1992

Contact: Mitchell Morehart (202) 219-0800

In 1990, U.S. farm businesses continued to recover from the financial problems encountered during the early and mid-1980's, according to the most recent Farm Costs and Returns Survey. Based on their overall financial performance, a combination of net cash farm income and debt/asset ratio, farm businesses in 1990 were in the strongest financial condition since 1984.

Gross income more than kept pace with rising expenses, even with dramatic reductions in Government support. Following widespread drought in 1988, average net incomes rebounded strongly in 1989 and 1990. After several years of reductions in the use of debt capital, 1990 saw a moderate rise in debt-financed capital purchases. Farm businesses were also in a better position to service debt in 1990 than at any other time during the 1987-90 period.

Number of Vulnerable Farms Down

Each year, a segment of farms experiences extreme financial difficulties, but the size of that segment has been steadily declining over the past few years. Roughly 7 percent of farms entered 1991 in a vulnerable financial position, having a relatively high amount of debt in combination with negative net income. This level of vulnerability compares with 11.6 percent in 1986.

Nearly two-thirds of vulnerable farms had gross sales below \$40,000. These small, part-time operations are perhaps better able to cope with farm financial difficulties, since many have access to off-farm earnings to support their farm business.

Even though the composition of vulnerable farms has not changed much with regard to farm size, the geographic locations and production specialties associated with vulnerable farms have changed considerably since 1987. The Corn Belt had the largest concentration of vulnerable farms in both 1987 and 1990, yet its share of vulnerable farms went from 22 percent in 1987 to 16 percent in 1990. The Lakes States also had a substantial

reduction in the share of vulnerable farms. In contrast, the Southeast and Southern Plains regions had the largest 1987-90 increase in vulnerable farms.

The proportion of vulnerable farms that specialized in cash grains dropped from 26 percent in 1987 to 18 percent in 1990, the largest reduction for any production specialty.

Incomes Vary by Region and Commodity

The highest average net farm income occurred in the Northern Plains, Mountain, and Pacific regions. Increases in expenses outpaced income growth in 1990 for farms in the Northeast, Southeast, and Mountain regions, resulting in lower average net farm income than in 1989. Production specialties that, on average, had their most profitable year (since 1987) in 1990 were: tobacco; vegetables, fruits, or tree nuts; nursery or greenhouse; beef, hogs, or sheep; and other livestock.

To Order This Report...

The information presented here is excerpted from *Financial Performance of U.S. Farm Businesses, 1987-90*, AER-661, by Mitchell J. Morehart, James D. Johnson, and David E. Banker. The cost is \$14.00.

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