

RETURNS TO LAND INVESTMENT

I N K A N S A S

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Kansas Agricultural Experiment Station • Kansas State University, Manhattan • Marc A. Johnson, Director

RETURNS TO LAND INVESTMENT IN KANSAS*

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ABSTRACT

Financial information from farms enrolled in the Kansas Farm Management Association program was used to determine the relationship between land values and net farm income for 1974 through 1994. Kansas land prices increased annually during this period, except for the period 1983-87. The total decline in land values was 40.6% for this 5-year period. Rates of return to land and buildings investment were derived for the six association regions for the 1974-94 period. The high degree of variability in rates of return to land investment and the low average rate of return for this period were consistent with the results of previous studies. Rates of return to owned investment in land varied from a high of 18.59% in the southwest association in 1974 to a low of -7.98% in the same association in 1981. Rates of return to land investment were highest in the western associations (3.27% in northwest and 3.53% in southwest) and lowest in the northeast association (1.06%). These rates of return do not include the average appreciation in land values for each region over the 1974-94 period. Changes in cash rental rates tended to lag behind changes in land prices.

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INTRODUCTION

The purposes of this analysis were to determine the relationship between land values and net farm income for 1974 through 1994 and to compute an estimated rate of return to land and buildings investment during that period.¹ Kansas land prices increased annually from 1974 to 1982 and then decreased each year for the period 1983-87. The total decline in land values was 40.6% for this 5-year period. Land values then rebounded during the period 1988-94 (Figure 1).

DATA SOURCES

Data for this analysis were obtained from financial records of actual farms enrolled in the Kansas Farm Management Association program.² There are six Farm Management Associations in the state--two each in the western, central, and eastern regions. Data are derived largely from the same farm operations each year. However, new farms are added as new producers participate in the program and others drop from the program.

Net farm income is defined in the Farm Management Association program as the return to the operator's labor, management, and equity capital computed on an accrual basis. Two problems exist in the interpretation of the "return" to land investment derived from this income value. First, net farm income includes income derived from rented land. Data are not available that would allow the returns from owned and rented land to be separated. Therefore, the analysis assumes that rent share paid the landlord represents the full return to the rented land, and that the operator's return from rented land is included in the implied returns to operator's labor, management, and equity

capital. However, to the extent that rented land contributed more (less) than rent share to the net farm income reported, the calculated return on investment in land is overstated (understated). Second, net farm income represents income derived from both crop and livestock production. Therefore, the residual return to land investment estimated in this analysis represents a rate of return from the total farm business and not only crop enterprises or crop production.

Returns to one resource of production, such as land, have different implications for the young producer with a high debt load, the established producer with a high equity, and the outside investor. Because net farm income represents a return to operator's labor, management, and equity capital, understanding the definitions and assumptions used to determine the "return" to land is extremely important.

PROCEDURES

Distribution of the net farm income to factors of production--land, labor, management, and capital--is entirely arbitrary. The method used in this analysis was to first estimate implicit values or opportunity cost values for operating capital and operator's labor and management. These implicit values then were subtracted from net farm income, and the residual was assigned as the "return to land and buildings investment". This method is similar to computing returns to shareholder equities in a corporation. Earnings that remain after all costs are paid represent returns on the market value of farm real estate and are roughly comparable to per-share dividends. With this method, land receives only the net farm income remaining after allowances for returns to other major resources (labor,

¹This analysis represents an update of the following previous studies. Wilton B. Thomas, Don D. Pretzer, John H. McCoy, Dale A. Knight, and Frank Orazem, "Returns to Investment on Selected Types of Kansas Farm Management Association Farms", Department of Economics, Kansas Cooperative Extension Service, Kansas Agricultural Experiment Station, 1969. Don D. Pretzer and Alonna M. Giacomini, "Returns to Land Investment Based on Selected Types of Kansas Farm Management Association Farms", Department of Economics, Kansas Cooperative Extension Service, 1979. John R. Schlender and Kenneth L. McReynolds, "Returns to Land Investment", Department of Agricultural Economics, Kansas Cooperative Extension Service, 1990.

²Sources: "The Annual Reports", Kansas Farm Management Associations, Department of Agricultural Economics, Cooperative Extension Service, Kansas State University, 1974-94.

management, and non-real estate capital) have been made.

The results of any residual computation depend entirely on the assumptions made in allocating returns to other factors, especially to the operator's labor and management. In addition, errors in estimating values of any of the components used in arriving at the residual, if not offset, become incorporated in the residual.

The return to owned land investment was calculated as follows: net farm income plus interest paid on real estate loans minus assumed value for the operator's labor and management minus value of unpaid family labor, minus assumed return to net operating capital. (See Appendix Tables 1-6).

Interest on Real Estate Loans

Net farm income was adjusted by the interest paid on real estate loans, because this interest had been deducted as an expense in computing net farm income. The values of real estate loans were obtained from the financial records of association farms. The average annual interest rates on farm real estate loans at agricultural banks in the Federal Reserve's Tenth District were applied against the land mortgage debt.³

Operator's Labor and Management

Valuation of operator's labor and management is a real problem, because no closely comparable market exists from which to derive an implicit value. A value of \$22,500 was used as the base value for 1994, and then this value was deflated by the annual inflation rate each year to obtain the values for 1974-93. Using this method, the value of operator's labor and management was determined to be \$7,493 for 1974.⁴ A value higher than \$22,500 would reduce the residual return to land and buildings investment.

The farms also varied slightly in number of operators involved from year to year and from region to region. The operator's labor and management values are the number of operators per farm times the labor and management

values for that year.

Value of Unpaid Family Labor

The value of unpaid family labor as reported by the farms was used.

Interest on Net Operating Capital

Determination of an implicit return to net operating capital represents a problem similar to determining the value of operator's labor and management. In the period 1974 to 1994, the Kansas Farm Management Association program utilized three different percents (6.0, 8.0, and 10.0) for computing the rate of return to operating capital. For this analysis, the rate was assumed to be 8% for the entire period. This rate was applied only to operating capital equity, because interest expense on operating capital debt was deducted in the computation of net farm income.

Value of Owned Land Investment

For the financial records of Kansas Farm Management Association farms, land is revalued every 5 years, with the land value held constant for the intervening 5-year period. Land was revalued in the following years: 1975, 1980, 1985, and 1990. Therefore, the Farm Management Association farm records do not provide an accurate value of owned land and buildings investment for each year. For this analysis, the average number of owned acres was computed for each year for each association and then multiplied times the average land price value of for the region for that year to obtain a revised value of owned land and buildings investment.⁵

RESULTS

Table 1 presents the rates of return to owned investment in land and buildings annually for all farms for each of the six Kansas Farm Management Associations. Rates of return to owned investment in land varied from a high of 18.59% in the southwest association in 1974 to a low of -7.98% in the same association in 1981. The rate of return to owned investment in land

³Source: "Quarterly Agricultural Credit Survey", Federal Reserve Bank of Kansas City.

⁴Previous studies had used \$6,000 and \$7,500 as values for operator's labor and management for the year 1974.

⁵Sources: "The Annual Reports", Kansas Farm Management Associations, Department of Agricultural Economics, Cooperative Extension Service, Kansas State University, 1974-94 and Agricultural Land Values and Markets, Kansas Agricultural Statistics, U.S. Department of Agriculture, Economic Research Service, 1974-94.

was highly variable from year to year in all of the associations. Rates of return ranged from an average of 3.53% in the southwest association to 1.06% in the northeast association.

Table 2 presents the average rates of return to owned investment in land and buildings for the period 1990-94 for the following selected farm types: all farms, cash crop-dryland, cash crop-cow herd, and dairy.⁶ The average rates of return for cash crop-dryland farms were lower than those for all farms in the two western associations, but higher than those for all farms in the central and eastern associations. For cash crop-cow herd farms, the average rates of return were all negative. Except for the south central association, the average rates of return for dairy farms were positive, but lower than the values for cash crop-dryland farms.

Cash Rental Rates

Cash rental rates provide another indication of land returns, because a cash rent payment is primarily a payment made for the use of land. Labor; management; operating capital (machinery, livestock, supplies, etc.); and certain capital investments, such as machinery and breeding livestock, are furnished by the cash renter. Consequently, the cash rent payment is not a return to these factors.

Landowner costs must be deducted from cash rental rates to determine the net return to land investment. Real estate tax is the principal landowner cost. Other possible landowner costs include fencing and miscellaneous overhead expenses.

Table 3 shows average price per acre, cash rental rates, and rent as a percentage of price for nonirrigated cropland, irrigated cropland, and pastureland in Kansas for the period 1979 through 1994.⁷ Cash rental rates advanced with rising land prices from 1979 through 1982 for nonirrigated cropland and from 1979 through 1981 for both irrigated cropland and pastureland. Even though prices began to fall significantly for all three land classes (irrigated cropland and pastureland in 1982 and

nonirrigated cropland in 1983), cash rental rates continued to rise slightly through 1984. Cash rental rates reached lows in 1987 for non-irrigated cropland and pastureland and in 1988 for irrigated cropland. As shown by the rent to price ratios in Table 3, changes in cash rental rates tended to lag behind changes in land prices. Rent to price ratios varied from 5.4% in 1981 to 6.9% in 1987 for nonirrigated cropland, from 6.3% in 1981 and 1982 to 9.7% in 1987 for irrigated cropland, and from 3.0% in 1981 to 5.0% in 1986 for pastureland.

CONCLUSIONS AND IMPLICATIONS

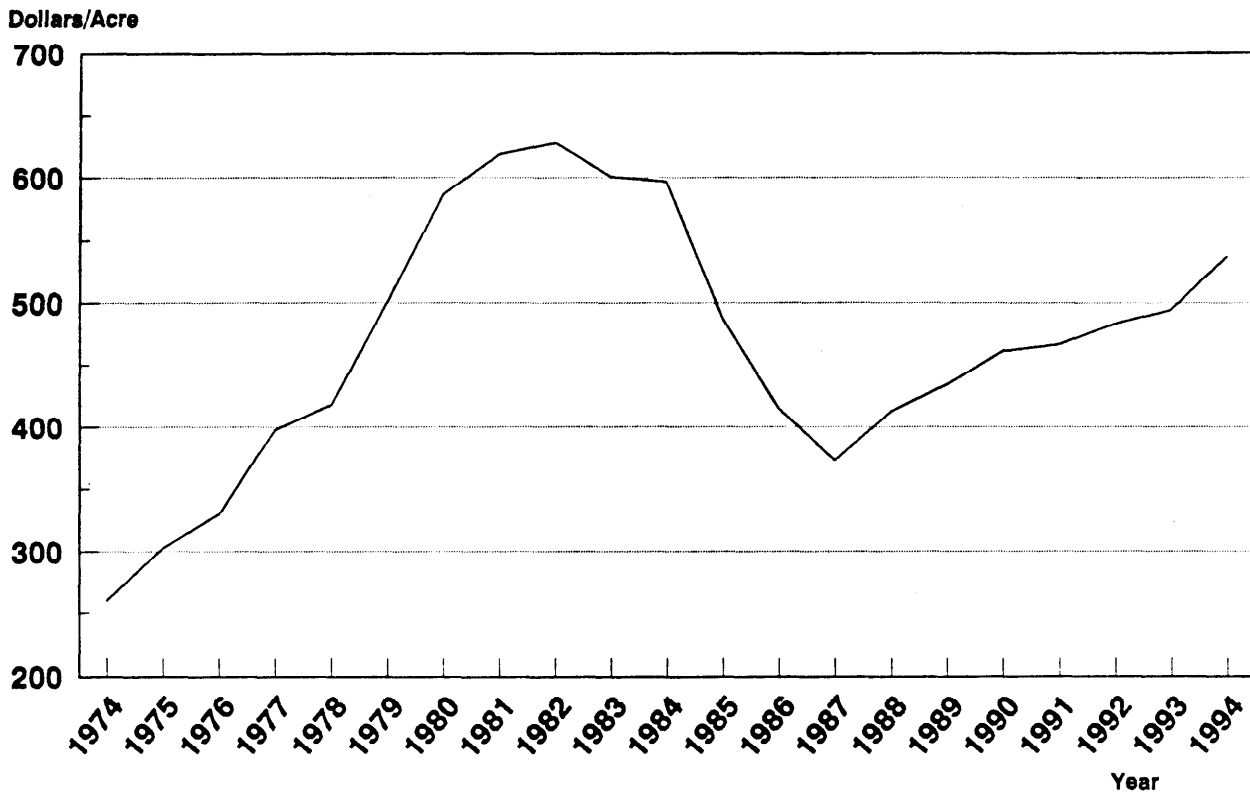
1. The high degree of variability in rates of return to land investment and the low average rate of return on investment for the period 1974-94 were consistent with the results of previous studies.
2. Overall average returns from annual earnings to land resources were extremely low. Higher land values, higher values for labor and management, and/or greater than 8% interest on equity operating capital would result in even lower returns.
3. Rates of return to land investment were highest in the western associations (3.27% in northwest and 3.53% in southwest) and lowest in the northeast association (1.06%).
4. The low rates of return to land investment in the northeast, north central, and southeast associations of 1.06, 1.75, and 2.08%, respectively, may reflect the influence of relatively low or negative livestock profits on net farm income.
5. The opportunity cost value placed on the operator's labor and management has a significant impact on the rate of return to land investment values. A higher (lower) value than that used in this analysis would decrease (increase) the rates of return.

⁶These farm types were selected for this analysis because they were prevalent in the six Farm Management Associations, and this allowed for a comparison of the rate of returns to land investment between crop and livestock operations.

⁷Source: Agricultural Land Values and Markets, U.S. Department of Agriculture, Economic Research Service.

6. The land and buildings investment was valued at fair market value for agricultural purposes. If nonagricultural influences on land values had been considered, then the returns to land resources would have been lower.

Figure 1. Land Value per Acre, All Land and Buildings, 1974-94*



Source: Agricultural Land Values and Markets, U.S.
Department of Agriculture, Economic Research Service.

Table 1. Rates of Return to Owned Investment in Land and Buildings, Farm Management Associations, 1974-94.

Year	N.W. Assn.	S.W. Assn.	N.C. Assn.	S.C. Assn.	N.E. Assn.	S.E. Assn.
			(%)			
1974	4.48	18.59	-7.61	8.29	-4.54	-6.55
1975	4.43	4.29	8.53	7.05	3.47	-1.09
1976	-1.98	-3.56	-2.78	-2.55	-0.25	0.16
1977	1.87	0.95	2.31	1.28	1.24	5.36
1978	8.88	9.81	15.98	9.34	10.97	5.87
1979	11.01	13.79	8.68	10.53	9.82	7.97
1980	2.52	5.80	-0.71	1.55	-1.08	-4.29
1981	-6.13	-7.98	-4.10	-2.41	-1.17	-2.07
1982	0.00	1.28	1.34	1.74	-2.15	0.64
1983	3.26	3.46	-0.87	1.29	-3.66	-2.03
1984	0.75	3.33	-3.57	-2.19	-4.85	-3.86
1985	-1.29	-1.74	-3.72	-3.79	-4.00	-5.21
1986	1.20	-1.94	3.40	0.98	1.50	1.28
1987	11.84	7.97	15.83	9.45	9.15	14.26
1988	15.34	15.19	12.75	12.54	7.59	16.13
1989	2.60	0.61	-1.05	-4.19	2.38	7.01
1990	5.27	5.96	9.92	2.89	5.86	4.35
1991	0.59	0.17	-5.90	-0.93	-5.14	-1.97
1992	3.60	2.39	5.48	2.58	8.56	9.13
1993	8.46	6.73	-3.40	4.48	-2.09	2.92
1994	1.73	-0.89	-4.09	-2.93	-2.11	0.64
AVERAGE ¹	3.27	3.53	1.75	2.36	1.06	2.08

¹Geometric average.

Table 2. Average Rates of Return to Owned Investment in Land and Buildings, Selected Farm Types, Farm Management Associations, 1990-94.

Assn.	All Farms	Cash Crop Dryland	Cash Crop Cow Herd	Dairy
			(%)	
N.W.	3.98	3.45	(0.13)	--
S.W.	2.78	1.95	(2.10)	--
N.C.	0.26	0.55	(2.46)	0.37
S.C.	1.23	3.08	(4.06)	(2.52)
N.E.	0.89	2.43	(2.67)	1.02
S.E.	3.06	5.55	(3.88)	3.28

Table 3. Average Prices per Acre, Cash Rents per Acre, and Rent to Price Ratios for Nonirrigated Cropland, Irrigated Cropland, and Pastureland, 1979-1994.*

Year	Nonirrigated Cropland Rented for Cash			Irrigated Cropland Rented for Cash			Pastureland Rented for Cash		
	Price per acre	Cash rent per acre	Ratio, rent to price	Price per acre	Cash rent per acre	Ratio, rent to price	Price per acre	Cash rent per acre	Ratio, rent to price
	(\$)	(\$)	(%)	(\$)	(\$)	(%)	(\$)	(\$)	(%)
1979	568	27.90	4.9	858	58.80	6.8	335	11.60	3.5
1980	669	30.60	4.6	951	60.90	6.4	395	12.40	3.1
1981	702	31.70	4.5	1,011	64.00	6.3	421	12.60	3.0
1982	726	34.00	4.7	1,000	62.80	6.3	407	12.80	3.1
1983	688	34.00	4.9	943	62.50	6.6	401	13.30	3.3
1984	673	34.10	5.1	918	63.52	6.9	374	13.60	4.3
1985	543	32.38	6.0	784	61.50	7.8	313	13.08	4.2
1986	460	30.34	6.6	692	63.80	9.2	267	13.22	5.0
1987	415	28.60	6.9	613	59.67	9.7	239	10.81	4.5
1988	462	30.60	6.6	692	54.10	7.8	255	11.80	4.6
1989	480	30.20	6.2	812	62.50	7.6	278	10.80	3.9
1990	514	33.10	6.4	855	61.50	7.0	286	11.50	4.0
1991	520	32.50	6.2	841	60.60	7.2	294	11.60	4.0
1992	539	31.90	5.9	834	62.70	7.5	308	12.00	3.9
1993	551	32.80	6.0	841	65.10	7.7	316	12.80	4.1
1994	587	36.60	6.2	925	69.20	7.5	369	12.80	3.5
AVERAGE	569	31.96	5.6	848	62.07	7.3	329	12.29	3.7

*Source: Kansas Agricultural Statistics, Kansas Board of Agriculture, U.S. Department of Agriculture.

APPENDIX TABLE 1. Returns to Owned Investment in Land and Buildings, Farm Management Association, Northwest, 1974-94.

Inputs

Year	Net Farm Income	Real Estate Loans	Federal Land Bank Interest Rate	No. of Operators	Inflation Rate	Operators Labor and Management	Unpaid Family Labor	Net Operating Capital	Investment in Land and Buildings
1974	22055	56935	8.67	1.09	11.0	7493	961	120400	183903
1975	23442	44686	8.94	1.06	9.1	8168	863	104483	215864
1976	8490	54195	9.16	1.09	5.8	8640	991	93967	225335
1977	15801	63346	9.14	1.03	6.5	9203	964	80533	251699
1978	35814	73006	9.56	1.05	7.7	9900	1068	95217	266976
1979	49534	80853	11.05	1.06	11.3	11025	955	127500	323607
1980	23188	90400	14.46	1.07	13.5	12510	1480	139667	404975
1981	-20874	113393	16.60	1.08	10.4	13793	1353	123267	459250
1982	6743	123075	15.84	1.08	6.1	14648	2012	104830	438310
1983	26214	145260	13.77	1.08	3.2	15120	2247	119960	552811
1984	10977	145841	14.27	1.08	4.3	15773	2250	107540	518816
1985	373	173058	13.24	1.05	3.6	16335	2227	123300	462496
1986	13719	160505	11.67	1.05	1.1	16650	2397	99350	385770
1987	48658	140532	10.89	0.97	4.4	17258	2562	115220	299376
1988	62177	132540	11.23	1.01	4.1	17955	2140	118700	308220
1989	24237	116462	11.78	0.90	4.8	18833	1859	128190	342044
1990	35000	110240	11.36	0.89	5.4	19845	2647	121790	331428
1991	26442	117399	10.34	0.86	4.2	20678	6000	160863	329222
1992	38946	118381	9.09	0.90	3.0	21308	4800	164650	348448
1993	60854	115133	8.39	0.85	3.0	21938	5679	169388	386000
1994	33497	120450	8.92	0.86	2.6	22500	3779	176438	405423

Outputs

Year	Net Farm Income	+ Interest on Real Estate Loans	- Labor and Management Charge	- Interest on Operating Capital	= Return to Land and Buildings (\$)	+ Owned Investment in Land and Buildings	= Rate of Return to Land and Buildings (%)
1974	22055	4936	9128	9632	8231	183903	4.48
1975	23442	3995	9521	8359	9557	215864	4.43
1976	8490	4964	10409	7517	-4472	225335	-1.98
1977	15801	5790	10443	6443	4705	251699	1.87
1978	35814	6979	11463	7617	23713	266976	8.88
1979	49534	8934	12642	10200	35627	323607	11.01
1980	23188	13072	14866	11173	10221	404975	2.52
1981	-20874	18823	16249	9861	-28162	459250	-6.13
1982	6743	19495	17832	8386	20	438310	0.00
1983	26214	20002	18577	9597	18043	552811	3.26
1984	10977	20812	19285	8603	3900	518816	0.75
1985	373	22913	19379	9864	-5957	462496	-1.29
1986	13719	18731	19880	7948	4622	385770	1.20
1987	48658	15304	19302	9218	35442	299376	11.84
1988	62177	14884	20275	9496	47291	308220	15.34
1989	24237	13719	18809	10255	8892	342044	2.60
1990	35000	12523	20309	9743	17471	331428	5.27
1991	26442	12139	23783	12869	1929	329222	0.59
1992	38946	10761	23977	13172	12558	348448	3.60
1993	60854	9660	24326	13551	32636	386000	8.46
1994	33497	10744	23129	14115	6997	405423	1.73
AVERAGE					11584	354284	3.27

APPENDIX TABLE 2. Returns to Owned Investment in Land and Buildings, Farm Management Association, Southwest, 1974-94.

Inputs

Year	Net Farm Income	Real Estate Loans	Federal Land Bank Interest Rate	No. of Operators	Inflation Rate	Operators Labor and Management	Unpaid Family Labor	Net Operating Capital	Investment in Land and Buildings
1974	43005	71791	8.67	1.03	11.0	7493	343	120050	169796
1975	20170	41122	8.94	1.10	9.1	8168	524	82633	179928
1976	6256	56770	9.16	1.13	5.8	8640	302	102333	190716
1977	15001	66015	9.14	1.14	6.5	9203	286	99133	245016
1978	39484	72818	9.56	1.14	7.7	9900	284	114933	261750
1979	53603	73995	11.05	1.12	11.3	11025	303	142933	273360
1980	33913	82343	14.46	1.13	13.5	12510	429	159317	318928
1981	-13339	89829	16.60	1.15	10.4	13793	399	145150	329565
1982	15701	100840	15.84	1.16	6.1	14648	365	123140	348840
1983	27666	104670	13.77	1.15	3.2	15120	825	134770	378561
1984	27690	103574	14.27	1.16	4.3	15773	1082	135820	366916
1985	10846	103910	13.24	1.11	3.6	16335	1345	133700	319615
1986	10342	97719	11.67	1.09	1.1	16650	708	106690	290460
1987	39006	85137	10.89	1.09	4.4	17258	495	106760	256361
1988	58427	83434	11.23	1.08	4.1	17955	520	124080	249888
1989	23739	75879	11.78	1.10	4.8	18833	319	124430	274905
1990	39635	83006	11.36	1.07	5.4	19845	190	129540	289732
1991	29237	77400	10.34	1.06	4.2	20678	526	178275	320896
1992	38520	75971	9.09	1.05	3.0	21308	485	180450	340120
1993	53595	69954	8.39	1.08	3.0	21938	874	178738	306240
1994	30075	76965	8.92	1.02	2.6	22500	1519	191275	317840

Outputs

Year	Net Farm Income	+Interest on Real Estate Loans	- Labor and Management Charge	- Interest on Operating Capital	= Return to Land and Buildings (\$)	+ Owned Investment in Land and Buildings	= Rate of Return to Land and Buildings (%)
1974	43005	6224	8061	9604	31564	169796	18.59
1975	20170	3676	9509	6611	7727	179928	4.29
1976	6256	5200	10065	8187	-6796	190716	-3.56
1977	15001	6034	10777	7931	2327	245016	0.95
1978	39484	6961	11570	9195	25681	261750	9.81
1979	53603	8176	12651	11435	37694	273360	13.79
1980	33913	11907	14565	12745	18509	318928	5.80
1981	-13339	14912	16261	11612	-26300	329565	-7.98
1982	15701	15973	17357	9851	4466	348840	1.28
1983	27666	14413	18213	10782	13084	378561	3.46
1984	27690	14780	19379	10866	12226	366916	3.33
1985	10846	13758	19477	10696	-5569	319615	-1.74
1986	10342	11404	18857	8535	-5646	290460	-1.94
1987	39006	9271	19306	8541	20430	256361	7.97
1988	58427	9370	19911	9926	37959	249888	15.19
1989	23739	8939	21035	9954	1688	274905	0.61
1990	39635	9429	21424	10363	17277	289732	5.96
1991	29237	8003	22445	14262	533	320896	0.17
1992	38520	6906	22858	14436	8131	340120	2.39
1993	53595	5869	24567	14299	20598	306240	6.73
1994	30075	6865	24469	15302	-2831	317840	-0.89
AVERAGE					10131	287116	3.53

APPENDIX TABLE 3. Returns to Owned Investment in Land and Buildings, Farm Management Association, North Central, 1974-94.

Inputs

Year	Net Farm Income	Real Estate Loans	Federal Land Bank Interest Rate	No. of Operators	Inflation Rate	Operators Labor and Management	Unpaid Family Labor	Net Operating Capital	Investment in Land and Buildings
1974	1654	46614	8.67	1.12	11.0	7493	169	76100	117648
1975	22852	39835	8.94	1.16	9.1	8168	102	67233	134376
1976	6532	43928	9.16	1.16	5.8	8640	89	59683	155991
1977	14848	52120	9.14	1.08	6.5	9203	72	62167	200651
1978	45785	58885	9.56	1.10	7.7	9900	111	78850	213426
1979	34182	65229	11.05	1.11	11.3	11025	189	96017	245116
1980	8800	73259	14.46	1.07	13.5	12510	333	97117	294395
1981	-3720	78330	16.60	1.08	10.4	13793	318	85600	312069
1982	15384	78077	15.84	1.12	6.1	14648	218	89633	296244
1983	9491	81305	13.77	1.11	3.2	15120	57	78967	283679
1984	2719	74335	14.27	1.09	4.3	15773	310	66317	265216
1985	6149	67810	13.24	1.07	3.6	16335	91	61217	197414
1986	21211	67633	11.67	1.08	1.1	16650	45	70017	161172
1987	40459	58818	10.89	1.08	4.4	17258	220	85733	133590
1988	40727	60250	11.23	1.06	4.1	17955	109	94250	163216
1989	19333	59260	11.78	1.05	4.8	18833	162	101820	169034
1990	42491	59488	11.36	1.05	5.4	19845	370	112090	192321
1991	16381	60007	10.34	1.07	4.2	20678	400	146650	197664
1992	38371	63472	9.09	1.04	3.0	21308	102	131125	207888
1993	21297	64318	8.39	1.04	3.0	21938	342	133988	211342
1994	19246	68293	8.92	1.05	2.6	22500	469	127513	219208

Outputs

Year	Net Farm Income	+ Interest on Real Estate Loans	- Labor and Management Charge	- Interest on Operating Capital	= Return to Land and Buildings (\$)	+ Owned Investment in Land and Buildings	= Rate of Return to Land and Buildings (%)
1974	1654	4041	8561	6088	-8954	117648	-7.61
1975	22852	3561	9577	5379	11458	134376	8.53
1976	6532	4024	10111	4775	-4330	155991	-2.78
1977	14848	4764	10011	4973	4627	200651	2.31
1978	45785	5629	11001	6308	34105	213426	15.98
1979	34182	7208	12427	7681	21282	245116	8.68
1980	8800	10593	13719	7769	-2095	294395	-0.71
1981	-3720	13003	15214	6848	-12780	312069	-4.10
1982	15384	12367	16624	7171	3957	296244	1.34
1983	9491	11196	16840	6317	-2471	283679	-0.87
1984	2719	10608	17503	5305	-9481	265216	-3.57
1985	6149	8978	17569	4897	-7340	197414	-3.72
1986	21211	7893	18027	5601	5475	161172	3.40
1987	40459	6405	18859	6859	21147	133590	15.83
1988	40727	6766	19141	7540	20812	163216	12.75
1989	19333	6981	19937	8146	-1768	169034	-1.05
1990	42491	6758	21207	8967	19074	192321	9.92
1991	16381	6205	22525	11732	-11672	197664	-5.90
1992	38371	5770	22262	10490	11388	207888	5.48
1993	21297	5396	23158	10719	-7183	211342	-3.40
1994	19246	6092	24094	10201	-8957	219208	-4.09
AVERAGE					3633	208174	1.75

APPENDIX TABLE 4. Returns to Owned Investment in Land and Buildings, Farm Management Association, South Central, 1974-94.

Inputs

Year	Net Farm Income	Real Estate Loans	Federal Land Bank Interest Rate	No. of Operators	Inflation Rate	Operators Labor and Management	Unpaid Family Labor	Net Operating Capital	Investment in Land and Buildings
1974	19512	44848	8.67	1.07	11.0	7493	493	73117	109089
1975	20805	32322	8.94	1.05	9.1	8168	488	65967	132588
1976	7988	37813	9.16	1.14	5.8	8640	554	60283	147750
1977	13768	48886	9.14	1.09	6.5	9203	537	67183	179040
1978	31194	58344	9.56	1.10	7.7	9900	622	76467	204978
1979	38373	62928	11.05	1.11	11.3	11025	623	95167	235924
1980	18121	67062	14.46	1.10	13.5	12510	1387	106233	269777
1981	6111	72630	16.60	1.10	10.4	13793	1316	99067	259581
1982	15978	81685	15.84	1.09	6.1	14648	1257	90100	257433
1983	17387	81749	13.77	1.11	3.2	15120	1197	94100	243615
1984	8003	81011	14.27	1.07	4.3	15773	853	85267	227661
1985	6693	85015	13.24	1.08	3.6	16335	732	80217	180488
1986	17414	74509	11.67	1.07	1.1	16650	576	77183	157724
1987	30387	74009	10.89	1.05	4.4	17258	569	73867	146481
1988	38716	69385	11.23	1.06	4.1	17955	545	86830	159426
1989	12729	68758	11.78	1.07	4.8	18833	356	96260	176136
1990	25695	63351	11.36	1.05	5.4	19845	388	85500	166732
1991	24721	66074	10.34	1.03	4.2	20678	859	136263	161570
1992	32128	63555	9.09	1.02	3.0	21308	761	142700	154800
1993	38063	63511	8.39	1.04	3.0	21938	787	143613	185217
1994	24684	63750	8.92	1.06	2.6	22500	688	138088	177892

Outputs

Year	Net Farm Income	+ Interest on Real Estate Loans	- Labor and Management Charge	- Interest on Operating Capital	= Return to Land and Buildings (\$)	+ Owned Investment in Land and Buildings	= Rate of Return to Land and Buildings (%)
1974	19512	3888	8511	5849	9040	109089	8.29
1975	20805	2890	9064	5277	9353	132588	7.05
1976	7988	3464	10404	4823	-3775	147750	-2.55
1977	13768	4468	10568	5375	2293	179040	1.28
1978	31194	5578	11512	6117	19142	204978	9.34
1979	38373	6954	12861	7613	24852	235924	10.53
1980	18121	9697	15148	8499	4172	269777	1.55
1981	6111	12057	16488	7925	-6246	259581	-2.41
1982	15978	12939	17223	7208	4486	257433	1.74
1983	17387	11257	17980	7528	3136	243615	1.29
1984	8003	11560	17730	6821	-4988	227661	-2.19
1985	6693	11256	18374	6417	-6842	180488	-3.79
1986	17414	8695	18392	6175	1543	157724	0.98
1987	30387	8060	18690	5909	13847	146481	9.45
1988	38716	7792	19577	6946	19984	159426	12.54
1989	12729	8100	20507	7701	-7379	176136	-4.19
1990	25695	7197	21225	6840	4826	166732	2.89
1991	24721	6832	22157	10901	-1505	161570	-0.93
1992	32128	5777	22495	11416	3994	154800	2.58
1993	38063	5329	23603	11489	8300	185217	4.48
1994	24684	5687	24538	11047	-5215	177892	-2.93
AVERAGE					4429	187329	2.36

APPENDIX TABLE 5. Returns to Owned Investment in Land and Buildings, Farm Management Association, Northeast, 1974-94.

Inputs

Year	Net Farm Income	Real Estate Loans	Federal Land Bank Interest Rate	No. of Operators	Inflation Rate	Operators Labor and Management	Unpaid Family Labor	Net Operating Capital	Investment in Land and Buildings
1974	5041	46799	8.67	1.10	11.0	7493	741	80067	138528
1975	18084	35250	8.94	1.11	9.1	8168	615	77450	154395
1976	12715	41130	9.16	1.17	5.8	8640	567	77433	157664
1977	15670	50048	9.14	1.17	6.5	9203	523	80750	200703
1978	38124	52101	9.56	1.16	7.7	9900	566	82417	223040
1979	45632	62082	11.05	1.21	11.3	11025	571	115033	299096
1980	11828	72544	14.46	1.20	13.5	12510	706	126733	327825
1981	10080	77661	16.60	1.20	10.4	13793	748	120250	338640
1982	5078	91145	15.84	1.22	6.1	14648	1084	111530	388450
1983	671	91862	13.77	1.18	3.2	15120	1233	94450	364153
1984	-2007	85672	14.27	1.17	4.3	15773	1099	82670	329095
1985	4266	89339	13.24	1.22	3.6	16335	1221	76970	280554
1986	21437	90691	11.67	1.22	1.1	16650	1176	84890	248976
1987	41351	79946	10.89	1.22	4.4	17258	1131	99610	217513
1988	41498	76865	11.23	1.20	4.1	17955	1247	113840	240086
1989	31047	72584	11.78	1.23	4.8	18833	1143	123640	226842
1990	40428	67849	11.36	1.18	5.4	19845	730	120270	245073
1991	18689	64359	10.34	1.16	4.2	20678	952	166913	251807
1992	56620	67262	9.09	1.16	3.0	21308	1335	183163	257396
1993	30496	62569	8.39	1.14	3.0	21938	1126	191263	271684
1994	30196	66774	8.92	1.15	2.6	22500	1389	186738	286135

Outputs

Year	Net Farm Income	+ Interest on Real Estate Loans	- Labor and Management Charge	- Interest on Operating Capital	= Return to Land and Buildings (\$)	+ Owned Investment in Land and Buildings	= Rate of Return to Land and Buildings (%)
1974	5041	4057	8983	6405	-6290	138528	-4.54
1975	18084	3151	9681	6196	5358	154395	3.47
1976	12715	3768	10676	6195	-388	157664	-0.25
1977	15670	4574	11291	6460	2494	200703	1.24
1978	38124	4981	12050	6593	24461	223040	10.97
1979	45632	6860	13911	9203	29378	299096	9.82
1980	11828	10490	15718	10139	-3539	327825	-1.08
1981	10080	12892	17300	9620	-3948	338640	-1.17
1982	5078	14437	18955	8922	-8362	388450	-2.15
1983	671	12649	19075	7556	-13310	364153	-3.66
1984	-2007	12225	19553	6614	-15949	329095	-4.85
1985	4266	11828	21150	6158	-11213	280554	-4.00
1986	21437	10584	21489	6791	3740	248976	1.50
1987	41351	8706	22186	7969	19903	217513	9.15
1988	41498	8632	22793	9107	18230	240086	7.59
1989	31047	8550	24308	9891	5399	226842	2.38
1990	40428	7708	24147	9622	14367	245073	5.86
1991	18689	6655	24938	13353	-12948	251807	-5.14
1992	56620	6114	26052	14653	22029	257396	8.56
1993	30496	5250	26135	15301	-5691	271684	-2.09
1994	30196	5956	27264	14939	-6051	286135	-2.11
AVERAGE					2746	259412	1.06

APPENDIX TABLE 6. Returns to Owned Investment in Land and Buildings, Farm Management Association, Southeast, 1974-94.

Inputs

Year	Net Farm Income	Real Estate Loans	Federal Land Bank Interest Rate	No. of Operators	Inflation Rate	Operators Labor and Management	Unpaid Family Labor	Net Operating Capital	Investment in Land and Buildings
1974	1203	50079	8.67	1.13	11.0	7493	752	77917	151248
1975	9648	44441	8.94	1.13	9.1	8168	887	67783	175344
1976	11782	51760	9.16	1.16	5.8	8640	944	65767	180601
1977	24248	56098	9.14	1.17	6.5	9203	924	80167	210240
1978	27756	62397	9.56	1.16	7.7	9900	892	86450	245672
1979	40123	71304	11.05	1.14	11.3	11025	1022	105283	326232
1980	-758	73861	14.46	1.13	13.5	12510	1243	109850	331700
1981	2543	89610	16.60	1.15	10.4	13793	1050	97933	354688
1982	11511	100662	15.84	1.12	6.1	14648	1000	98130	342076
1983	6005	96753	13.77	1.11	3.2	15120	1059	98890	315810
1984	666	95136	14.27	1.11	4.3	15773	894	94680	304380
1985	370	98438	13.24	1.12	3.6	16335	885	83660	239268
1986	18808	89707	11.67	1.10	1.1	16650	938	91400	211728
1987	46714	86603	10.89	1.11	4.4	17258	1032	110400	190247
1988	57076	83286	11.23	1.11	4.1	17955	1145	130110	216657
1989	38291	79331	11.78	1.09	4.8	18833	783	137050	219200
1990	36100	77978	11.36	1.11	5.4	19845	705	144700	244648
1991	24224	76294	10.34	1.09	4.2	20678	929	172488	261000
1992	56257	77965	9.09	1.07	3.0	21308	886	174775	281210
1993	39612	79486	8.39	1.05	3.0	21938	908	183438	262694
1994	34084	81352	8.92	1.05	2.6	22500	1239	183325	280840

Outputs

Year	Net Farm Income	+ Interest on Real Estate Loans	- Labor and Management Charge	- Interest on Operating Capital	= Return to Land and Buildings (\$)	+ Owned Investment in Land and Buildings	= Rate of Return to Land and Buildings (%)
1974	1203	4342	9219	6233	-9908	151248	-6.55
1975	9648	3973	10117	5423	-1918	175344	-1.09
1976	11782	4741	10966	5261	295	180601	0.16
1977	24248	5127	11692	6413	11270	210240	5.36
1978	27756	5965	12376	6916	14429	245672	5.87
1979	40123	7879	13590	8423	25989	326232	7.97
1980	-758	10680	15379	8788	-14245	331700	-4.29
1981	2543	14875	16912	7835	-7328	354688	-2.07
1982	11511	15945	17406	7850	2200	342076	0.64
1983	6005	13323	17842	7911	-6426	315810	-2.03
1984	666	13576	18402	7574	-11735	304380	-3.86
1985	370	13033	19180	6693	-12470	239268	-5.21
1986	18808	10469	19253	7312	2712	211728	1.28
1987	46714	9431	20188	8832	27125	190247	14.26
1988	57076	9353	21075	10409	34945	216657	16.13
1989	38291	9345	21311	10964	15361	219200	7.01
1990	36100	8858	22733	11576	10649	244648	4.35
1991	24224	7889	23468	13799	-5154	261000	-1.97
1992	56257	7087	23686	13982	25676	281210	9.13
1993	39612	6669	23943	14675	7663	262694	2.92
1994	34084	7257	24864	14666	1811	280840	0.64
AVERAGE					5283	254547	2.08

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