The MINNESOTA RURAL REAL ESTATE MARKET in 1988

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INCLUDING SPECIAL STUDIES OF:

Economic Development Regions
Southwestern Minnesota
Trends in Land Prices and Net Returns per Crop Acre in Southwestern Minnesota
A Comparison of Minnesota Farmland Value Appreciation and U.S. Government Bond Yields
The Drought of 1988
Deflated Estimated Values and Sales Prices

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ERRATA

The Minnesota Rural Real Estate Market in 1988

Page 2	The deflated average sales price per acre in 1988 was $198 (not $199).
Page 2	In the Northwest district, unimproved land predominated with 80 percent (not 90 percent).
Page 58	In the heading to Table 32, the final period is 1981-1987 (not 1981-1988).
Page 66	In the discussion of Table 38 second line from bottom, the percentage change is between two paired years for the years 1910-1945 (not 1910-1947).

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Summary

The statewide average estimated value of Minnesota rural real estate increased by 9 percent to $523 per acre from July 1987 to July 1988. This was a reversal in the trend of continually declining values in every year since 1981. Each district except the Northeast showed an appreciation in value, with the southern and the western districts showing greater increases than the eastern districts.

In contrast to the estimated value, the average price per acre paid in sales reported during January - June 1988 increased to $691 or 24 percent above the January - June 1987 period with the largest increases in the Southeast, Southwest, and Northwest Districts.

An adjustment to remove the effect of a higher proportion of good quality land sold in 1988 than in 1987 reduced the statewide increase in average sales price from 24 percent to 20 percent. All districts reported increases after adjusting, although the price increase in the Northwest District was reduced from 22 percent to 10 percent. In the Northeast District an increase of 10 percent unadjusted became a 19 percent increase after adjustment, and in the East Central District an 8 percent decline was converted into an 11 percent increase.

When deflated with the Consumer Price Index (1967=100), the average estimated value was $149 per acre in 1988, slightly below the deflated estimated value of $151 per acre in 1955. The deflated average sales price per acre in 1988 was $199, slightly below the deflated 1966 price of $209.

Expansion buyers continued to dominate the market by purchasing 75 percent of the properties sold. Investors and sole-tract buyers purchased 13 and 12 percent of the tracts, respectively. Expansion buyers were most prominent in the cash grain areas, accounting for over 80 percent of all sales in the three western districts.

Unimproved land (land without buildings) increased as percentage of all sales to 61 percent, up 2 percentage points from 1987. In the Northwest district, where expansion buyers were most prominent, unimproved land was also the highest with 90 percent of sales. In general the greater the proportion of purchases made by expansion buyers, the greater the proportion of unimproved land sales.

Cash financing was the method of finance used in 41 percent of all sales, with a concentration in the Southwest and the Northwest Districts. Contracts for deed continued to decline in use to 34 percent of the sales, the lowest since 1956. Mortgage financing was used in only 25 percent of the sales.

In 1988, financial difficulty was the most frequent reason given for selling, accounting for 42 percent of all sales. Assuming that "leaving farming" and "reducing size of operation" were also the result of financial deterioration, then 56 percent of sales were caused by financial difficulty, a reduction from 70 percent in 1987. Retirement and death accounted for 23 percent and 14 percent of the sales, respectively.

Introduction

Data for this report were gathered from 664 usable responses to approximately 1,400 questionnaires mailed in July 1988 to those familiar with the rural real estate market in Minnesota, including real estate brokers, appraisers, farm managers, county officials, agricultural credit and bank officials, and others. Respondents to the survey provided two types of information: estimates of land value and data from actual farm sales.

The estimates of land value per acre refer to farms of average size and value in the respondents' communities, as of July, 1988. The estimates are aggregated by counties, then by districts, and finally for the whole state.

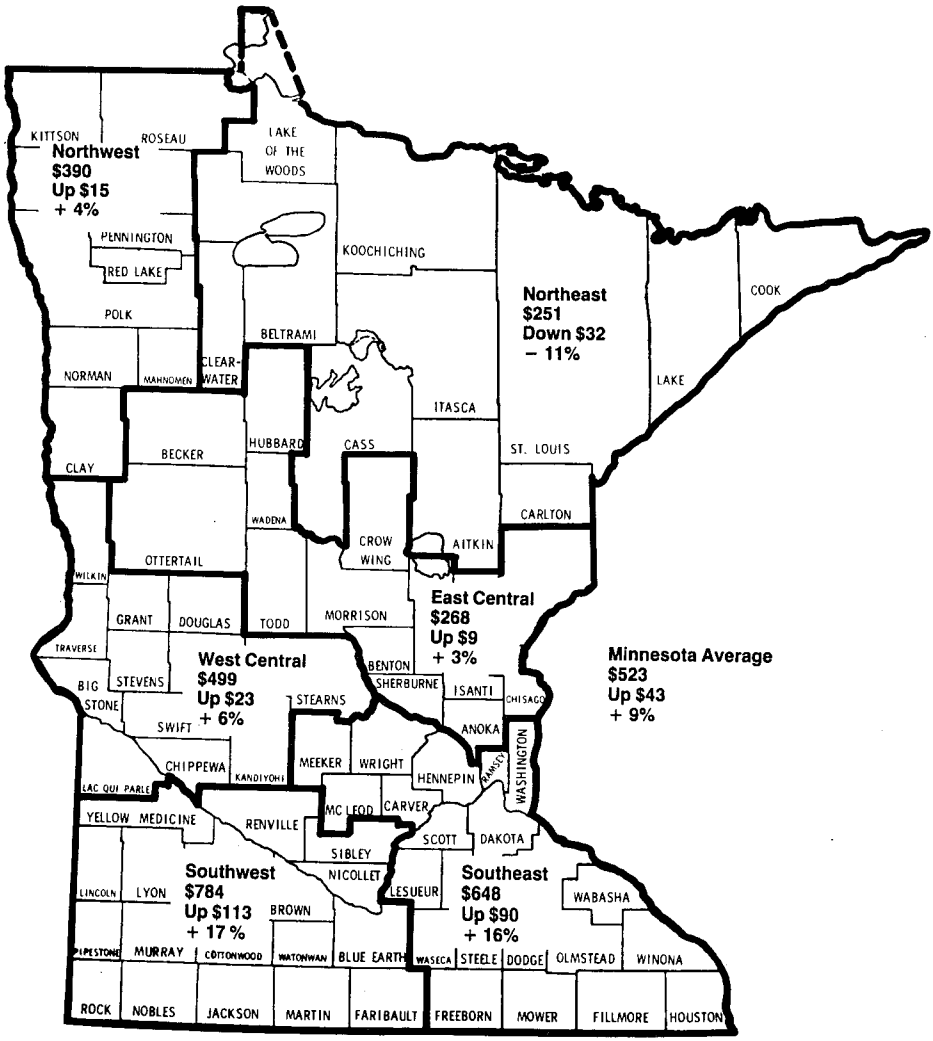
District and state estimated values are computed by weighting the estimated value for a given county by the acres of land in farms in that county as reported in the 1982 U.S. Census of Agriculture. Percentage changes in the value from year to year are computed by averaging estimates by counties from respondents from whom estimates were also received in the previous year. This percentage change is then applied to the estimated value of the previous year for the districts, and at the state level.

Data on reported sales refer to sales of farmland occurring between January 1 and July 1, 1988. For each sale the respondents supplied information regarding acreage, price per acre, location, method of financing, quality of land and buildings, reason for sale, and buyer and seller characteristics.

The data for sales prices are subject to greater year-to-year variability than are the data on estimated values. This is the result of wide differences in land and building quality, location characteristics of a particular tract, and the impact that unusually high or low prices for individual sales can have on the average sales prices.

In analyzing the data, duplicate reports of sale were eliminated, data for Hennepin and Ramsey Counties (Minneapolis and St. Paul) were omitted, and respondents were asked not to report sales between close relatives (father-son, etc.)

Figure 1. Estimated Land Values per Acre in 1988 (Excluding Hennepin and Ramsey Counties)



[1]Based on reported estimates of average value per acre of farmland for the first six months of 1988.

Part I
The Minnesota Rural Real Estate Market in 1988

A. Land Market Trends

Reporters' Estimates

In 1988, the statewide *average estimated value per acre* was $523, an increase of 9 percent from $480 in 1987 (Table 1 and Figure 1). This was the first statewide increase in average value since 1981 (Figure 2).

With the exception of the Northeast district, all districts increased in value. The greatest gain of 17 percent was in the Southwest district. Alternatively the Northeast district continued to decline, by 11 percent from 1987. Remaining

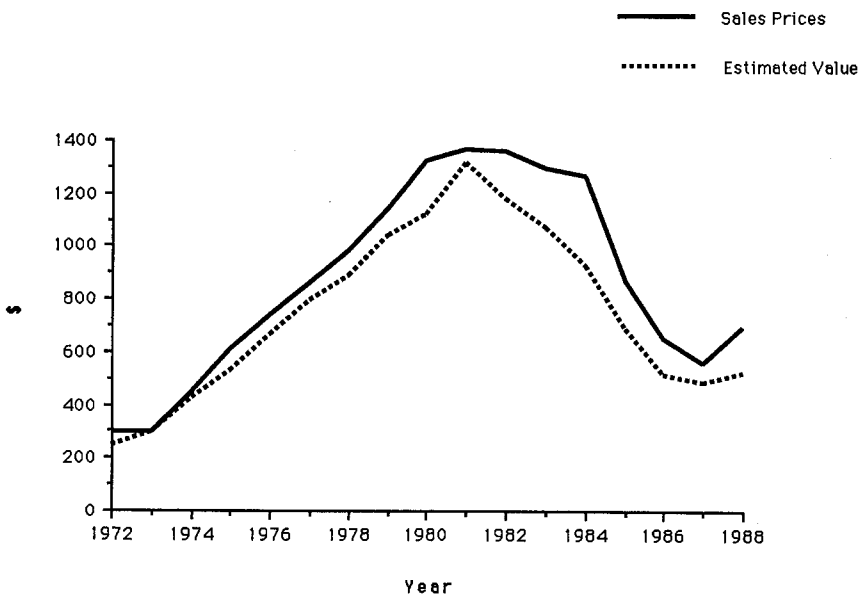
Table 1: Estimated Average Value Per Acre of Minnesota Farmland, by District, 1972-1988

Year	South-east	South-west	West Central	East Central	North-west	North-east	State Average
1972	370	379	208	163	117	76	248
1973	433	459	247	194	146	115	298
1974	576	675	378	279	199	144	423
1975	674	844	503	296	295	163	525
1976	856	1106	624	349	378	210	667
1977	1027	1316	730	415	427	279	794
1978	1191	1421	803	498	483	304	889
1979	1453	1620	883	573	599	368	1040
1980	1526	1750	962	596	683	390	1120
1981	1709	2083	1135	679	813	460	1310
1982	1504	1875	1044	584	748	483	1179
1983	1354	1669	981	561	658	411	1065
1984	1164	1401	873	505	586	436	927
1985	861	967	690	374	510	362	686
1986	603	696	511	296	418	308	515
1987	558	671	472	259	375	293	480
1988	648	784	499	268	390	251	523
Percent Change 1987-1988	16	17	6	3	4	-11	9

districts increased in value as follows, in descending order: Southeast, 16 percent; West Central, 6 percent; Northwest, 4 percent; and East Central, 3 percent.

The regional pattern of changes in estimated value has been similar for the past two years. In 1987, the southern and the western districts declined less than the northern and eastern districts. In 1988, the southern and the western districts increased more than the northern and eastern districts. Although other causes may also be involved, this two-year pattern may demonstrate the stabilizing and positive effects of government support measures in the 1985 Agricultural Act and the rise in grain exports, which benefited primarily those areas most dependent on cash crops.

Figure 2. Average Estimated Values and Average Sales Prices for Minnesota Farmland, 1972-1988



Reported Sales

Information was gathered by the 1988 survey on 1,077 sales of farmland and buildings occurring between January 1 and July 1, 1988. For the state as a whole, the *average reported sales price per acre* was $691 (unadjusted). This was a considerable increase of 24 percent over the 1987 statewide average price of $559 (Table 2 and Figure 2). As was true for estimated value, 1988 marked the first increase in average sales price since the peak in 1981.

Regionally, five of the six districts reported increases in price. The largest increase was in the Southeast District at 28 percent. The only district with a reduction in price was the East Central District at 8 percent. In descending order of increase, the remaining districts are listed as follows: Northwest, 22 percent; Southwest, 21 percent; West Central, 16 percent; and Northeast, 10 percent.

There are wide differences between the percentage changes in the average estimated value and average reported sales price in all districts except the Southwest. In the Southeast, West Central, Northwest, and the Northeast Districts, the percentage change in reported sales prices exceeded the change in estimated values. The greatest difference occurred in the Northeast District where the estimated value declined by 11 percent and the sales price increased 10 percent for a difference of 21 percentage points. Conversely, in the East Central District the estimated value increased 3 percent while the sales price decreased by 8 percent.

A possible reason for the wide difference between the 22 percent increase in sales price and the 4 percent gain in estimated value for the Northwest District could be the price-enhancing effects of the Conservation Reserve Program (CRP). Entries in that program in the Northwest District involve the highest percentage of land in farms in the state.

The highest average sales price for farmland in 1988 was reported in the Southwest District, at $911 per acre. This district has consistently reported the highest sales price, since 1974, with the single exception of 1978. The ranking of the district average sales prices in descending order is as follows: Southwest, $911; Southeast, $797; West Central, $571; Northwest, $411; East Central, $395; Northeast, $184. The rank order of the districts based on prices received in actual sales is the same as the rank order based on estimated values.

Table 2: Average Reported Sales Price per Acre of Farmland by District, Minnesota, 1972-1988 (Unadjusted)

Year	South-east	South-west	West Central	East Central	North-west	North-east	State Average
1972	389	366	222	145	107	76	293
1973	444	410	223	178	120	122	298
1974	598	630	340	243	204	144	450
1975	792	844	493	299	353	159	607
1976	937	1116	644	321	377	210	735
1977	1216	1340	709	446	432	198	859
1978	1352	1321	908	554	504	256	980
1979	1675	1680	949	618	612	411	1140
1980	1837	1868	1095	603	759	394	1318
1981	1965	2005	1171	680	919	483	1367
1982	1749	2022	1168	746	887	406	1360
1983	1470	1872	1068	679	711	328	1291
1984	1386	1665	1062	644	700	223	1263
1985	1013	1181	872	510	575	222	864
1986	673	830	602	556	411	220	650
1987	621	755	493	429	337	168	559
1988	797	911	571	395	411	184	691
Percent Change 1987-1988	28	21	16	- 8	22	10	24

Adjusted Sales Prices

Change in average sales price can be a result of the movement of two variables: a change in the price and a change in the mix of properties sold. Respondents frequently commented in the survey questionnaires in 1988 that "good land was selling." A change in the quality of land sold between 1988 and 1987 would affect prices. If the mix of properties sold included more good quality land in 1988 than in 1987, then the increase in the sales prices has been exaggerated. As explained below, adjusted sales prices for the district and the state as a whole are computed in an attempt to reduce this distortion.

Adjusted sales prices were derived by multiplying the 1988 average reported sales price per acre for each county by the number of acres sold in that county in 1987. These total county values, based on 1988 prices and 1987 acres sold, were then summed within their respective district and the product was divided by the total acres sold in the district in 1987.

Table 3: Adjusted Sales Prices per Acre for 1988, by District, Minnesota

Region	Unadjusted Price		1988 Adjusted Price	Percent Change 1987 to 1988	
	1987	1988		Unadjusted	Adjusted
Southeast	621	797	785	28	26
Southwest	755	911	892	21	18
West Central	493	571	560	16	14
East Central	429	395	476	- 8	11
Northwest	337	411	371	22	10
Northeast	168	184	200	10	19
Minnesota	559	691	669	24	20

Table 4: Percentage Changes in Adjusted Sales Price per Acre, the Consumer Price Index, and Gross National Product Price Deflator, 1975-1988

Years	South-east	South-west	West Central	East Central	North-west	North-east	State	Index 1[a] CPI	Index 2[b] GNP
1975-76	23	33	32	6	10	21	26	6.2	6.4
1976-77	23	20	8	32	10	8	18	6.4	6.3
1977-78	13	2	18	37	12	-24	10	6.8	6.8
1978-79	13	22	4	16	44	47	17	10.3	8.6
1979-80	6	12	9	0	18	-27	9	14.3	11.0
1980-81	6	15	13	19	18	- 4	11	10.5	10.0
1981-82	- 8	- 8	- 9	4	-14	-18	- 8	7.2	6.2
1982-83	-14	-11	- 9	- 7	-20	-17	-12	3.5	4.4
1983-84	- 7	-13	- 3	6	4	-44	- 8	4.4	4.0
1984-85	-25	-35	-20	-12	-16	- 8	-25	3.7	3.4
1985-86	-27	-30	-21	11	-13	-39	-24	2.4	2.6
1986-87	-11	- 5	-19	-22	12	-19	- 9	3.0	4.0
1987-88	26	18	14	11	10	19	20	3.9	5.0

[a]Index 1 is the Consumer Price Index (CPI). The percentage changes in the index are calculated by comparing the average for the first six months of the year with the average for the first six months of the previous year.
[b]Index 2 is the Gross National Product (GNP) Implicit Price Deflator for Personal Consumption Expenditures calculated for the first six months of each year, to permit comparison with the Consumer Price Index. Source: Department of Commerce, Bureau of Economic Analysis. *Survey of Current Business*. Seasonally adjusted.

In effect, this attempts to answer the question: What would have been the district average sales price per acre in 1988 if each county's proportion of acres sold had remained unchanged from 1987? A similar calculation was made at the state level by aggregating district average prices in 1988 weighted by acres sold in each district in 1987. This reduces the effect of the shift in quality difference, by removing the shift in the geographic distribution of sales activity among counties and districts (Table 3).

When the statewide reported sales prices were adjusted, the increase of 24 percent was reduced to 20 percent. Within the state, and after the adjustment, all districts experienced increases in prices over 1987.

The greatest adjusted price increase was reported in the Southeast District at 26 percent. In descending order the rates of increase in the remaining districts were: Northeast, 19 percent; Southwest, 18 percent; West Central, 14 percent; East Central, 11 percent; and Northwest, 10 percent.

It is noteworthy that adjusting to remove the effects of differences in sales frequencies on a county-by-county basis changed an 8 percent decline (unadjusted) to an 11 percent increase in the East Central District, and reduced the increase in the Northwest District from 22 percent to 10 percent.

Table 4 presents the past years' percentage changes in adjusted sales prices. Included are two price indices: The Consumer Price Index and the Gross National Product (GNP) Price Deflator for Personal Consumption Expenditures. These allow the comparison of percentage changes in adjusted prices and the percentage changes of prices in the national economy.

Activity in the Rural Real Estate Market

The survey gathers data on two measures of activity in the farmland market. A question in the survey asks respondents to estimate the percentage change in the number of farmland sales in their area, comparing the first six months of 1987 and 1988. The majority of the respondents saw no change in the number of sales. Of the remaining respondents most of them reported an increase. The most active areas were the districts in the west and south (Table 5).

Table 5: Percent of Respondents Indicating Direction of Change in Number of Farms Sold by District from 1987 to 1988

Region	% Estimating increase in sales	% Estimating decrease in sales	% Estimating no change in sales
Southeast	29	15	55
Southwest	27	17	56
West Central	29	15	56
East Central	15	11	74
Northwest	23	6	70
Northeast	12	13	88
Minnesota	25	13	62

The number of sales reported annually through the survey provide another measure of market activity. The number of sales decreased from 1241 in 1987 to 1077 in 1988, with declines in all but the West Central district (Table 6).

Table 6: Number of Reported Sales, Acreage of Land Sold and Average Acres Per Sale, by District, Minnesota, January 1 - July 1, 1983-1988

District	1983	1984	1985	1986	1987	1988
			No. of Sales*			
Southeast	336	365	237	322	324	270
Southwest	395	468	221	312	462	371
West Central	187	208	142	152	194	236
East Central	158	112	86	91	109	85
Northwest	105	69	91	81	133	95
Northeast	23	8	18	22	20	20
Minnesota	1204	1230	795	980	1241	1077
			Acres Sold			
Southeast	40,878	45,520	29,601	49,133	48,815	44,632
Southwest	50,127	52,855	27,336	39,281	62,013	52,335
West Central	31,190	34,771	22,377	28,912	33,836	41,297
East Central	20,421	15,599	10,475	12,175	16,953	12,069
Northwest	24,211	15,023	16,652	17,996	41,098	20,878
Northeast	3,007	1,346	7,273	3,199	4,280	3,663
Minnesota	169,834	165,114	113,714	150,696	206,995	174,874
			Acres/Sale			
Southeast	122	125	125	153	151	165
Southwest	127	113	124	126	134	141
West Central	167	167	158	190	174	175
East Central	129	139	122	134	156	142
Northwest	231	218	183	222	309	220
Northeast	131	168	404	145	214	183
Minnesota	141	134	143	154	167	162

*These sales should not be interpreted as a record of total farm land transactions for the years indicated. The majority of farm land sales are completed in the first half of the calendar year, which explains the choice of the January 1 - July 1 reporting period. Some sales do occur in the latter half of the year, but they are not included in the data reported.

B. Analysis of Reported Sales

Reason for Sale

The single most frequently reported reason for the sale of farmland in 1988 was financial difficulty, accounting for 42 percent of all sales (Figure 3 and Table 7). Assuming that two other reasons, "reduce size of operation" (8 percent of the sales) and "left farming" (6 percent), were a result of financial difficulty, then a total of 56 percent of the sales could be attributed to deteriorating financial positions. While high by historical standards, this is a substantial drop from the 70 percent of all sales reported as due to financial difficulties in 1987.

Between 1972 and 1981, retirement and death consistently accounted for 53 to 61 percent of all reasons for sale (Table 8). This dropped to an all-time low of 26 percent in 1987, but recovered to 37 percent in 1988 (retirement, 23 percent, and death, 14 percent).

Figure 3. Reason for Sale, Minnesota, 1988

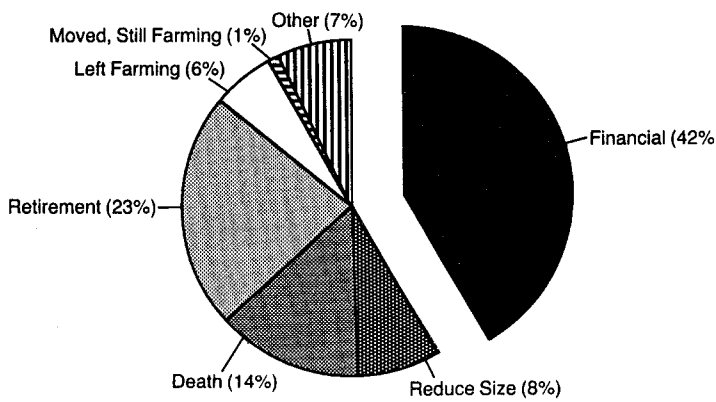


Table 7: Percentage of Sales by Reason for Selling Land, Minnesota, by Districts, 1988

Reason for Sale	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
			PERCENT				
Financial Difficulty	36	39	56	25	53	11	42
Reduce Size	3	17	2	3	5	4	8
Left Farming	8	3	4	16	2	16	6
Subtotal	47	59	62	44	60	31	56
Death	11	16	14	13	13	16	14
Retirement	36	17	20	26	14	37	23
Moved, Still Farming	1	1	0	4	0	5	0
Other	5	7	4	13	13	11	7

Regionally, financial difficulty was most frequent reported in the West Central (56 percent) and Northwest (53 percent) districts. Including sales resulting from reducing the size of the operation or leaving farming shows the much greater financial problems in the western districts. Most of the sales in the West Central (62 percent), Northwest (60 percent), and Southwest (59 percent) districts were a result of overall financial difficulty. Less than half of the sales in 1988 in the Southeast, East Central, and Northeast districts (47 percent, 44 percent, and 31 percent) were due to these three reasons for sale.

Table 8: Percentage of Sales By Reason For Selling Land, Minnesota, 1972-1988

	Reason for Sale							
Year	Death	Retire-ment	Left Farming	Moved, Still Farming	Divorce[a]	Reduce Size of Operation[a]	Financial Difficulty[b]	Other
1972	20	39	20	8				14
1973	15	42	18	6				20
1974	15	46	12	10				18
1975	17	40	15	7				21
1976	16	41	14	9				19
1977	15	38	15	9				23
1978	14	39	16	10				21
1979	18	41	15	10				17
1980	16	39	12	10				23
1981	17	36	16	9				22
1982	17	32	11	3	2	23		11
1983	14	29	12	2	1	23		20
1984	16	22	13	2	2	25		20
1985	17	25	12	2	1	18		25
1986	12	18	11	1	1	17		40
1987	12	14	5	0		6	60	3
1988	14	23	6	0		8	42	7

[a]These reasons were added to the survey in 1982.
[b]This was added to the survey in 1987.

Type of Buyer

Three types of buyers are identified in this study: *Sole-tract Buyers* are operating farmers who are planning to manage the farms they buy and are not using the purchase to expand existing land holdings. *Expansion Buyers* are adding the purchased land to existing holdings. *Investor Buyers* are non-expansion buyers who do not plan to operate the land themselves but presumably expect to rent it out, or have it operated by a manger.

For the state as a whole, expansion buyers in 1988 purchased 75 percent of all sales reported (Table 9 and Figure 4), up from 74 percent in 1987. Sole-tract buyers remained unchanged at 12 percent and investor buyers accounted for 13 percent of the sales in 1988.

The greatest frequency of purchases by expansion buyers was in districts where cash grains predominate. In the Southwest, West Central, and Northwest districts, expansion buyers accounted for over 80 percent of the sales. Sole-tract buyers were a significant part of the market only in the East Central District (29 percent) and investor buyer activity was greatest in the East Central District (25 percent) and the Northeast (33 percent).

Figure 4. Percentage of Farm Sales by Type of Buyer, Minnesota, 1954-1988

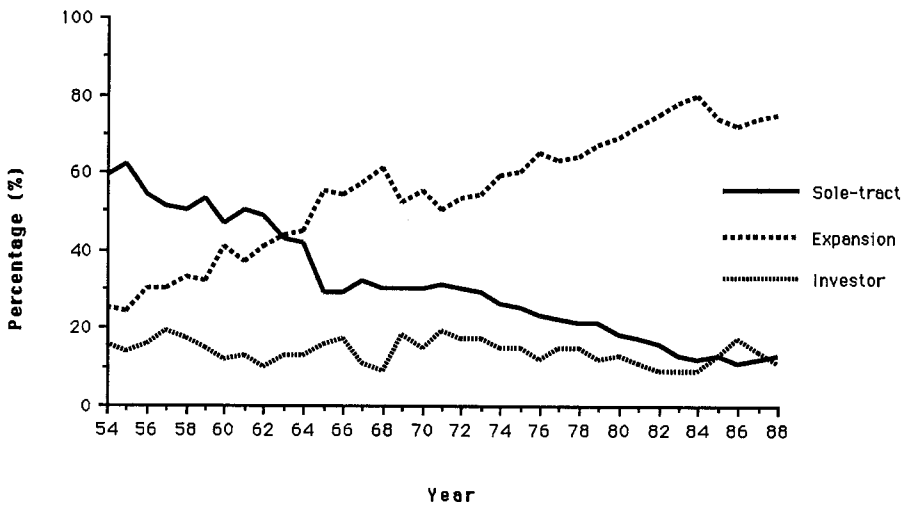


Table 9: Proportion of Farmland Sales and Average Sales Price per Acre by Type of Buyer, by District and Minnesota, 1987-1988

District	Sole-Tract Operator Buyer			
	1987 % of sales	1987 $ per acre	1988 % of sales	1988 $ per acre
Southeast	17	687	16	715
Southwest	5	620	7	719
West Central	14	564	8	699
East Central	28	536	29	394
Northwest	6	387	14	267
Northeast	31	161	11	273
Minnesota	12	572	12	598
		Expansion Buyer		
	1987 %	1987 $	1988 %	1988 $
Southeast	63	598	66	804
Southwest	86	780	80	939
West Central	72	504	83	562
East Central	53	376	46	328
Northwest	89	350	85	406
Northeast	31	173	56	167
Minnesota	74	581	75	695
		Investor Buyer		
	1987 %	1987 $	1988 %	1988 $
Southeast	20	636	18	887
Southwest	9	631	13	884
West Central	14	419	9	554
East Central	19	498	25	504
Northwest	5	184	1	405
Northeast	38	168	33	196
Minnesota	14	515	13	772

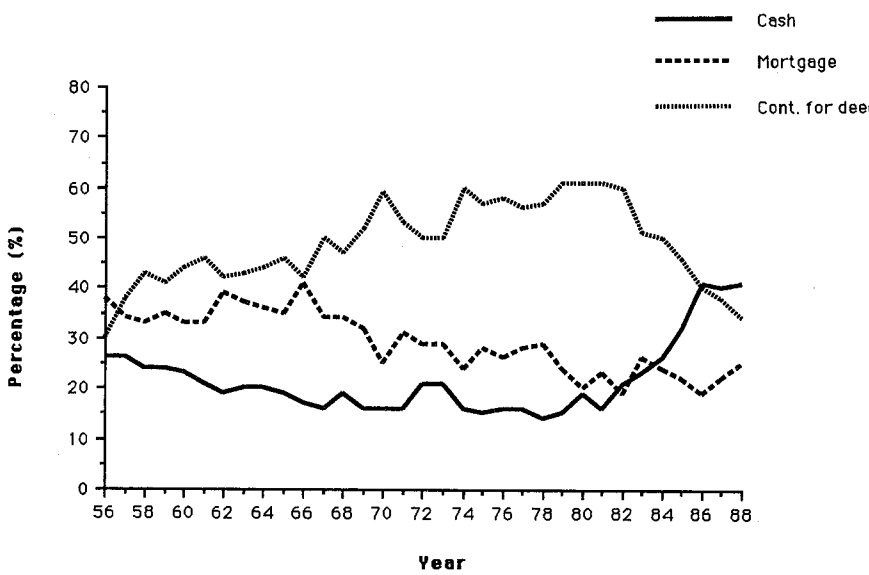
Table 10: Percent of Sales of Farm Land Made to Three Types of Buyers, Minnesota, 1954-1988

Year	Investor Buyer	Expansion Buyer	Sole-Tract Buyer
	Percent		
1954	16	25	59
1955	14	24	62
56	16	30	54
57	19	30	51
58	17	33	50
59	15	32	53
1960	12	41	47
61	13	37	50
62	10	41	49
63	13	44	43
64	13	45	42
1965	16	55	29
66	17	54	29
67	11	57	32
68	9	61	30
69	18	52	30
1970	15	55	29
71	19	50	31
72	17	53	30
73	17	54	29
74	15	59	26
1975	15	60	25
76	12	65	23
77	15	63	22
78	15	64	21
79	12	67	21
1980	13	69	18
81	11	72	17
82	9	75	16
83	9	78	13
84	9	80	12
1985	13	74	13
86	17	72	11
87	14	74	12
88	12	75	13

Expansion buyers have been the dominant purchasers since 1965, accounting for half or more of the sales (Table 10). This has offset the loss of share of sole-tract buyers who had been the predominant buyers before 1963. Investor buyer activity has remained relatively constant, varying between 19 percent and 9 percent of the sales over the 35 years since 1954.

One noteworthy feature of the market in recent years has been the low participation rate of investor buyers in the Northwest district. Over the seven years since the land price peak, 1982-1987, investors accounted for under 5 percent of the sales in the Northwest district, by far the lowest percentage of any district.

Figure 5. Percentage of Farm Sales by Method of Financing, Minnesota, 1954-1988



Method of Finance

In spite of the upturn in land prices in 1988, farmland buyers continued the trends in methods of financing their purchases that have prevailed since prices tumbled after 1981. As they have in each of the last three years, cash sales predominated in 1988, accounting for 41 percent of the total (Table 11). Contracts for deed were used in 34 percent of the sales, and mortgages in 25 percent (Figure 5). This is the lowest percentage of sales using contracts for deed since data were first collected on this method of financing in 1956, and continues the uninterrupted downward trend from the all-time high of 61 percent in 1980 and 1981.

By districts, cash financing in 1988 was especially strong in the Southwest (48 percent) and Northwest (46 percent). The most frequent use of mortgages was in the Southeast and East Central Districts (28 and 26 percent, respectively), while in the Northwest District they were used in only 16 percent of the sales. Contracts for deed had their strongest showing in the central districts of the state accounting for 41 percent of the sales in the West Central, and 58 percent in the East Central. These two districts also had the lowest percentage of cash sales, at 34 and 16 percent respectively. These data indicate clearly that the increased frequency of cash sales has been associated with declines in the use of contracts for deed.

Table 11: Proportion of Farm Sales by Method of Financing, By District, Minnesota, 1965, 1970, 1975, 1981-1988

Method of Financing	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
	percent						
Cash							
1965	17	15	22	21	29	29	19
1970	15	13	14	19	20	31	16
1975	12	16	13	15	18	30	15
1981	17	20	17	9	16	10	16
1982	20	24	20	15	28	9	21
1983	25	27	22	10	25	22	23
1984	23	31	23	19	25	13	26
1985	26	41	20	26	42	17	32
1986	32	56	36	24	49	19	41
1987	35	43	43	24	52	22	40
1988	41	48	34	16	46	45	41
Mortgage							
1965	33	39	41	30	27	3	35
1970	19	23	28	28	40	26	25
1975	28	27	24	36	30	25	28
1981	20	22	19	28	27	32	23
1982	17	22	17	13	22	23	19
1983	25	26	25	19	38	17	26
1984	19	25	28	22	39	13	24
1985	24	21	18	21	33	6	22
1986	17	19	19	18	19	24	19
1987	26	21	16	16	28	45	22
1988	28	25	25	26	16	22	25
Contract For Deed							
1965	50	45	37	49	44	68	46
1970	66	64	58	53	40	43	59
1975	60	58	63	49	52	45	57
1981	63	58	63	63	57	58	61
1982	63	54	62	72	50	69	60
1983	50	47	53	71	37	61	51
1984	59	43	49	59	36	75	50
1985	51	38	53	52	26	78	46
1986	51	25	44	58	32	57	40
1987	39	36	41	60	20	33	38
1988	31	27	41	58	38	33	34

Table 12: Average Sales Price Per Acre of Farmland by Method of Financing, by District, Minnesota, 1981-1988

Method of Financing	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
	Dollars per Acre						
Cash							
1981	2091	2058	1251	758	1084	397	1613
1982	1490	1992	1014	792	772	407	1326
1983	1367	1723	1058	476	825	328	1315
1984	1314	1520	1047	700	686	100	1254
1985	986	1063	733	454	539	237	820
1986	637	785	566	341	491	199	646
1985	614	766	450	424	447	199	585
1988	775	927	545	359	494	217	741
Mortgage							
1981	1900	2021	1115	494	1039	514	1295
1982	1553	1909	1119	772	1240	379	1416
1983	1464	1932	1108	650	808	205	1332
1984	1375	1629	1041	761	797	185	1268
1985	969	1113	835	435	646	890	866
1986	664	895	666	736	338	212	674
1987	627	725	465	414	290	156	484
1988	785	917	579	461	388	162	728
Contract for Deed							
1981	1947	1910	1174	843	851	478	1318
1982	1879	2008	1223	790	834	413	1358
1983	1536	1907	1077	724	632	400	1263
1984	1417	1747	1119	605	648	229	1268
1985	1069	1194	946	552	552	179	856
1986	680	853	592	556	384	227	635
1987	624	750	541	428	246	198	578
1988	857	883	595	382	368	164	634

Table 12 presents the average sales price per acre by method of financing and by district. In 1988, cash and mortgage financed sales exhibited essentially the same price per acre of $741 and $728 respectively. Contract for deed financed sales were at a lower price of $634 per acre. For each type of financing method, the Southwest district sales had the highest average price.

Distance of Buyer's Residence from Tract Purchased

The rural real estate market has remained a local market, as seen by a median distance of buyer from tract purchased of 4 miles (Table 13). This means that one-half of the buyers purchased tracts 4 miles or less from their home. This is consistent with the fact that 75 percent of the tracts sold were purchased by expansion buyers, because present operators would likely purchase near their existing tracts.

Uniformity characterized the districts in 1988. The Southwest district had the most local market, with a median distance of 3 miles. The East Central and Northeast districts showed increasing localization, with the East Central district moving from a median distance of 10 miles in 1987 to 5 miles in 1988 and the Northeast district moved from 8 miles to 4 miles.

The median distance alone does not provide information on the spatial distribution of sales, as shown in Table 13. A more detailed analysis can be accomplished by using distance intervals. Statewide, the predominance of local buyers in 1988 is shown by the fact that 55 percent of the sales were to buyers living within five miles, 74 percent within 10 miles, and 89 percent within 50 miles of the tracts purchased.

Another useful interpretation is by aggregating the percentage of buyers in each district that lived under 10 miles from the tract purchased. Measured in this way, the Southwest district had the most local market, with 83 percent of the sales to buyers living within 10 miles. The West Central and Northwest districts were next, with 78 and 76 percent of their sales to buyers living less than 10 miles; Northeast, East Central, and Southeast districts contained 65 percent, 64 percent, and 63 percent of the buyers who lived within 10 miles of their purchases.

Using percent of acres sold instead of number of sales within 10 miles, again the Southwest district was the most local with 80 percent (Table 14). In descending order, the percentage of acres sold to buyers living less than 10 miles away, for the remaining districts, was West Central, 76 percent; Northwest, 71 percent; East Central, 55 percent; Southeast, 53 percent; and Northeast, 48 percent. The lower percentages, as compared to the percent of sales, indicate that larger size tracts were being purchased by those buyers living farther away. This is supported by the fact that the average size of tract sold to buyers living within 2 miles or less was 146 acres, 2 to 4 miles, 147 acres; 5

Table 13: Percentage of Farm Land Sales by Distance of Buyer's Residence from Tract, by District, Minnesota, 1981-1988

Distance of Buyer's Residence from Tract Purchased	South-east	South-west	West Central	East Central	North-west	North-east	MN
	percent						
Less than 2 miles							
1981	24	27	17	13	15	13	21
1982	23	17	25	17	24	14	21
1983	22	17	18	28	15	29	20
1984	20	18	21	23	24	13	20
1985	25	25	21	29	19	19	24
1986	21	18	12	16	14	20	17
1987	23	29	15	21	26	28	23
1988	22	26	23	23	18	30	24
2-4 Miles							
1981	31	37	29	18	27	13	30
1982	40	42	36	11	41	6	35
1983	34	44	30	14	46	19	35
1984	39	46	40	21	32	0	40
1985	34	41	35	33	43	25	37
1986	31	38	41	24	43	15	36
1987	30	37	42	13	33	0	33
1988	30	34	25	23	40	21	31
5-9 Miles							
1981	20	18	24	8	26	10	19
1982	16	27	19	17	13	3	19
1983	23	23	27	16	14	5	22
1984	19	22	20	18	32	25	21
1985	21	21	21	12	22	6	20
1986	21	24	24	15	29	15	22
1987	20	20	22	15	24	24	20
1988	11	23	30	18	18	14	19
10-49 Miles							
1981	18	12	16	25	17	10	17
1982	15	9	13	25	13	19	14
1983	16	13	19	28	15	19	17
1984	18	11	15	23	8	50	15
1985	16	10	21	14	8	6	14
1986	17	10	16	31	9	15	7
1987	20	10	15	37	15	18	16
1988	21	9	15	18	20	0	15

Table 13: (cont'd) Percentage of Farm Land Sales by Distance of Buyer's Residence from Tract, by District, Minnesota, 1981-1988

Distance of Buyer's Residence from Tract Purchased	South-east	South-west	West Central	East Central	North-west	North-east	MN
	percent						
50-299 Miles							
1981	6	4	14	26	8	32	10
1982	5	5	6	21	5	33	8
1983	3	2	6	12	5	19	5
1984	4	3	3	12	5	13	4
1985	1	2	1	10	3	0	3
1986	8	7	7	11	1	15	7
1987	6	2	4	13	0	24	4
1988	14	8	4	16	2	14	9
300 Miles and Over							
1981	1	3	1	9	8	23	4
1982	1	0	1	8	6	25	3
1983	0	1	0	2	3	10	1
1984	1	0	1	2	0	0	1
1985	1	1	0	1	5	44	2
1986	2	3	1	4	4	15	2
1987	1	2	2	1	2	6	2
1988	2	0	3	2	2	21	2
Median distance in Miles							
1981	4	3	5	15	5	55	4
1982	3	4	4	10	3	70	4
1983	4	3	5	6	3	5	4
1984	3	3	3	5	4	11	3
1985	3	3	3	3	3	27	3
1986	4	4	4	5	4	8.5	4
1987	4	3	4	10	3	8	4
1988	4	3	5	5	4	4	4

Table 14: Percentage of Acres Sold by Distance of Buyer's Residence from Tract Purchased, by District, Minnesota, 1988

Distance of Buyer's Residence from Tract Purchased	South-east	South-west	West Central	East Central	North-west	North-east	MN
	percent of acres sold						
Less than 2 miles	21	24	21	15	13	23	21
2-4 miles	20	33	25	26	34	15	27
5-9 miles	12	23	30	14	24	10	21
under 10 miles	53	80	76	55	71	48	69
10-49 miles	20	10	15	28	24	0	16
50-299 miles	21	10	7	14	2	26	12
300 miles and over	6	0	2	3	3	26	3

to 9 miles, 172 acres; 10 to 49 miles, 182 acres; 50 to 299 miles, 220 acres; and 300 or more miles, 269 acres per sale.

The distribution in regional intervals can also be seen by regrouping the counties into Economic Development Regions (Figure 7, page 36). When using the thirteen regions instead of the six districts, the median distance shows a less uniform market (Table 15). The market was least local in Regions 5, 3, and 7E, situated in the northeastern quadrant of the state. In the remaining regions the median distance varied from 3 to 5 miles (Table 15).

The markets in the same three regions were least local when measured by the percent of acres sold. In Regions 5,3 and 7E only 26 percent, 32 percent, and 44 percent respectively of acres sold were to buyers living within 10 miles. The distribution of acres sold was similar to the distribution of the number of sales, in all regions except for Regions 1, 3, 10, and 11. In Region 1, 79 percent of the sales were to buyers living within 10 miles as compared to 70 percent of the acres sold. Buyers living within 10 miles in Region 3 accounted for 50 percent of sales, Region 10 had 63 percent of sales, Region 11 had 64 percent within 10 miles which is different from 32 percent, 50 percent, and 55 percent for percent of acres sold.

Table 15: Percentage of Acres Sold by Distance of Buyer's Residence from Tract, by Economic Development Regions, Minnesota, 1988

Economic Development Regions	DISTANCE IN MILES Under 2	2-4	5-9	**Under 10**	10-49	50-299	300+	Median (miles)
	percent of acres sold							
1	13	29	28	**70**	27	--	3	4
2	21	31	16	**68**	3	15	14	3
3	32	--	--	**32**	--	63	5	50.4
4	14	30	20	**64**	27	6	3	5
5	9	12	5	**26**	--	51	23	70
6W	20	29	40	**89**	5	5	1	4
6E	28	33	14	**75**	24	1	--	3
7W	25	10	45	**80**	18	2	--	5
7E	44	--	--	**44**	56	--	--	8
8	22	33	27	**82**	9	9	--	3
9	28	31	15	**74**	11	15	0	3
10	20	20	10	**50**	14	28	8	4
11	27	16	12	**55**	45	--	--	3.5
Minnesota	21	27	21	**69**	16	12	3	4

Quality of Land and Buildings

As noted in the section discussing adjusted sales prices, respondents reported that "good land was selling." In 1988, land classified by respondents as "good" accounted for 45 percent of all sales, an increase of 4 percentage points over 1987. This offset a decline in the proportion of poor quality land from 15 to 11 percent of sales between 1987 and 1988 (Table 16). It should be noted that estimates of land quality are made by respondents with reference to the average quality of farmland in their respective parts of Minnesota. This means that land of "good" quality in one area may be regarded as "average" or "poor" in another area or by individual respondents. These differences should be kept in mind in interpreting the validity of highly aggregated statistics.

Statewide, each quality of land increased in price from 1987 to 1988 (Table 17 and Figure 6). Land seen as good in quality sold for $849 per acre in 1988, up 16 percent over $732 in 1987. Average quality farmland increased 15 percent from $530 to $611. The biggest percentage increase was for poor quality land for which the average price went up from $322 to $427 an acre, an increase of 33 percent.

Figure 6. Average Sales Price per Acre of Land by Varying Quality, Minnesota, 1974-1988

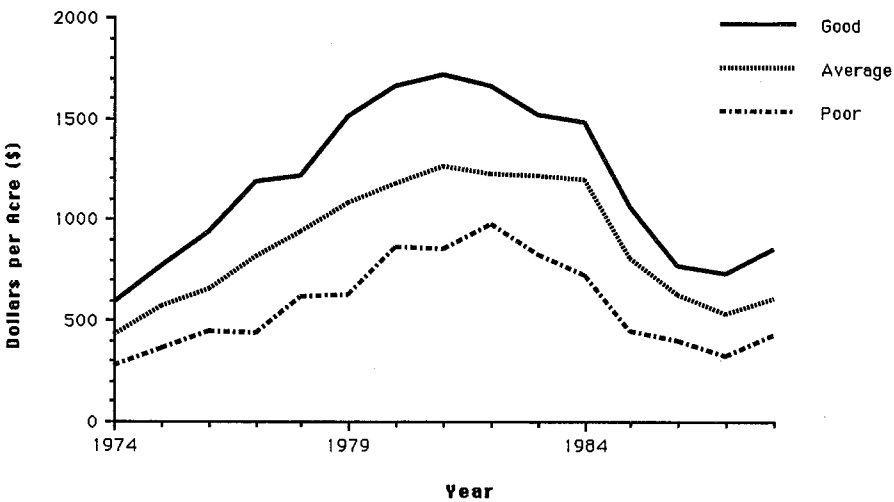


Table 16: Percent of Sales by Type of Buyer for Land of Varying Quality, Minnesota, 1980-1988

Year	Sole-tract	Expansion	Investor	All Sales
		GOOD QUALITY		
		percent of sales		
1980	34	41	20	37
1981	36	43	27	40
1982	33	46	31	42
1983	39	42	22	40
1984	32	43	40	42
1985	34	42	38	41
1986	29	44	34	41
1987	35	44	30	41
1988	30	49	34	45
		AVERAGE QUALITY		
		percent of sales		
1980	56	47	57	50
1981	53	45	53	47
1982	56	43	49	45
1983	47	47	47	47
1984	53	47	35	47
1985	47	47	40	46
1986	61	44	51	47
1987	47	43	48	44
1988	55	43	44	44
		POOR QUALITY		
		percent of sales		
1980	11	12	23	13
1981	11	12	20	13
1982	10	12	20	12
1983	14	11	31	13
1984	15	9	25	11
1985	20	11	22	14
1986	10	12	15	12
1987	18	13	22	15
1988	15	8	22	11

A useful classification of land quality is with reference to type of buyer. Expansion buyers have consistently confined their purchases to land of good or average quality, with an increase in their purchases of good land increased from 44 to 49 percent

Table 17: Price Paid per Acre by Type of Buyer for Land of Varying Quality, Minnesota, 1980-1988

Year	Sole-tract	Expansion	Investor	All Sales
		GOOD QUALITY		
	----------	sales price per acre	----------	
1980	1,229	1,847	1,291	1,658
1981	1,446	1,789	1,727	1,716
1982	1,414	1,740	1,323	1,656
1983	1,111	1,573	1,540	1,517
1984	1,281	1,512	1,357	1,478
1985	939	1,092	1,019	1,061
1986	826	760	765	765
1987	641	753	700	732
1988	834	826	1,001	849
		AVERAGE QUALITY		
	----------	sales price per acre	----------	
1980	811	1,365	1,086	1,173
1981	956	1,390	1,143	1,261
1982	916	1,359	1,049	1,224
1983	996	1,258	1,142	1,213
1984	978	1,239	1,129	1,197
1985	688	852	725	808
1986	628	619	647	625
1987	594	533	475	530
1988	544	599	731	611
		POOR QUALITY		
	----------	sales price per acre	----------	
1980	707	895	865	858
1981	987	874	620	849
1982	769	1,094	654	976
1983	810	888	667	829
1984	739	774	570	723
1985	481	525	317	445
1986	612	361	446	396
1987	363	296	386	322
1988	346	434	462	427

between 1987 and 1988. Sole-tract buyers have also consistently purchased a higher proportion of land of average quality. In 1988, average quality land comprised 55 percent of their purchases, as compared to 30 percent that was good quality land. Expansion buyers have apparently been more selective. This

Table 18: Percent of Sales by Quality of Building and by Type of Buyer, Minnesota, 1980-1988

Year	Sole-tract	Expansion	Investor	Total
		GOOD QUALITY		
		percent of sales		
1980	26	11	8	14
1981	39	10	10	15
1982	34	8	15	13
1983	30	8	9	11
1984	34	5	15	10
1985	30	7	9	11
1986	28	9	20	13
1987	28	6	9	9
1988	26	6	9	10
		AVERAGE QUALITY		
		percent of sales		
1980	41	20	19	24
1981	32	15	22	19
1982	34	13	16	16
1983	37	13	19	17
1984	36	12	10	14
1985	34	14	16	17
1986	33	12	20	16
1987	38	12	14	16
1988	29	12	12	15
		POOR QUALITY		
		percent of sales		
1980	21	17	25	18
1981	16	17	26	17
1982	14	16	21	16
1983	16	18	24	18
1984	13	12	26	13
1985	21	12	18	14
1986	18	14	8	13
1987	11	12	15	13
1988	17	13	16	14

Table 18: (cont'd) **Percent of Sales by Quality of Building and by Type of Buyer, Minnesota, 1980-1988**

Year	Sole-tract	Expansion	Investor	Total
	NO BUILDINGS			
	percent of sales			
1980	11	53	47	44
1981	12	58	42	48
1982	18	63	47	54
1983	16	61	47	54
1984	17	71	49	63
1985	15	67	57	58
1986	21	65	52	58
1987	23	68	62	62
1988	28	69	63	63

inference is reversed for investor buyers, whose purchases have consistently included a higher proportion of poor quality land than has been true of operating or expansion buyers. Apparently investor buyers have placed greater emphasis on price than on land quality.

In considering the relationship between building quality and type of buyer, it is not surprising to find that sole-tract buyers purchased land with similar proportions of either good or average quality buildings (Table 18). In total, 55 percent of their purchases involved land with either good or average buildings, down from 66 percent in 1987. The presence of buildings can be assumed to be especially important to sole-tract buyers who plan to live on the land purchased. In contrast, expansion buyers prefer land with no buildings and 69 percent of their purchases involved land with no permanent structures in 1988. Investors have also been primarily interested in unimproved land (land without buildings), and in 1988, 63 percent of their purchases were unimproved. For all three types of buyers, the frequency of purchases of land without buildings has been increasing throughout the 1980s, reaching 63 percent in 1988.

Again, these results must be interpreted with caution. Estimates of building quality are subjective, and can be expected to fluctuate among individuals. They do not represent an underlying uniform measure of quality.

Improved versus Unimproved Land

From 1980 to 1988, there were five years in which statewide average sales prices of improved land (with buildings) were higher than the statewide average sales prices of unimproved land (without buildings); 1980, 1983, 1985, 1986, and now 1988. In 1988, the average price of improved land increased 31 percent from $544 to $713 per acre, in contrast to an increase of 18 percent to $674 for unimproved land (Tables 19 and 20).

Regionally, the sharpest differential occurred in the Northwest district, where unimproved land sold in 1988 at 152 percent of the price of improved land. In the Northeast district, where few agricultural sales are made each year, the average price for improved land was much higher than for unimproved.

The fact that 61 percent of all sales involved land without buildings is associated with the increasing importance of expansion buyers, who are typically interested in purchasing land but not buildings. It may also reflect continuing conversion of building sites to crop acres.

Table 19:Proportion of Sales and Average Sales Price per Acre of Improved and Unimproved Farmland, by District, Minnesota, 1987 and 1988

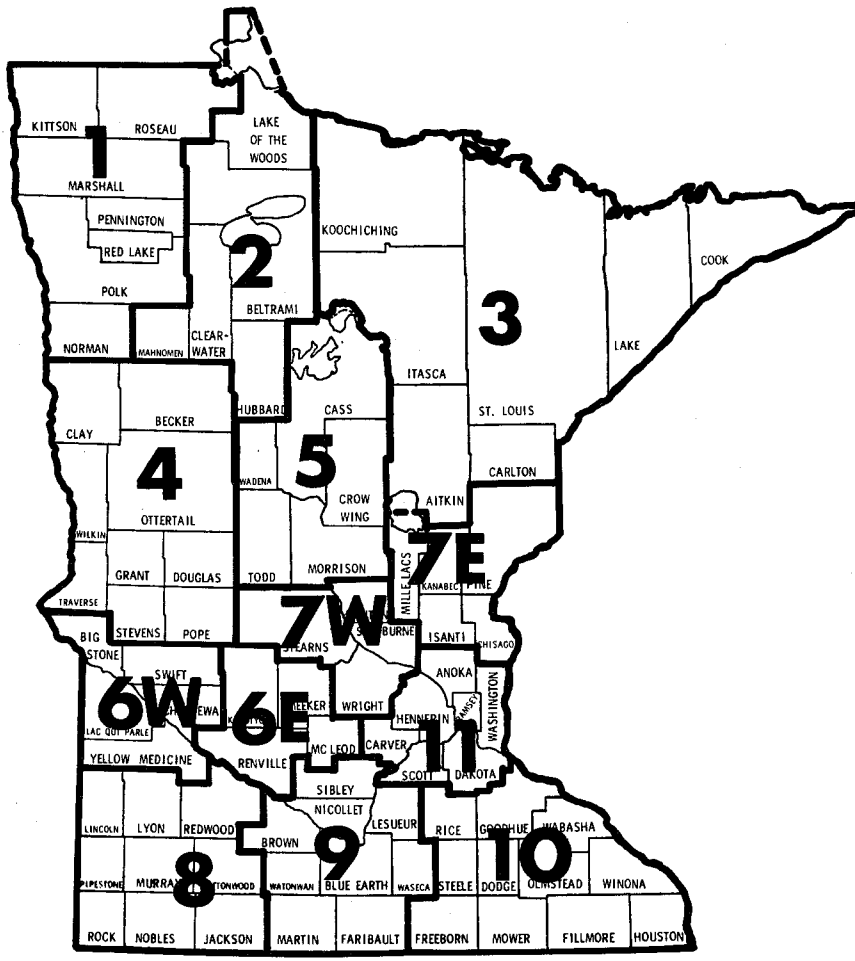
	Improved				Unimproved				Price of Unimproved Land as a percent of Price of Improved	
	1987		1988		1987		1988		1987	1988
District	%	$	%	$	%	$	%	$	%	%
Southeast	40	682	45	877	60	572	55	711	84	81
Southwest	37	743	37	880	63	764	63	937	103	107
W. Central	46	520	31	610	54	465	69	551	89	90
E. Central	62	444	68	391	38	398	32	409	90	104
Northwest	30	269	20	303	70	403	80	460	150	152
Northeast	60	166	50	240	40	174	50	148	104	62
Minnesota	41	544	39	713	59	573	61	674	105	94

This is seen clearly in the Northwest district, where 80 percent of the sales were of unimproved land and 85 percent of the sales were to expansion buyers. In the West Central district, unimproved land increased as a proportion of all sales to 69 percent in 1988. Declines in the proportion of sales of unimproved land occurred in both Southeast and East Central districts. In general, the rank order of percent of sales of unimproved land coincides with the rank order of percent of sales to expansion buyers in all districts.

Table 20 : Proportion of Sales and Ratio of Prices of Improved and Unimproved Land, Minnesota, 1970-1988

	Percent of Sales		Price Per Acre Unimproved/Improved
	Improved	Unimproved	Percent
1970	77	23	79
1971	77	23	82
1972	73	27	78
1973	73	27	74
1974	69	31	96
1975	66	34	101
1976	65	35	103
1977	60	40	87
1978	61	39	87
1979	59	41	93
1980	56	44	98
1981	53	47	106
1982	48	52	109
1983	48	52	99
1984	37	63	109
1985	43	57	95
1986	44	56	98
1987	41	59	105
1988	39	61	94

Figure 7. Minnesota Economic Development Regions



C. Trends in Sales Prices by Economic Development Regions

Classifying sales data by the state's 13 Economic Development Regions (Figure 7) emphasizes the effects on average sales prices of year-to-year shifts in the geographic frequency of sales. Table 21 presents the unadjusted average sales prices by regions for the fifteen years from 1974 through 1988, and the percentage change in unadjusted prices from 1987 to 1988. In addition, the sales prices in 1988 are adjusted to show the changes that can be attributed to price shifts alone and that are not due to variations by counties in the frequency of sales of higher and lower priced land.

A comparison of the unadjusted and adjusted percentage changes in prices from 1987 to 1988 reveals some sharp differences. In general, the adjusted percentage price changes showed the smallest variation from the unadjusted changes in the four southern and southwestern regions (Regions 6W, 8, 9, and 10), and in the northwest (Region 1). In contrast, the greatest differences were in Region 2, where the unadjusted increase of 36 percent from 1987 to 1988 was converted into a decline of 8 percent, and in Region 5, where a modest 6 percent increase in unadjusted prices became a 29 percent increase after adjustment.

These data underline the highly variable nature of the mix of sales of better and poorer quality land in the regions outside the major cash grain producing areas. In a contiguous area comprising Regions 2, 5, 7E, and 11, changes in year-to-year average sales prices are extremely sensitive to variation in the quality of land being sold. These are areas in which recreation and residential demand for rural lands are prominent, and in which sales prices are frequently influenced by quality features that are relatively unrelated to agricultural productivity.

Table 21: Average Reported Sales Price per Acre of Farmland by Economic Development Regions, Minnesota, 1974-1988 (Unadjusted) and 1988 Adjusted Sales Price Data

	Economic Development Regions													
Year	1	2	3	4	5	6W	6E	7W	7E	8	9	10	11	State
Unadjusted														
1974	199	141	148	317	197	341	569	430	254	534	829	565	882	450
1975	344	206	157	446	259	537	691	472	316	710	1115	753	1035	607
1976	300	250	162	542	235	696	923	596	455	906	1464	915	1150	735
1977	367	277	179	558	297	746	1027	778	473	1058	1835	1197	1437	859
1978	433	321	280	853	478	906	1171	927	575	1199	1682	1373	1396	980
1979	560	520	310	828	483	960	1528	1112	768	1574	2111	1645	1799	1140
1980	132	452	271	868	506	1051	1735	1056	741	1674	2320	1864	1778	1318
1981	888	645	386	973	695	1303	1949	1300	790	1646	2865	1941	1830	1367
1982	806	459	325	987	556	1259	1876	1240	873	1701	2484	1713	1711	1360
1983	671	515	141	874	605	1090	1569	1187	780	1743	2139	1395	1878	1291
1984	636	460	256	955	502	1098	1391	1123	828	1405	1964	1337	1642	1263
1985	533	390	192	691	467	872	1163	869	604	986	1392	929	1423	864
1986	342	231	268	622	499	552	746	738	889	701	953	629	1127	650
1987	325	198	---	458	360	506	635	592	687	703	878	577	827	559
1988	375	269	191	504	381	582	831	804	670	795	1061	749	1070	691
%Change of Unadjusted Prices 1987-1988	15	36	---	10	6	15	31	36	- 2	13	21	30	29	24
Adjusted 1988 Prices	362	182	---	460	466	594	784	761	607	817	1068	745	914	652
Percentage Change from 1987 Unadjusted to Adjusted 1988 Prices	11	- 8	---	0	29	17	23	29	-12	16	22	29	10	20

Part II
The Effect of Climate, Location, Soil Quality, and Government Programs on the Rural Real Estate Market

The Rural Real Estate Market in Southwestern Minnesota

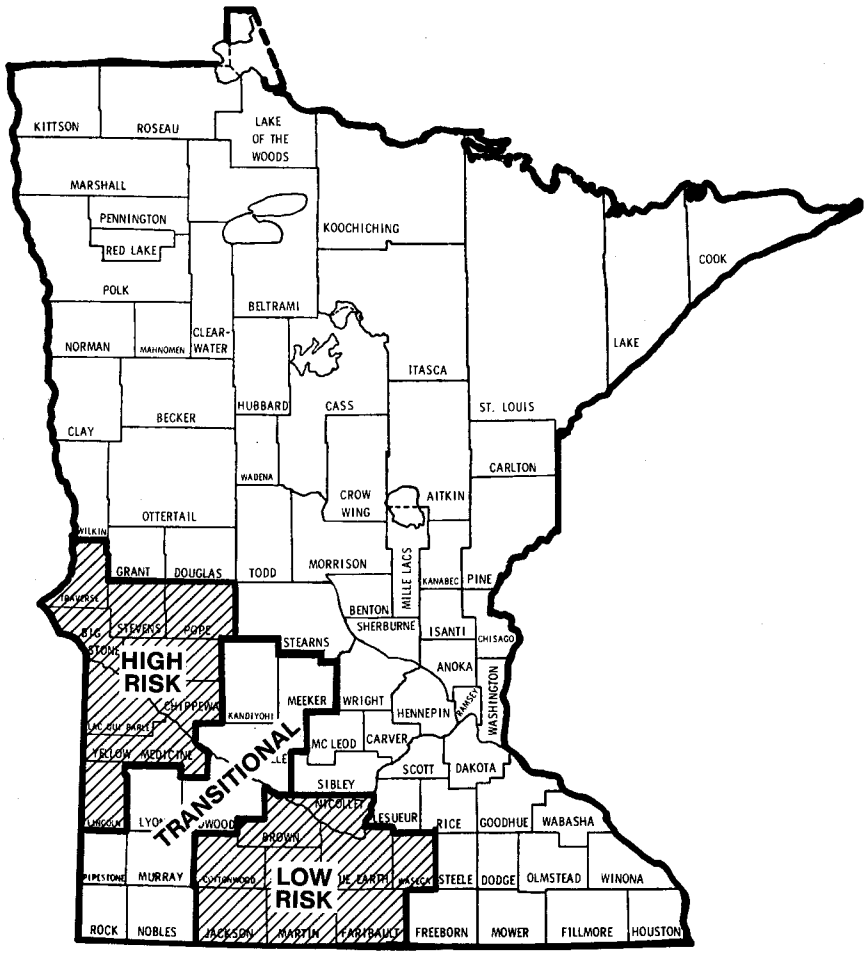
Southwestern Minnesota offers an opportunity to compare land market trends in areas of wide distribution of cash grain field crops, a general absence of urban influences, and similar land use patterns, but with different exposure to climatic risk. Three clusters of counties are formed for this study: a *lower-risk area* of nine south-central counties with high crop yields and relatively stable weather patterns; a *higher-risk area* of nine west-central counties with a history of greater variability in crop yields and extremes in climate; and a *transitional area* consisting of nine counties lying in between, as shown in Figure 8. In 1988, the definition of the transitional area has been changed to exclude Stearns county because of its different land use patterns. Results excluding Stearns county are given in parentheses in Tables 22-25 to permit comparison with the former ten county definition which included Stearns.

Sales prices in each of the three areas increased in 1988, with larger increases in the transitional area (19 percent) and in the lower-risk area (18 percent). The higher-risk area increased the least at 14 percent. During the decline in land prices from 1981 to 1987 the spread in average prices between the higher-risk area and the lower-risk area sales price narrowed. With the upturn in land prices in 1988, the spread increased again, dropping the relative price of the higher-risk group to that of the lower-risk group from 56 to 54 percent (Table 22).

A comparison of the relative average transaction amounts (Table 23) shows that the total sales value in the higher-risk area fell relative to the lower-risk area. This is a result of greater increase in both average sales price per acre and average tract size in the lower-risk region (Table 22).

In each area, expansion buyers accounted most of the reported sales, ranging from 77 percent in the transitional area including Stearns county (81 percent, without Stearns county), in the transitional area to 80 percent in the lower-risk area and 81 percent in the higher-risk area (Table 24). In both the higher-risk and transitional areas (including Stearns county), the percentage of sales to expansion buyers remained unchanged between 1987 and 1988. Sales to expansion buyers fell as a

Figure 8. Higher-Risk, Lower-Risk, and Transitional Areas of Minnesota, 1988



percentage of total sales in the lower-risk areas, declining from 89 to 80 percent. Investor buyers in both higher- and lower-risk areas increased their percentage of purchases, while sole-tract buyers accounted for only 5 percent of the market in both of these areas.

In all three areas, cash was the most frequent method of financing, accounting for 40 to 48 percent of the sales (Table 25). Mortgage financing was increasingly used in all three areas, and especially in the transitional and higher-risk counties, while contract for deed sales declined.

Table 22:Farmland Sales by Risk Category in Southwestern Minnesota, 1981-1988

item		1981	1982	1983	1984	1985	1986	1987	1988
					DOLLARS				
average sale price per acre ($)	hi	1159	1140	1016	1001	783	561	479	545
	tr	1680	1698	1590	1356	1011	680	651	(662)[a]776 (799)
	lo	2760	2529	2145	1954	1354	919	853	1011
					PERCENT				
change in sale price from previous year (%)	hi	22	- 2	-11	- 1	-22	-28	-15	14
	tr	8	1	- 6	-15	-25	-33	- 4	19 (21)[b]
	lo	19	- 8	-15	- 9	-31	-32	- 7	18
average sale price as % of average price in low risk area	hi	42	45	47	51	58	61	56	54
	tr	61	67	74	69	75	74	76	(78) 77 (79)
					ACRES				
average # acres per sale	hi	191	158	162	167	151	206	169	176
	tr	156	136	150	127	140	148	144	(141) 146 (145)
	lo	111	110	110	101	115	117	125	139

NOTE: "hi," "tr", and "lo" refer (respectively) to higher-risk area, transitional area, and lower-risk area.

[a]Numbers in parentheses are Transitional area values excluding Stearns county.

[b]This percentage compares average sale price per acre for both 1987 and 1988 excluding Stearns county.

Table 23: Variations in Total Transaction Amount, Lower-Risk, Transitional and Higher-Risk Areas, Southwestern Minnesota, 1981-1988[a]

Risk Area	1981	1982	1983	1984	1985	1986	1987	1988
					DOLLARS			
Hi	221,369	180,120	164,592	167,167	118,233	115,566	80,957	95,938
Trans.	262,080	230,928	238,500	172,212	141,540	100,640	93,744 (93,370)[b]	113,311 (115,899)
Low	306,360	278,190	235,950	197,354	155,710	107,523	106,625	140,501
					PERCENT			
Hi/Lo	67.8	64.7	69.8	84.7	75.9	107.5	75.9	68.3

[a]Transaction Amount is price per acre times acres per sale.
[b]Numbers in Parentheses are Transitional area values excluding Stearns county.

Table 24:Proportion of Sales by Type of Buyer (top number) and Average Price per Acre (bottom number), by Risk Areas, Southwestern Minnesota, 1981 - 1988

		1981	1982	1983	1984	1985	1986	1987	1988
HIGHER-RISK AREA									
sole-tract	%	5	6	7	6	8	5	8	5
buyer	$	1165	1264	994	1207	499	479	410	513
expansion	%	88	83	85	83	83	80	81	81
buyer	$	1171	1135	1026	996	836	564	482	549
investor	%	6	11	7	11	8	14	11	14
buyer	$	1172	1127	1052	895	748	594	519	536
TRANSITIONAL AREA									
sole-tract	%	13	11	14	10	14	10	10 (5)[a]	13 (8)
buyer	$	1557	1733	1249	1190	900	624	631 (632)	689 (611)
expansion	%	76	81	79	85	72	76	77 (81)	77 (81)
buyer	$	1752	1742	1678	1373	1061	688	689 (708)	794 (827)
investor	%	10	8	8	5	14	14	13 (14)	9 (11)
buyer	$	1405	1302	1368	1330	900	677	487 (484)	854 (854)
LOWER-RISK AREA									
sole-tract	%	3	2	4	2	4	4	5	5
buyer	$	2763	2447	1875	1699	1338	931	762	746
expansion	%	93	94	92	95	83	81	89	80
buyer	$	2790	2569	2183	1979	1331	905	859	1056
investor	%	4	4	4	3	13	15	6	14
buyer	$	2765	1617	2368	2098	1142	968	846	938

[a]Numbers in parentheses are Transitional area values excluding Stearns county.

Table 25:Percentage of Sales by Method of Finance (top number), and Average Sale Price per Acre (bottom number) by Risk Areas, Southwestern Minnesota, 1981-1988

		1981	1982	1983	1984	1985	1986	1987	1988
HIGHER-RISK AREA									
cash	%	14	23	30	30	33	39	45	40
	$	1335	1085	984	1002	730	506	473	551
mortgage	%	24	16	24	26	15	15	19	28
	$	1042	1160	1106	1010	840	607	611	554
contract for deed	%	62	61	46	44	52	46	36	32
	$	1165	1149	1002	1051	769	555	505	539
TRANSITIONAL AREA									
cash	%	19	25	23	24	34	50	41	(43)[a] 44 (46)
	$	1646	1675	1497	1985	855	676	636	(651) 775 (809)
mortgage	%	19	21	19	25	19	20	19	(18) 31 (31)
	$	1842	1576	1604	1286	1031	722	611	(625) 793 (815)
contract for deed	%	63	54	58	51	48	31	40	(39) 25 (23)
	$	1626	1758	1598	1476	1075	649	666	(675) 760 (760)
LOWER-RISK AREA									
cash	%	28	19	26	35	38	52	45	48
	$	2893	2502	2078	1901	1272	885	862	1030
mortgage	%	24	26	34	25	20	22	21	24
	$	2583	2546	2226	1941	1202	956	864	980
contract for deed	%	47	55	40	40	42	27	34	28
	$	2680	2495	2175	2029	1333	920	819	1021

[a]Numbers in parentheses are Transitional area values excluding Stearns county.

Trends in Land Prices and Net Return Per Crop Acre in Southwest Minnesota

It is seldom possible to make comparisons on a per acre basis between trends in land prices and net cash returns from farming, due to a lack of detailed farm records. An opportunity to make this comparison in Southwestern Minnesota is provided by the availability of time series data on farm land prices, from this study, and of comprehensive data on costs and returns from annual reports by the members of the Southwestern Minnesota Farm Business Management Association. These data are the basis for the graphics presentations in Figures 9 and 10, covering the period from 1970 through 1988. The land price data are for Economic Development Region 8, delineated in Figure 7 above.

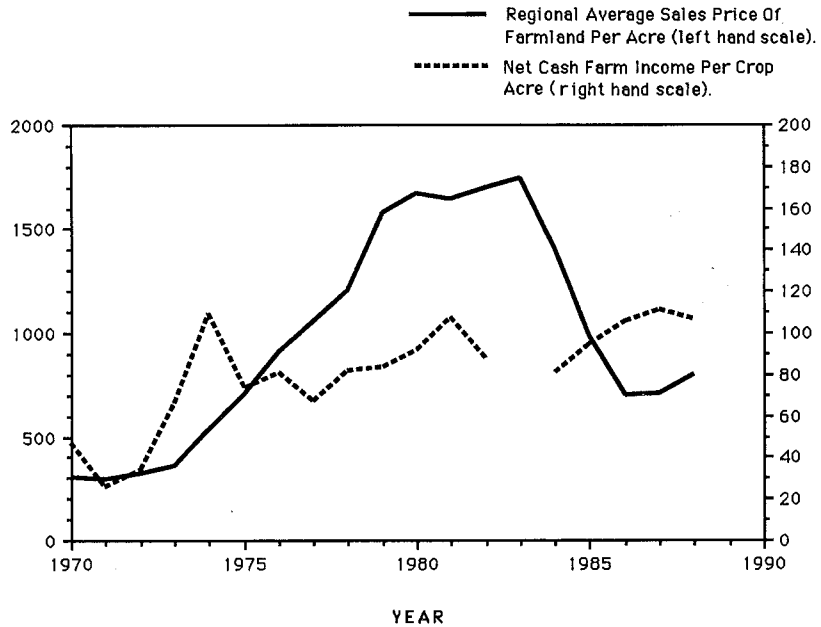
The validity of the comparison rests on the fact that approximately 85 percent of the members of the Southwestern Minnesota Farm Business Management Association reside within this region. It must be assumed that they are above-average farmers, and that the absolute levels of their cash returns per crop acre are above average for the counties represented. It also seems reasonable to assume that the trends in cash returns are representative of the region, over time, and that more complete returns for all farms would shift the level but not the trend.

With these reservations, it is instructive to refer first to Figure 9, showing land prices, derived from actual sales, and net cash returns per crop acre, in nominal (current) dollars. This comparison shows clearly the tenuous nature of the relation between net returns and land prices between 1975 and 1985. Land prices for the region more than doubled from 1975 to 1983, and dropped 60 percent from 1983 to 1986, almost exactly back to the level of 1975. In the same period, net cash returns per crop acre fluctuated in a range between approximately 70 and 110 dollars per acre. It seems clear that expectations other than those derived from realized net cash returns from farming were driving the land market in this period.

This conclusion is strengthened by a reference to Figure 10, showing the same data deflated by the Consumer Price Index (1982-84 = 100). The peak in real net cash returns per crop acre was reached in 1974, at the beginning of the land price boom, and fell almost continuously to 1984. Real land prices peaked in 1979, five years after the peak in real net cash returns, and at a time when real net cash returns had been cut approximately in half from their peak level.

An instructive segment of Figure 10 concerns the most recent

Figure 9. Trends in Land Prices per Acre[a] and Net Cash Farm Income per Crop Acre[b], Southwestern Minnesota, 1970-1988



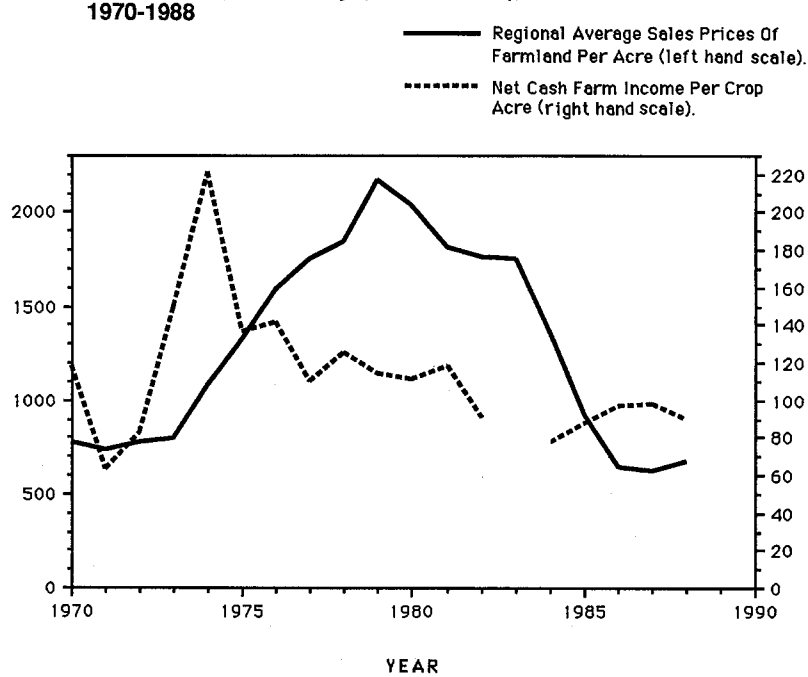
[a]Annual University of Minnesota Survey of the Rural Real Estate Market (Economic Development Region 8).
[b]Annual report of the S.W. Minnesota Farm Business Management Association; 1983 date being revised.

years. Real net cash returns per crop acre turned up after 1984, three years before the upturn in real land values in 1987-88.

Two tentative conclusions can be drawn from Figures 9 and 10. The first concerns the relatively long time lag between shifts in the direction of real rates of return per crop acre and real land prices. The expectations of continuing land price appreciation and depreciation dies hard.

A second tentative conclusion is that land price declines in the 1980's, both nominal and real, appear to have undershot an equilibrium position. The recovery of land prices reported here for 1988 is to levels of land prices relative to real rates of return per crop acre that are more defensible than at any time

Figure 10. Trends in Land Prices per Acre[a] and Net Cash Farm Income per Crop Acre[b] (Deflated by (CPI, 1982-84), Southwestern Minnesota, 1970-1988

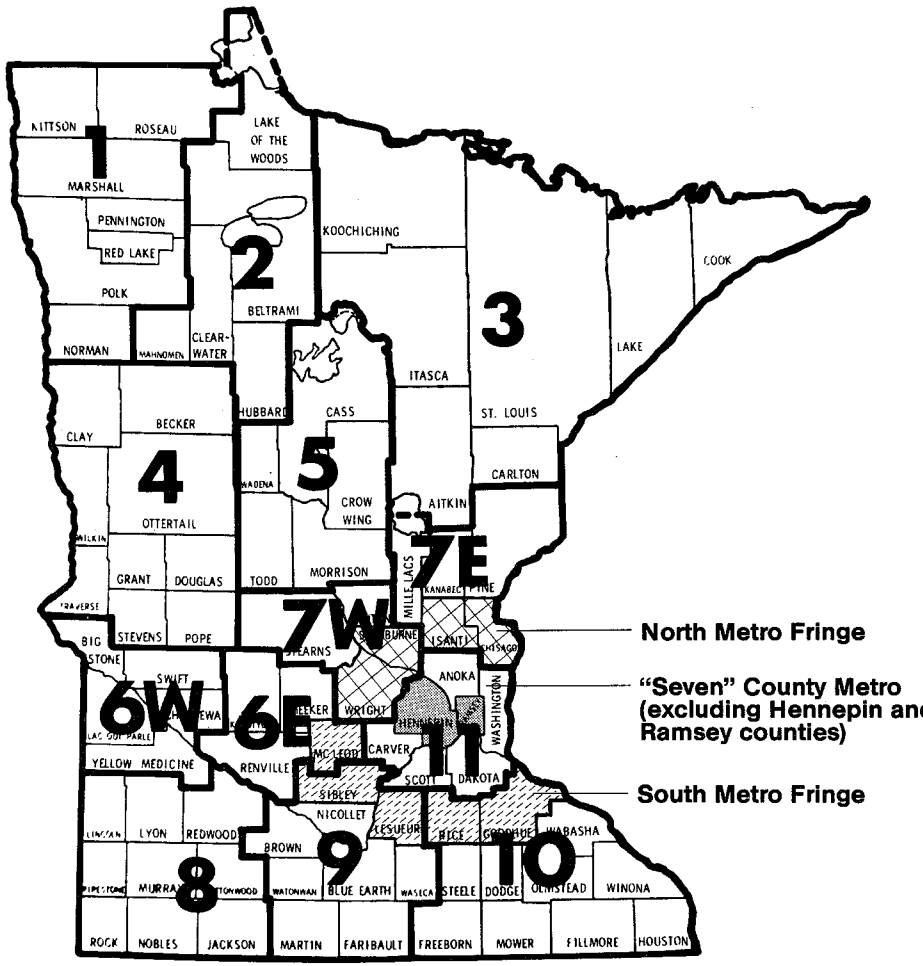


[a]Annual University of Minnesota Survey of the Rural Real Estate Market (Economic Development Region 8).
[b]Annual report of the S.W. Minnesota Farm Business Management Association

in the past 16 years, since the beginning of the land boom of the 1970s.

Appreciation is due Kent Olson for aid in assembling the data on net cash returns per crop acre, and to the members of the Southwestern Minnesota Farm Business Management Association who generated the basic data.

Figure 11. Minnesota Economic Development Regions and the Greater Twin Cities Metropolitan Area



The Greater Twin Cities Metropolitan Area

The *Greater Twin Cities Metropolitan Area* is defined, for this study, as 14 counties surrounding the counties containing the Twin Cities (Hennepin and Ramsey). To facilitate a more detailed study of this area, three sub-areas are designated. These are based on population levels, recent rates of population growth, productivity of the land, and historical trends in land values (Figure 11).

The *"Seven" County Metro* area consists, for this study, of Region 11 among the Economic Development Regions. It includes five counties (excluding Hennepin and Ramsey counties): Anoka, Carver, Dakota, Scott, and Washington.

The *South Metro Fringe* consists of five counties: Goodhue, McLeod, Le Sueur, Rice, and Sibley.

The *North Metro Fringe* includes four counties: Chisago, Isanti, Sherburne, and Wright.

All sub-areas experienced an increase in reported sales prices in 1988.

The average for the Greater Twin Cities Metro Area as a whole increased 20 percent, from $772 in 1987 to $928 per acre in 1988 (Table 26). This increase was a clear reversal of the continuous decline in land prices since 1981.

The sharpest increase in prices occurred in the North Metro Fringe, with a jump of 52 percent from $764 per acre in 1987 to $1,159 in 1988. This is the first time since this grouping of counties was introduced in this annual survey in 1973 that the North Metro Fringe has shown the highest price per acre of the three sub-areas. The remaining sub-areas also experienced increases, of 29 percent in the "Seven" County Metro core, and 13 percent in the South Metro Fringe.

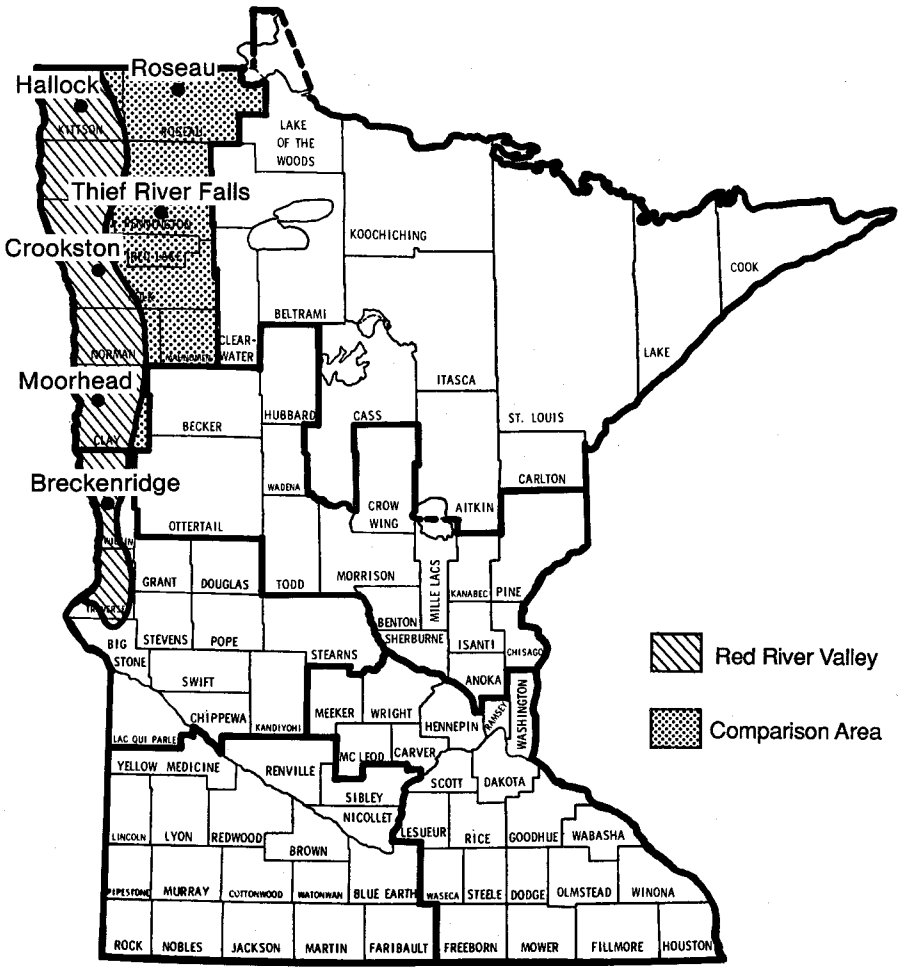
The increase in the North Metro Fringe gains significance from the fact that in general it has poorer soils than the South Metro Fringe. This is further evidence of the extent to which non-agricultural considerations are playing a leading role in patterns of rural land values around the Twin Cities.

Table 26: Average Reported Sales Price per Acre, Greater Twin Cities Metropolitan Area and Sub-areas, 1973-1988

Year	"Seven" County Metro[1]	South Metro Fringe[2]	North Metro Fringe[3]	Greater T.C. Metro (14 counties)[4]	Minnesota
1973	698	475	353	516	298
1974	882	647	556	689	450
1975	1035	808	599	839	607
1976	1150	1086	718	1045	735
1977	1437	1285	752	1198	859
1978	1396	1313	892	1185	980
1979	1799	1799	1309	1694	1140
1980	1778	2097	1170	1781	1318
1981	1830	1955	1334	1791	1367
1982	1711	1867	1446	1759	1360
1983	1878	1614	1325	1581	1291
1984	1642	1464	1280	1458	1263
1985	1423	1069	1051	1152	864
1986	1127	846	721	855	650
1987	827	752	764	772	559
1988	1070	848	1159	928	691

[1]Anoka, Carver, Dakota, Scott, Washington Counties (Hennepin and Ramsey are excluded for reported purposes.)
[2]Goodhue, McLeod, Le Sueur, Rice and Sibley Counties
[3]Chisago, Isanti, Sherburne, Wright Counties
[4]All fourteen counties named above

Figure 12. The Red River Valley and Comparison Area



The Red River Valley Area

The Red River Valley, defined as the former glacial lake plain, is an area of highly productive land. Surrounding the valley, there are areas of sharply defined and generally less agriculturally productive land. As a result, analyses that include both valley and non-valley land are often distorted. To reduce the effect of these sharp changes in land quality, two sub-areas are studied: the *Red River Valley*, and a *Comparison Area* consisting of non-valley townships and counties lying primarily within the Northwest district but outside of the valley. The two areas are shown in Figure 12.

In 1988 the average price per acre paid in reported sales in the Valley increased by 23 percent, from $493 to $612, and in the Comparison area by 16 percent, from $244 to $281 (Table 27). This has continued the trend toward an increase in the spread between prices in the two areas that has been apparent since 1986.

Table 27: Farm Land Sales Prices and Average Tract Size, Red River Valley and Comparison Area, 1972-1988

Year	Price Per Acre ($)		Percent Change From Previous Year (%)		Average Size of Tracts Sold (acre)	
	Valley	Comparison Area	Valley	Comparison Area	Valley	Comparison Area
1972	151	78	-9	18	316	260
1973	201	90	33	15	252	358
1974	359	152	79	69	231	337
1975	535	227	49	49	219	270
1976	733	279	37	23	216	325
1977	780	306	6	10	284	287
1978	849	385	9	26	270	290
1979	993	461	17	20	257	321
1980	1112	638	12	38	204	317
1981	1195	788	7	24	281	284
1982	1239	629	4	-20	164	287
1983	998	561	-19	-11	190	249
1984	939	524	-6	-7	186	248
1985	755	387	-20	-26	180	203
1986	625	266	-17	-31	187	265
1987	493	244	-21	- 8	232	369
1988	612	281	23	16	186	256

Table 28: Proportion of Sales by Type of Buyer (top number) and Average Price per Acre (bottom number), 1981-1988

Type of Buyer		1983	1984	1985	1986	1987	1988
				RED RIVER VALLEY			
Sole-Tract	%	2	2	0	2	0	4
Buyer	$	1150	1250	--	513	--	389
Expansion	%	98	98	92	96	100	94
Buyer	$	995	1005	740	626	506	605
Investor	%	0	0	8	2	0	2
Buyer	$	--	--	857	897	--	502
				COMPARISON AREA			
Sole-Tract	%	11	17	9	6	13	19
Buyer	$	646	445	578	356	387	243
Expansion	%	81	80	68	88	77	81
Buyer	$	561	544	402	258	232	290
Investor	%	8	3	23	6	10	0
Buyer	$	399	350	289	393	184	--

From the beginning of the land boom in 1973 and through 1979 the annual ratio of land prices per acre in the Valley to those in the Comparison area increased sharply and varied from 215 to 263 percent. This reversed in 1980 and the ratio reached a low point of 152 percent in 1981. It stayed below 200 from 1979 through 1985. In the past three years it has climbed above 200 and in 1988 was at 218 percent, or approximately the same level that existed at the beginning of the boom in 1973 (223 percent). Land prices in the Valley, in short, accelerated more rapidly and reached higher relative levels during the boom than was true for the Comparison Area.

The fall from peak prices (1982 in the Valley, 1981 in the Comparison Area) to the low in 1987 was 60 percent in the Valley and 69 percent in the Comparison Area. In 1988, relative prices in the two areas were back where they were at the beginning of the boom. This may be an indication of a return to comparative stability.

Table 29: Proportion of Sales and Average Sales Price Per Acre of Improved and Unimproved Land, Red River Valley and Comparison Area, 1981-1988

Area and Year	Percentage of Sales		Price Per Acre		Price of Unimproved Land as a % of Price of Improved Land
	Improved	Unimproved	Improved	Unimproved	
	%	%	$	$	%
Red River Valley					
1981	25	75	1,083	1,293	119
1982	29	71	1,358	1,187	87
1983	25	75	959	1,027	107
1984	15	85	1,051	918	87
1985	8	92	755	755	106
1986	30	70	581	648	112
1987	20	80	423	527	125
1988	6	94	610	612	100
Non-Valley Area					
1981	39	61	886	677	76
1982	42	57	663	596	90
1983	28	72	618	523	85
1984	40	60	485	561	116
1985	28	72	387	388	100
1986	24	76	238	276	116
1987	41	59	237	254	107
1988	31	69	274	287	105

Expansion buyers dominated the market in 1988, with 81 percent of the sales in the Comparison Area and 94 percent in the Valley (Table 28). One feature of the market in both areas in 1988 was the virtual absence of investor buyers. In both areas sales of unimproved land (without buildings) increased as a proportion of all sales to 94 percent in the Valley and 69 percent in the Comparison Area (Table 29).

In contrast to the trend in recent years, the use of contracts for deed increased to 45 percent of all sales in the valley and to 48 percent in the Comparison Area. These offset the decline in cash sales from 60 percent in 1987 to 39 percent in 1988 in the Valley, and a decline in mortgage financing from 36 percent in 1987 to 17 percent in 1988 in the Comparison Area (Table 30).

Table 30: Proportion of Sales and Price Paid Per Acre by Method of Finance, Red River Valley and Comparison Area, 1983-1988

Method of Finance		1983	1984	1985	1986	1987	1988
				RED RIVER VALLEY			
Cash	%	33	27	52	49	60	39
	$	1021	911	675	715	592	651
Mortgage	%	40	38	37	13	21	15
	$	1019	1008	834	601	429	558
Contract for Deed	%	27	35	11	38	19	45
	$	965	1037	801	598	447	616
				COMPARISON AREA			
Cash	%	17	21	23	45	39	35
	$	533	550	235	279	291	262
Mortgage	%	38	38	31	32	36	17
	$	627	551	439	303	245	295
Contract for Deed	%	45	41	46	23	25	48
	$	537	485	463	202	175	283

Part III
A Comparison of Minnesota Farmland Value Appreciation and U.S. Government Bond Yields

A possible consideration of investors, when purchasing land, is a determination of when it is better to invest in U.S. Government Bonds and when it is better to invest in rural land. The initial comparison here is between two measures: the percentage change in the deflated estimated land values in Minnesota and in real (deflated) U.S. Government Bond Yields (USGBY) with a 10-year maturity.

Figure 13 shows that during the 1950's and 1960's investors could choose between the slow but constant increase in real USGBY and an erratic trend in real estimated land values. In the 1970s investors could choose between the significant appreciation in real land values and the lower stable yields of government bonds. The opposite was true in the 1980s.

Figure 13. Percent Change in Deflated Estimated Value and U.S. Treasury Bond Yields (10-year maturity), 1953-1987

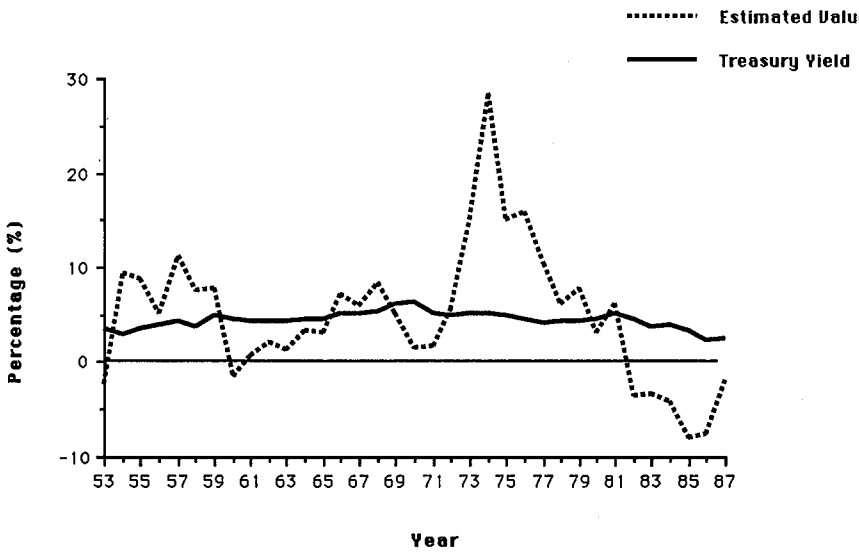


Table 31: Annual Real (Deflated) Rate of Return to Farming from Residual Income, 1953-1987[a]

1953	4.1	66	3.8	79	1.1
54	3.9	67	2.8	1980	0.4
1955	2.7	68	2.4	81	0.7
56	2.7	69	2.8	82	0.7
57	2.6	1970	2.6	83	0.3
58	4.2	71	2.6	84	0.9
59	1.9	72	3.5	1985	1.1
1960	2.6	73	5.8	86	1.2
61	3.2	74	3.0	87	1.5
62	3.2	1975	2.2		
63	3.2	76	1.2		
64	2.6	77	1.0		
1965	3.6	78	1.2		

[a]Source: Nominal (Undeflated) Rate of Return to Farming from Residual Income is from Ken Erickson, Economic Research Service, United States Department of Agriculture.

If the annual average real rates of return to farming, as shown in Table 31, are added to the percentage changes in real estimated land values, from 1953 to 1987, the combined figures are greater than the real USGBY except for the years 1953, 1960-1961, 1970-1971, 1980, and 1982-87.

In 1969-1970 the two measures (percentage change in real estimated land values and real USGBY) diverged. Real USGBY continued to increase while real (deflated) estimated land values decreased by 3.9 percent.

The two measures diverged again in 1972-1973 when real estimated land values increased by 13.1 percent and real USGBY increased by only 5.1 percent. Increases in real estimated land values continued to be larger than the increase in real USGBY until 1977 through 1979, when the two measures increased at approximately the same rate of 5 percent.

In 1979-1980 real USGBY continued to increase while real estimated land values declined by 5.1 percent. At this time, 1979-1980, investors should have begun to question continued investment in farmland versus U.S. Government Bonds. This signal to consider switching investments came two years before the decline in land values began in 1981-1982.

Table 32: Average Real Return to Assets from Residual Income, Annual Growth Rate of Real Minnesota Estimated Land Value, Average Real U.S. Government Bond Yields (10 Year), 1953-1960, 1961-1970, 1971-1980, and 1981-1988

Period	Average Real Rate of Return to Farming	Annual Growth Rate Real Estimated Land Values	Average Real USGBY[a]
	.....Percentage.....		
1953-1960 (8 years)	2.575	3.659	3.966
1961-1970	2.960	1.149	5.004
1971-1980	3.270	9.025	4.709
1981-1988 (7 years)	3.550	-16.076	3.632

[a]Source: The Nominal U.S. Government Bond Yields (10 year) are from *The Economic Report of the President, Transmitted to the Congress*, January, 1988

An additional analysis of real USGBY (10 year) and real estimated land values can be made by comparing annual growth rates. Comparisons of these two measures for the periods 1953-1960, 1961-1970, 1971-1980, and 1981-1987 are given in Table 32.

As seen in Table 32 the annual growth rates of real estimated land values and real USGBY were close during the period 1953-1960. However, during the 1961-1970 period the real USGBY was more than four times greater than the annual growth rate of real estimated land values.

This reversed for the 1971-1980 period when the annual growth rate for real estimated land values was two times greater than real USGBY for the same period. A growth rate of real estimated land values greater than that for real USGBY was consistent with the strong land market during the 1970s.

During the most recent period, 1981-1987, the growth rate for real estimated land values was significantly negative and thus, considerably less than real USGBY.

Part IV
The Drought of 1988

Shortage of precipitation and extreme heat characterized much of Minnesota in 1988. As the year progressed, more and more of the state experienced extreme drought conditions, with the exception of northeastern Minnesota and a small area in the southwest. In August, rains returned, reducing the intensity of the drought, but drought conditions persisted in much of the state even to the close of the year.

County-level data from this study have been used in an attempt to relate the agricultural impact of the drought, as measured by production changes for three crops (corn, wheat, and soybeans), to the changes in average reported sales prices per acre for farmland between 1987 and 1988. The agricultural impact was measured by taking the difference between the 1988 yields per harvested acre and a three-year average of yields for 1985-1987.

Any reduction or gain in yield was valued at an estimate of the county level average season price for the three grains. This estimate was constructed by taking the difference between the county loan rate and the national loan rate. The difference was subtracted from the national season average price to obtain the county price. This was used to estimate the reduction in receipts per acre. The higher the loss in receipts the greater the assumed impact of the drought.

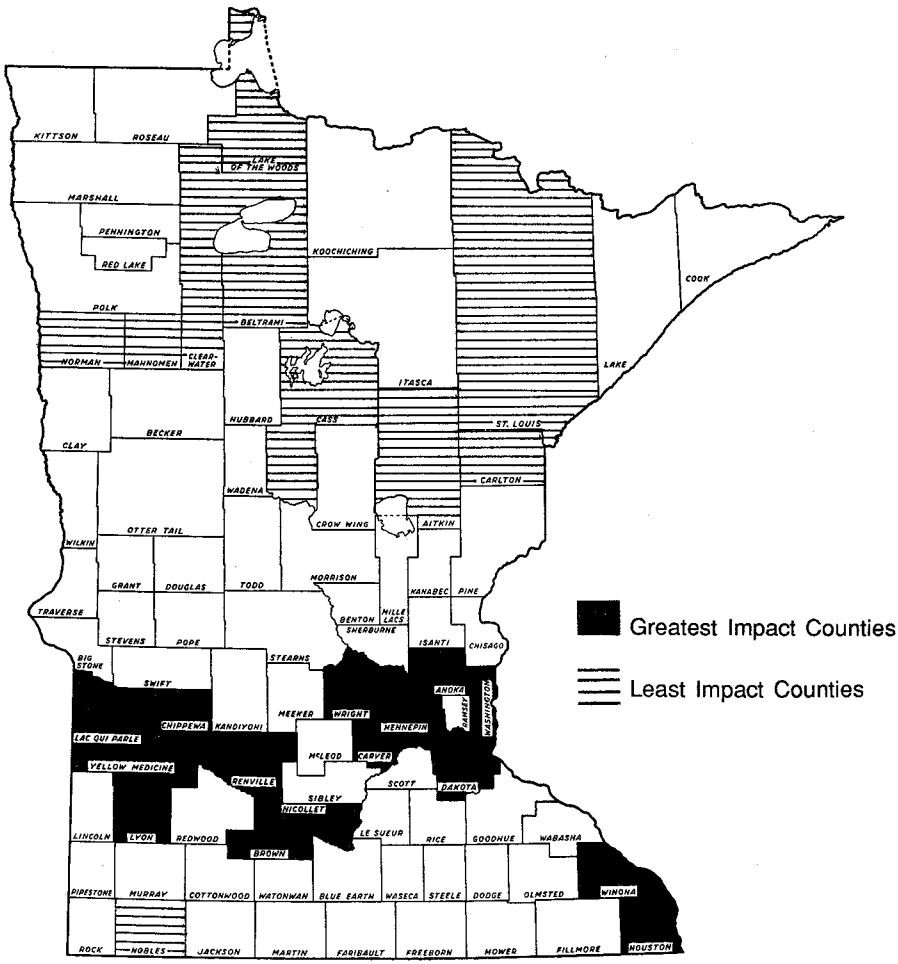
Little relation was found between the loss in receipts per acre and the change in farmland prices in 1988. The greatest impact areas were along the Minnesota River and north along the Mississippi River up to St. Cloud (Figure 14, depicted by black). Alternatively, the least devastated areas were the Northeast district, and Nobles county in the southwest (depicted by grey).

In spite of the drought, the upward trend in land prices was apparent even in the hardest hit areas, except for the counties along the Mississippi River southeast of the Twin Cities (Minneapolis-St. Paul), where both gains and losses in prices were reported. Counties in the Northeast district were not included in this analysis of drought effects, due to the small number of reported sales for both 1987 and 1988.

Since this annual survey assembles data on estimated values as of July of each year, and data on sales for the period January to June, the full effects of the drought of 1988 could not be revealed by the data used for this report. It can be anticipated

that the land market survey for 1989 will reflect the effects of the 1988 drought in greater geographic detail.

Figure 14. Agricultural Impact of 1988 Drought: Greatest and Least Impact Counties of Minnesota



Part V
Deflated Estimated Values and Reported Sales Prices

Trends in the estimated values and reported sales prices are heavily influenced by the rate of inflation in the general economy. One means of removing the effect is by deflating with the Consumer Price Index (CPI). In 1988, the average CPI for the first six months was 349.9 (1967=100). The effect of the rate of inflation can be removed from the estimated sales prices by dividing the 1988 data by 3.499.

The nominal (current) statewide estimated land value for 1988 was $523 per acre, slightly below the nominal value of $525 per acre in 1975. When deflated, the estimated value in 1988 was $149 which was slightly below the deflated 1955 value of $151 per acre (Table 33).

The nominal reported sales price per acre in 1988 was $691, well below the nominal 1976 value of $735. The 1988 deflated sales price was $198, ranking it below the deflated sales price of $209 per acre in 1966 (Table 34).

When deflated by districts, all districts except the Northeast experienced an increase in real values over 1987, and all districts except the East Central experienced an increase in real reported sales prices.

Table 33: Average Estimated Value Per Acre, State and Districts, Deflated by the CPI, Minnesota, 1910-1988

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
	--------- dollars per acre in 1967 dollars ----------						
1910-11	207	193	139	86	86	39	146
1912-13	238	238	159	100	100	45	169
1914-15	272	279	186	113	106	47	193
1916-17	281	306	205	125	113	46	208
1918-19	259	262	173	111	89	40	182
1920-21	235	253	163	113	95	40	173
1922-23	227	237	163	112	88	46	169
1924-25	203	215	145	96	86	43	152
1926-27	200	206	136	92	68	42	143
1928-29	195	199	131	86	64	41	138
1930-31	176	176	102	72	44	36	120
1932-33	156	159	103	66	49	34	110
1934-35	130	145	95	65	55	37	100
1936-37	142	154	92	70	53	58	106
1938-39	142	161	88	66	52	59	107
1940-41	140	162	86	62	53	57	102
1942-43	133	156	82	59	49	51	98
1944-45	148	171	91	66	55	53	106
1946	150	178	96	67	56	55	111
1947	143	173	93	64	55	52	108
1948	144	179	96	65	57	53	110
1949	150	190	102	69	62	55	116
1950	151	196	105	69	64	55	118
1951	161	213	114	76	69	59	127
1952	165	220	121	82	86	53	135
1953	162	218	119	77	80	50	131
1954	173	232	123	82	89	50	140
1955	187	256	128	85	91	56	151
1956	192	263	131	86	93	52	155
1957	196	273	145	91	102	58	164
1958	207	279	142	97	104	75	170
1959	219	292	153	102	118	66	180

Table 33: (cont'd) **Average Estimated Value Per Acre, State and Districts, Deflated by the CPI, Minnesota, 1910-1988**

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
	--------- dollars per acre in 1967 dollars ----------						
1960	212	280	150	106	112	72	175
1961	223	292	157	112	118	76	184
1962	212	276	152	109	115	76	175
1963	212	268	155	112	124	74	176
1964	222	271	156	119	124	64	179
1965	232	276	154	119	120	54	181
1966	249	285	157	126	115	60	188
1967	262	303	163	128	108	62	194
1968	275	320	174	129	117	55	203
1969	283	321	180	134	110	50	205
1970	273	299	171	139	103	53	196
1971	275	290	169	128	98	52	192
1972	296	303	166	130	94	61	198
1973	326	345	186	146	110	86	224
1974	392	459	257	190	135	98	288
1975	418	524	312	184	183	101	326
1976	502	649	366	205	222	123	391
1977	566	725	402	229	225	154	437
1978	610	727	411	255	247	156	455
1979	668	745	406	263	275	169	478
1980	618	709	390	241	277	158	454
1981	627	765	417	249	298	169	481
1982	520	649	361	202	259	167	408
1983	454	559	329	188	221	138	357
1984	374	450	281	162	188	140	298
1985	267	300	214	116	158	112	213
1986	185	213	156	91	128	94	158
1987	166	199	140	77	111	87	143
1988	185	224	143	77	111	72	149

Table 34: Average Price Per Acre of Reported Farm Sales, State and Districts, Deflated by the CPI, Minnesota, 1954-1988

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
	dollars per acre in 1967 dollars						
1954	182	231	131	71	79	48	153
1955	207	263	126	81	84	57	180
1956	197	254	123	70	95	50	171
1957	208	257	131	80	104	47	171
1958	194	270	133	89	91	60	179
1959	241	278	148	83	97	70	198
1960	213	271	154	78	114	56	181
1961	211	285	145	99	103	42	184
1962	216	252	155	84	82	33	178
1963	233	242	149	94	119	52	183
1964	230	252	162	93	112	56	192
1965	214	246	141	101	112	42	188
1966	261	268	169	116	106	31	209
1967	272	306	179	93	117	51	215
1968	303	316	179	100	86	45	223
1969	310	304	176	118	110	46	217
1970	298	292	177	121	97	39	209
1971	283	283	169	124	83	36	214
1972	311	292	177	116	86	61	234
1973	333	308	168	134	90	91	224
1974	405	427	230	164	138	98	305
1975	491	524	306	185	219	99	377
1976	550	654	389	188	221	123	431
1977	670	739	390	246	238	109	473
1978	692	676	464	284	258	131	501
1979	770	773	284	284	282	189	524
1980	744	757	444	244	307	160	534
1981	721	736	430	250	337	177	502
1982	605	700	404	258	307	140	470
1983	493	627	358	227	238	110	433
1984	446	533	341	207	225	72	406
1985	314	367	271	158	178	69	268
1986	205	253	183	169	125	67	198
1987	182	222	145	126	99	49	164
1988	228	260	163	113	117	53	198

Statistical Appendix

This report has made use of averages. In using averages, the variation about the average is not apparent. A wide variation reduces the reliability of the data, and any reduction in variation increases the significance of the averages. The measures of variation given here are the average reported sales prices.

Two measures of variability are the standard deviation and the coefficient of variation. One standard deviation gives a dollar value which, when used to make upper and lower bounds around the average, would include about two-thirds of the reported sales. For the state in 1987, two-thirds of the sales would be bound within $342.90 ($691.20 - $348.30) and $1,039.50 ($691.20 + $348.30). The coefficient of variation is a related measure. It is calculated by dividing the standard deviation by the mean. This product is multiplied by 100 to obtain a percentage figure. Again for the state as a whole in 1987, the coefficient of variation would be 51.4 percent. For each of the two measures, larger coefficients reflect larger variation about the average reported price.

Tables 36 and 38 showing year to year percentage changes in sales prices and estimated values have been added to the section. Note that the percentage change in Table 38 for the years 1910-1947 are between two paired years. Thereafter the table values show percentage changes between two consecutive years.

Table 35: Average Price Per Acre of Reported Farm Sales, Standard Deviation and Coefficient of Variation, Minnesota and districts, 1954-1988

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
			Average Price Per Acre (dollars)				
1954	146.3	186.3	105.6	57.3	63.5	38.5	123.4
1955	166.1	211.3	101.0	65.1	67.5	45.7	144.5
1956	160.6	207.1	100.5	57.1	77.0	40.3	138.8
1957	175.5	216.9	110.1	67.3	87.8	39.3	144.3
1958	168.0	234.2	115.4	77.5	78.7	51.7	155.3
1959	210.1	243.1	128.8	72.6	85.1	61.2	173.2
1960	189.1	240.4	136.4	69.3	100.8	49.5	160.9
1961	189.1	255.8	130.3	89.0	92.0	37.9	165.2
1962	195.7	228.5	140.5	76.3	73.9	30.3	161.1
1963	214.1	221.9	136.2	86.2	108.8	47.6	168.1
1964	213.3	234.3	150.3	86.3	103.6	51.6	178.1
1965	202.0	232.7	133.2	95.8	106.2	39.7	178.0
1966	253.4	260.4	164.3	113.0	103.4	30.6	203.4
1967	272.4	306.1	178.6	92.9	116.6	51.2	214.8
1968	316.0	329.0	186.0	104.0	90.0	47.0	232.0
1969	340.7	334.1	193.6	129.7	120.8	50.7	238.3
1970	346.0	340.0	206.0	141.0	113.0	45.0	243.0
1971	343.6	343.0	204.5	150.2	100.1	43.7	259.0
1972	389.4	365.7	221.7	145.1	107.2	76.4	293.3
1973	443.5	410.1	223.0	178.1	119.7	121.7	298.4
1974	598.4	630.1	339.8	242.7	204.0	144.4	450.1
1975	791.8	843.9	492.9	298.5	352.8	159.3	607.0
1976	937.2	1115.7	663.7	321.3	377.0	209.7	735.2
1977	1216.0	1340.4	708.6	445.7	431.7	197.9	858.8
1978	1351.7	1320.7	907.6	554.0	504.0	256.3	979.6
1979	1674.6	1679.5	618.1	618.1	612.2	410.9	1139.9
1980	1837.1	1868.2	1095.3	603.0	758.8	394.5	1318.5
1981	1965.3	2004.6	1170.6	680.1	918.7	482.8	1367.1
1982	1748.5	2022.3	1167.9	745.7	886.8	405.7	1359.5
1983	1470.0	1872.0	1068.4	678.5	711.1	327.6	1291.0
1984	1386.1	1658.1	1062.2	644.4	700.0	223.2	1263.0
1985	1012.5	1181.0	872.3	509.6	575.0	222.0	862.4
1986	672.5	829.6	602.3	556.0	411.3	219.8	649.8
1987	620.8	754.6	493.4	428.7	337.4	168.0	558.7
1988	797.4	910.9	570.9	395.4	411.1	184.3	691.2

Table 35: (cont'd) **Average Price Per Acre of Reported Farm Sales, Standard Deviation and Coefficient of Variation, Minnesota and districts, 1954-1988***

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
			Standard Deviation				
1954	60.5	59.4	32.9	32.6	39.5	27.5	70.4
1955	67.3	71.5	35.7	31.9	43.0	33.9	84.6
1956	69.8	69.9	38.6	33.5	43.0	31.5	83.1
1957	82.7	72.7	42.8	37.0	86.5	36.1	89.9
1958	78.4	79.7	43.3	38.0	55.2	31.6	91.5
1959	87.2	77.0	44.5	41.3	62.8	59.5	96.6
1960	90.4	77.0	47.7	48.6	76.6	42.1	95.8
1961	83.5	71.9	40.0	47.8	54.1	20.1	86.8
1962	80.7	68.6	45.1	39.1	57.2	29.7	88.5
1963	79.4	77.1	50.8	43.7	69.4	26.1	88.6
1964	91.6	77.3	70.1	52.4	89.9	39.0	97.2
1965	96.3	87.0	82.1	63.5	91.1	31.7	98.1
1966	142.7	95.3	56.1	66.5	65.7	32.2	199.4
1967	115.3	106.2	62.8	67.6	85.4	29.8	127.6
1968	179.0	124.2	77.5	108.5	70.5	41.6	160.7
1969	228.6	123.4	64.5	104.2	83.9	45.0	174.0
1970	189.7	129.6	75.4	105.6	89.5	29.3	162.5
1971	154.3	128.1	66.6	100.7	66.9	28.9	157.4
1972	154.9	136.4	79.0	96.7	70.0	38.8	164.4
1973	183.3	164.1	94.0	97.2	76.8	86.6	188.9
1974	265.2	290.0	147.2	153.0	127.5	60.6	287.7
1975	291.3	373.8	225.0	142.5	220.8	72.2	360.4
1976	359.0	501.4	243.0	176.2	273.2	100.6	457.8
1977	476.9	606.8	305.2	244.1	294.3	99.4	599.0
1978	454.4	496.9	329.2	304.0	260.9	100.5	539.7
1979	850.3	833.3	361.4	357.2	354.7	228.3	791.6
1980	639.5	746.7	487.2	298.1	337.2	152.9	780.1
1981	675.8	891.3	426.9	624.5	332.2	157.0	826.6
1982	615.9	758.5	423.5	360.8	405.0	127.4	774.3
1983	501.2	593.0	355.4	369.9	293.1	160.5	665.7
1984	452.8	585.6	311.1	334.0	328.4	105.5	586.1
1985	383.8	450.9	350.8	298.6	294.9	122.8	464.9
1986	264.3	266.9	213.6	317.3	241.2	106.5	293.0
1987	251.6	268.6	171.8	248.0	208.4	65.3	287.2
1988	342.6	330.8	165.9	236.1	234.5	81.3	348.3

Table 35: (cont'd) **Average Price Per Acre of Reported Farm Sales, Standard Deviation and Coefficient of Variation, Minnesota and Districts, 1954-1988***

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
			Coefficient of Variation (percent)				
1954	41.4	31.9	31.1	56.9	62.3	71.5	57.1
1955	41.4	33.8	35.3	53.7	63.5	74.2	59.1
1956	43.5	33.7	38.4	58.6	55.8	78.0	59.9
1957	47.1	33.5	39.7	57.0	98.5	68.5	62.4
1958	46.7	34.0	37.5	49.0	70.1	63.0	58.8
1959	41.5	31.6	34.5	56.9	73.8	97.2	55.8
1960	47.8	32.0	35.0	70.2	76.0	85.1	59.5
1961	44.2	31.8	30.7	53.7	58.7	53.1	52.6
1962	41.2	30.0	32.2	51.2	77.3	98.0	54.9
1963	37.1	34.8	37.3	40.7	63.8	54.8	52.7
1964	42.9	33.0	46.6	60.8	86.7	75.5	54.6
1965	47.6	37.4	61.6	66.2	85.8	79.8	55.1
1966	56.4	36.7	32.6	58.9	63.8	105.4	58.7
1967	42.3	34.7	35.2	72.8	73.2	58.2	59.4
1968	56.6	37.3	41.6	103.8	78.3	88.5	69.2
1969	67.1	36.9	33.3	80.4	69.5	88.9	73.0
1970	54.8	38.1	36.6	74.9	79.2	65.1	66.9
1971	44.9	37.4	32.6	67.0	66.8	66.1	60.8
1972	39.8	37.3	35.2	66.6	65.3	50.8	56.1
1973	41.3	40.0	42.2	54.6	64.2	71.2	63.3
1974	44.3	46.0	43.3	63.0	62.5	42.0	63.9
1975	36.8	44.3	45.7	47.7	62.6	45.3	59.4
1976	38.3	44.9	36.6	54.8	72.5	48.0	62.3
1977	39.2	45.3	43.1	54.8	68.2	50.2	69.7
1978	33.6	37.6	36.3	54.9	51.7	39.2	55.1
1979	50.8	49.6	38.1	57.8	57.9	55.6	69.4
1980	34.8	40.0	44.5	49.4	44.4	38.8	59.2
1981	34.4	44.5	36.5	91.8	36.2	32.5	60.5
1982	35.2	37.5	36.3	48.4	45.7	31.4	57.0
1983	34.1	31.7	33.3	54.5	41.2	48.9	51.6
1984	32.6	35.3	29.3	51.8	46.9	47.3	46.4
1985	37.9	38.2	40.2	58.6	51.3	64.8	53.9
1986	39.3	32.2	35.5	57.1	58.6	48.5	45.1
1987	40.5	35.6	34.8	57.9	61.8	38.9	51.4
1988	43.0	36.3	29.1	59.7	57.0	41.1	50.4

*Each acre is treated as a unit in calculating standard deviations and coefficients of variation.

Table 36: Percentage Change of Average Reported Sales Price per Acre, District and Minnesota, 1954-1988

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
1954-55	13.5	13.4	-4.4	13.6	6.3	18.7	17.1
1955-56	-3.3	-2.0	-0.5	-12.3	14.1	-11.8	-3.9
1956-57	9.3	4.7	9.6	17.9	14.0	-2.5	4.0
1957-58	-4.3	8.0	4.8	15.2	-10.4	31.6	7.6
1958-59	25.1	3.8	11.6	-6.3	8.1	18.4	11.5
1959-60	-10.0	-1.1	5.9	-4.5	18.4	-19.1	-7.1
1960-61	0.0	6.4	-4.5	28.4	-8.7	-23.4	2.7
1961-62	3.5	-10.7	7.8	-14.3	-19.7	-20.1	-2.5
1962-63	9.4	-2.9	-3.1	13.0	47.2	57.1	4.3
1963-64	-0.4	5.6	10.4	0.1	-4.8	8.4	5.9
1964-65	-5.3	-0.7	-11.4	11.0	2.5	-23.1	-0.1
1965-66	25.4	11.9	23.3	18.0	-2.6	-22.9	14.3
1966-67	7.5	17.5	8.7	-17.8	12.8	67.3	5.6
1967-68	16.0	7.5	4.1	11.9	-22.8	-8.2	8.0
1968-69	7.8	1.6	4.1	24.7	34.2	7.9	2.7
1969-70	1.6	1.8	6.4	8.7	-6.5	-11.2	2.0
1970-71	-0.7	0.9	-0.7	6.5	-11.4	-2.9	6.6
1971-72	13.3	6.6	8.4	-3.4	7.1	74.8	13.2
1972-73	13.9	12.1	0.6	22.7	11.7	59.3	1.7
1973-74	34.9	53.6	52.4	36.3	70.4	18.7	50.8
1974-75	32.3	33.9	45.1	23.0	72.9	10.3	34.9
1975-76	18.4	32.2	34.7	7.6	6.9	31.6	21.1
1976-77	29.7	20.1	6.8	38.7	14.5	-5.6	16.8
1977-88	11.2	-1.5	28.1	24.3	16.7	29.5	14.1
1978-79	23.9	27.2	-31.9	11.6	21.5	60.3	16.4
1979-80	9.7	11.2	77.2	-2.4	23.9	-4.0	15.7
1980-81	7.0	7.3	6.9	12.8	21.1	22.4	3.7
1981-82	-11.0	0.9	-0.2	9.6	-3.5	-16.0	-0.6
1982-83	-15.9	-7.4	-8.5	-9.0	-19.8	-19.3	-5.0
1983-84	-5.7	-11.4	-0.6	-5.0	-1.6	-31.9	-2.2
1984-85	-27.0	-28.8	-17.9	-20.9	-17.9	-0.5	-31.7
1985-86	-33.6	-29.8	-31.0	9.1	-28.5	-1.0	-24.7
1986-87	-7.7	-9.0	-18.1	-22.9	-18.0	-23.6	-14.0
1987-88	28.4	20.7	15.7	-7.8	21.8	9.7	23.7

Table 37: Average Estimated Value Per acre of Farm Real Estate in Minnesota by Districts, 1910-11 through 1944-45, by Two-Year Periods, and Annually, 1946 through 1988

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
1910-11	58	54	39	24	24	11	41
1912-13	69	69	46	29	29	13	49
1914-15	82	84	56	34	32	14	58
1916-17	92	100	67	41	37	15	68
1918-19	117	118	78	50	40	18	82
1920-21	141	152	98	68	57	24	104
1922-23	114	119	82	56	44	23	85
1924-25	104	110	74	49	44	22	78
1926-27	106	109	72	49	36	22	76
1928-29	100	102	67	44	33	21	71
1930-31	88	88	51	36	22	18	60
1932-33	64	65	42	27	20	14	45
1934-35	52	58	38	26	22	15	40
1936-37	59	64	38	29	22	24	44
1938-39	60	68	37	28	22	25	45
1940-41	59	68	36	26	22	24	43
1942-43	65	76	40	29	24	25	48
1944-45	78	90	48	35	29	28	56
1946	88	104	56	39	33	32	65
1947	96	116	62	43	37	35	72
1948	104	129	69	47	41	38	79
1949	107	136	73	49	44	39	83
1950	109	141	76	50	46	40	85
1951	125	166	89	59	54	46	99
1952	131	175	96	65	68	42	107
1953	130	175	95	62	64	40	105
1954	139	187	99	66	72	40	113
1955	150	205	103	68	73	45	121
1956	156	214	107	70	76	42	126
1957	165	230	122	77	86	49	138
1958	179	242	123	84	90	65	147
1959	191	255	134	89	103	58	157

Table 37: (cont'd) **Average Estimated Value Per acre of Farm Real Estate in Minnesota by Districts, 1910-11 through 1944-45, by Two-Year Periods, and Annually, 1946 through 1988**

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
1960	188	248	133	94	99	64	155
1961	189	247	133	95	100	64	156
1962	192	250	138	99	104	69	159
1963	194	246	142	103	114	68	161
1964	206	252	145	111	115	59	166
1965	219	261	146	112	113	51	171
1966	242	277	153	122	112	58	183
1967	262	303	163	128	108	62	194
1968	286	333	181	134	122	57	211
1969	308	350	196	146	120	54	223
1970	317	347	198	161	120	62	227
1971	333	351	204	155	119	63	232
1972	370	379	208	163	117	76	248
1973	433	459	247	194	146	115	298
1974	576	675	378	279	199	144	423
1975	674	844	503	296	295	163	525
1976	856	1106	624	349	378	210	667
1977	1027	1316	730	415	427	279	794
1978	1191	1421	803	498	483	304	889
1979	1453	1620	883	573	599	368	1040
1980	1526	1750	962	596	683	390	1120
1981	1709	2083	1135	679	813	460	1310
1982	1504	1875	1044	584	748	483	1179
1983	1354	1669	981	561	658	411	1065
1984	1164	1401	873	505	586	436	927
1985	861	967	690	374	510	362	686
1986	603	696	511	296	418	308	515
1987	558	671	472	259	375	283	480
1988	648	784	499	268	390	251	523

Table 38: Percentage Change in Estimated Value per Acre, by District and Minnesota, 1910-1988

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
1910-13	19.0	27.8	17.9	20.8	20.8	18.2	19.5
1912-15	18.8	21.7	21.7	17.2	10.3	7.7	18.4
1914-17	12.2	19.0	19.6	20.6	15.6	7.1	17.2
1916-19	27.2	18.0	16.4	22.0	8.1	20.0	20.6
1918-21	20.5	28.8	25.6	36.0	42.5	33.3	26.8
1920-23	-19.1	-21.7	-16.3	-17.6	-22.8	-4.2	-18.3
1922-25	-8.8	-7.6	-9.8	-12.5	0.0	-4.3	-8.2
1924-27	1.9	-0.9	-2.7	0.0	-18.2	0.0	-2.6
1926-29	-5.7	-6.4	-6.9	-10.2	-8.3	-4.5	-6.6
1928-31	-12.0	-13.7	-23.9	-18.2	-33.3	-14.3	-15.5
1930-33	-27.3	-26.1	-17.6	-25.0	-9.1	-22.2	-25.0
1932-35	-18.8	-10.8	-9.5	-3.7	10.0	7.1	-11.1
1934-37	13.5	10.3	0.0	11.5	0.0	60.0	10.0
1936-39	1.7	6.3	-2.6	-3.4	0.0	4.2	2.3
1938-41	-1.7	0.0	-2.7	-7.1	0.0	-4.0	-4.4
1940-43	10.2	11.8	11.1	11.5	9.1	4.2	11.6
1942-45	20.0	18.4	20.0	20.7	20.8	12.0	16.7
1944-46	12.8	15.6	16.7	11.4	13.8	14.3	16.1
1946-47	9.1	11.5	10.7	10.3	12.1	9.4	10.8
1947-48	8.3	11.2	11.3	9.3	10.8	8.6	9.7
1948-49	2.9	5.4	5.8	4.3	7.3	2.6	5.1
1949-50	1.9	3.7	4.1	2.0	4.5	2.6	2.4
1950-51	14.7	17.7	17.1	18.0	17.4	15.0	16.5
1951-52	4.8	5.4	7.9	10.2	25.9	-8.7	8.1
1952-53	-0.8	0.0	-1.0	-4.6	-5.9	-4.8	-1.9
1953-54	6.9	6.9	4.2	6.5	12.5	0.0	7.6
1954-55	7.9	9.6	4.0	3.0	1.4	12.5	7.1
1955-56	4.0	4.4	3.9	2.9	4.1	-6.7	4.1
1956-57	5.8	7.5	14.0	10.0	13.2	16.7	9.5
1957-58	8.5	5.2	0.8	9.1	4.7	32.7	6.5
1958-59	6.7	5.4	8.9	6.0	14.4	-10.8	6.8
1959-60	-1.6	-2.7	-0.7	5.6	-3.9	10.3	-1.3

Table 38: (cont'd) **Percentage Change in Estimated Value per Acre, by District and Minnesota, 1910-1988**

Year	South-east	South-west	West Central	East Central	North-west	North-east	Minnesota
1960-61	0.5	-0.4	0.0	1.1	1.0	0.0	0.6
1961-62	1.6	1.2	3.8	4.2	4.0	7.8	1.9
1962-63	1.0	-1.6	2.9	4.0	9.6	-1.4	1.3
1963-64	6.2	2.4	2.1	7.8	0.9	-13.2	3.1
1964-65	6.3	3.6	0.7	0.9	-1.7	-13.6	3.0
1965-66	10.5	6.1	4.8	8.9	-0.9	13.7	7.0
1966-67	8.3	9.4	6.5	4.9	-3.6	6.9	6.0
1967-68	9.2	9.9	11.0	4.7	13.0	-8.1	8.8
1968-69	7.7	5.1	8.3	9.0	-1.6	-5.3	5.7
1969-70	2.9	-0.9	1.0	10.3	0.0	14.8	1.8
1970-71	5.0	1.2	3.0	-3.7	-0.8	1.6	2.2
1971-72	11.1	8.0	2.0	5.2	-1.7	20.6	6.9
1972-73	17.0	21.1	18.8	19.0	24.8	51.3	20.2
1973-74	33.0	47.1	53.0	43.8	36.3	25.2	41.9
1974-75	17.0	25.0	33.1	6.1	48.2	13.2	24.1
1975-76	27.0	31.0	24.1	17.9	28.1	28.8	27.0
1976-77	20.0	19.0	17.0	18.9	13.0	32.9	19.0
1977-78	16.0	8.0	10.0	20.0	13.1	9.0	12.0
1978-79	22.0	14.0	10.0	15.1	24.0	21.1	17.0
1979-80	5.0	8.0	8.9	4.0	14.0	6.0	7.7
1980-81	12.0	19.0	18.0	13.9	19.0	17.9	17.0
1981-82	-12.0	-10.0	-8.0	-14.0	-8.0	5.0	-10.0
1982-83	-10.0	-11.0	-6.0	-3.9	-12.0	-14.9	-9.7
1983-84	-14.0	-16.1	-11.0	-10.0	-10.9	6.1	-13.0
1984-85	-26.0	-31.0	-21.0	-25.9	-13.0	-17.0	-26.0
1985-86	-30.0	-28.0	-25.9	-20.9	-18.0	-14.9	-24.9
1986-87	-7.5	-3.6	-7.6	-12.5	-10.3	-8.1	-6.8
1987-88	16.1	16.8	5.7	3.5	4.0	-11.3	9.0

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