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MINNESOTA AGRICULTURAL ECONOMIST

NO. 622 AUGUST-SEPTEMBER-OCTOBER 1980

LAND PRICES: WHY SO HIGH? WILL THEY GO HIGHER?

Paul R. Hasbargen*

IN THIS ISSUE

Policymakers and farmers often ask (1) why are farmland prices so high relative to farm earnings and (2) what can be done to control land price increases.

This August-October issue addresses these concerns and closes with a perspective on land price changes during the 1980s.

MAJOR FACTORS AFFECTING LAND PRICES

The single most important factor affecting farmland value (and price) is its earning capacity. If this remained the same through time for every owner and potential owner, land prices would remain fairly stable.

The value of land expected to have a perpetual annual yield can be determined by dividing that yield by the competitive long term annual rate of return on the investment. If an acre yields \$60 in net returns, and is expected to continue yielding this amount annually, and the competitive rate of return is 10 percent, the productive value of that acre is \$600. This for-

mula, $\text{yield} \div \text{rate of return} = \text{value}$, simply discounts all future earnings (yields) by the appropriate long term discount rate (rate of return) and totals them as one current number (value). Today's per acre price represents the sum total of all the future earnings of that acre discounted into current dollars.

According to this formula, the important factors affecting the current economic value of land are (1) expected future earnings and (2) the competitive rate of return—the discount rate.

A study of land prices shows that more productive land with higher earning potential commands higher market prices. But, why does the ratio between current land prices and current land earnings—the competitive rate of return—remain so low, only 3 to 4 percent? Why are farm owners willing to own land—and buy more—when returns are so low relative to current interest rates? A closer look at the two components of the capitalization formula indicates the economic forces affecting land prices.

Future Earnings

First, "expected future earnings" are based not only on current earnings but on historical changes in earnings. And, history shows that the earning capacity of farmland has trended upward since the thirties. New technologies have increased productivity. New operators have applied improved management. Expanding foreign markets have helped increase the demand for field crops. These and other factors have resulted in a fairly consistent rate of increase in the real earning power of land during the past 30 years. One recent study estimated that the *real* returns (constant purchasing power dollars) to farm assets—which are about 70 percent land—have increased at an annual

rate of over 4 percent per year during the past 25 years.¹ Other studies show that in nominal dollars (not corrected for inflation) the annual growth rate in earnings has been more than 10 percent per year in recent years. (For example, a landowner who receives a cash rent of \$100 per acre now, compared with \$50 per acre 7 years ago has received an average annual increase of about 10 percent per year.) If one expects such growth rates to continue, there is a willingness to accept a lower current rate of return in the first year after purchase. In other words, expectations for continued increases in the nominal returns to land get capitalized into land prices.

¹Emanuel Melichar, "Capital Gains Versus Current Income In The Farming Sector," *American Journal Of Farm Economics*, 61 (1979):5.



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Table 1 shows the impact that different rates of expected growth in net income would have on the maximum bid price an individual could make on acres that yield from \$48 to \$72 in the first year after purchase. Note that with an expectation that annual net returns will increase at 7 to 8 percent per year, the maximum bid prices are about double what they would be in the absence of any income growth expectations.

The higher the general rate of inflation in the economy, the higher the annual increase in the return to land is apt to be. If the government permits a high rate of inflation in the general economy, current farm programs are set to insure that at least some of this increase will be passed on to crop producers. Therefore, high inflation rates tend to drive up land prices.

Inflation has another—closely related—dimension of importance to many potential buyers. This is the increase in the value of land itself as the dollar depreciates in value, making land a good inflation hedge. An individual concerned about protecting a position of current wealth and increasing future net worth will pay relatively more for land if the value of the dollar and other more liquid assets are expected to continue to decline. Table 2 shows the impact that different expectations of annual rates of inflation in land values would have on the maximum bid price per acre for land that now earns a \$60 net return, along with the impact of differences in the growth rate in annual income discussed earlier.

Land that earns \$60 per acre is currently selling for about \$1,800, thus yielding a 3.3 percent current return under average to good management. Assuming a competitive rate of return of 9 percent on after-tax dollars, the data in table 2 implies market expectations that inflation will continue at the rate of some 6 percent per year for both variables or some combination—such as 4 percent for one and 8 percent for the other—that would result in a similar market price. (If a 7 percent competitive rate of return is assumed, the implied inflation expectations would be about 5 instead of 6 percent.)

A note of caution should be given to potential buyers when reading across table 2. While the income growth dimension of inflation *does* generate additional dollars in later years to aid in paying off principal and interest com-

Table 1. Maximum bid price based on land productivity and alternative annual growth rates in net income over the next 30 years (excludes land appreciation considerations)

Annual growth rate in net income	Current year's net income		
	\$48	\$60	\$72
	-----maximum bid price per acre*-----		
0	\$ 569	\$ 683	\$ 797
2%	671	811	950
4%	810	985	1,159
6%	1,002	1,224	1,447
8%	1,271	1,560	1,849
10%	1,651	2,036	2,420

*These bid prices are generated by a computer program that has been provided with the following set of assumptions about other variables: a 9 percent after-tax rate of return, financing for 30 years at 9.5 percent interest, and a low income tax bracket. The effects of changing the values of these variables will be discussed later.

Table 2. Maximum bid price on land that earns \$60, including inflation projections and present (after-tax) value of the land 30 years from now, to obtain an after-tax return of 9 percent

Income growth rate	Expected land value inflation rates			
	0%	3%	6%	9%
0%	\$683	\$ 844	*	*
2%	811	972	*	*
4%	985	1,146	\$1,521	*
6%	*	1,386	1,761	\$2,612
8%	*	*	2,096	2,947

*These combinations are not rational since the two inflation measures are likely to be closely correlated. However, if expectations for escalating inflation rates become widespread, one should project a higher future land price increase than an income growth increase, therefore, pushing down the competitive rate of return below the current 3.0-3.5 percent.

mitments, the land value appreciation dimension of inflation *does not* produce any cash flow unless the land is sold or refinanced. (Also, consider that the size of future interest payments might increase if the loan is established with "flexible" interest rates, such as are currently used by the Federal Land Bank and are likely to be used by more and more lenders in coming years.)

Rate Of Return

The second part of the capitalization formula—the competitive rate of return or the discount rate—can also vary through time as well as between buyers and between geographic areas.

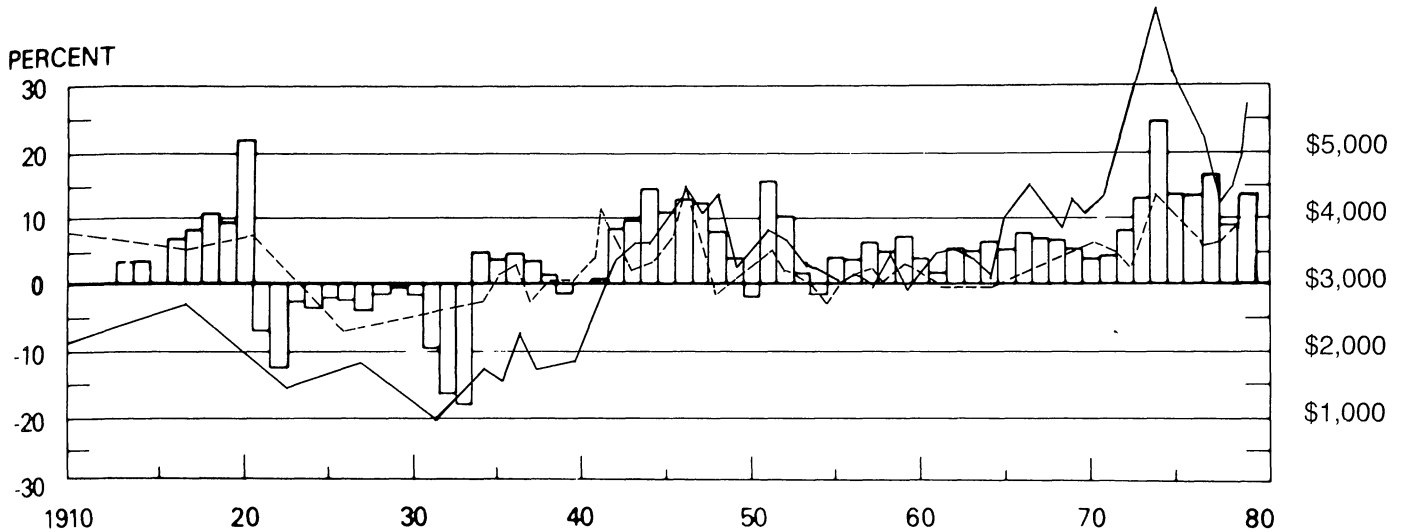
A higher discount rate will prevail in high risk crop production areas since crop failures can interrupt cash flows in any given year. Likewise, a higher discount rate is often used by the beginning operator who is less able to withstand losses from either "poor weather" or "poor prices."

The competitive rate of return will fluctuate through time with the general inflation level since interest rates paid on alternative investments must change with the inflation rate. However, as noted in the footnote to table 2, escalating inflation rates are apt to drive down the acceptable rate of return on farmland as more and more people attempt to protect their wealth positions by investing in farms. This suggests that if inflation continues to increase, the cash flow problems inherent in farm purchases will become even more severe as the gap between current returns and current interest rates continues to widen.

Historical Evidence

In summary, the two measures which explain most year-to-year land price changes are (1) changes in farm earnings and (2) changes in the general inflation rate. Figure 1 shows the "fit" of these two factors with changes in land prices since 1912.

Figure 1. Average income per farm and changes in the consumer price index (CPI) compared with percent changes in per acre value from previous year



REPORTED AS OF MARCH 1, 1912 TO 1975 AND FEBRUARY 1, 1976 TO DATE EXCLUDES ALASKA AND HAWAII. DATA UNAVAILABLE PRIOR TO 1912 USDA

----- = % Change in CPI
 _____ = Avg. earnings per farm

Note, that only twice during the past 60 years have land prices increased more than 10 percent for more than 2 consecutive years. Both of these periods (mid 1940s and early 1970s) were characterized by a unique combination of large increases in farm earnings as well as high rates of inflation.

From 1944-47, average per farm earnings were 44 percent higher—in constant dollar terms—than in the previous 4 years, 1939-43. Average per farm earnings showed no improvement between 1948 and 1971 after adjusting for inflation. But, in 1972-75, average real earnings again jumped an average of 57 percent over the previous 4 years. The largest year-to-year farm price increase ever recorded (1974) came on the heels of the largest year-to-year farm earnings increase ever recorded (1973).

The farm earnings decline in 1976 and 1977 dropped the annual rate of land price increase to near the current economic inflation level in 1977. However, the significant rebound in farm earnings in 1978 again pushed the average U.S. farmland price increase above the general inflation rate (14 percent versus 9 percent).

Turning to the inflation variable, note that the two highest inflation peri-

ods of the past 50 years (excluding 1980), as measured by the consumer price index (CPI), were 1946-47 which averaged 11.5 percent and 1974-75 which averaged 10.6 percent. The other years of relatively high inflation rates were 1942 and 1951. In 1951-52 there was a 2 year surge in average land prices. This followed an actual decline in land prices in 1950 that was likely associated with the 1 percent CPI's decline in 1949 and its low 1 percent increase in 1950.

History, therefore, agrees with economic logic that the two major factors influencing farmland prices are farm earnings and the economy's inflation rate.

OTHER FACTORS AFFECTING LAND PRICE

Many other factors can affect land prices—especially in specific sale situations. Location with respect to good roads and markets, size of parcel, buildings and historical yield records all affect the maximum bid price for a particular acreage. Farm appraisers make adjustments for all these factors when evaluating a farm property in comparison with others that have been recently sold when they use the market data approach.²

²Paul R. Hasbargen and Kenneth H. Thomas, *Buying Farm Land—What Is It Worth?—Can I Afford It?*, Extension Bulletin 404, Agricultural Extension Service, University of Minnesota, 1978.

Table 3. Maximum bid prices that can be paid for two different qualities of land under three different fixed interest rates on 30 year loans when the downpayment is 25 percent of the land price*

Annual interest rate on amortized loan	Current earning capacity of land	
	\$50/Acre	\$100/Acre
-----percent-----	-----maximum bid price-----	
8.0	\$1,325	\$2,086
9.5	1,216	1,915
11.0	1,120	1,764

*Other assumptions are that farm earnings will increase at an average annual rate of 4 percent, land values will inflate at 6 percent per year, and the buyer wants an after-tax rate of return of 8 percent per year.

Financing Terms

Financing terms also influence the maximum bid price that an individual can pay for land. A higher price can be paid if the interest rate is lower. Table 3 illustrates how much more a buyer could pay for land generating \$50 and \$100 in current earnings as the interest rate drops from 11 percent to 8 percent. In these examples, the maximum bid price increases by 6 percent for each 1 percent drop in the interest rate paid over a 30 year loan period. If the interest rate drops from 9.5 percent to 8 percent, the buyer could bid 9 percent more for land and be about as well off on a 30 year repayment loan. However, the increase in the maximum bid price is less for shorter term loans—being about 4 percent for each 1 percent change in the rate on a 10 year loan.

Tax considerations will change these trade off ratios. For example, if interested in minimizing the tax consequences of the sale, the seller is apt to accept a trade off of 3 to 4 percent rather than the maximum 4 to 6 percent calculated in these examples. This is because the seller will pay fewer taxes on a sale that returns a higher proportion of receipts in the form of capital gains which are taxed at a lower rate than the interest payments. (Capital gains sales are apt to be only 40 percent taxable, versus 100 percent of the interest payments.) The buyer in the high tax bracket, however, will prefer the higher interest rate—lower land price option since interest payments are deductible farm expenses while principal payments on land are not.

A new IRS ruling effective September 29, 1980 greatly reduces the bargaining range on the interest rate

variable. This ruling says that if the stated interest rate on a contract sale is less than 9 percent, the IRS will calculate taxes due them *as if the rate were 10 percent*. (This is in contrast to a 1975 ruling placing these two numbers at 6 and 7 percent.)

Variation in the length of repayment period or in the size of the downpayment can also influence the maximum bid price. Table 4 shows the large effect that changes in these two variables might have on maximum bid prices for situations similar to those assumed in table 3. (Land earning either \$50 or \$100, financed at 9.5 percent fixed interest for 30 years with earnings increasing at 4 percent per year and land values at 6 percent per year, and an after-tax desired return of 8 percent.) Note that neither of these finance variables has as much potential impact on maximum bid prices—over the ranges shown—as a 1 percent change in the interest rate.

Income Tax Variables

Changes in either the marginal tax bracket or in the capital gains taxes expected at time of farm sale appear to have very little impact on the maximum bid price. Furthermore, analysis of these variables using the capital budgeting model reported by Lee³ suggests that the change in the bid price would often be in the direction opposite of that expected. That is, as the marginal tax bracket of the buyer increases, the buyer would tend to bid a bit *less* for farmland rather than more as is often

³W. F. Lee, "A Capital Budgeting Model For Evaluating Farm Real Estate Purchases," *Canadian Farm Economics* II (1976):3.

assumed. This is because the benefit of the tax deductible interest payments are more than offset by the fact that net returns per acre are reduced by the higher income taxes paid.

However, if a significant portion of the purchase cost of a farm is depreciable property, then the individual in the higher tax bracket may be willing to make a slightly higher bid since depreciation costs can be used to "shelter" other income.

Outside Investors

It has been charged that some of the rapid land price increases of recent years have been caused by "outside investors." One assertion has been that nonfarmers in high tax brackets have been buying land for "tax shelter" purposes. Our analysis, as reported here earlier, suggests that there is little basis for this charge, since there appears to be no incentive for high bracket tax investors to outbid lower tax bracket buyers for farmland if they both have the same minimum acceptable after-tax rate of return.

An analysis of the types of buyers and sellers of farmland reported by USDA each year verifies the lack of validity of this charge. In fact, it shows that nonfarmers have been *selling more acres* than they have been buying in recent years. Also, the proportion of nonfarm investment buyers has declined slightly since 1975 and has about equaled the proportion of nonfarm sellers (excluding estate sales). Nationally, these proportions are in the 20 to 25 percent range, while in the Corn Belt and Minnesota they are about 15 percent each year. This difference reflects the fact that to date nonfarm investments in farmland are more prevalent in poorer agricultural areas where farmers are less interested in buying land for farming purposes. For example, Minnesota sales data from recent years show that investors accounted for only 10 percent of the land tract purchases in the strictly agricultural areas of southwestern and west central Minnesota, compared to 23 percent of the purchases in the marginal, recreation-oriented area of northeastern Minnesota.⁴

⁴ Rodney Christianson and Philip Raup, *The Minnesota Rural Real Estate Market in 1978*, Economic Report ER 79-3, St. Paul, MN, Department of Agricultural and Applied Economics, University of Minnesota, March 1979.

Table 4. Maximum bid prices that can be paid for two different qualities of land under three different downpayment and amortization period levels when the interest rate is 9.5 percent*

Downpayment as a percent of purchase price	Current earning capacity of land	
	\$50/Acre	\$100/Acre
	-----maximum bid price-----	
5%	\$1,253	\$1,973
25%	1,216	1,915
45%	1,181	1,860
Amortization period in years		
20	1,188	1,871
30	1,216	1,915
40	1,234	1,934

*See footnote in table 3 for assumptions relative to inflation expectations and desired rate of return.

Despite the fact that outside investors have not been a significant factor in past land price increases, they could well become more important in the future as escalating inflation rates encourage more people to look for investments in real property to protect the future purchasing power of their assets.

HOW CAN LAND PRICE INCREASES BE MODERATED?

High land prices relative to net returns to farmland make it difficult for beginning farmers to compete in bid-

ding for available farms. This has led to many different legislative proposals and laws aimed at curtailing the competition for farmland, with the hope that these would slow down the rate of land price increases.

Laws Against Corporate Farming

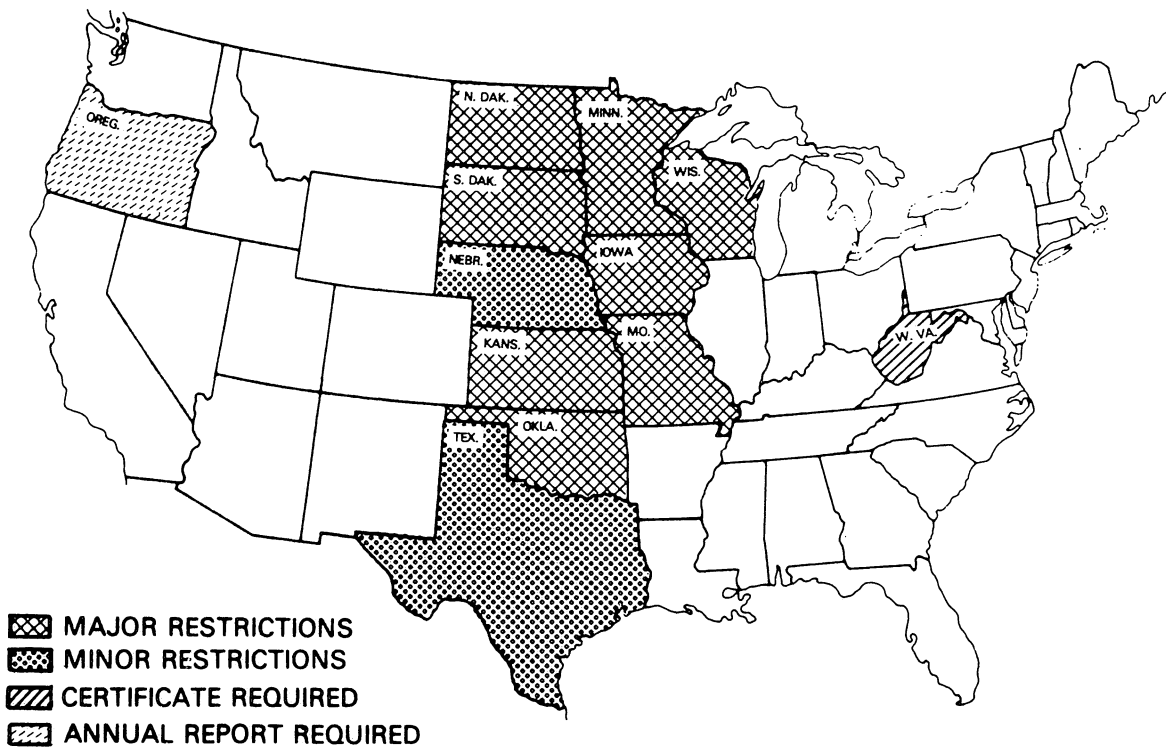
For example, in the early 1970s a number of Midwestern States responded to public outcries against "corporate farming" and passed anti-corporate farming legislation (Oklahoma in 1971, Minnesota in 1973, South Dakota and Wisconsin in 1974,

Iowa and Missouri in 1975). Figure 2 shows a four category classification of these different laws by USDA analysts. Those states with laws classified as having "major restrictions" severely limit land ownership by other than family held corporations.

Figure 3 shows the percent increase in farm prices by state during the decade of the seventies.

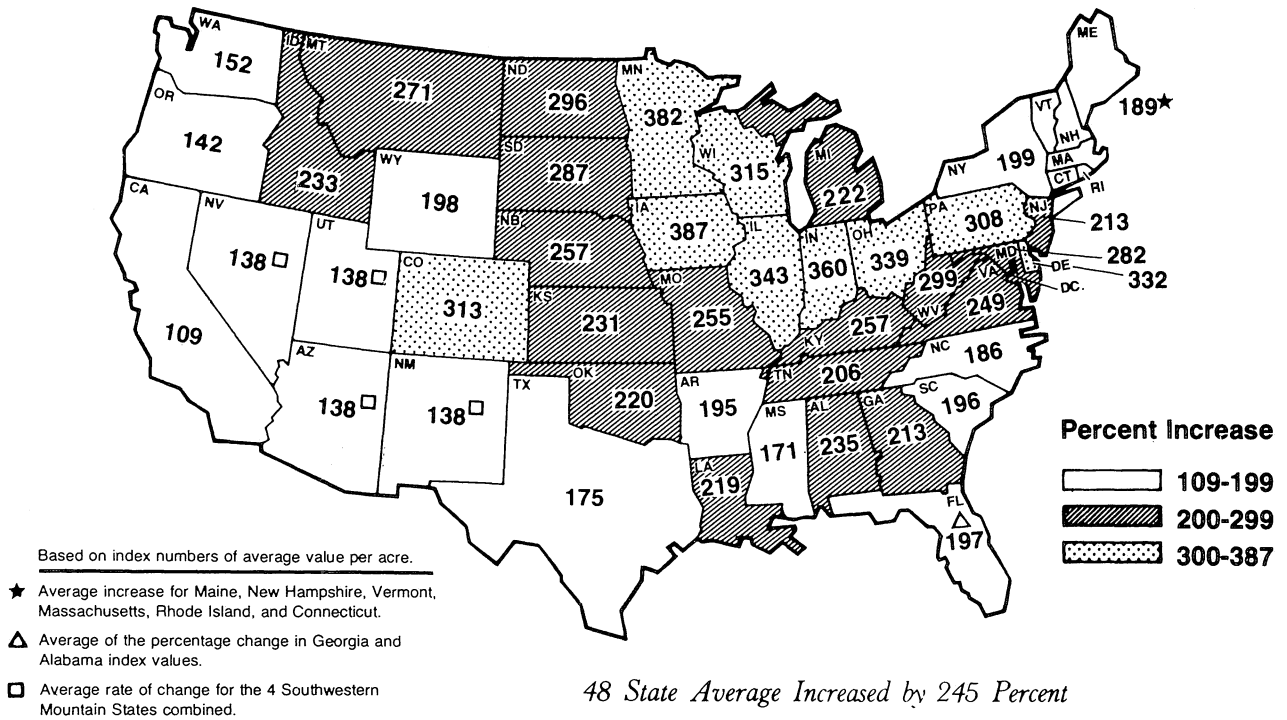
In comparing figure 3 with figure 2, note that the two states with the greatest land price increases since 1970—Iowa and Minnesota—have major restrictions against corporate farmland purchases. Land prices increased slightly

Figure 2. States with corporate farming legislation, 1977



Source: Thomas Edmondson and Kenneth Krause, *State Regulation of Corporate Farming*, Ag. Econ. Report 419, U.S. Department of Agriculture, December 1978.

Figure 3. Percent increase in average value of farm real estate per acre, March 1970-February 1980



Source: *Farm Real Estate Market Developments*, CD-85, Economics, Statistics and Cooperatives Service, U.S. Department of Agriculture, August 1980

more during the 1970s in North Dakota, where corporate land ownership has been completely prohibited since 1932, than in South Dakota where the corporate farming law was adopted in 1975. These, and additional comparisons of land price increases between states with restrictive laws and bordering states give no evidence of any curtailment in land price increases by such laws.

A look at the land price increases in states where corporate agriculture is relatively important also tends to refute the charge that corporations were a significant force in bidding up land prices during the seventies. The 1974 census of agriculture showed 8 states (of the contiguous 48) where the sales from corporations with more than 10 shareholders accounted for 10 percent or more of all agricultural sales. (For the U.S., this type of corporation owned 1.9 percent of the farm acreage and

accounted for 5.3 percent of total farm sales.) These states were Florida, Colorado, Connecticut, Texas, Arizona, New Mexico, Massachusetts, and California. Figure 3 shows that 7 of these 8 states had land price increases significantly below the average for the nation as a whole. In fact, California, Arizona, and New Mexico were the 3 lowest states in farmland price increases during the past decade.

Laws Against Foreign Investors

In recent years public concern has shifted to farmland purchases by "foreign investors." Because of this, Congress passed a new disclosure law in 1978 and USDA included questions on foreign land investments in its March 1, 1979, land price survey. Foreign own-

ership reported amounts to 5.6 million acres—less than one-half of one percent of all U.S. farmland, and less than 0.1 percent of the agricultural land in Minnesota and the Dakotas. Activity was reported more frequently in the "sunbelt" states. Foreign ownership of farmland was highest in Tennessee, Georgia, and South Carolina—which accounted for 25 percent of the total reported foreign ownership.

Minnesota law forbids the sale of land to a foreigner. Other states have passed or are considering similar laws. It is doubtful that such laws have had any measurable impact on the rates of land price increases to date—they certainly haven't in Minnesota. However, if excess OPEC dollars start to migrate more rapidly into farmland ownership, such laws could become a moderating price factor in some areas during the eighties.

Other Legislative Proposals

Several other legislative changes have been suggested to try to curtail farmland price increases. These include (1) lower limits on government payments to large farmers, (2) more progressive real estate tax rates as farm size increases, (3) changes in estate tax laws and (4) changes in income tax laws—including removing the option that farmers now have of reporting taxes on the cash basis rather than the accrual basis.

These proposals will not all be evaluated here. However, the previous analysis of the relative importance of the factors affecting land price bids suggests that such additional law changes would likely have only marginal effects on the rate of land price inflation in the future since they do not directly impact on the major two variables—inflation and farm earnings. In fact, there is real danger that attempts to curtail land price changes through such laws might hurt the very people the legislators are trying to help. (An example of such a situation may be the recent tax/loss farm law passed by the Minnesota legislature that limits the use of farming losses to offset nonfarm earnings when calculating Minnesota income taxes if nonfarm earnings exceed \$15,000. This law strikes out against one of the primary methods used by today's beginning farmers to get established in farming—off-farm work for one or both of the farming partners. This law was declared unconstitutional by one court last year, but that ruling was recently overturned by the Minnesota Supreme Court.)

Controlling Inflation

To significantly affect the future rate of land price changes, one of the two major forces affecting price changes—the farm income level or the inflation rate—must be influenced. Obviously, most people in the agri-business sector are not going to look for ways to *reduce* future farm earnings. This leaves inflation.

Those concerned about the undesirable effects of “overpriced” land and inflating land values (such as the problem that beginning farmers have in handling the cash flow requirements of a farm purchase) should make control of the national inflation rate a top priority policy item. Fortunately, there is a growing awareness of the serious na-

ture of the problem of inflation. But, unless constituents speak clearly to their representatives about their concern on this issue, normal legislative pressures will continue to push in the direction of more rather than less inflation via high levels of deficit spending.

OUTLOOK FOR THE 1980s

Many forces will keep the demand for farmland high relative to the amount available for sale in the eighties. These include (1) a developing trend from urban to country living, (2) a related increase in part-time farming, (3) a growing interest in land investment as an inflation hedge—by farmers, non-farmers, foreign interests, insurance companies and others, and (4) estate tax laws which may discourage land sales.

These forces may be sufficient to keep farmland prices increasing a bit faster than the general inflation rate even if farm earnings remain stable. If foreign demand for American grain continues to increase as expected, real farm earnings may also increase during the 1980s adding to the upward pressure on land prices.

Outlook For 1980-81

What is the current land price change picture? Lower farm earnings during the first half of 1980 pulled land prices down. But, high inflation rates coupled with the recovery in grain prices have maintained expectations for continued growth in farm earnings in the future. So, farmland prices are, on balance, likely inching higher again during 1980 at a rate almost equal to the general inflation rate of some 12 percent. In areas where 1980 farm income is severely depressed because of drought, nominal land prices may remain fairly stable. But, in dairy areas where farm incomes remain strong, land price increases will again surpass the general inflation rate.

Longer Run Outlook

Strong upward movements in land prices should be anticipated in this decade by those who see worldwide demand for grain expanding somewhat faster than production. Conversely, those who expect that the world's capacity to produce grain will expand more rapidly than demand should expect land prices to increase at a rate that

is equal to or somewhat below the general inflation rate.

The longer run land price forecast for the 1980s should depend largely on expectations regarding the future inflation rate. Given government's propensity for deficit spending and the continued rapid expansion of international credit, I am not very hopeful that inflation rates will be curtailed before first reaching even higher levels. And, given current economic conditions, including potential energy shortages, I see shortfalls in world grain production in the 1980s. My subjective odds favor another doubling of land prices within 5 years.

Jerome W. Hammond. Editor
Prepared by the Agricultural Extension Service and the Department of Agricultural and Applied Economics. Views expressed are those of the authors, not necessarily those of the sponsoring institutions. Address comments or suggestions to Professor Jerome W. Hammond, Department of Agricultural and Applied Economics, 1994 Buford Avenue, University of Minnesota, St. Paul, MN 55108.

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Norman A. Brown, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55108. The University of Minnesota, including the Agricultural Extension Service, is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap.

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