

Twentieth century trends in farmland values

Farmland values have exhibited unprecedented increases in recent years. Nationwide, the compound annual rate of increase in farmland prices has been on the order of 16.5 percent during the past five years. The value of an asset appreciating at this rate doubles every four and a half years. If this rate of increase were to persist until the end of the century, land currently valued at \$1,000 per acre would be worth \$33,535 per acre in the year 2000. If the rate were to drop to one-half the level experienced during the past five years, the value of that same land would rise to "only" \$6,192 per acre by the year 2000.

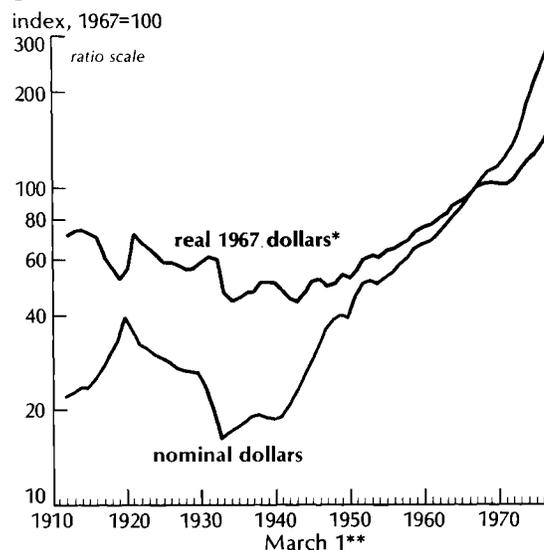
Frequent reports cite farmland transaction prices at several thousand dollars per acre, although nationwide the average was about \$450 per acre at the beginning of 1977. Farmland is a very heterogeneous resource, however. The quality—and therefore the price—of farmland varies greatly, depending upon raw productive capacity, tillability, topography, improvements, location, etc. A wide range in price is often experienced even within short distances. Nevertheless, virtually all classes of farmland have appreciated rapidly in recent years, with more productive areas generally pacing the trend. Reflecting the latter point, surveys conducted by the Federal Reserve Bank of Chicago indicate farmland prices in the Seventh District portions of Illinois have appreciated at a compound annual rate of 25 percent during the past five years, followed closely by 22.5 percent annual rates achieved in Indiana and Iowa. In comparison, the compound annual rate of increase in Michigan and Wisconsin—where land is less productive—has been roughly 14 percent over the past five years.

The widespread rapid gains in land prices have heightened the interests of both farmers and investors in acquiring farm property. At the same time the downtrend in farm income

since 1973 has raised concerns among lenders and investors about whether the momentum of the current boom has carried land prices beyond the income-generating capability of the property. Unfortunately, there can be no definitive response to such concerns without a clear perspective of what the future holds. But viewing the current land boom within its historical perspective does provide some interesting insights.

The twentieth century history of farmland values contains three striking features. Perhaps foremost is the unprecedented increases that have occurred since 1972. The doubling of farmland prices during the past five years (while rising at a compound annual rate of 16.5 percent) has been only remotely paralleled by two other boom periods—both occurring during highly inflationary war periods. During the five years

Both nominal and real farmland values register unprecedented gains in 1970s



*Deflated by index of prices paid by farmers for family living items.

**Since 1975 the index is computer as of February 1.

ending in 1920, farmland values rose at a compound annual rate of 11 percent. Similarly, the compound annual rate of increase during the five years ending in early 1947 was 12 percent.

The second striking feature is the remarkably consistent uptrend in farmland values that occurred between the Depression low and the onset of the current boom. This uptrend was marred only by single-year declines in 1938, 1949, and 1953. The rise was also remarkably consistent in that farmland values doubled in each of the three 13-year periods between the 1933 low and the 1972 onset of the current boom. This consistency was roughly equivalent to a compound annual rate of appreciation of 5.5 percent.

The pronounced downtrend following the World War I boom is the third striking feature of the twentieth century trends in farmland values. The downtrend was noteworthy both for its duration—13 consecutive years—and for its steepness—60 percent between the 1920 peak and the Depression low of 1933. Recovery from the Depression low required 16 years—including the World War II boom period—before land values returned to their earlier peak.

Farmland values adjusted for inflation add an interesting dimension to the historical perspective of the current boom. In essence, the adjustment reflects the “real value of farmland,” or in this case the “purchasing power” of an acre of farmland in terms of goods and services bought by farmers in 1967.

The demand for farmland in part reflects its value as a hedge against inflation. The general downtrend in real land values during most of the first half of this century, however, indicates land, at best, was only a partial hedge against inflation. Conversely, the uptrend since the mid-forties indicates the appreciation in land values has markedly exceeded inflation. The uptrend in real land values since the mid-fifties has been extremely consistent, marred only by slight dips in 1970 and 1971.

The corollary between the current land boom and the World War I and World War II booms is lost in the measure of real land

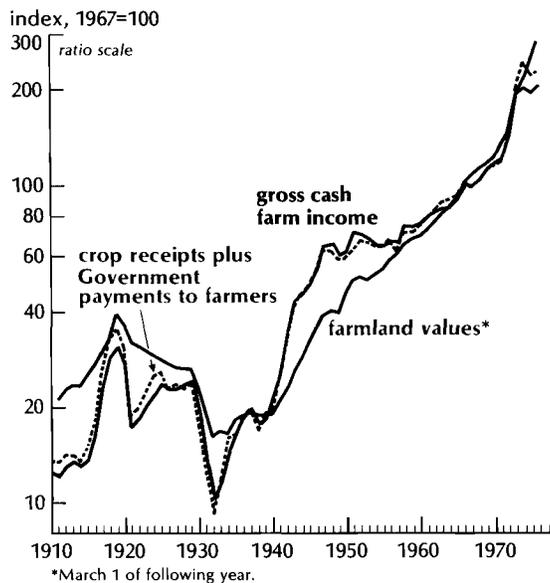
values. The rise in land values during the current boom has markedly exceeded the high rates of inflation, pushing the real value of farmland up 42 percent during the last five years. Conversely, relatively high inflation rates during the World War I boom dragged real farmland values well below their 1914 peak—a peak not again surpassed until 1960. Similarly, the high inflation rates during the World War II boom roughly equaled the escalation in land prices, resulting in generally flat farmland values when adjusted for inflation. Interestingly, the low point of the century for real farmland values occurred in 1943.

Farm income and land values

A major factor underpinning the demand for farmland is the income expected to be generated by the land. There are numerous measures of farmers’ income, reflecting differing aspects of the farming business or sources of income. Some of the more common measures of farmers’ earnings—including gross farm income, net farm income, and off-farm earnings of farm operator families—are depicted in the two charts on the next page.

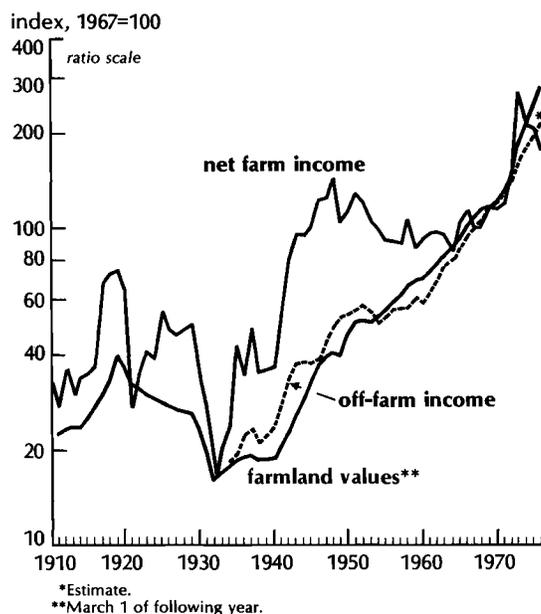
Not surprisingly, year-to-year changes in farm income (gross or net) do not track particularly closely with changes in farmland values. The overall trends are similar, however. The simultaneous slide in land values and income following the World War I peak is self-evident. Also, the three major land booms during the current century have coincided with surging levels of gross and net farm income. However, the relative rise in farm income measures in recent years has not been as great as the income gains experienced during the previous two booms. In contrast, the gains in land values have been much greater during the current boom. Moreover, in light of the leveling off in farm income in recent years, the rise in land values during the current boom has significantly exceeded the rise in farm income. Judging from past relationships, this supports the concern of whether the current boom has carried land prices beyond the level justified by farm earnings.

The escalation in land values continued despite a leveling in gross farm income . . .



The relationship between farm income and land values during the fifties and early sixties poses an interesting diversion in the historical perspective; a diversion which may also underlie the current apparent inconsistency between gains in land values and income. With the exception of 1953 farmland values trended steadily upward during the fifties and early sixties. In contrast, gross cash farm income was relatively flat and net farm income trended irregularly lower. The downturn in net income about offset the decline in farm numbers, holding net income per farm comparatively flat during this period. Apparently, the sharp and consistent increases in off-farm earnings—particularly since the mid-fifties—was a major factor permitting farmers to bid land values steadily higher. In the mid-fifties off-farm earnings of farm operator families were equivalent to only one-half of net farm income. By the mid-sixties off-farm income equaled net farm income. And during the past two years off-farm earnings have substantially exceeded the high levels of net farm income. Moreover, the growth in off-farm earnings among the largest

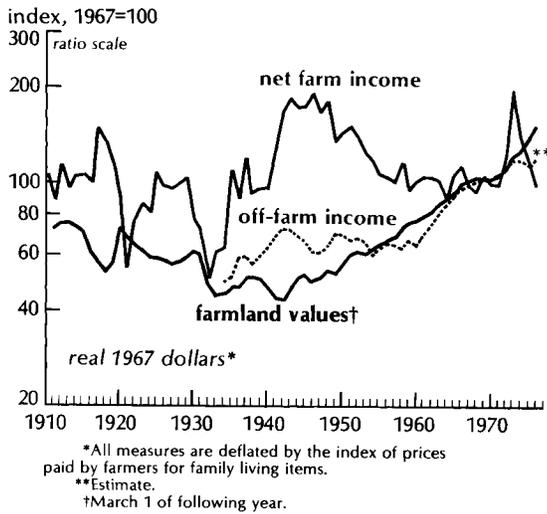
. . . and a decline in net farm income



farms during the past decade has substantially exceeded that for all other sizes of farms.

A comparison of real farmland values and real earnings is striking in two respects. On the one hand trends in real net farm income since the Depression bear little resemblance to trends in real farmland values. In terms of the purchasing power of net farm income, the most prosperous farm income years occurred during the 1941-53 period. During this span real farm income exceeded \$15.5 billion annually, a level surpassed in only four other years—1917, 1918, 1973, and 1974—since 1909. Despite this extended period of peak performance in real farm earnings, real land values, although trending irregularly higher, registered only nominal gains. Between 1953 and 1972, however, real farm income trended irregularly lower, while real farmland values were generally rising steadily. And with respect to trends since 1972, the issue about whether land prices have risen to levels unjustified by net farm earnings is vividly evident when both measures are adjusted for inflation. Last year real net farm income was roughly equal to the level experienced in 1967

Net farm earnings drop sharply when adjusted for inflation, while farmers' real off-farm earnings continue upward



and the tenth lowest in the past 40 years. On a per farm basis, real net income was up only 15 percent from the 1967 level. In contrast, real farmland values were more than 50 percent above the 1967 level.

The other striking feature in the above chart is the similarity between trends in real farmland values and real earnings of farm operators from off-farm sources, particularly since the mid-fifties. While the similarity may reflect more of a coincidental rather than a causal relationship, it clearly adds support to the thesis that nonfarm earnings have contributed to farmers' aggressive bidding for farmland.

Debt servicing requirements

The surge in farmland values has reemphasized the longstanding concern about the debt servicing capacity of high-priced land purchases. This issue is addressed in the following two charts, first by indicating the rapid uptrend in principal and interest payments associated with financing a land purchase annually. Secondly, the trend in annual principal and interest payments is related

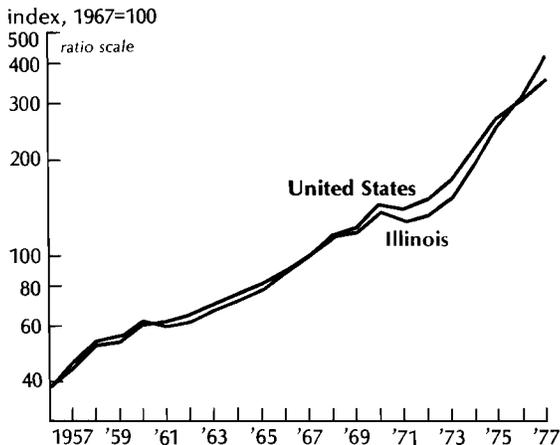
to an "expected" annual market value measure of the output from an acre of land.

The average per acre dollar value of farmland multiplied by the debt-to-purchase price ratio for farm real estate transfers provides a rough approximation of the per acre debt assumed annually by purchasers of farmland. For each year the principal and interest payments reflect the annual payment that would be required to repay the debt incurred on an acre of farmland purchased that year, assuming a fully amortized 25-year mortgage with equal annual payments and with interest rates comparable to that charged by Federal Land Banks at the beginning of the year.

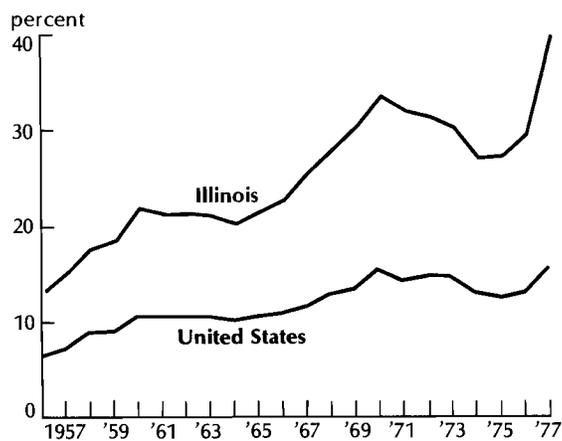
Annual principal and interest (P&I) payments have increased faster than land values since the mid-fifties, reflecting the general uptrend in both mortgage rates and the debt-to-purchase price ratio in farm real estate transfers. The proportion of purchase price financed has averaged about 76 percent in recent years, as opposed to 70 percent in the mid-sixties and 60 percent in the mid-fifties.

Annual P&I payments may have moved to a new high with respect to the per acre cash income that could be expected from raising corn, particularly in Illinois. The annual P&I payment for an average acre of Illinois farmland purchased during the early sixties was equivalent to just over 20 percent of the gross receipts that could be expected from raising corn. A general uptrend during the latter part of the sixties—reflecting rising interest rates and (in 1970) blight reduced yields—resulted in a 1970 peak of 34 percent. The proportion of gross income required to repay debt actually trended downward during the first half of the seventies—reflecting lower interest rates (initially) and higher grain prices. Nevertheless, the sustained uptrend in land values the last two years and lower corn prices have pushed the ratio of P&I payments to cash receipts to a new high of around 40 percent in Illinois. The ratio is now seven percentage points above the previous 1970 peak and about double the levels typically experienced during the early sixties.

Rapidly increasing principal and interest payments . . .



. . . absorb a much larger proportion of cash receipts



The derivation of the principal and interest payment for any given year is based on the amount of debt incurred in purchasing an acre of land, i.e., the average per acre dollar value multiplied by the national average debt-to-purchase price ratio. The analysis assumes a 25-year fully amortized mortgage with equal annual payments and an interest rate equivalent to the average charged by federal land banks at the beginning of the year. In the right-hand chart the annual principal and interest payment is expressed as a percent of the "expected" returns from raising an acre of corn. The "expected" return is the average of the per acre yields during the preceding three years multiplied by the average of corn prices received by farmers for the past three years.

Farm real estate debt

The twentieth century relationship between farmland values and farm real estate debt, on balance, has been nearly parallel. Both trended sharply higher during the first two decades, but then declined for several years. For the past three decades both land values and real estate debt have risen sharply.

The World War II years provided one notable exception to the relationship between farmland values and outstanding farm real estate debt. In contrast to the World War I boom and that of recent years, the World War II boom in farmland values was accompanied by a paydown in farm real estate debt. With the availability of new capital goods to the private sector greatly curtailed by the diversion to war-related manufacturing demands, farmers converted their soaring net incomes into debt repayments. By the beginning of 1946 outstanding farm real estate had fallen to a 31-year low. The

paydown probably contributed, indirectly, to the sustained uptrend in land values during the fifties and early sixties when farm incomes were trending lower. Farmers had demonstrated they could handle large amounts of debt, and their earlier paydown had generated a considerable "credit reserve."

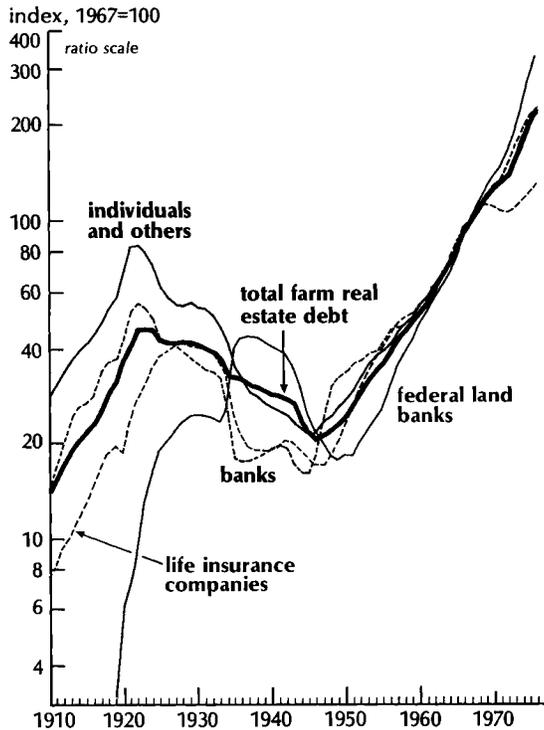
The availability of mortgage financing is another major factor supporting the demand for farmland. Farmers may obtain credit from numerous sources including individual sellers, institutional lenders, and "other" lenders. Historically, individuals have provided the bulk of financing for farm transfers. In recent years individuals have accounted for around two-fifths, while institutional lenders accounted for roughly one-half.

Among institutional lenders commercial banks have consistently provided about one-tenth of the annual credit extended to finance farm real estate transfers. This consistency however, has not prevailed among life in-

surance companies and federal land banks (FLBs). In the mid-sixties life insurance companies were the leading institutional holder of farm mortgage debt, typically providing

about one-fifth of the annual volume of credit extended to finance farm real estate transfers. In contrast, FLBs provided about one-tenth. In the intervening years, the roles have been completely switched. Life insurance companies have responded to restrictive usury ceilings and alternative investment opportunities by reducing their share to less than one-tenth in recent years. On the other hand, FLBs now account for about 30 percent of the much larger annual volume of credit extended to finance farm real estate purchases.

Federal land banks pace rise in outstanding farm real estate debt



The increased role of FLBs in financing farm real estate transfers in recent years is reflected in the rapid growth they have experienced in outstandings. During the land boom of the past five years farm real estate debt held by FLBs rose at a compound annual rate of 18.5 percent, outstripping the growth rate in total farm real estate debt by about 9 percentage points and the growth rate in farmland values by about 2 percentage points. At the beginning of this year the \$18.5 billion in farm real estate debt held by FLBs accounted for one-third of all farm real estate debt and was virtually equal to the combined portfolios of the three other major institutional lenders (banks, life insurance companies, and the Farmers Home Administration).

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