THE ASSET DEVALUATION PROBLEM

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Virtually every economic situation in agriculture has an unmatched pair of implications that may be called the proximate and the ultimate. Devaluation of the fixed assets of agriculture has a meaning of enormous significance in the here-and-now — the proximate. It bears not so much on impersonal gross measures of productivity and output but on the human element. Loss of farm asset values is a major blow to the hopes and aspirations of hundreds of thousands of farmers, bringing intense emotional distress and even suicides.

The ultimate view is different. Of most interest to agricultural economics is the economic lesson that current devaluation teaches. In the classroom cliche of yesteryear, recent events offer a learning experience.

What is being learned? One lesson is almost biblical. We are learning how gossamer are the dollar statistics we attach to both real and intangible property in our economy.

Put in different words, we are learning that a capitalistic economy runs on promises, usually implied ones. We are learning further that any default on those promises reveals how flimsy, how papier-mache, is the structure of capital values in the economy.

I think we are also learning that central government has a lot to say as to what those values are to be. It can change those values, overnight. The monetary authority can flip capital values like a hotcake. Also to be noted is the sizable problem that is posed for government if action is to be taken to stabilize a sector that has been subject to rapidly changing capital values. We are witnessing that problem in agriculture today.

THE CAPITAL VALUE OF FIXED ASSETS

A further introductory note reminds of the ambiguity of the word "capital." We speak of physical capital and of finance capital. Capital value as a concept can take on several meanings. Our attention here is confined to the valuation of land as a fixed asset and the associated issue of financing of land purchase, with its repayment obligation.

Land is indeed a fixed asset. It is not a capital good. Return to its economic employment (farming in this case) is a residual. The owner of land naturally expects to receive the factor return, which in technical language is called rent. If the owner is also the operator, the rental return is hidden in the combined earnings of the owner-operator. If the owner is instead non-participatory, the land is rented out and the rental payment is approximately equal to the factor return of rent.

I now move to two observations, one very familiar and the other less so. What is the value of land? It is the capitalized value of expected rent — the factor share apportionable to land. And how is the conversion made—by dividing by the interest rate?

Here is where the process becomes more sticky. By what right can the interest rate a bank charges on loans play so weighty a role? The answer, presumably, lies in the equilibrium action of *finance* capital markets. Income that a given amount of finance capital can generate by being put out on loan must equate with the income to be received as rent on property of the same value (We assume a small correction for difference in risk.). Tweeten and Pongtanakorn say the relationship is an application of the law of one price.

The notion of equity that accompanies the nice idea of equilibrium comes into play. It is a defensible relationship. It is also a scary relationship. We recognize the caveat that a market economy is reasonably acceptable if it works efficiently, with almost perfect

knowledge, fluidity of adjustments, and so on. But what happens if those conditions are not met? What happens, especially if the capital market or the mechanism for establishing the price of borrowed money (interest), is not so efficient? What happens further if either value, but especially the interest rate, is managed or manipulated in some way?

Just to ask the question explains why I among many economists shudder at the claims made for monetarism, a dogma and a policy that calls for management of the money supply and interest rate. The point at issue is the potential for disturbing an equilibrium relationship between the interest rate and value of the rent factor return to a fixed asset. What happens when that relationship is upset suddenly and sharply?

CAPITAL VALUE, INTEREST RATE, AND PAYMENT

Having raised the spectre of the mischief that can be done by a manipulated interest rate, I return to the basic economic relationships. They present a neat connection among the capital value of a fixed asset, loan principal for its purchase, and interest payment obligation. As I pointed out in an article published in *Challenge*, in principle any change in interest rate gives rise to a matching and opposite adjustment in the value of a fixed asset on which money has been lent (Breimyer, 1985a). Thus, if land yields $100 an acre of rental (factor) return at 8 percent interest, its value is $1,250. If the interest rate is doubled to 16 percent, the land is revalued at $625.

The maximum size of a loan for purchase of the fixed asset of land is the value of the land. Conceivably, it is not irrational to borrow to the full asset value. The borrower (farmer) refunds the earnings from the land to the owner and relies on the factor shares of return to his labor, management, and operating capital for his living. If the land yields a return of $100 and the interest rate is 8 percent, the land's value and the principal of the loan are $1,250 and the interest obligation calculates at the $100. If the interest rate is 16 percent, that rate applied to $625 is, again, $100.

The interest payment obligation is independent of the interest rate, provided two important conditions are met. One is that once a debt has been incurred, the interest rate and interest payment are invariable, or, if the interest rate be variable, that the principal of the loan be indexed to conform to changes in asset value. The other condition is the familiar one that all adjustments be instantaneous and perfectly efficient.

In other words, the institutional structure that prevails is of critical significance. Assume a traditional system wherein the principal of a loan and interest rate both are fixed and that the farmer has not borrowed to the full amount of the value of the land, but to 60 percent of its value. That is, if he bought and borrowed when the interest rate was 8 percent, he carried a note with a principal of $750 and accepted an interest payment obligation of $60 an acre. Things were going splendidly, when suddenly a change in national monetary policy doubled the interest. Here, an interesting scenario unfolds. Let us remember that the interest rate is assumed as fixed. Such was long the practice in agricultural lending. Still today, probably half of all farm real estate loans carry a fixed rate. Quickly seen is that the value of the farmer's land begins to slip toward its eventual figure of $625. But because the land still earns $100 as factor return and the farmer's interest payment remains at $60, his cash flow position has not changed.

The main effect that is felt is to accounting data. The farmer's net worth vanishes. On both his balance sheet and that of his lender, he is insolvent.

Previously, the farmer had an equity of $500 an acre in his land. If he owned 400 acres, his net worth was $200,000. But a debt of $750 an acre on $625 land puts him deeply in the red, even though his cash flow has not changed.

An inference in this illustration is the volatility of balance sheet data when interest rates fluctuate but remain invariable on an existing loan. The illustration I am giving might seem to be innocent of any other meaning. But several meanings are to be drawn. An obvious one is that the lender, according to time-honored practice, could in fact require the farmer to make a principal payment of $125 or be subject to foreclosure — even though the farmer has the same cash flow as before. A more realistic meaning is that even if banking laws can be circumvented to forestall that action, the farmer has lost all further borrowing capacity. If the farmer has a bad crop year and needs to borrow for putting in his next crop, or for any other

legitimate purpose, he will be unable to beg a penny if his debt/asset ratio is greater than 1.

The third meaning to be drawn is the sense of defeat a farmer sees as his net worth plummet from $200,000 to minus $50,000, even though his farming practices and current income have not changed a penny's-worth. This is one of the proximate consequences of a changing financial situation, as mentioned in the opening paragraph.

A VARIABLE INTEREST RATE

Much of the distress in agriculture today originates in a recent institutional change in lending practices, that of converting to a flexible interest rate. I wrote about this in a note in the AAEA *Newsletter* (Breimyer, 1985b). The announced object in the new practice, adopted during the 1970s, was to index the rate for inflation. The rationale was defensible, if the rate were in fact to be flexed in line with inflation. The Federal Reserve Board chose, though, beginning in the fall of 1979, not to adjust the interest rate to inflation but to use it to stop inflation. The farmer who saw the value of his asset decline from $1,250 to $650 could take some solace in his preserved cash flow. But, when he began to be billed not for a $60 interest payment but for $120, both his spirits and his financial security collapsed. The proximate effect was traumatic.

The harsh consequences come about because the new institutional structure is of variable interest payments but invariable principal of the loan on which interest is paid. So, it is that the idea advanced by Milton Friedman, that perhaps both principal and interest rate should be indexed, takes on some credibility (Breimyer, 1985a).

Fixed principal and variable interest smash to smithereens the neat theoretical equilibrium among rental return to land, interest rate, valuation of land, and interest payment due that I have described. It is this feature that converts the innocuous-appearing power of the Federal Reserve Board to a life-or-death authority over any business or any sector that depends heavily on borrowed finance capital. Without exaggeration, the monetary authority holds the power of dispossession of business proprietors who use an appreciable amount of borrowed capital. It is a power of expropriation.

PASSING COMMENTS

A few comments on the scenario just outlined come to mind. It should be obvious that when interest rates fluctuate as much as they have the last decade, the institutional framework takes on penetrating significance. At fixed interest rates, the events of the 1980s are not too devastating, although the sudden vanishing of a borrower's net worth is hardly trivial. At variable interest rates but fixed principal, the situation is unmanageable for a sizable borrower.

A second comment is the hiatus between debt-to-asset ratio and cash flow measures under the conditions of the last several years, and particularly, once again, the crucial differences between fixed versus variable interest rates. In the example used here, the farmer enjoying fixed interest rates saw his debt-to-asset ratio climb to 120 but he remained fully capable of servicing his loan. The same farmer having to pay variable rates experienced an increase in his interest payment to $120, on land that earned rent of $100. His cash flow position likely became untenable. Economists often put too much faith in debt-to-asset ratio data.

Thirdly, the few of us in agricultural economics who are veterans of the Great Depression of the 1930s remember that the only stabilizing action of that time was negotiation downward of the principal of farmers' debts. The action was improvised but necessary and corrective.

Similar action seems called for today. The farmer in the example can pay 16 percent interest on a loan that has been scaled down to a level he can carry. At least a reduction of one-sixth is necessary, to $625. At 16 percent the interest payment is the $100 that the land yields as rent. Full indexing, though, would reduce the principal to $375, whereupon at 16 percent the borrower would again be paying $60 a year as interest.

A DOZEN SIDE ISSUES

This brief review does not examine all the many facets of the situation that have prevailed in agriculture the last generation or two. The basic economics of valuation of land as a fixed asset have been complicated by anticipation of future increase in value; that is, until about 1980, the buyers of land

capitalized not just rental return but anticipated capital gains. Correcting for that speculative boom was, in my opinion, necessary and justified. But to characterize all the chaos and trauma of the 1980s just in those terms is wrong, cruelly wrong. In that regard, I call attention to the Tweeten-Pongtanakorn paper. In any event, the capital gains aspect has been wiped out by now. What has been happening recently is realignment among rental income as a factor share, the interest rate, the valuation of land, and the interest payments required of farmers — the last being influenced critically by whether the obligation carries a fixed or variable interest rate.

Similarly, I have assumed unchanged net return to the land factor. Price-cost relationships (exclusive of interest as a cost) have deteriorated sufficiently to exacerbate the situation I have pictured. But again, this unwelcome experience as our export markets shrink only elaborates and magnifies the basic relationships I have set forth. They are not the mainspring.

Still another side issue is the economics of an owner-operator's paying for his land, that is, increasing his equity, by making payments on the principal of the loan used for land purchase (to reduce it). This is the textbook dream world, the old ladder thesis. I am most respectful. The fact of the matter, though, is that from 1933 to 1980 farmers did not pay for land primarily by diverting their net income from farming into repaying principal. In my estimate, during that period three-fourths of the growth in farmers' net worth in landholding was funding by economic growth and appreciation of all values in agriculture. Since 1980, both asset values and net incomes have trended downward, bringing to a grinding halt, virtually all opportunity for an operating farmer (without tax write-off subsidy) to build an equity in landholding.

As a last comment of this nature, Philip Raup pointed out at a seminar on our campus that years ago when labor constituted a sizable part of all inputs in farming, labor income was available as a cushion to help absorb blows of adversity. Now, more and more of all expenses in farming are commercial-contractual. The family's own labor is a small part. Resiliency is diminished.

THE MAGNITUDE OF WHAT IS GOING ON

I take a little credit for being one of the first extension economists in the early 1980s to recognize the magnitude of the adjustments being forced on United States agriculture. Fairly early, I predicted that devaluation of assets would amount to $300 billion. I forecasted the demise of 200,000 to 300,000 full time farmers (I was not entirely consistent in the figure I posed.). I predicted trouble for commercial banks and I foresaw the possible collapse of the cooperative farm credit system — although I stayed silent about this last foreboding. At the 1985 seminar on the University of Missouri-Columbia campus to which I have referred, one speaker predicted that the dissolutions among farmers would increase and spread to all parts of the nation. The year 1987 was foreseen as the worst year.

Capital valuations as written on a piece of paper held in the vaults of banks that are farmers' lenders and on the carbon copies that lodge in the farmers' desks are only a scratching with a pen. They are secondary to cash flow data. Yet, they are integral to an economy of market capitalism. The interest rate has a devastating capacity to influence what those numbers are. It follows that the role of central government to manage or manipulate that interest rate is one of the most weighty of all the activities a modern government undertakes.

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