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DISCUSSION: EXTERNAL FINANCE: A NECESSARY COMPONENT IN GROWTH PROJECTIONS FOR SOUTHERN AGRICULTURE

Emanuel Melichar

John Penson has presented a stimulating and informative paper on the recent prospective role of debt in financing Southern agriculture. As the data he recites indicate, the boom in land prices and machinery purchases born of the 1972-73 increase in farm income has been accompanied by large increases in outstanding debt. In view of rapidly rising asset values, many persons are currently asking whether the associated credit demands can be adequately accommodated within the present structure of lending institutions and arrangements. But at the same time, wide fluctuations and a generally downward drift in farm income since 1973 are also leading analysts to ask how borrowers and lenders alike can prepare for periods in which normally useful financial leverage may be transformed into financial difficulty. While Penson addresses both sets of concerns, this author's predilection to emphasize the latter leads one to believe that he performs the greater service in documenting the significant relative increase in debt incurred by Southern agriculture so far in the 1970s, the dramatic lengthening of the payback periods that relate outstanding debt to income, and the consequent rise in financial risk confronting both borrowers and lenders. As he notes, increased risk reduces the optimum level of debt and suggests urgent research attention to farmer and lender adaptations involving a wide range of equity and credit arrangements. His treatment of these subjects deserves our close attention and study.

This paper's more specific remarks deal with three general areas which introduce additional thoughts and information: (1) the conceptual model with which Penson introduces his subject, (2) data on market shares of farm lender groups and (3) projec-

tions of farm debt and the financial position of farmers.

THE THEORETICAL MODEL

The first portion of Penson's paper presents a theoretical or conceptual financial model of the farm sector. It exposes his audience to one type of theoretical framework within which analysts at the research frontier of aggregate farm finance are attempting to formulate their empirical explorations. But frankly, it is questionable whether the model plays, in this particular paper, the role apparently visualized by the author.

Penson states that he presents this model "to illustrate the channels through which the cost and availability of debt and equity capital and increasing financial risk can restrict the future rate of growth of farm firms." This objective certainly goes to the heart of his assigned topic. Let us, however, examine the discussion which accompanies the elements of the model. Necessarily each concept must be greatly abbreviated, but hopefully without undue distortion.

Equations 1 through 4, he states, indicate that capital stock is increased so long as the additions are expected to more than pay for themselves.

Equation 5, he states, indicates that as demand for farm output increases, more capital stock is desired; as cost of capital increases, less capital stock is desired.

Equation 6, he indicates, reiterates these relationships and in addition indicates that the willingness of farmers to make additional capital investments is positively related to their wealth and to how sure they are about their expectations of future prices and

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incomes.

Equation 7 indicates that farmers want to hold relatively less cash if times are good, more if times are uncertain.

Finally, equations 8, 9 and 10 indicate that the amount of debt used depends on its cost as well as on the amounts of capital stock and cash desired, that lenders set up upper limit on the debt/asset ratio they will permit, and that the cost of borrowing includes the implicit cost of reduced liquidity as that upper limit is approached.

These statements are fundamental economic observations and relationships in the finance area. It may be appropriate to review them at the beginning of this paper. But it is necessary or useful, within the context of this particular paper, to translate them into hieroglyphics to be in turn decoded by faithful readers?

If, in a paper, presentation of a conceptual model is followed by presentation of estimating equations and variables and then by the estimation of coefficients that quantify the relationships and help to indicate their relative importance and validity, then a precise symbolic statement of both the conceptual and empirical models is indeed necessary, and the reader is presumably willing to struggle through them in order to qualify himself to understand and to use the empirical results of the study. But such is not the case in this paper.

Let us return to the purpose of the model as given by Penson: "to illustrate the channels . . ." The channels appear to be basic economic relationships. This author suggests that restatement of these relationships in symbolic language is not an illustration at all; rather, data, events and anecdotes selected to illuminate or to elaborate these relationships would have served better as illustrations.

While still on this unsubstantive tack, a semantical comment might be indulged in as well. Throughout his discussion of the model, Penson states that the equations "suggest" economic relationships above. Repeated use of the term "suggest" unfortunately implies that these basic relationships are being deduced from the equations when, in fact, the relationships were obviously used in formulating the equations. A more appropriate verb would have been "reflect."

If one goes beyond the role that the conceptual model has in Penson's paper, numerous substantive questions readily arise. The model appears equivalent to a growth model of an individual farm firm couched in macro language; that is, with the plural "farmers" substituted for the singular "farm." Are there pitfalls in this approach? Has it been tried before? In what ways does it differ from the conceptual model

underlying the author's AIW Simulator that is now used by the USDA? Penson hints at the existence of some estimating equations but later alludes briefly to difficult data problems. Where does he, or others, stand in terms of the construction of an empirical model and of proxies for essential variables that cannot be or are not being measured? These are the types of questions with which this discussion would have been concerned if the specific model presented were of greater import to the paper as a whole.

FARM LOAN MARKET SHARES OF LENDER GROUPS

A few comments on trends in the market shares of the several farm lender groups are in order.

First, with respect to the share of outstanding farm debt held by commercial banks, Penson's description is somewhat misleading when restricted, by lack of data on noninstitutional non-real-estate debt at the state level, to shares of debt held by the major farm lending institutions. With respect to non-real-estate debt, in recent years this approach virtually amounts to comparing commercial banks with production credit associations (PCAs) only. Thus, it is worth noting that the USDA's latest national estimates show that the banks' share of total non-real-estate debt rose from 30 percent in 1940 to 40 percent in 1950, to 42 percent in 1960, again to 49 percent in 1970, and further to 51 percent in 1976. The share held by PCAs meanwhile rose from five percent in 1940 to 27 percent in 1976, which explains why the banks' share drops sharply in a comparison limited to these two groups. But the broader comparison indicates that both banks and PCAs picked up market shares from other lenders, first from the Farmers Home Administration and more recently from merchants and individuals [5, p. 22].

National patterns of market shares of total farm debt—real estate and non-real-estate combined—are also interesting. The share held by banks rose from 15 percent in 1940 to 28 percent in 1950 and then stayed near that level, being 27 percent in 1960, 28 percent in 1970, and now 29 percent in 1976. The share held by the cooperative Farm Credit System—primarily Federal Land Banks and PCAs—meanwhile started at 31 percent in 1940, fell to a low of 12 percent in 1952, and has since risen back to 30 percent in 1976 [5, p. 7].

As Penson points out, banks in unit-banking states have, on average, maintained their farm loan market shares better than the generally larger banks servicing the farm loan market in states that permit branching—and particularly better than in states that

allow statewide branching. State-aggregate data for the 1960s indicate that this relationship held in the South as well as nationally. From 1965 to 1970, for instance, the ratio of bank farm loans to total farm debt fell sharply (by about 12 percent) in the two Southern statewide-branching states, North and South Carolina, and in Louisiana, a limited-branching state. The ratio fell more moderately (by from three to six percent) in three limited-branching states—Georgia, Kentucky and Tennessee—and in Florida, a unit-banking state that underwent the holding company acquisition activity that Penson noted. The ratio changed little in two other limited-branching states, Alabama and Mississippi, as well as in Oklahoma, a unit-banking state. It rose by four percent in another unit-banking state, Texas [3, p. 108].

Penson concludes that the frequently cited advantages of branch banking have been offset through unit-bank use of participation loans. This inference understates the case, in that the phenomenon is one of banks with the twin problems of overline loans and greater difficulty in raising outside funds outperforming, with respect to market share of farm lending, banks without these problems. In the Southern states in which branch banks or multibank holding companies are prominent, more detailed studies of the data for and behavior of individual banks might help to identify how the apparent farm lending advantages of these forms of banking structure are somehow dissipated—perhaps through greater attention to development of nonfarm lending opportunities—and to indicate measures that might improve their farm lending performance. Detailed data on assets and liabilities of each of the nation's 14,000 commercial banks can now be purchased each quarter (income and expense data are available semiannually), and it is not difficult to devise studies of these data that would certainly be interesting and perhaps even fruitful [4, pp. 86-87].

For farm real estate debt there are national data by lender group going back to 1910, with much farm sector history etched in the trends and cycles of lender shares. As Penson notes, the dropping market shares of life insurance companies has been a prominent feature of the 1970s. Shortfalls in their fund inflows and the availability of higher yields on nonfarm securities were key factors in this experience. Interestingly, under similar circumstances during World War I life insurance companies also failed to participate in a farm lending boom, and their market share fell from 14.8 percent in 1917 to 11.5 percent in 1920. During this period the newly formed Federal Land Banks filled the gap. But with the farm economy in distress after 1920, with the national index of farm land prices falling in every year from

1920 to 1932, and with total farm real estate debt falling in nearly every year after 1923, life insurance companies returned to the farm loan market in force during the 1920s and actually increased their outstanding farm mortgage loans in every year through 1927—in the process raising their market share of farm real estate debt to 22.3 percent by 1928. Thus they had missed the wartime boom but nevertheless managed to work themselves into full-fledged participation in the subsequent problems. Does one dare to mention that farm lending by insurance companies has been reviving recently? Fortunately, it is said that history never repeats itself in the same way.

PROJECTIONS OF CAPITAL AND DEBT

There is, as usual, a good demand for projections that extend five or ten years into the future. Penson cites debt projections made by Harding [1, p. 15] for the ten-year period 1976-1985, and discusses some of their implications. It may be useful to develop an understanding of the nature of these projections, which are representative of those currently appearing in the popular literature.

In making his debt projections, Harding first projected the capital flow to be financed, next projected that from 35 to 45 percent of the flow would be financed through an increase in outstanding debt, and finally projected that the Farm Credit System would provide 39 percent of the increase. Since these ratios reflect recent experience, the key to the nature of the debt projections is an understanding of the capital flow projections to which the ratios are applied. A reader of Harding's paper can readily calculate that he was projecting an average capital flow of \$40 or \$47 billion per year, depending, he stated, on whether annual general price inflation averaged four or seven percent, respectively. Assuming that these projected ten-year averages are attained along a smooth growth path during this time span, this author has estimated for a forthcoming seminar that annual capital flow by 1985 would need to reach values of \$52 or \$68 billion, respectively [2].

Compare these values, first, with past annual values of capital flow. For five years, 1966-70, the series was relatively stable, with annual values averaging \$12.6 billion. As the boom developed it approximately doubled, reaching in 1973 a new plateau at which it has held—within the narrow range of \$23 to \$26 billion—for the past four years.

Consider, secondly, the rise in asset values implied by the projected capital flows. Since the bulk of annual capital flow consists of land transfers and replacement of machinery and real estate improve-

ments, the series is highly dependent on the trend in asset values. Again assuming a smooth growth path, it is estimated that January 1, 1986 asset values consistent with the alternative capital flow projections might be \$1,110 or \$1,460 billion, respectively, up from \$585 billion ten years earlier. (Readers may enjoy computing implied nominal capital gains per farm owner.)

These figures should make it clear that capital flow and debt projections either extrapolate current capital spending and land price boom over another ten years, or require that one or two more booms of equivalent proportions occur within that time span. These events are not impossible; however, the current boom is only the sixth of such proportions since the American Revolution.

In addition, booms are prolonged (e.g., the World War II, Marshall Plan, and Korean War sequence) or triggered by sharp increases in farm income. Thus, those who project capital flows of boom-like proportions and then express qualms about how they can possibly be financed are both inconsistent and probably worrying about the wrong event. The boom will occur only if the initial income gain is there, and that income along with the typically euphoric atmosphere of a boom usually insures that financing is not a major problem. But the historical record justifies apprehensions about the potential need to unwind fixed costs and debt obligations that prove excessive in the light of post-boom income.

Since longer-term projections remain in demand, why has the supply from analysts such as your discussant dried up? Largely because of great uncertainty about many basic aspects of the farm sector's financial situation during the next few years. The popular view is optimistic, but this is characteristic of a euphoric boom. History tells us to expect an eventual collapse in crop prices and income, but judgment tells us that any collapse will, as in the 1950s, be aborted by a supporting net of government farm programs. A key uncertainty is the level at which the supporting net will be placed; that is, what toll will be exacted in the way of a cost-price squeeze, and how much of the windfall gains in land values will be protected. Meanwhile, we observe that the boom in asset prices continues while net farm income has been in a declining pattern since the last quarter of 1973, basically interrupted only during two quarters in mid-1975 (the Russian drought) and for one quarter in 1976.

While such uncertainties affect projections of asset values and capital flows, additional difficulties attend the associated debt projections. For the last 20 years, increases in farm debt nationally have been considerably greater than would have been necessary

to finance net farm capital formation (the net additions to machinery, buildings, land improvements, livestock, crop inventories and financial assets). There are at least three alternative series estimating net investment (net capital formation less the increase in debt): one computed from Balance Sheet data [5, p. 59] another calculated in the national flow-of-funds accounts [5, pp. 80-81], and a third computed from USDA sources and uses of funds statement [7, p. 16]. While some of the series underlying these estimates leave much to be desired, so that discussions of net investment often turn into debates or lamentations about the underlying data, numbers involved are such that the validity of my basic observation is hardly in question. For the 1960s, estimates of the amount by which the total increase in debt exceeded net capital formation range from \$10 to \$16 billion. For the first six years of the 1970s, estimates are more consistent, ranging only between \$22 and \$26 billion. In other words, about one-half to two-thirds of the total increase in farm debt incurred so far in this decade was not needed to finance net capital formation.

In a sense, therefore, it is misleading to state, when referring to the total increase in farm debt, that "we have seen a significant increase in the amount of debt capital used to finance farm capital accumulation." Instead, much of the large increase in debt has been used to increase size and financial leverage of individual farm firms, as Penson's data and other comments clearly indicate.

Such use of debt has several implications. For instance, if large increases in debt are not being used to increase productive capacity of agriculture, are they essential, as is often claimed, for the nation's well-being? Do further increases in farm size, which the debt increases do facilitate, now have the large economic and social value that they undoubtedly did in earlier decades? If the downward trend in real farm income is signalling the approaching end of boom-sized increases in land prices, is it the right time to be concerned with the ability of the farm sector to increase or even to maintain current financial leverage ratios?

Debt-leverage and debt-payback ratios cited by Penson are indicative of potential financial problems. When the average ratios have risen in the manner Penson cited, one can be sure that some individual farms have incurred fixed costs and debt interest and repayment obligations that will expose them as financially vulnerable if the downtrend in real net farm income continues. In that event, much may depend on the number of such farms and the degree to which they are concentrated regionally or by commodities. Hopefully, some indications as to the riskiness of current

positions will be forthcoming from the 1974 Census of Agriculture, in which all commercial farms were asked to report outstanding debts.

At one point in his paper Penson noted that "external finance of farm capital accumulation has historically played a minor role . . ." and that "the fraction of annual farm capital flows financed with debt capital was extremely small over the 1900-1950 period." In fact, the only time during that period that external finance was heavily used was during the

World War I boom [6, pp. 140-143]. What an extraordinary amount of subsequent mischief and misery can be traced to that brief excursion into significant external finance! How much greater may be the potential danger now, should the farm environment continue to be characterized by greater market and natural risks. In research interests and programs, concern with growth now needs to share its top billing with attention to the nature and avoidance of financial instability.

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