Farm Economies of the Plains: A Comment

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Contents

Abstract

William H. Meyers comments on a paper by Belongia and Gilbert presented at the 1986 annual meetings of the Allied Social Science Association. Belongia and Gilbert analyzed the scope of farm income and debt problems in the Plains States and discussed the causes of those problems. Meyers accepts Belongia and Gilbert's evidence of a deterioration in farm financial conditions since 1980, but rejects their test of the effects of macroeconomic fluctuations on economies dependent on agricultural income. The bases of his objections are Belongia and Gilbert's use of national GNP only as an explanatory macroeconomic variable and their use of farm or personal income as measures for agricultural sector performance, although it may verify the effectiveness of government programs in insulating farm income from the effects of macroeconomic policies. Meyers recommends a reevaluation of current agricultural policies to address the financial problems of farmers and agricultural lenders, which he sees as a more serious problem than that of general farm income.

Introduction

The paper by Belongia and Gilbert has two distinct sections: the first section discusses the scope of income and debt problems in the Plains States and the second discusses the causes of those income and debt problems. One can almost always count on a Belongia paper to be controversial, and that is certainly true of the second part of this paper. It is the part of the paper with which I have the greatest concern, but I also have a few comments on the first section.

Scope of Income and Debt Problem

I do not quibble with the evidence presented by the authors. This evidence that financial conditions in the farm sector have deteriorated substantially since 1980 and pose a problem for the lenders as well as for the farm sector. Even more persuasive evidence of the problems is provided in farm financial survey data that has been assembled by the USDA and others. The latter studies reveal that about one-third of the farmers in the United States are in financial difficulty; and this one-third holds about two-thirds of the agricultural debt. A minority of farmers, but a much larger proportion of the total agricultural debt, are involved. The evidence also shows that these problems are more severe in the Plains States which are the focus of this paper, than in other regions of the country. Moreover, the data for the last few years indicates the financial situation is not improving. It is likely to be with us for several more years.

Belongia and Gilbert point out that the income-debt problem is related to the substantial decline in asset values since 1981. Their data goes through 1985. Data available for 1986 indicates that the decline in land values is continuing. In Iowa, for example, county-average land values between 1981 and 1986 have declined in a range from 60 to 67 percent, with a 15 percent decline in 1986. As a consequence, current land values in real terms are lower than they have been at anytime during the past forty years (Duffy and Olsen).

Both the cash flow and the financial structure aspects of the problem deserve special attention. Table 1 arrays a sample of farmers with respect to both cash-flow-to-equity and debt-to-asset ratios. It is clear that farmers with a large cash flow can survive a relatively large increase in debt-to-asset ratio, and farmers with relatively little debt can survive a relatively low cash flow. Farmers experience severe financial stress when their cash-flows are negative even when they do not have a severe debt problem. Likewise, they become stressed if their debt-to-asset ratio is very high and their cash flow is positive. This has important policy implications, since current commodity programs that address only the cash-flow aspect have limited value in dealing with the overall financial problems of the farm sector.

Farm Sector Dependence on Aggregate Fluctuation

In this section the authors set out to test whether macroeconomic fluctuations have greater impacts on agriculture-dependent economies than on nonagriculture-dependent economies. They conduct this test by regressing rates of change in farm income, or personal income by state, on rates of change in GNP. I will argue that this model does not adequately test the hypothesis that the authors set out to investigate. My first objection is that the model uses only national GNP as an explanatory macroeconomic variable. My second objection is that farm income and personal income are not appropriate measures for agricultural sector performance, since they are heavily influenced by government transfer payments and price-support programs.

The Choice of Macroeconomic Explanatory Variables

There are several macroeocnomic variables that clearly have an influence on agricultural sector performance:

Interest rate. The farmers' interest expenses rose from about $10 billion a year in the late 1970s to over $20 billion a year in the early 1980s, and in the last few years have accounted for 15 to 20 percent of total farm expenses. There is no doubt that changes in the interest rate have an important direct impact on cash flow and farm income. It is also quite likely that the interest rate has a significant indirect effect on agriculture through its effect on Third World debt-servicing requirements. As Third World debt problems have increased in the 1980s, due in large measure to the increased interest rates, the increased debt-service requirements of many Third World countries have either stifled their import demand or induced stronger measures on their part to increase exports competitive with U.S. exports. The effects have a negative impact on U.S. export performance and consequently on commodity prices.

Exchange rate. The appreciation of the U.S. dollar relative to many foreign currencies in the early 1980s made U.S. commodities more expensive to foreign customers and less competitive with exports from competing countries. Most studies have found that these exchange-rate movements had a significant negative effect on U.S. exports and on agricultural-sector performance.

GNP growth. This is the one variable used by the authors, and it should be expected to influence the rate of growth demand for U.S. agricultural products. The direct effect would be through U.S. consumption, but an indirect effect is also likely because of the effect of U.S. economic performance on the GNP growth rates of foreign economies that are important consumers of U.S. agricultural products abroad.

Money supply. Since the money supply is a policy instrument that influences all the other macroeconomic aggregates already mentioned, supply would have an effect on agricultural-sector performance through its influence on these and other macroeconomic aggregates.

The Farm Income Measurement Problem

If the intent of the authors is to measure the effect of macroeconomic aggregates on the performance of the agricultural sector, then the farm-income or personal-income measures are not appropriate choices for the dependent variable. The reason for this is that the government has an agricultural policy that is basically countercyclical in its behavior. When demand slows and prices fall, government programs act to contract production, accumulate stocks, and increase transfer payments. The accumulated effect of these policy responses is to substantially insulate net farm income from these macroeconomic shocks. Thus, the relationships used by the authors to test the impact of GNP fluctuations on farm income may merely demonstrate the effectiveness of these programs in insulating farm income from these external shocks.

Evidence of these countercyclical responses of government policy can be seen in Figures 1 and 2. Figure 1 shows that net farm income in nominal terms has fluctuated over the last fifteen years but has not shown any distinct secular trend. At the same time, the cost to the government of direct payments to farmers and the total outlays associated with farm programs have increased substantially in the 1980s. This increase is in response to the declining performance of the agricultural sector. It is clear that net farm income would have been substantially lower without the government program assistance. Figure 2 shows another aspect of the government response, the increase in commodity stocks controlled or paid for by the government during the 1980s. These

stock accumulations have the effect of increasing the market price of the commodity when there is sluggish market demand.

It is difficult to find an ideal measure for agricultural sector performance. Value of output would be a better measure than net farm income, but it would still include the effects of supply reduction and price-support program operations. Probably the best measure, and one that has been used by most other analysts looking at this question, is the terms of trade between agriculture and other sectors of the economy. This measure often takes the form of either the ratio of agricultural-product prices to industrial-product prices or other indices of nonagricultural prices. The agricultural prices used in this way still contain some effects of government programs through price-support operations, but these measures are better than others that have been discussed here.

A recent test using monthly and quarterly data and the innovation accounting methods of Sims (Devadoss and Meyers) found that money-supply shocks have noneutral effects on the ratio of the farm product prices to industrial-product prices. This is consistent with previous work done by Bordo and Chambers. Another type of evidence on the importance of macroeconomic factors to agriculture has been found in impact analyses conducted with structural commodity-market models (Meyers et.al.). A counterfactual analysis was conducted over the period 1980 to 1984 to evaluate the impact on agriculture due to the changes in macroeconomic conditions in the U.S. and foreign markets. The hypothetical alternative scenario was run under the assumption that macroeconomic conditions for the 1970s, including strong GNP growth rates and favorable exchange rates for the U.S. relative to foreign currencies, continued for five more years. The results are briefly illustrated in Figures 3 and 4. The volume and value of exports were stronger over the period (Figure 3), production and prices of major export commodities were higher, the PIK program of 1983 was no longer necessary, and government expenditures on farm programs were substantially reduced (Figure 4). The study bears out the previous assertion that farm income is not a good measure of agricultural sector performance. In this study, the impact of these more favorable macroeconomic conditions on net farm income was positive but not very substantial. The major impact was on the reduction of the cost of the commodity programs that are in place to buffer the agricultural sector from just these kinds of external shocks. While the alternative macroscenario is highly contrived, it serves to demonstrate the importance of the macroeconomic environment to agriculture.

Conclusions

The Beloniga and Gilbert test does not tell us much about the effect of macroeconomic aggregates on agricultural sector performance, primarily because of the choice of dependent variable. Perhaps it does verify that existing agricultural policies have been largely successful in insulating farm income from the effects of macroeconomic policies. As pointed out by Belongia and Gilbert in the first part of their paper, however, these policies have not insulated agricultural sector financial conditions from macroeconomic influences.

Numerous studies have found important linkages between macroeconomic shocks and performance in the agricultural sector. Yet, this evidence should not lead us to conclude that macroeconomic policies need to be changed to favor a sector that represents about 3 percent of GNP. Rather, the evidence should lead us to reevaluate current agricultural policies in light of the fact that they do little to address the financial problem of farmers and agricultural lenders. This is currently a more serious problem that that of general farm income.

5

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Table 1. Distribution of Sample Iowa Farm Operators in Financial Stress
Groups by 1986 Debt-to-Asset Ratio and Cash-Flow-To-Equity Ratio

Debt-to-Asset-Ratio		Insolvent	Cash-Flow-to-Equity Ratio Class (%)				
			Less than -20	-20 to -5	-5 to 5	5 to 20	Greater than 20
0-10	Group #	----	2	2	3	4	4
	% of sample		1%	2%	15%	15%	3%
10-40	Group #	----	2	2	3	4	4
	% of sample		*	3%	13%	11%	2%
40-70	Group #	----	1	1	2	3	4
	% of sample		1%	3%	6%	7%	3%
70-100	Group #	----	1	1	2	2	2
	% of sample		4%	1%	1%	2%	3%
Insolvent	Group #	1	----	----	----	----	----
	% of sample	4%					

* Less than one percent

Group 1 - Survival unlikely
Group 2 - Stressed but restructurable
Group 3 - Stable
Group 4 - Strong

Source: Robert W. Jolly and Douglas R. Olsen, "1986 Iowa Farm Finance Survey:
Summary," mimeo., Cooperative Extension Service, Iowa State
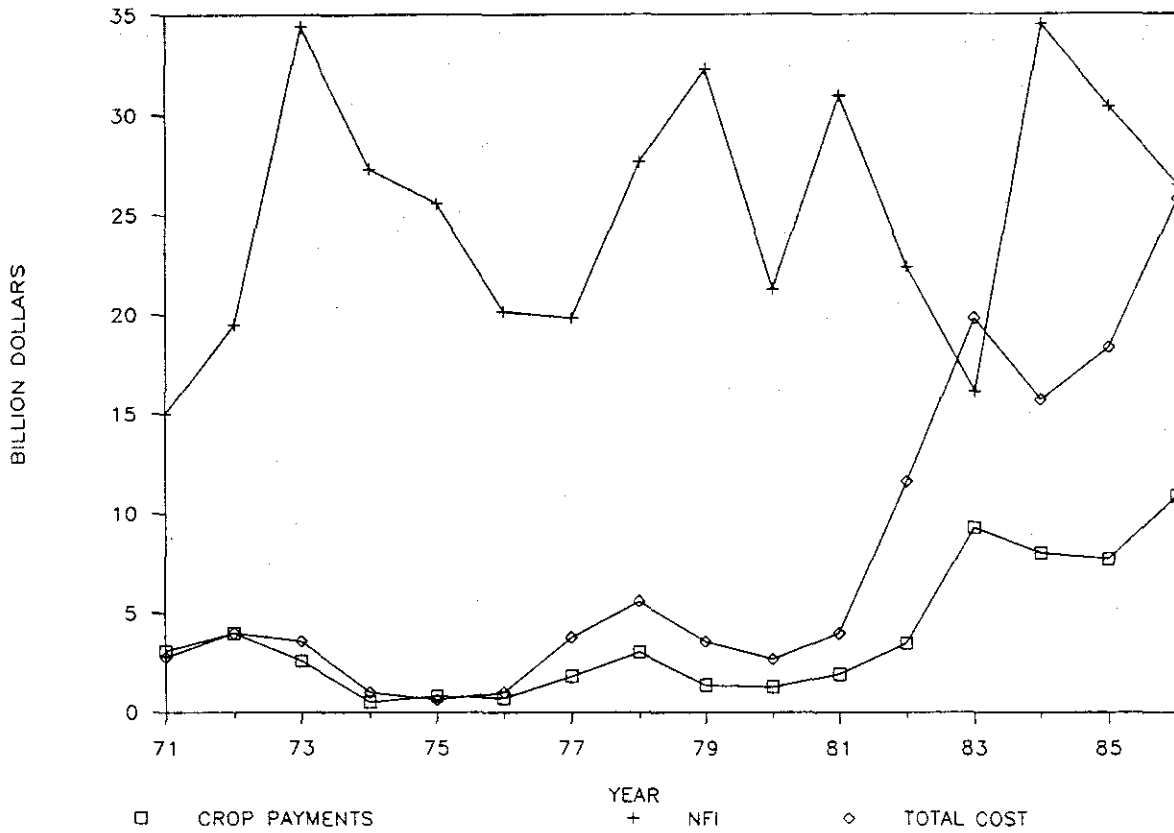University, Oct. 1986.

FIGURE 1.   NFI AND GOV'T EXPENDITURES

| □ CROP PAYMENTS | + NFI | ◇ TOTAL COST |

FIGURE 2.   FOR AND CCC STOCKS
(CORN AND WHEAT)
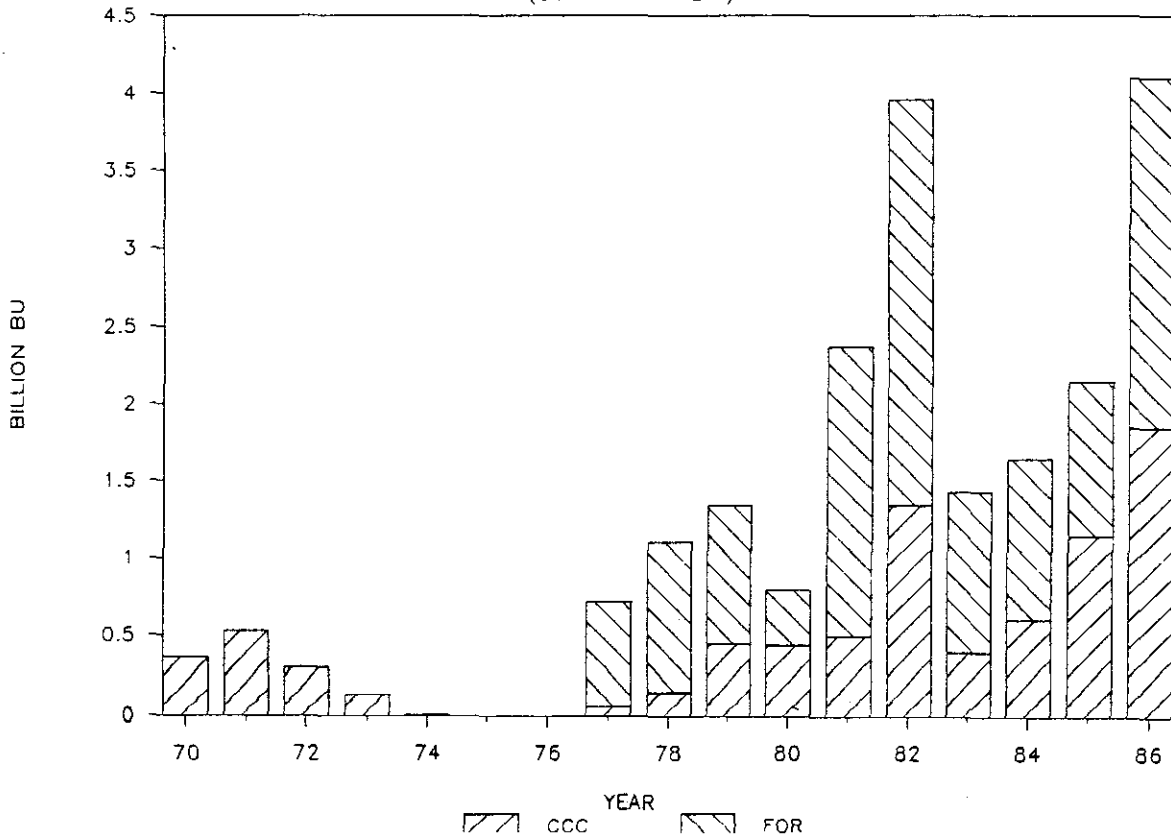
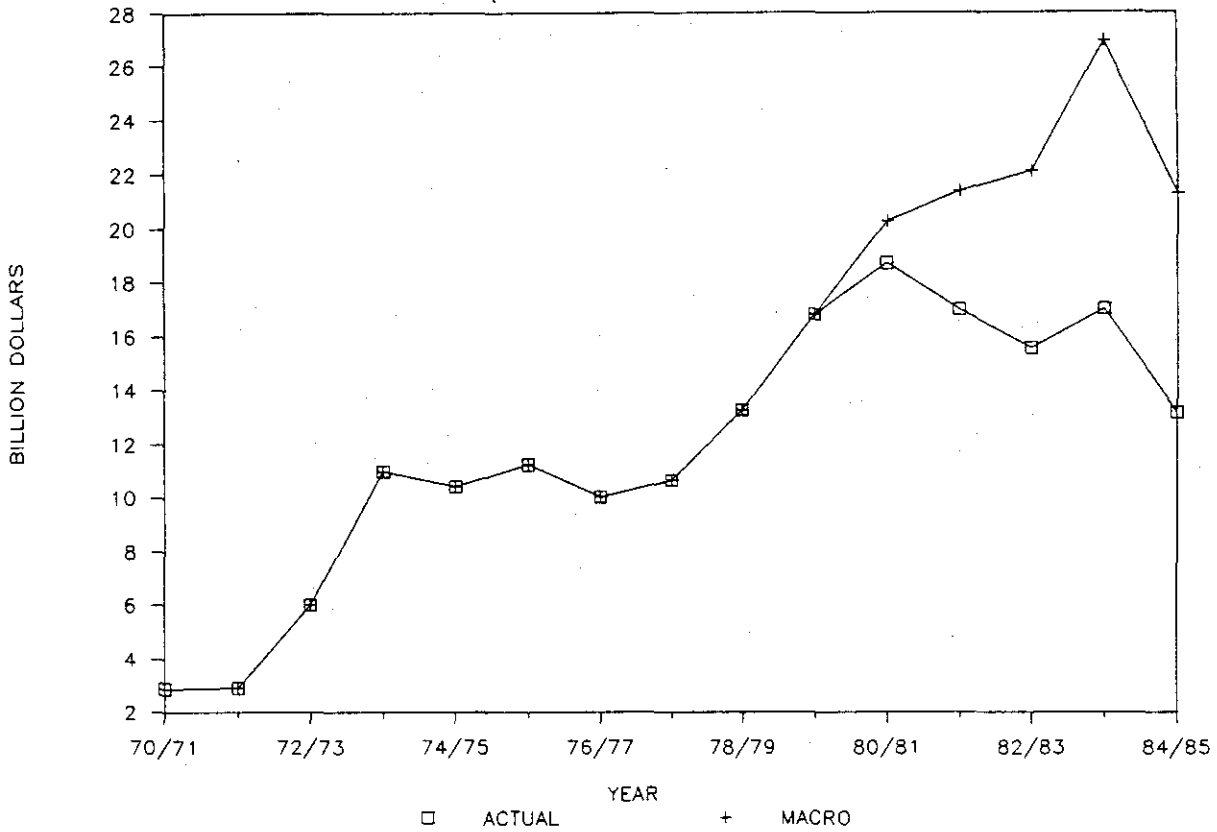

YEAR

CCC   FOR

FIGURE 3. VALUE OF U.S. AG EXPORTS

(WHEAT, CORN, SOYBEANS)

FIGURE 4. GOVERNMENT EXPENDITURES