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Research Review

Accounting for Commodity Credit Corporation Loans in Farm Income

By Roger Strickland*

Commodity Credit Corporation (CCC) loan programs have been an important marketing tool for U S farmers for several decades. Prior to 1980, CCC loans were accounted for in the U S Department of Agriculture's (USDA) farm income estimates by adding the value of new loans made to open-market sales at the farm gate. Old loans repaid were subtracted in order to avoid double-counting when the commodity was subsequently marketed.

This procedure has been questioned on the grounds that, if CCC loans are indeed loans and not sales, they should be treated like other loans and distinguished from open market sales receipts. The alternative to including CCC loan payments as receipts when received is to account for only those loans which the farmers never repay, referred to as loans forfeited or liquidated. The value of loans forfeited or liquidated would be added to open market sales when the loan is terminated and the Government takes ownership of the commodity.

Beginning with the farm income statistics published in 1980, USDA will estimate two alternative cash receipt series: (1) the old series which includes the net value of CCC loans made and repaid and (2) a new series which includes only the value of CCC loans forfeited or liquidated. All production must be accounted for as marketed, either directly or via livestock, or added to inventory stocks. Thus, a change in quantity marketed due to a change in the treatment of CCC loans will have an offsetting effect on quantity in inventory. If net farm income is defined to include the value of inventory change, then the treatment of CCC loans will not substantially affect net farm income. It can, however, have a significant effect on realized net income, defined to exclude the value of inventory change.

In using cash receipt estimates, one may have to choose between the two series. The choice will be a definitional one and could depend on one's assumptions and type of analysis. I will consider some key issues in characterizing CCC loans and in defining receipts as income. The issue is important because the old series may be discontinued after the new one is established.

A review of the terms and payments under the CCC loans program indicates that, although a CCC loan does possess

some attributes of other types of loans (bank, PCA, and others), the loan has several key attributes of a sale. In fact, a case can be made that a CCC loan is a sale to CCC or to the Government for a price that is at or above market price with an option, for a fee labeled as interest, to purchase an equal quantity at a later date, if it becomes advantageous to the producer.

CCC loans possess the following nonloan features:

1. The decision as to whether to "repay the loan" or "forfeit the collateral" and finalize the sale is solely at the discretion of the payee.
2. If the farmer decides it is not desirable to pay the "interest" cost associated with the agreement, the loan is not repaid nor is it revoked, but the option of reclaiming the commodity is lost.
3. The collateral specifies a quantity and grade of the commodity held in reserve. It does not specify a particular bushel of grain in the way that an automobile loan specifies a particular automobile. So, the right to repay the CCC loan and reclaim a quantity of the commodity is really an option to buy a certain quantity at a given price. Under a true production loan from a bank or PCA that is secured by the commodity, the farmer would be expected to repay the loan and dispose of the collateral. The farmer would bear all risk of a drop in the commodity price. Under a CCC loan, the farmer bears no downside risk and reclaims the commodity only if the current market price exceeds the loan or "call" price.

The Internal Revenue Service (IRS) allows the farmer the option of reporting the funds received either by forfeiting or delivering the commodity, or by reclaiming and selling the commodity. In cases where payments from CCC are reported when received but the option to reclaim and market the grain is exercised, only that portion of the sale value above the amount originally reported is taxable income reportable in the year of sale. Once a farmer selects one of the two options, permission to change must be requested from IRS. This requirement tends to discourage frequent year-to-year switches.

The test that IRS usually applies to determine when a payment becomes reportable income is the point at which the payee has control over the money to do with as he or she

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pleases. Thus, one can have reportable income before receiving money, that is, because payment is delayed due to an action or decision of the payee. One can have earned income but it is not reportable income because the money is not yet available. For example, profit from the sale of common stock is not reportable until the settlement date, which is a week after the sale date. The seller knows on the day of sale how much profit was made but cannot get access to the funds until settlement date.

Since IRS allows the payee an option as to when payments may be reported, this flexibility could be construed as evidence that it considers CCC payments to be income. IRS does not normally give taxpayers the opportunity to select the timing of payments so as to minimize their taxes, on the contrary, IRS has definite rules for determining when income is reportable. In the case of CCC loans, it may not be politically feasible for IRS to rule that the payments were not loans, when the Congress has specifically labeled these payments as loans.

The option granted by IRS gives the farmer two alternative income tax strategies from which to choose. The CCC payments may be reported at the time the commodity is sold instead of when the loan disbursement is received. By continually rolling over a series of loans, the farmer can postpone reporting the sale of the crop placed under the program indefinitely or until participation in the program, at least temporarily, is ended. That may well occur

during a year of high prices in which the storage bins are emptied.

Alternatively, the farmer can opt to report the payments as income as the loans are received. Under a progressive tax structure, taxes can be minimized by smoothing the taxable income reported. Postponing the reporting of receipts from CCC until the contract is terminated may result in reporting income from the sale of several years' production in a single year and in a year of high market prices.

Thus, the CCC commodity loans have attributes similar to those of other loan types, for example, repayment, interest, and collateral, but the disposition of the proceeds of CCC loans is solely at the discretion of the payee. The payee may opt not to pay the money back to CCC. The option to pay back would be chosen only if the grain could be sold for profit. In such a case, the farmer's additional income received in the current year would be the difference between the amount of the repayment to CCC and the receipts from selling the commodity on the open market.

Which is the "best" definition of farm income is not clear. There are arguments for and against each side. In the short run, both series are available and the user of the statistical series has a choice. The discussion above may help users make that choice.

In Earlier Issues

The role that law plays in the conservation of renewable natural resources is often overlooked by agricultural economists. [There are] grave doubts on the wisdom of placing sole reliance on the classical economic doctrine that owners pursuing their own best interests assure full utilization, development, and conservation.

Erling D. Solberg
Vol. 6, No. 4, Oct. 1954, p. 129

Computer Modelling in Agriculture

N R. Brockington. Oxford, Eng Oxford University Press, 1979 \$26 00, 156 pp

Reviewed by Linda Calvin*

The author intended this book as an introduction to computer modeling for agriculturalists, particularly those concentrating on the biology of production. The type of modeling discussed is variously described as computer modeling, dynamic system modeling, and dynamic simulation modeling. These are certainly very general categories—a more specific description would be system dynamics modeling. Despite the vague title, it is a good introduction which will also serve agricultural economists well.

Most literature on system dynamics falls into two groups: theoretical discussions on modeling, which are often very mathematical and give the reader little idea of what a program actually looks like or how to build one, and manuals which describe a particular programming language in detail but provide no perspective on how system dynamics differs from other modeling techniques. This book provides a useful, easy-to-read introduction which combines theory and practice. It is an important book for a limited audience: people with no experience in system dynamics modeling who want both a brief overview of where this technique fits into the general configuration of modeling techniques and an introduction to the mechanics of building a system dynamics model.

Those readers who want only an idea of what their modeling colleagues are doing will find this book a sufficient introduction. Others who would like to do modeling themselves will have to do additional reading, but Brockington's text is an excellent starting point, particularly for those people who are easily intimidated by math, new programming languages, and esoteric theoretical discussions. System dynamics modeling requires a sound understanding of the complex interactions between components of the system to be modeled and a basic understanding of a fairly simple modeling technique. This book demystifies the methodology and will enable many people to pursue modeling activities.

Brockington introduces the concept of a system and describes the different types of models used in agriculture. Although the sophisticated modeler may disagree with the schematic classification of models presented, the beginning modeler will find the discussion illuminating; it clarifies the concepts of system dynamics by comparing it to econometric and linear programming models. Brockington

also discusses the stages of model building: (1) development of a verbal description of the system; (2) design of a pictorial representation (flow diagram) which shows the structure of the system; and (3) construction of a quantitative computer model of the system. Stages 1 and 2 are discussed in chapter 2 which presents fundamentals of flow diagramming as developed by Forrester (1)¹. The author describes and diagrams problems of continuous biological growth, carbon metabolism in plants, and animal population growth. Additional problems are provided at the end of the chapter with answers at the end of the book.

Brockington uses these same problems to construct computer programs—the next step. He describes the relative virtues of the two types of computer languages available for system dynamics modeling: general purposes languages, such as FORTRAN and ALGOL, and specialized languages, such as CSMP and DYNAMO. The general languages are flexible and can be used for any type of problem, but they require additional programming to make a model dynamic. Specialized simulation languages are oriented towards the standard operations that occur frequently in system dynamics, but they may be awkward in some situations. The dynamic elements are built into the specialized languages.

Each program is written in both FORTRAN and CSMP, and sample computer printouts are presented. The FORTRAN used in these examples is not very sophisticated, the most complex element is the "do loop" procedure. Anyone who understands FORTRAN should be able to follow CSMP with no trouble. Although CSMP is not a common language, it is similar to DYNAMO which is much more common. In a 1977 survey of simulation models by S R. Johnson and Gordon Rausser (2), 85 percent of the models were written in FORTRAN or ALGOL. The most common specialized language was DYNAMO which was used in 8 percent of the cases; none of the studies used CSMP. Comparing the FORTRAN and CSMP sample programs is extremely helpful to the person who can choose what language to use. Brockington concludes that the choice of language depends on the type of model the researcher wants and that person's current knowledge of computer languages. The specialized languages do not take as long to learn as the general languages, an advantage to the beginner. Brockington

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¹Italicized numbers in parentheses refer to items in the reference section at the end of this review.

seems to believe that the specialized languages may be inefficient in their use of computer time, my experience indicates that DYNAMO is a rather inexpensive language. He also discusses choice of a time variable, incorporation of nonlinear equations, and stochastic variables. Problems at the end of the chapter introduce sensitivity testing.

Chapter 4 presents more complex concepts and techniques, perhaps too complex, given the level of the previous material. Unfortunately, the examples are only in CSMP. If, after reading the first three chapters, a researcher is inspired to do some modeling, I think it is best to skim chapter 4, choose a language, and then pursue these more complex concepts in the appropriate language manuals. Brockington elaborates on flow rates—constant and variable rates, feedbacks, exponential delays, pipeline delays, and multiple factor rate controls—and discusses transport processes.

Brockington briefly discusses programming techniques in GPSS for event-oriented (discrete) models. The final chapter describes procedures for testing the models.

This book does exactly what the author set out to do: provide an "entree" for those who are interested in modeling agricultural systems. It presents standard material in a simple and effective manner.

References

- (1) Forrester, J. W. *Industrial Dynamics*. Cambridge, Mass.: MIT Press, 1961.
- (2) Judge, George G., Richard H. Day, S. R. Johnson, Gordon C. Rausser, and Lee Martin (eds.). "Quantitative Methods in Agricultural Economics, 1940s to 1970s. A Survey of Agricultural Economics Literature, Vol. 2." Minneapolis: Univ. of Minnesota Press, 1977.

In Earlier Issues

An important cause [of increased expenditures for marketing services] is that consumers want certain services with their food. Here the separation of the services supplying time, place, and form utility from the raw commodity raised on the farm becomes academic. To the housewife, they are part and parcel of the can of frozen orange juice she buys.

Marguerite C. Burk
Vol. 6, No. 1, Jan. 1954, p. 19

Rural Change: The Challenge for Agricultural Economists

Glenn Johnson and Allen Maunder, eds Oxford, Eng International Association of Agricultural Economists, Institute of Agricultural Economics, 1981 \$38 50, 738 pp

Reviewed by Joseph W. Willett*

Rural change was the theme of the 17th International Conference of Agricultural Economists held in Banff, Alberta, Canada in September 1979. In his presidential address, Denis K. Britton noted that the first meeting was held 50 years earlier and he asked, "What could we in the agricultural economics profession today show to our founders by way of achievement?"

To demonstrate the contributions to the "progressive value of knowledge" by the profession over the years, Britton referred to the *Survey of Agricultural Economic Literature* which was published under the auspices of the American Agricultural Economics Association. Britton also identified other scholarly reviews of the profession's output. "Despite all this testimony," said Britton, "the task which the present generation inherits is undiminished." He then cited some dubious evidence about rural poverty from which he concluded that agricultural economists have shown a "notable lack of success" in promoting "the economical provision of the material requirements of the good life for rural people." He maintained that "the underlying concern, rightly or wrongly is with equity and not with productivity" and cited as his authority President Nyerere of Tanzania. Britton concluded that while being concerned with the many large problems of "our shipwrecked humanity," economists "should appreciate the value of marginal increments of improvement at the points of greatest opportunity and greatest need."

W. A. Lewis, who was subsequently awarded the Nobel Prize for Economics, presented the Elmhurst Memorial Lecture—"Development Strategy in a Limping World Economy." Lewis concluded that, whereas past economic growth in the less developed countries (LDC's) was driven by trade, this factor will be less important in the immediate future because of the economic problems of the more developed countries. In his judgment "some of the LDC's have already reached the stage of self-sustaining growth," these latter will "make it" in any case. But, "the rest still need a background of world prosperity if they are themselves to prosper."

In addition to the addresses by Britton and Lewis and a "synoptic" address by President-Elect Theodor Dams, 51 other papers with discussions were presented. This re-

viewer agrees completely with Dams' statement that "to compile an overview of the wide range of contributions is a difficult task." Dams judged that the Banff Conference demonstrated a special concern with overspecialization and was committed to offering specialists the opportunity to share broadening views. Dams referred to the conferees' interest in problems of food "gaps," difficulties of small farmers and the landless, economic planning issues, needs for food security, and investment needs in LDC's. He emphasized that poverty presents an ethical-moral challenge to agricultural economists, and he thought that the conferees had shown a great willingness to accept the responsibility.

Because marketing efficiency affects rural incomes, Dams drew attention to the papers on marketing. He said that the research has many gaps and that much more work is needed to integrate small farmers and the poor into the markets. He thought that the strategy of relying on rapid industrialization to automatically solve these problems has failed.

Dams pointed out that numerous conference papers using quantitative methods had drawn much criticism during the discussions. He emphasized the importance of economists' applying quantitative tools to real-world problems rather than placing undue concern on merely polishing their tools.

Dams also emphasized the importance of studies on decisionmaking and planning procedures in agriculture, a subject which had been the principal topic at the International Association of Agricultural Economists conference in Nairobi 3 years earlier. The Banff Conference included a first-hand paper on agriculture in the Peoples Republic of China and papers on agricultural planning in Eastern Europe, as well as papers and discussions on decisionmaking in multinational firms, parastatal organizations, and state trading agencies. Dams warned that in spite of some progress, the methods of agricultural economists continue to be more appropriate to analysis of and recommendations for large, rather than small, farms.

Several conference papers showed that outmigration from agriculture and structural changes within agriculture still generate major social frictions, even in developed countries. Agricultural surpluses and related problems continue in many countries. The relationship between central and local planning agencies in developing countries, conflicts between localities over rural development programs, and research on farming systems received much attention.

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Although conference members discussed energy analyses of agriculture and the difference between the approaches of economists and ecologists, Dams thought these problems needed more research and should be discussed at the 1982 Conference. He said that international cooperation, international agencies, and integration will present even greater challenges to agricultural economists in the future because of the increasing interdependence of national economies. The papers and discussions also raised questions about whether LDC students of agricultural economics in the United States and Europe receive adequate training that will help them solve their countries' economic problems. Concerning the relationships between politics and research and the concomitant challenge to the professional integrity of agricultural economists who are consulted by governments, Dams suggested they should make clear whether they are working in positive or normative economics.

Dams found the Banff Conference to be much concerned with the need for interdisciplinary research—which he pointed out—had been an issue throughout the Association's 50-year history. He suggested that economists might foster interdisciplinary work by first examining specific problems, formulating objectives, and then raising questions for members of other disciplines.

Dams also referred to complaints at the Banff Conference by economists from developing nations about the difficul-

ties in communicating their research results and in gaining access to important studies undertaken in their own countries either by other governments or by international institutions. He suggested that more serious efforts should be made to exchange and discuss research, however, he thought some of those problems could be solved informally rather than at the institutional level. Dams concluded by suggesting as "survival principles"—tolerance, amiable disagreement, and group thinking.

The conference program, organized by Vice President Glenn Johnson, grouped the papers into eight sections: the role of agricultural economics in micro, subnational, national, supra-national, multi-nation, parastatal, and state trading agencies, and within the discipline. The contributed papers were published in 1981 in the IAAE's Occasional Papers series (*The Rural Challenge*, Gower Publishing Co., Aldershot, Eng.). Reports of the meetings of 32 discussion groups and photographs of most of the participants appeared in IAAE Members' Bulletin No. 3, published in March 1981.

Dams referred to the "Conference sandwich" and Britton wished a *bon appetit* to the conferees in attacking the "feast of intellectual food" supervised by Glenn Johnson. This reviewer agrees that there is much sound nutrition as well as palatable fare in this volume, but there is some junk food as well. Nonetheless, all agricultural and development economists should at least sample the fare.