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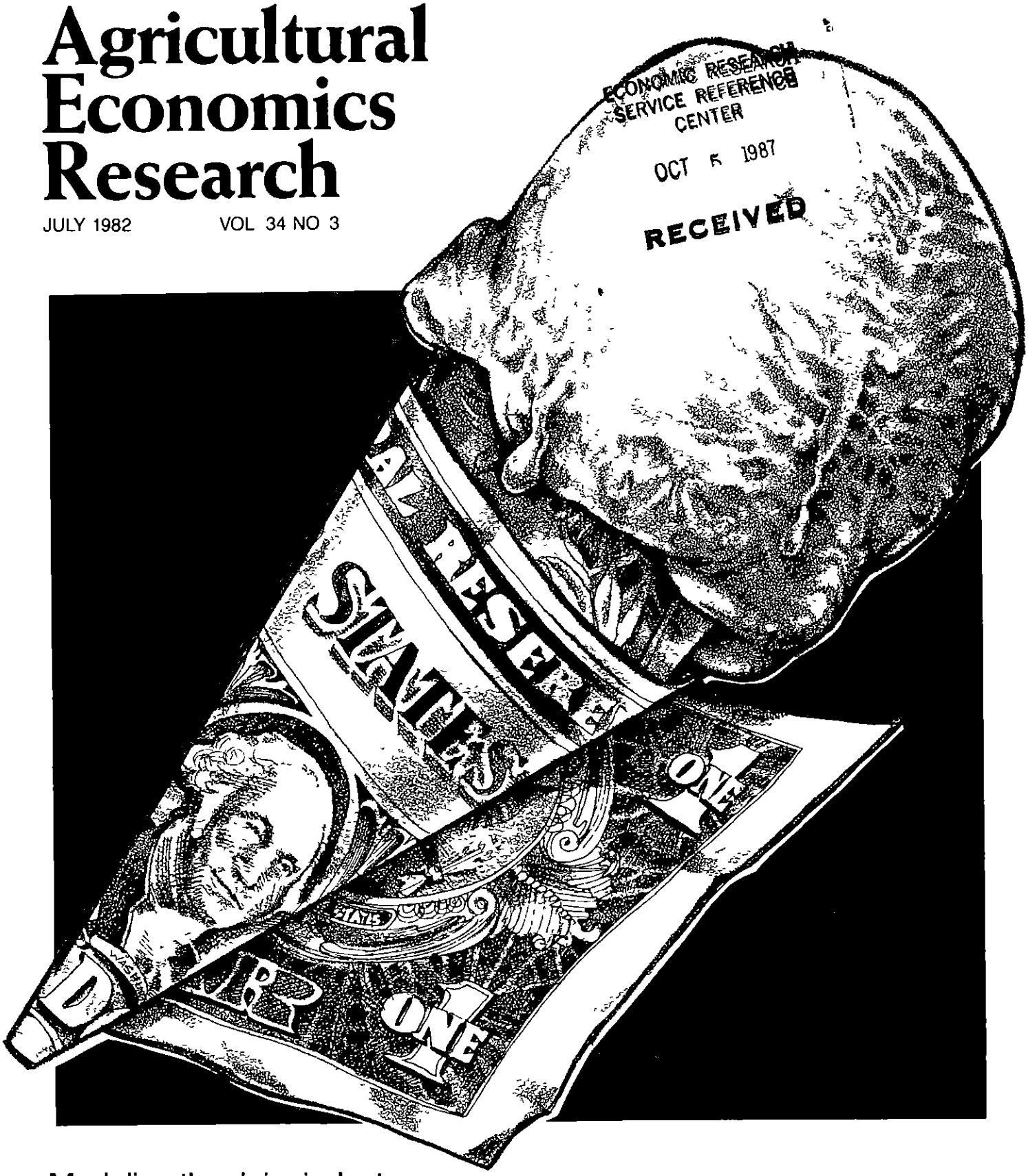

Modeling the dairy industry
page 1

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In This Issue

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"A carpenter and a geometer investigate the right angle in different ways " Take a sentence like that out of its original context and you can read many ideas into it The sentence is from Aristotle I have seen it quoted in various places Each time, a different interpretation was put on it So I looked it up in the Nicomachean Ethics (Book 1, 1098a) and found that the segment quoted above ends with a semicolon The rest of the sentence is "the former does so in so far as the right angle is useful for his work, while the latter inquires what it is or what sort of thing it is, for he is a spectator of the truth "

The sentence comes just after Aristotle has outlined a great truth and informed us that anyone is capable of filling in the details later The work of the carpenter is subordinated by Aristotle to minor questions of detail, the geometer contemplates truth

The frequently quoted first segment implies no necessary ranking of the relative values of carpenters and geometers in society,.but the second part of the sentence—in context—does I understand that Aristotle really meant it as a put-down of carpenters Geometers, on the other hand, he ranks among the elite

If my interpretation is correct, then I do not like Aristotle's innuendo about superior and inferior occupations The functions of both the geometer and the carpenter are equally noble and—to make a pun of it—worthy of the Nobel Prize Let me illustrate with two prize winning scientists, one a carpenter and the other a geometer

Linus Pauling, winner of the Nobel Prize for Chemistry, tells an anecdote about his first meeting with Albert Einstein Pauling had just given a seminar on quantum mechanics and the chemical bond Einstein was in the audience Afterwards, when he was asked what he thought about the seminar, Einstein said it was "too complicated" for him Pauling concludes "He was interested in what was going on in the understanding of the structure of molecules, but in a rather general way rather than in the detailed way in which I am interested " Pauling sees himself as one of Aristotles' carpenters and Einstein as a geometer But unlike Aristotle, Pauling sees no reason to feel inferior about it

The articles in this issue illustrate that there is some of the geometer and some of the carpenter in all good agricultural economists We contemplate and outline eternal truths, we also fill in needed details

This journal carried an overview of USDA's Food and Agricultural Policy Simulator (FAPSIM) in its April issue The model is used by USDA economists to forecast prices and quantities for 13 agricultural subsectors and it estimates cash receipts, expenses, and net farm income In this issue, the authors present details of the dairy subsector of FAPSIM The dairy sector contains 46 equations and can be run as a stand-alone model However, 11 of its exogenous variables are endogenous to FAPSIM so the model can also be run allowing for relevant feedback loops with the other livestock and crops sectors The authors compare runs done both ways The comparison raises—and offers empirical answers to—some interesting questions about the validity of fitting and running models that are known in theory to be subsectors of larger systems

If FAPSIM with its 360 equations seems like too large a model for your tastes, the second article in this issue describes a three-equation system The three variables are food at home, food away from home, and nonfood consumer purchases These three variables are related to one another according to the microeconomic theory of consumer demand Appropriate assumptions reduce the three equations to two But they turn out to be a formidable looking, interlocked pair A canned software package for nonlinear regression is called upon to fit the system The result is a useful set of empirical estimates of factors affecting the demand for food couched in a small system of equations that satisfy the requirements of economic theory

The third article is also concerned with demand for farm products It was found that single-equation methods for fitting equations failed to provide usable results because variables which statistical theory assumes to be independent were in fact highly correlated The author turned to a method for doing regression on the principle components of the data instead of on the original data The method has been in the literature for a decade or more, but it is not used extensively Some might object that "if you start with multicollinearity, no statistical manipulation can possibly sort out reliable partial regression coefficients!" On the other hand, it is difficult to argue with success Using principle components regression, the author found that variables which had the wrong sign according to economic theory using ordinary least squares regression righted themselves and that variables which were not statistically significant became so The cost of this success, the author openly admits, is biased coefficients

The final article in this issue raises an important question The author asks whether the measure of net farm income

which is regularly published by ERS is as useful as it might be One of his concerns is that it is income after taxes that affects farm management decisions and farmer well-being. The costs of buying a tax shelter may be reflected in the estimate of farm expenses, but the benefits are not reflected in the estimates of income His other concern is that capital gains from inflation are not allowed for Capital gains on the land owned by farmers can exceed net income. And, farmers can use these capital gains as collateral to borrow money for expansion of the farm business Recent experience with inflation and the tax laws call into question whether the income statement and the balance sheet really tell us what we need to know

Clark Edwards

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