



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# Staff Papers Series

Staff Paper P86-23

June 1986

## MINNESOTA'S RURAL ECONOMIC CRISIS: ALTERNATIVE FUTURES

by

Michael Boehlje



**Department of Agricultural and Applied Economics**

University of Minnesota  
Institute of Agriculture, Forestry and Home Economics  
St. Paul, Minnesota 55108

MINNESOTA'S RURAL ECONOMIC CRISIS:  
ALTERNATIVE FUTURES

by

Michael Boehlje

Professor and Head of Department  
Department of Agricultural & Applied Economics  
University of Minnesota

Staff Papers are published without formal review within the  
Department of Agricultural & Applied Economics

The University of Minnesota is committed to the policy that  
all persons shall have equal access to its programs, facilities  
and employment without regard to race, religion, color, sex,  
national origin, handicap, age, or veteran status.

## MINNESOTA'S RURAL ECONOMIC CRISIS: ALTERNATIVE FUTURES\*

Michael Boehlje\*\*

I would like to look at the future of agriculture with a focus on eight different dimensions. The discussion will emphasize primarily the production sector, although we will make forays into the input supply industry and rural businesses as well as the financing sector. The eight dimensions of the future of agriculture include the following.

### 1. Recycling

There has been a lot of discussion about the "exits" from the agricultural sector; various types of predictions and projections of 15 to 20-plus percent of farmers having to leave agriculture. A large number of farmers are going to have to dramatically change their way of farming. But there is increasing evidence of recycling...of farmers who are changing their ownership pattern, moving into a tenancy status, recycling, starting over again. I don't want to suggest that it is a pleasant process, that it does not come without great human and economic loss. But there is for some a brighter future by recycling and restarting than "holding on one more year."

---

\*Presented at conference, "Minnesota's Rural Economic Crisis: Challenge for the Future," St. Paul, MN, February 6, 1986.

\*\*Professor and Head of Department, Department of Agricultural and Applied Economics, University of Minnesota, St. Paul.

A recycling and restarting strategy has implications with respect to the issues of land tenancy; it has implications with respect to property rights of tenants and landlords; it has implications, obviously, with respect to issues of part-time versus full-time farming.

Considering those farmers who may have to dramatically alter their operations or exit the industry, we do have some sobering data. There is a study in Missouri that shows that approximately one-third of the farmers who are exiting from agriculture are slowly drifting into poverty. Certainly we need to be cognizant of the growing poverty problem in rural areas and have programs at both state and federal levels to respond to this problem. But there are opportunities for recycling/restarting, if, in fact, we recognize financial stress early enough.

## 2. Restructuring

Again, this is not a costless process both in human and in financial terms. We do see changes in many farm operations in terms of sale, lease, or custom farming arrangements. We see changes in the production process; for example, contract production. We see scale-back strategies that are being implemented by various producers; they may be operating in the future at a different scale in a different size operation. They may still be full-time farmers but without the hired employees that they once employed.

Various worthwhile attempts to increase fixed resource utilization are being attempted. A lot of fixed resources in agriculture, in my judgment, are underutilized -- specifically, machinery, equipment, and facilities.

One of the things that is clear to me is that we aren't going to have the same kind of capital investments and investment patterns in agriculture that we had in the past. In part, this is because of investment cost and in part because we already have excess capacity that needs to be more efficiently and more completely utilized. So, I would suggest to you that restructuring of farms and agribusinesses in rural communities is part of the future of agriculture. This is neither costless nor painless, but again part of reality.

### 3. Opportunity for Entry

There is a perception that it is not a good time to enter agriculture. Certainly these are difficult times in agriculture for those who have excessive leverage. But we are putting together a set of data that tries to document what the opportunities are for entry -- not necessarily promoting it, just saying, "Here are the opportunities." I will give you a brief overview of some of this work.

We looked at the question of a farm operator who was farming 400 acres in a corn-soybean rotation in southern Minnesota with the opportunity to also farrow-finish 25 sows using a two-litter system. We had the producer in the government program and we assumed he was selling his corn at \$1.75 plus the government program payment, soybeans at \$4.67; hogs at \$44.50. We assumed that he had \$20,000 to start farming; he borrowed \$40,000 in operating funds to plant the crop. If you assume that the operator under very good management produced 150 bushel per acre corn, and was cashrenting

the property at \$85 per acre cash rent, his income above loan servicing (the amount of money he would have left for personal family living, reinvestment into business, etc.) is almost \$26,000. For crop share rent almost \$28,000 cash income is generated. If he bought the land and borrowed \$1,000 per acre with a 25-year pay-off at 13 percent, he would have \$500 left for family living. Assuming average management (approximately 120 bushel per acre yield), a cash rent arrangement results in \$11,000 left for debt servicing or to live on; for the crop share rent income after debt servicing is \$21,000, and for an ownership position the income is -\$14,000. A worst case scenario of 80 bushel per acre yield results in -\$18,000 of income with cash rent; +\$4,000 for a crop share rent; and -\$43,000 for the ownership position.

Briefly, let me conclude from this data:

- a. If a beginning farmer wants to enter agriculture as a 100 percent owner-operator, borrowing all of the money to start, he/she will have a difficult time. But on the other hand, in what business has it ever been feasible to enter as a full owner-operator, borrowing all the money to start?
- b. If a beginning farmer is willing to enter as a renter, there are opportunities. There are opportunities to generate reasonable-- maybe not outstanding--but reasonable incomes. Note that we built into our calculations that we had crop insurance, so 80 bushel is the guaranteed yield. Even in that case we had \$4,000 cash income if land is crop share rented; certainly not enough to live

on, but we did have a +\$4,000 cash income even in this case. Also we were only using roughly 1,600 hours during the year in producing agriculture commodities, which might allow the producer to have some other source of income.

- c. The numbers clearly indicate that the crop share rent option has significantly less risk in the worst case scenario, and not all that much lower income in the best case scenario, compared to either cash rent or an ownership position. Our conclusion, based on the analysis that we have done thus far, indicates that there are opportunities to enter into agriculture in the current environment.

#### 4. Lower Cost of Production

One of the issues in terms of lower cost of production is, "How do we get those lower costs?" Unfortunately for farmers, the reduced costs of production that have occurred thus far have come primarily by reductions in the value of contributed resources--the value of the land, the value of the machinery, the value of the labor, the value of those assets that the farmer contribute to the operation. We have yet to see significant declines in the prices of purchased inputs. One of the challenges in agriculture today is how to get productivity increases that will allow the agribusiness sector to sell the same input--the same tractor, the same seed, the same fertilizer--at a 25-30 percent lower price and still have a reasonable profit margin. That suggests to me that there are some real challenges in



terms of technological advance in the input supply industry, as well as in the agricultural production sector. For example, we have done very little innovation, in my judgment, in terms of how to produce tractors at a cost 25-30 percent less than what they are costing right now. One reason we have not done so is because there was very little economic incentive during the 1970s for research and development in the machinery manufacturing business on cost reductions; the R&D was "feature" focused -- new hydrolics, electronics, etc. Now, the economic incentive is there for the machinery manufacturers to figure out how to use new materials, new processes, new procedures such as robotics to produce the same horsepower hour at a lower cost.

5. Improved Competitive Position

Once the adjustment process occurs, agriculture in the U.S. will become increasingly competitive worldwide. Unless we regulate or restrict productivity increases and adjustments in the costs of inputs, we will have an improved internationally competitive position.

Whether in fact we are the low-cost producer in the world is an interesting issue. The answer is partly a function of technological advance in the U.S. and partly a function of what kind of incentives we provide to other countries to continue to expand their production at guaranteed high prices. One of the advantages of the 1985 Farm Program, in spite of the problems it has, is that it has given other countries the signal that we will no longer provide the price umbrella for them to expand production capacity at our expense, and with price guarantees set by the U.S. federal

government.

I do think, quite frankly, that with respect to current productive capacity we may not necessarily be the low-cost producer, although we are very close to it. As to new lands in Brazil and Argentina and additional productive capacity in other countries that requires significant capital expenditures to put on stream, then in that comparison we are clearly low-cost producers.

I would also note that some of the adjustments occurring in agriculture today have significant benefits to us in this region of the U.S. We do have a regional comparative advantage in agricultural production because of our soils and climate. You can produce an awful lot of corn in Georgia if you can sell it for \$4. If you have to sell it for \$2, you are not going to be very competitive producing corn in Georgia. Some of the adjustments that are occurring will result in our regional comparative advantage shining through. We will not see agriculture leave this part of the country like it will some of the marginal producing areas.

#### 6. Unique Financing Arrangements for Agriculture

We will see some really unique (strange in some cases because we have not seen them before) financing arrangements developed for agriculture because of the current financial stress. There will be new players, new institutions, new structures, and new requirements. A whole set of new arrangements that will involve various forms of equity, debt and debt-like instruments will be developed. We already see a new attitude towards the

use of debt--smarter lending and borrowing. The future financing of agriculture will be one of the areas where we will see dramatic changes.

7. More Demand for Non-farm Employment in Rural Communities

Non-farm employment for farmers is a critical and important issue. Farmers have certain skills to provide in the non-farm labor market, but we have not really done a very good job of cataloging those skills. We need to recognize that there will be increased demands for off-farm employment in many rural communities. We have not done the best job of determining what types of industries would most reasonably be attracted to rural communities, given their labor supply, environment, and other resources.

Some farmers will approach non-farm employment as a diversification strategy. Recognizing that the traditional diversification strategy of adding livestock to a crop operation or vice versa may not have been very successful, a more logical diversification strategy may be to have part of a farmer's income generated by either crop or livestock production and the remaining part generated off the farm. That is diversification.

8. Changes in Technology

The future of agriculture includes some major changes in technology. Biotechnology is a significant technological advance. Bovine growth hormone is going to be adopted relatively rapidly throughout much of the dairy industry in my judgment. Possibly the development of bovine growth hormone in cattle is not the most significant biotechnology development in the livestock sector. The most significant development may be the ability to

use growth hormones in the swine industry; early evidence indicates that there may be even greater payoffs in terms of productivity in swine than in the beef or dairy cow.

Biotechnology will have significant impacts in terms of the cost of production. It will also have major impacts in terms of supply and prices of dairy and other products. It may also have significant regional impacts; a basic, fundamental question being asked is "What will bovine growth hormone do to Upper Midwest dairy farmers compared to farmers in the Southern states?"

But it is not just biotechnology that will be part of the new future of agriculture. Information technology, which has significant expansion potential, will have a major impact on the efficiency and the cost of production in agriculture as well. Information technology may allow us to reduce input utilization without changing output, because of better knowledge about how that input is used, and when it needs to be available, so that application rates can be reduced without decreasing effectiveness and output.

There will also be opportunities for new electronic technology. Some of that technology is already seen in our machinery and equipment. But we have not exploited what is possible in terms of combining electronic servo mechanisms to automate disease control and solve a number of other nutrition and production problems in the livestock sector.

I have presented eight dimensions which we think will characterize the agriculture of the future. Many of these dimensions of the future will require changes and adaptation which will be difficult for some producers. But as a matter of fact, that is what agriculture traditionally and typically does well--change and adapt to the new environment.