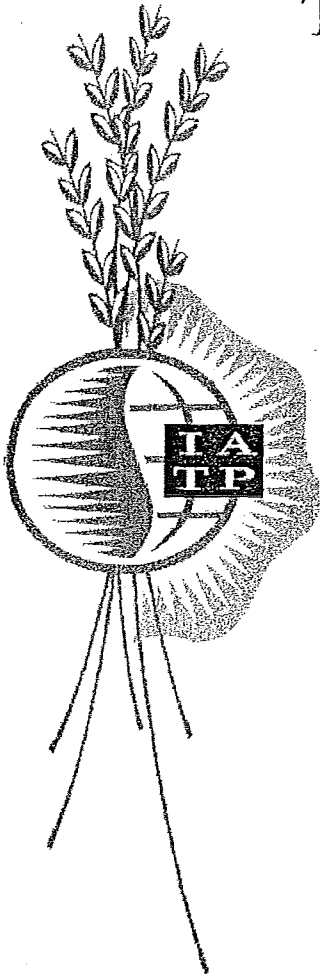


# WILL IT REALLY HELP FARMERS?

## The Upper Mississippi River Navigation Project

---



INSTITUTE  
*for*  
AGRICULTURE  
*and*  
TRADE POLICY

Richard A. Levins  
Philip W. Rice  
Elizabeth R. Sawin

June 2000

---

Institute for Agriculture and Trade Policy  
2105 First Avenue South  
Minneapolis, Minnesota 55404 USA

tel: 612-870-0453  
fax: 612-870-4846  
email: [iatp@iatp.org](mailto:iatp@iatp.org)  
url: [www.iatp.org](http://www.iatp.org)

---

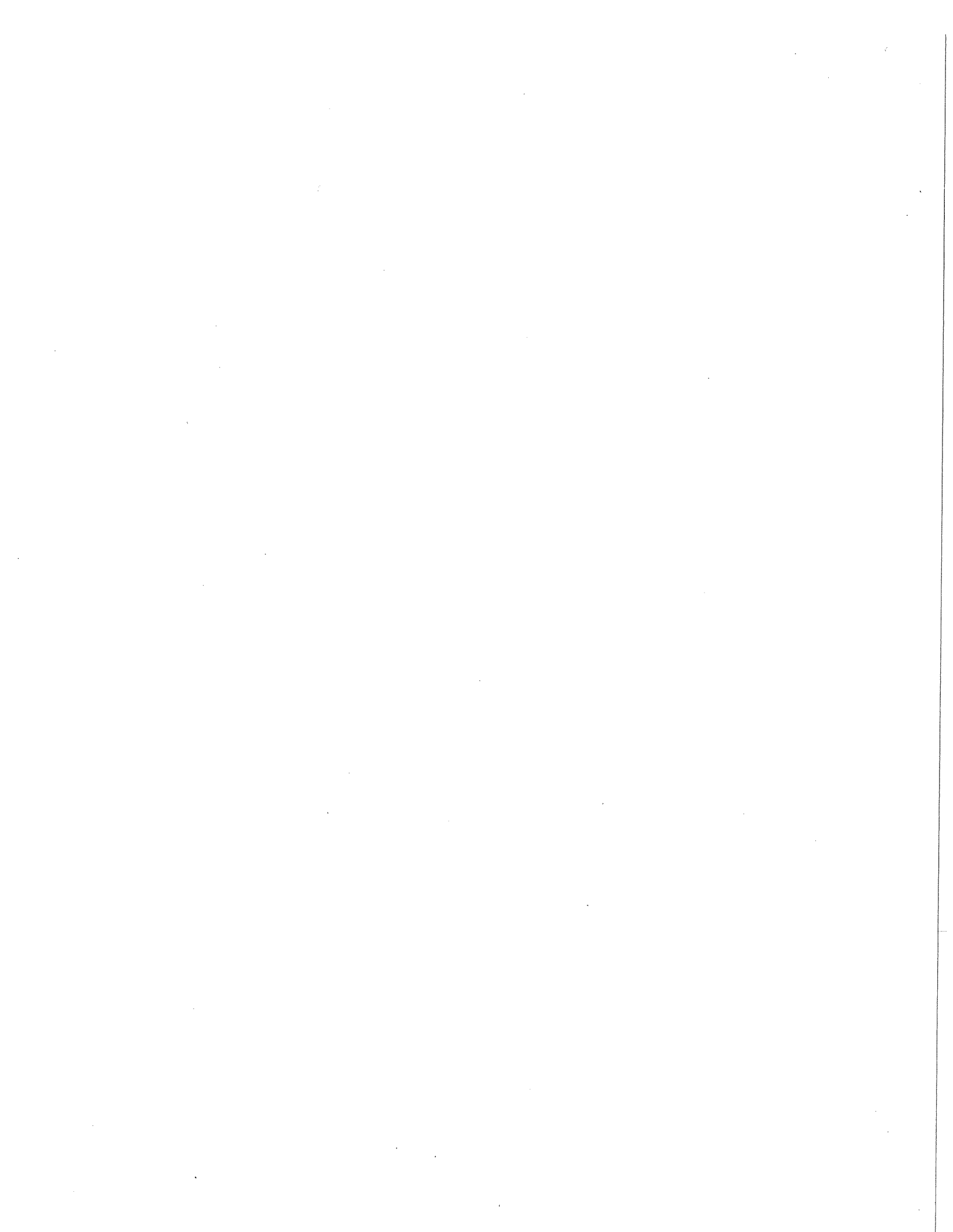
©2000 Institute for Agriculture and Trade Policy



# Table of Contents

---

Preface	4
Introduction	5
Public Costs, Private Benefits	6
Trickle Down Benefits and the River Project	6
The Corn Simulation Model	8
Simulation Results: Income	10
Simulation Results: Farm Numbers	11
Conclusion	12
About the Authors	12



## Preface

---

The Mississippi River navigation system has been developed over the years to provide a channel for nine-foot draft vessels from the Gulf of Mexico as far north as Minneapolis. The vast system of locks, dams, and dredged channels has been built and maintained by the United States Army Corps of Engineers. In recent years, powerful towboats have been developed that can tow more barges than can easily pass through the existing locks. Towboats usually need two passes to get barges through a traditional 600-foot lock. The extra time required increases river congestion and creates bottlenecks in some areas of the river system.

The Corps is currently undertaking a seven-year study on the need for navigational improvements on the Upper Mississippi and Illinois Rivers and to quantify the environmental impacts of providing these improvements. Several multi-billion-dollar proposals are currently under consideration and have generated substantial public controversy.

Agribusiness and farmer groups that support the project often claim that it will lead to improved income for U. S. farmers. In this paper, we examine that claim.

# Introduction

---

Support among farmer groups for the Upper Mississippi River Navigation Project is certainly understandable. Farm-level commodity prices have been disastrously low in recent years. Without massive government payments that have been paid out through various programs, there is general agreement that net farm income would be very low for most Midwest farmers. The river project brings with it the hope that lower transportation costs will translate into farmers receiving better crop prices and thereby improve farm profits.

The overall direction of U. S. farm policy in recent years also contributes to farmer support for the river project. In 1996, a radical departure from traditional commodity programs and payment schemes was instituted in the so-called "Freedom to Farm" act. In place of direct payment assistance, a more "market oriented" approach focused on government assistance in finding new foreign markets for U. S. commodities. Reducing transportation costs is one way to make U. S. exports more competitive.

In this paper, we will first examine the reasoning behind the claim that the River project will lead to improved farmer income. Then we will use a computer simulation model of the U. S. corn economy to test that reasoning. Both approaches lead us to conclude that the story of "transportation costs will go down, so farmer income will go up" is too simple for a global agricultural economy that farmers share with powerful, transnational corporations and non-farm landlords.

# Public Costs, Private Benefits

---

The barge companies have developed towboats so powerful that they will tow more barges than will fit through existing 600-foot locks. An obvious, and very compact, analysis is that if the barge tows are too big, then they are too big, and that is the end of the story. Another obvious approach is that private companies, and not the public, should figure out a way to pay the full costs of the River project if they want to use the larger equipment. Unfortunately, neither of these points of view is getting consideration. Rather, a massive taxpayer-financed program has been proposed to make it possible to use larger tows.

While the long run winners and losers of the River project may be difficult to sort out, the immediate winner is clear: those who transport and sell grain on world markets will have lower costs. What will happen next? Proponents of the project often claim its benefits will "trickle down" to farmers in the form of higher grain prices. It is reasonable to question the likelihood of this benefit transfer, and if higher farm prices do result, whether the benefits to farmers will last.

## Trickle Down Benefits and the River Project

---

If one views the farm economy in isolation from the rest of the agricultural economy, transportation savings go directly to farmers because there is no place else they can go. But farmers have no such isolation. Instead, they are sandwiched between much more powerful business interests. On one side, farmers sell their products to a handful of very large buyers such as Cargill and ADM. On the other side, farmers buy supplies from the likes of Monsanto, DuPont, and John Deere, all of which vastly overshadow any individual farm in size and economic power. Farmers must also have access to land, and since land is in fixed supply ("they are not making any more of it"), non-farm landlords are able to bargain with farmers on very favorable terms.

Farmers might benefit from the River project if the grain companies pass their costs savings along to farmers in the form of higher prices paid for grain. If there is sufficient competition among grain companies, farmers could sell their grain to the company who offers the best price. Among the respected economists who reviewed earlier drafts of this paper, there was considerable disagreement on whether there was sufficient competition among the few remaining grain giants to cause a bidding war for grain. But, for the moment, let us assume that the benefits do go to farmers in the form of higher prices.

Now the question becomes one of "why should the trickle down buck stop with farmers?" Here, our reviewers agreed: none thought that higher prices alone would help farmers for long. Farm costs would quickly rise and the benefits would continue trickling down past the farmers into the pockets of landlords and farm input suppliers:

Landlords, in particular, have been in a strong bargaining position for grain farmer profits because land is the biggest cost in growing grain, and there is only so much land to go around. The common assumption that farmers in the Corn Belt own the land they farm, and therefore benefit from higher land prices, is simply no longer the case. For example, the farm economics magazine *Choices* reported in its First Quarter 2000 edition that "less than 40 percent of Iowa's farmland was operated or farmed by its owner" in 1997. The report also noted "a striking shift from ownership toward land rental between 1982 and 1997".

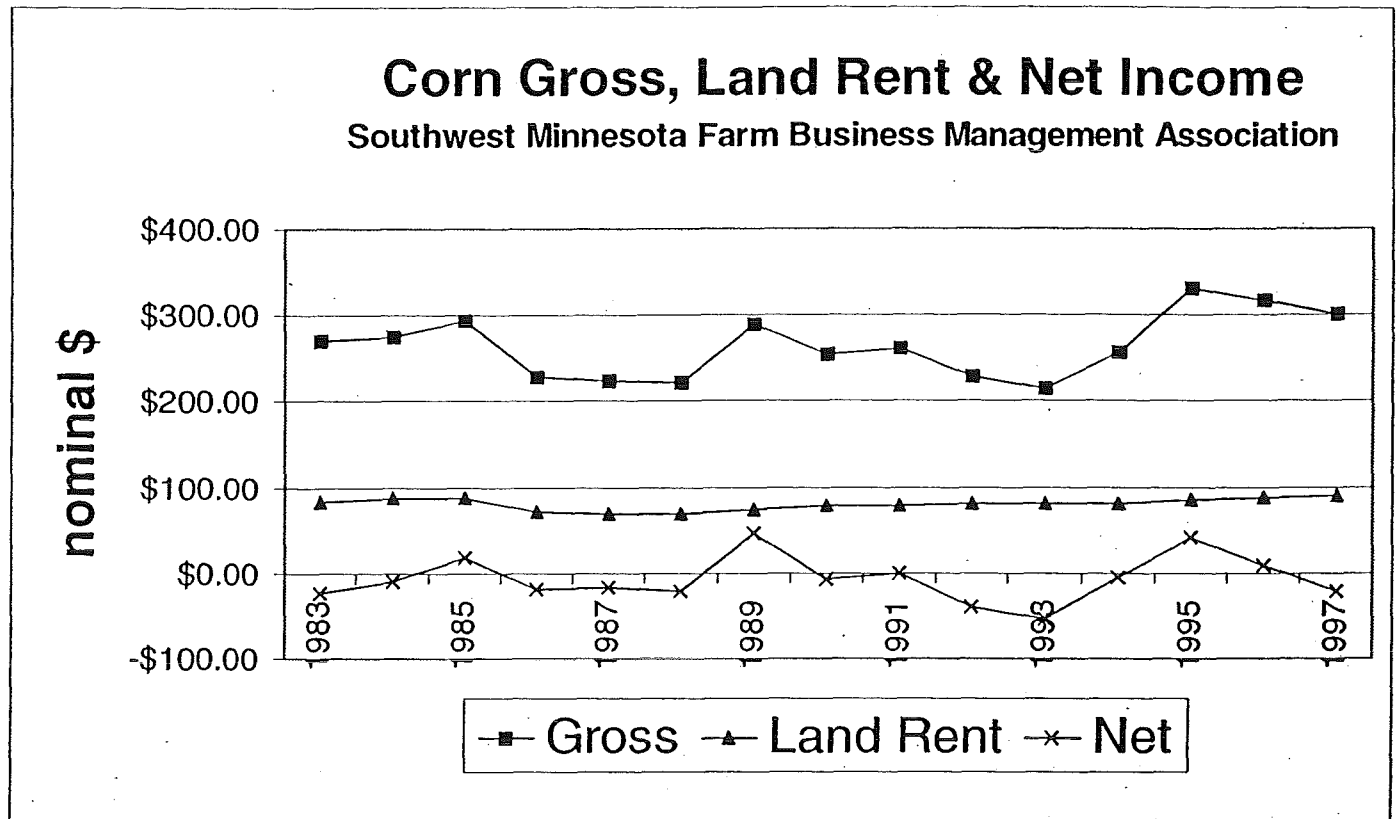


Figure 1

Figure 1 is a graph showing farm gross income, farm net income, and land rental rates for farmers growing corn in Southwest Minnesota. During 1983 to 1997, farmer net income has always been less than land rent, which is the income of those who own land. A similar picture could be painted for soybean farming. Why does this picture emerge? When farmers see higher prices, they compete all the more with each other for rights to rent available land. The non-farm landlords, not the farmers, always win.

Recent records from the same Southwest Minnesota data set give us another way to see how little bargaining power farmers have. In 1998, the average farm had a net income of \$8,600, although it received \$30,000 from the government. What happened to the remaining \$21,400? This money is being spent on land rent, inputs, supplies and equipment. And if farmers are not able to keep all the money



that the government pays directly to them, how can we ever expect a public subsidy to a large grain company to help farmers at all?

To summarize, the benefits from the proposed river project could end up in any number of places. The project could mean higher profits for multinational grain giants, improved income for U. S. farmers, or windfall profits for input suppliers and non-farm landlords. With this background, we now offer a more quantitative analysis of whether, and how far, the river project benefits will trickle down.

## The Corn Simulation Model

The analysis we present here is based on a systems dynamics computer simulation model of the U. S. corn economy. The simulation model was developed over the past two years with the help of many advisors from within the corn system. By capturing the basic feedback loops that drive producer decision making, especially in key areas such as adoption of new technology and land and equipment purchasing, the model is able to track general trends in yields, corn price, corn supply, and corn consumption over the past fifty years. Extensive testing of the model has also shown that it simulates reliably the ways that changes such as crop failures or demand surges affect the overall system (Figure 2).

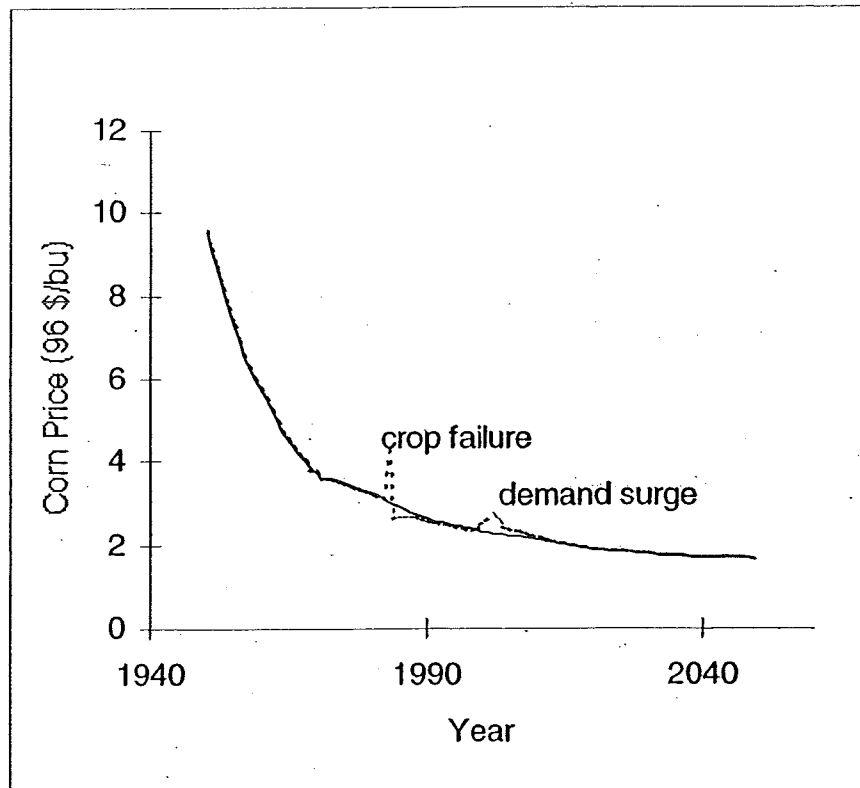


Figure 2

While space does not permit a full description of the model here, two fundamental drivers incorporated into it are especially important. One, the "technology driver", causes farmers to seek out new technologies and higher yields in a never-ending battle for survival in a world of falling prices. The other, the "cost of production driver", allows farmer benefits to be captured by landlords and input suppliers through increased costs of production. Simulation runs with this model suggest that any policy that does not directly address these two system drivers cannot have lasting positive effects on farmer income.

The model, in its present state, does not fully incorporate the transportation and processing sectors. We are therefore unable to forecast the degree to which benefits will reach farmers, through higher prices or otherwise. Instead, we make the generous assumption that all project benefits will be reflected in corn prices, and begin our simulations at that point. We further exaggerate the farmer benefits by assuming that price increases apply to all corn grown in the United States, rather than only that shipped at lower cost because of the river project.

Three scenarios were simulated, each for the years 1980 to 2020. In the first ("Baseline"), the river project is not completed. In the second ("Higher Farm Price"), the River project is completed and the farm price for corn is increased by four cents per bushel, a number commonly used for the full transportation cost savings from the River project. Because of two assumptions we also make, our estimates of farmer benefits will be on the high side: (1) we assume that the full four cents goes to farmers and is not captured in lower prices to corn buyers or in higher profits to those who ship corn, and (2) we assume that the four-cent advantage applies to all corn grown in the United States, and not just that shipped on the Upper Mississippi River System. The third scenario ("Lower Consumer Price") recognizes the "make U. S. products more competitive" argument that permeates "market oriented" thinking. Cost savings from the River project are passed on to buyers, which in turn increase the demand for U. S. corn. In this scenario we make the simplifying (and most likely inaccurate) assumption that demand for corn is limited only by price (i.e. demand is not saturable).

For the three scenarios, we looked at two important outcomes. One is the net income per acre realized by farmers; the other is the size of farms growing corn.

# Simulation Results: Income

The net income per acre results of the three simulation runs is shown in Figure 3. The "Baseline" scenario, in which the River project is not undertaken, shows a steady decline in net income per acre throughout the entire 40-year period. The principal reasons for this are the technology and cost of production drivers inherent in the system. The long-run trend is ever-decreasing profits per acre, increasing farm size, and fewer farmers. This has been the case in the United States for generations, and the simulation model shows the trend continuing.

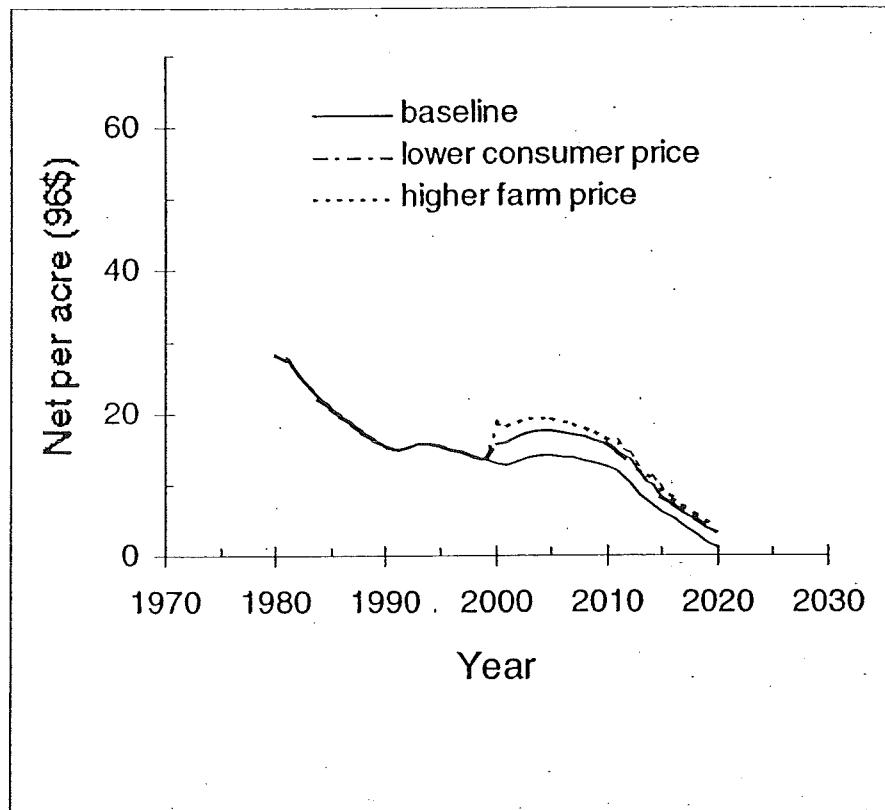


Figure 3

The "Higher Farm Price" scenario assumes that, beginning in the year 2000, corn prices are augmented by four cents per bushel for the remaining years of the simulation. Here, there is an immediate increase in per acre net income that gradually tapers off during later years because more corn is produced putting downward pressure on price, and input costs rise.

The "Lower Consumer Price" scenario is one in which lower transportation costs from the River project get passed on to buyers, who then buy more corn than they otherwise would. The results are much the same as in the previous scenario, only of smaller magnitude. As before, any increased money available to farmers from better prices is eroded by what we have called the "technology driver" and the cost of production driver."

# Simulation Results: Farm Numbers

To the extent the River project passes benefits on to farmers, it will do so through higher prices per bushel. A natural consequence is that those farmers who produce more bushels will benefit more; those who produce less corn will benefit less. This bias toward large farmers and against small farmers permeates most policy prescriptions of the past several decades, and pressure to find policies that encourage small farms is building.

The effect on farm size for each of the three scenarios is shown in Figure 4. Instead of net income per acre, the vertical axis shows acres per farm. In the baseline case, the trend toward larger, and therefore fewer, farms continues as it has in the past. In each of the two River project scenarios, this trend toward larger farms is slowed somewhat, but not reversed. The model shows that the trend to larger farms is slowed because the trend toward lower net income per acre is slowed. In essence, those farmers who would have been forced out by low prices are given a reprieve of a few years.

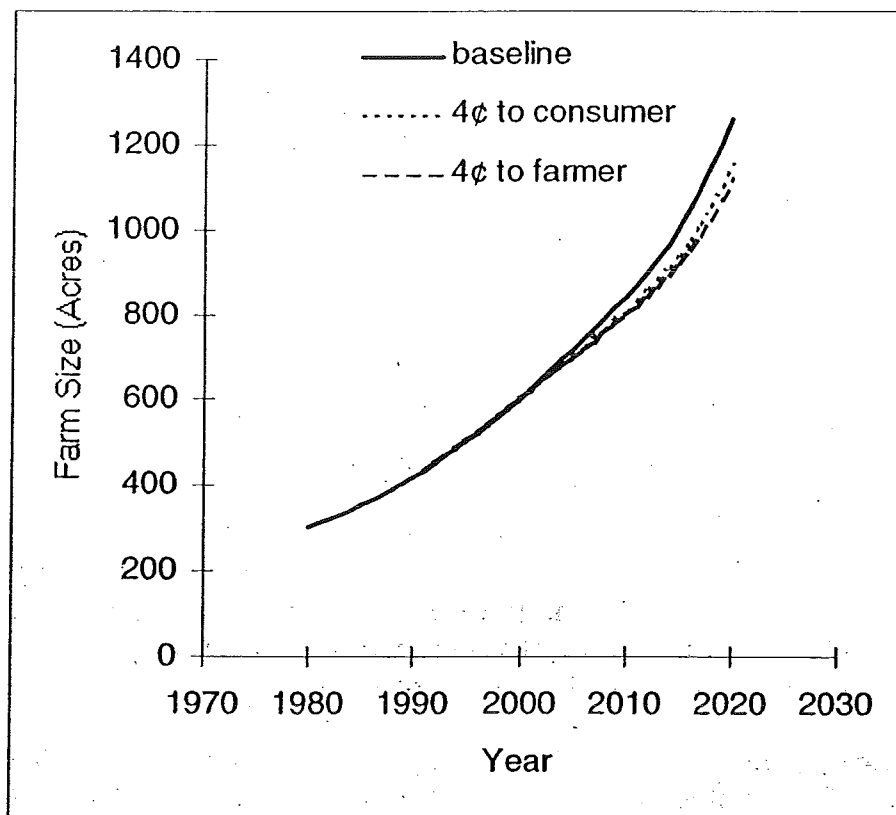


Figure 4

The farm size results, like those for net income per acre, show that only symptoms, and not the basic structural problems of the corn economy, are addressed by the River project.

# Conclusion

---

We understand the support farmers have shown for the River project, and find that under the assumptions made in the scenarios described here, there may be some farm-level benefits if the project is completed. At the same time, our analysis shows that the best farmers can hope for are small, short-lived improvements in net income per acre. Possibly, farmers will not even get that because of their weak bargaining position with grain handlers, input suppliers, and non-farm landlords. In particular, our findings are:

- The river project, as a way to help farmers, is fundamentally flawed. It attempts to address the symptom of low farm prices, but does not deal with the causes of that symptom, especially pressure on price from ever expanding yields and increasing economic power in the hands of non-farm corporations.
- The initial benefits of the project go to those corporations that transport and sell grain on world markets. We see no compelling reason why those benefits would be passed along to farmers.
- If benefits are passed along to farmers through higher prices, those benefits will tend to pass through the farmer's hands and on to input suppliers and landlords.
- The river project subsidizes corn, not farmers. To the extent any farmers will benefit, it will be those that sell the most corn. The river project does not reverse the long-run trend of fewer, larger farms.

We are very much in favor of programs that support independent family farmers. Our conclusion, however, is that the proposed river project will do little to advance this objective. If we are serious about helping farmers, we should look for better ways to spend billions of public dollars.

## About the Authors

---

This report was prepared by Richard A. Levins, Philip W. Rice, and Elizabeth R. Sawin. Dr. Levins is Professor of Applied Economics at the University of Minnesota and Senior Fellow with the Institute for Agriculture and Trade Policy. Dr. Rice and Dr. Sawin are Program Associates with the Sustainability Institute.

## About the Institute for Agriculture and Trade Policy

---

The Institute for Agriculture and Trade Policy (IATP) was established in 1986 as an independent nonprofit and tax-exempt research, education, and advocacy organization. IATP's mission is to foster environmentally and economically sustainable rural communities and regions through sound agricultural and trade policies. We assist public interest organizations in coalition building and influencing both domestic and international policymaking through research, education, outreach, and information systems management.



Institute for Agriculture and Trade Policy  
2105 First Avenue South  
Minneapolis, Minnesota 55404

tel: (612) 870-0453  
fax: (612) 870-4846  
email: [iatp@iatp.org](mailto:iatp@iatp.org)  
url: <http://www.iatp.org>

This paper is one in a series on the impact of expanding the navigational infrastructure on the Upper Mississippi River. Comments or questions on the paper can be directed to Mark Muller at (612) 870-3420 or [mmuller@iatp.org](mailto:mmuller@iatp.org).

This project has received generous financial support  
from the McKnight Foundation.