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

*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.*

Journal of Agribusiness 18(1), Special Issue (March 2000):61–70
© 2000 Agricultural Economics Association of Georgia

A New Structure for Agriculture: A Revolution for Rural America

Mark Drabenstott

U.S. agriculture is undergoing a tidal wave of change in its structure. A shift to supply chains and away from commodities and commodity markets is the hallmark of this new wave. The new agriculture of the 21st century will bring with it a new geography that may be nothing short of a revolution for rural America. Supply chains will tend to concentrate activity geographically and change the local economic dynamic where they do locate. Finally, the tide of change in agriculture's structure means a whole new slate of policy issues. Concentration, market access, and the delivery mechanism for government support all become bigger concerns with supply chains. But perhaps the biggest policy challenge looming ahead is addressing rural America's economic challenges. A much broader approach will be needed if rural America is to unlock its economic potential in the 21st century.

Key Words: agricultural policy, rural economy, rural policy, structural change, supply chain

U.S. agriculture is in the throes of tidal changes in its structure. The changes are complex. They involve a shift from commodities to finely graded products, and a shift from spot and futures markets to contracts. They involve a move away from traditional risk management to negotiated alliances. Taken together, these changes are sometimes called the "industrialization" of agriculture. Others refer to the changes as the emergence of agricultural "supply chains."

No matter the name given, the changes represent a veritable revolution for rural America. A broad swath of the rural economy still depends heavily on agriculture as an economic engine. In most cases, the engine has been commodity production and its associated input and output markets. Supply chains will change all of that. They will change which farmers still produce, what they produce, and where they produce it. In short, supply chains are bringing an entirely new geography to U.S. agriculture that promises to redraw the rural economic landscape.

Mark Drabenstott is vice president and director, Center for the Study of Rural America, the Federal Reserve Bank of Kansas City. This paper was presented at the National Symposium on the Future of American Agriculture, August 25–27, 1999, Athens, Georgia. The views expressed here are strictly those of the author, and do not necessarily represent those of the Federal Reserve Bank of Kansas City or the Federal Reserve System.

The changes in agriculture and rural America pose a whole new slate of questions for policy makers. Given the breathtaking speed of some of the changes, most agricultural policies are still built on a commodity foundation. And as rural communities just begin to figure out how supply chains are redefining their economic future, many broader rural economic issues have yet to be framed.

This paper reviews the changes sweeping the structure of agriculture and explores the implications of those changes for the rural economy and for public policy. The section below shows that supply chains are spreading and deepening throughout U.S. agriculture. The next section shows that supply chains will reduce agriculture's impact on rural communities and tend to concentrate activity in fewer rural places. Five looming questions are then posed and addressed for agricultural and rural policy as a result of the changes under way in agriculture's structure. Conclusions are offered in the final section.

The New Structure in U.S. Agriculture

Structural change is nothing new for U.S. agriculture. Indeed, the structure of this dynamic industry has been in a state of ferment throughout the 20th century. But the changes under way today are not just a matter of degree or tempo. Consolidation has been a constant theme in agriculture, and while current low prices will accelerate this trend, these changes are really nothing new. On the other hand, the extent and speed of supply chain consolidation now under way really is truly different. And the changes it brings will be much more profound. In short, a new tidal wave of change in the structure of agriculture will be a defining force in the rural America of the 21st century, while also defining who will remain in the new farming industry.

Agriculture is redefining the way it does business. Consumers are becoming more demanding of the foods they purchase. And food makers now have incredibly powerful technologies and processes that permit precise "food engineering"—from the farm to the dinner plate (Barkema, Drabenstott, and Welch, 1991). As a result, many farmers no longer grow the generic commodities of the past. Instead, they have signed on as the first link in a more tightly choreographed food system. The key component in this choreography is a business alliance known as a supply chain. In a supply chain, farmers no longer make independent production decisions and sell their crops at the local elevator. Rather, farmers sign a contract with a major food company to deliver precisely grown farm products on a preset schedule.

Once confined to a handful of products, such as chickens and vegetables, supply chains are beginning to dominate hog production and are spreading to grains. In 1997, nearly 60% of all the hogs in the United States were sold under some form of contract, compared with less than 5% in 1980 (Drabenstott, 1998). While no one knows how many hogs are being sold under contract in 1999, the share is certainly higher than in 1997.

Supply chains change not only *how* agriculture does business, but also *who* does business. The number of farms has been falling for decades as farmers have

expanded operations to drive costs down. Supply chains represent an even more fundamental change in industry structure. In almost all cases, supply chains include relatively few farm producers. The number is held down since the firm putting the chain together wants to minimize the costs of managing highly integrated business alliances. For instance, industry participants now believe that 40 or fewer chains will control nearly all U.S. pork production in a matter of a few years, and that these chains will engage a mere fraction of the 100,000 hog farms now scattered across the nation. Thus, farmers increasingly ask themselves how they will remain part of rapidly changing business. Without doubt, some will be left on the outside looking in.

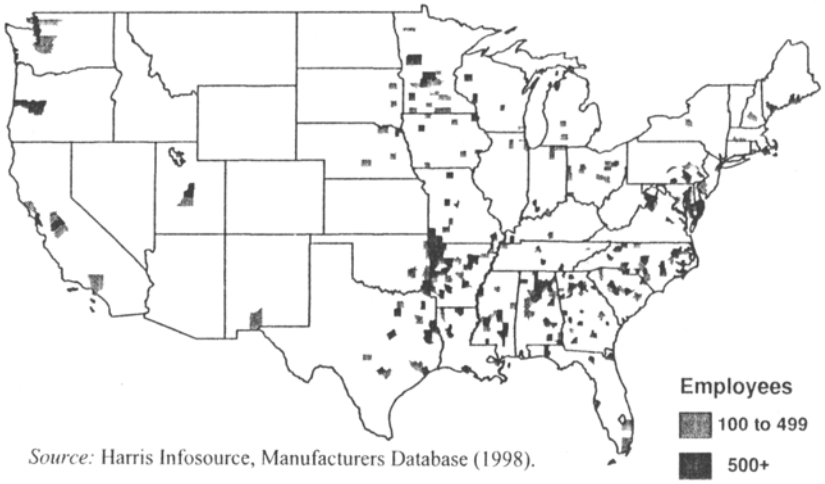
Agriculture's new structure seems likely to become "a tale of two farms" in the 21st century. *Commodity producers* will continue for the foreseeable future, but collectively they will control a shrinking slice of total agricultural production. Commodity producers will manage large-scale, low-cost enterprises, and will likely earn razor-thin margins in a highly competitive world market. *Product producers* will be the first link in supply chains, providing highly specific farm products intended for specialized retail segments. These supply chain participants will probably have huge scale operations and manage somewhat wider margins.

Looking ahead, a defining question of agriculture in the 21st century will be how quickly supply chains proliferate. Two factors seem likely to decide the outcome. One factor is the pipeline of trait-specific food products in the research pipeline. In general, that pipeline seems crowded with new products, most of which seem likely to come to market in a supply chain structure. The other factor is consumer acceptance of genetically enhanced products. European consumers are balking, while the jury is still out on U.S. consumers. If significant resistance develops, supply chain structures will obviously develop more slowly.

Supply Chains and a New Rural Landscape

While supply chains are redefining the farming business, they are literally redrawing the rural landscape. Indeed, agriculture's geography in the 21st century may be the most interesting, yet least understood, aspect of supply chains. For the past 200 years, a hallmark of commodity agriculture in the United States has been its wide dispersion. Corn, for instance, has been grown for more than 1,000 miles across the nation's midsection—from the rolling hills of Pennsylvania to the wide-open prairie of Nebraska.

Supply chains lead to a very different geography—one based on concentration in relatively few rural places. In that sense, the poultry industry may be a prelude to the future. The poultry industry is now characterized by a handful of supply chains that are concentrated mostly in the South, the mid-Atlantic, and the upper Midwest. What may be even more striking is that poultry processing and production have concentrated even further within these regions, as illustrated in figure 1. Quite simply, the poultry industry is found in relatively few rural places.



Source: Harris Infosource, Manufacturers Database (1998).

Figure 1. U.S. poultry processing plants, 1998

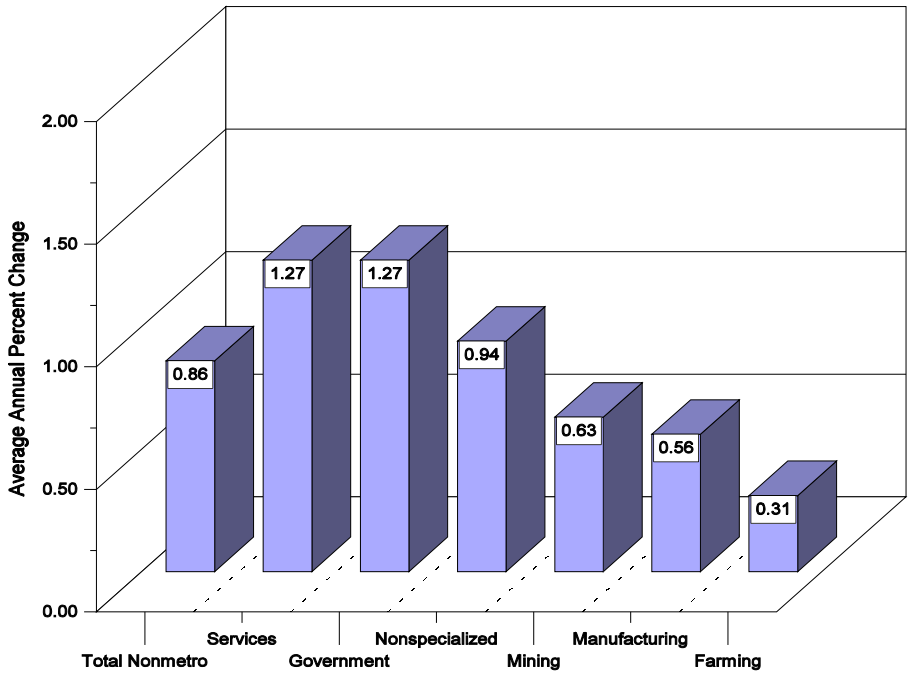
In short, a new geography in agriculture may turn into an economic revolution for rural America. Many rural places will still depend on a commodity agriculture that will continue for the foreseeable future, even as more segments are dominated by supply chains. The struggle for these "commodity communities" will be building an economic future with fewer farms, fewer banks, and fewer businesses. In the end, this probably means far fewer farm communities.

Meanwhile, some rural communities will hitch themselves to the brave new world of industrialized agriculture and supply chains. These communities will benefit from the jobs that processing activity will bring, as well as the prospect of higher per farm income for large local producers. Still, supply chains will locate in relatively few rural communities. And with fewer farmers and fewer suppliers where they do locate, the economic impact will be different than with the commodity agriculture of the past (Barkema and Drabenstott, 1996).

The current pipeline of agricultural research points to a plethora of engineered food products on the horizon, all likely to give rise to new supply chains. The question that remains is where this specialized agriculture of the future will locate. If the history of supply chains to date is any guide, relatively few rural communities may benefit.

In sum, whether one looks at rural areas surrounded by commodity production or supply chains, the bottom line is that agriculture is likely to have a smaller impact on local rural economies in the future. This net effect is notable at a time when consolidation is a more widespread phenomenon in much of rural America.

Even as agriculture consolidates, so does activity in many other sectors of the rural economy. Retailing is a good example. The "Wal-Mart" effect is now evident



Sources: U.S. Department of Labor/Bureau of Labor Statistics (1999), and USDA/Economic Research Service (1994).

Figure 2. Job growth, nonmetro counties: Average annual percent change, 1995–98

throughout much of rural America, with retail sales concentrating in bigger stores in bigger markets. To a large degree, this reflects the same forces that are pushing agriculture toward a supply chain structure. (Wal-Mart, for instance, is essentially a retail supply chain.) Consolidation is also evident in financial services and health care. In short, rural economic gains are concentrated, and mostly not in farm-dependent areas. Job growth for nonmetro counties is graphed in figure 2.

Thus, rural America faces significant new challenges due to the emerging new structure in agriculture and consolidation in other rural sectors. While some rural communities may benefit from these changes, many others must find new engines of economic growth. With growth weak in many remote rural areas, that challenge promises to be formidable.

A New Slate of Policy Questions

The tidal wave of change in agriculture not only redraws the rural landscape, it also reshapes the policy landscape. In some cases, the policy shifts revive old questions. In others, the questions are new. But in all cases, the policy agenda for the next

century will probably bear little relation to recent farm bills. Five policy questions (posed and discussed below) will be especially important in the period ahead.

1. *Can the structure of agriculture be legislated?*

The structure of agriculture is often front and center in farm bills. Most preambles make "family farms" the center of policy attention, for example. But history is far less clear on whether public policy can legislate the structure that ultimately arises. Technology and economic forces have far more to say on that outcome.

The shift to supply chains will be no different. Consumers want very specific traits in the foods they buy, and producers now have powerful new technologies to deliver such foods. Supply chains will bring the two together. While that is an oversimplification of what is going on, the point is that the economic forces at work are primal and powerful.

The economic forces are so powerful and the benefits to consumers so substantial that it may be neither possible nor desirable to legislate consolidation away. That said, public policy may want to consider how to mitigate the effects of supply chain consolidation. In particular, policy makers may want to pay attention to efforts to return world food demand to a strong growth path. Stronger export growth would help lift prices of agricultural commodities, and thus appears to be the policy option of choice if policy makers wish to slow the pace of consolidation and thereby mitigate rural impacts.

2. *Are commodity programs relevant in a supply chain world?*

Commodities have been the heart of agricultural policy for more than six decades. Supply chains drive a stake through that heart. Producers who participate in a supply chain simply no longer base decisions on commodity prices. Rather, decisions are driven by the terms of a contract and, more generally, the ability to manage a margin over time.

It becomes much more difficult, therefore, for government to manage farm support programs. Historically, those programs have been based on acres and bushels. In the future, if farm support programs continue at all, they will need to find a new means of distribution.

3. *How can farmers be kept in the game?*

A more vexing issue may be how to keep farmers in a new supply chain game. Production agriculture has always required innovation and efficiency for farmers to stay in the commodity business. But the requirements ahead simply take on new dimensions that go well beyond being able to produce more bushels at lower cost. For many farmers, the issue will be whether they are part of a supply chain or left on the outside looking in.

Indeed, staying in the game in an agriculture increasingly dominated by supply chains may be the defining issue for most farmers in the period ahead. Supply chains mark a clear shift from commodity markets to product markets, and most farmers still see themselves in the commodity business. To compete in the future, farmers must either be big enough to forge sturdy alliances with the "integrators"—who will be much bigger and stronger than most farmers—or they must become a viable partner by banding together in creative ways. In short, the key to staying in the game for many producers may be cooperatives that can either become part of a supply chain, or be the integrator of a new chain.

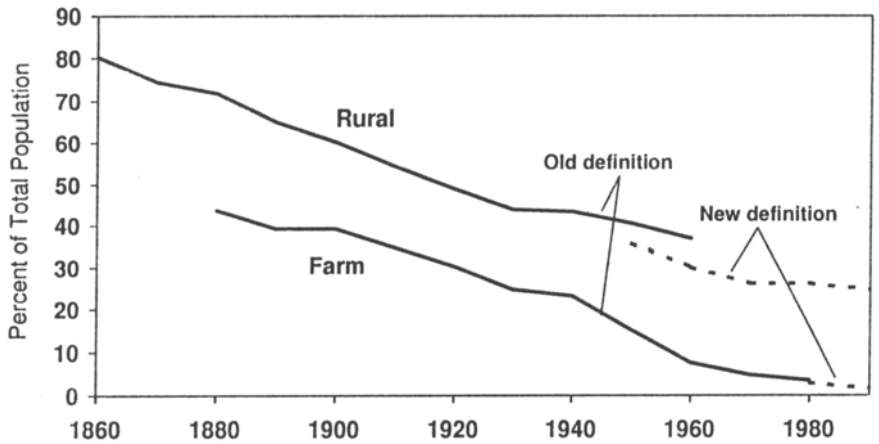
Cooperatives will not be a perfect avenue for all farmers. Cooperatives are often more adept at production than marketing, and capital tends to be a limiting factor in growing the business. But the growth of traditional cooperatives, such as Farmland Industries, and the proliferation of "new generation" closed cooperatives are still healthy signs that farmers are exploring collective ways to stay abreast of a consolidating agriculture. Public policies that assist the formation of cooperatives will play an important supporting role.

4. *When does concentration impede competition?*

The consolidation under way in U.S. agriculture is clearly leading to a more concentrated industry. The question is, when does concentration give rise to monopoly power? This question will be an important guiding force for public policy in the coming decade. When an industry *does* become too concentrated, any additional increase in concentration only boosts industry profits without benefiting consumers. Overall, there is no compelling evidence that U.S. agriculture is near that point. The growth in food industry profits, for instance, is not higher than in other industries, and in fact appears to be lower than most. At the retail level, one factor that helps to keep markets competitive is the rising tide of food imports. To a very considerable extent, the food market is global. All that said, with the pace of consolidation now under way, the potential for monopoly power in the food sector is an issue that bears watching in the new century.

Producers will remain concerned about access to competitive markets—both for inputs and for the sale of their products. Indeed, in mergers like Cargill-Continental, the biggest question is probably whether such mergers leave farmers in local areas without competitive buyers for their products. In some localized markets, the divesting of operations where local monopolies might result from a merger may be in order. Moreover, farm cooperatives may be a very helpful way of supplying additional competitive yeast. Nevertheless, such divestitures should not distract attention from the overarching benefits of a leaner industry which agribusiness mergers normally create.

Overall, public policy will almost surely be paying more attention to concentration and market power issues in the future. An overriding need will be to define markets appropriately. Many agricultural markets—both for inputs and outputs—are



Source: U.S. Bureau of the Census, 1990 Census of Population (1993), and Fuguitt, Brown, and Beale (1989, 1990).

Figure 3. Rural and farm populations, as a percent of total population

global now, and thus the definition of a competitive market may involve far fewer participants today than when markets were confined to U.S. borders only.

5. *Can agricultural policy address rural economic issues?*

The changes now sweeping agriculture point to a broad new slate of policy issues in the new century. While agricultural policy *was* rural policy in the 20th century, a much broader approach will be required if rural America is to achieve its economic potential in the 21st.

The starting point for rural policy discussion in the period ahead will be whether the United States goes beyond agricultural policy. Much of the nation's agricultural policy framework was put in place when agriculture dominated the rural economy. That is no longer the case. Since 1950, the number of farm-dependent rural counties has plummeted from more than 2,000 to just 556 when the 1990s began. A graph of the rural and farm populations as a percent of total population is presented in figure 3.

The conclusion is inescapable: agricultural policy no longer cures rural ills. To be sure, agricultural policy will remain a basic element of rural policy. Yet if policy makers want to shape the economic future of *all* of rural America, rural policy must encompass a much broader array of issues. Four issues will be especially important to the course of the rural economy in the 21st century.

- *New economic engines.* Much of rural America is searching for new sources of economic growth, yet little is known about which industries may hold the greatest promise. Public research into new rural economic engines may be considered, but the key will ultimately be the ability of rural entrepreneurs to establish new businesses in rural America. Business and technical assistance programs aimed at rural businesses may get new attention.

- *Physical and digital infrastructure.* Roads, bridges, and water and sewer systems will have a major impact on sustaining new economic initiatives in rural America. And with a declining tax base in many rural communities, tough decisions over new investments lie ahead. An even bigger issue may be providing adequate digital infrastructure in rural America.

- *Financial markets.* Rural businesses face a shorter menu of capital options than their metro area counterparts. This points to the opportunity for market innovations that increase the availability of equity and other forms of capital.

- *Reinventing public services.* With a tide of economic changes, many local governments in rural America struggle to maintain public services. Especially in areas where population and tax revenues are declining, innovation in traditional delivery systems will become a growing necessity in the 21st century.

Addressing these rural issues will be a tall order in the period ahead. The challenge is only made bigger by the fact that rural policy is not the province of one agency or level of government. Should rural issues be sorted out at the federal, state, or local level, or all of the above? This question is but the beginning of what promises to be a long debate over rural policy in the years to come, a debate that likely will begin in earnest as Congress reconsiders agricultural policy over the next couple of years.

Conclusions

U.S. agriculture is undergoing a tidal wave of change in its structure. A shift to supply chains and away from commodities and commodity markets is the hallmark of this new wave. Supply chains are likely to drive a deep wedge into the nature of farming. Those who remain commodity producers will consolidate and drive down costs, continuing a trend under way for decades. Those who become the initial links in a supply chain will do business very differently, depending on negotiations and contracts to manage their profit margins.

The new agriculture of the 21st century will bring with it a new geography that may be nothing short of a revolution for rural America. Supply chains will have two powerful effects on the rural economy. First, they will tend toward concentrated activity geographically, a marked departure from the spatial dispersion U.S.

agriculture has long represented. And second, supply chains will even change the dynamic where they do locate, sourcing fewer inputs locally, making fewer decisions locally, and leaving fewer profits in the local community.

Finally, the tide of change in agriculture's structure means a whole new slate of policy issues. Concentration, market access, and the delivery mechanism for government support all become more immediate concerns with supply chains. But perhaps the biggest policy challenge looming ahead is addressing rural America's economic challenges. A much broader approach will be needed if rural America is to unlock its economic potential in the 21st century.

References

Barkema, A., and M. Drabenstott. (1996). "Consolidation and change in heartland agriculture." In *Economic Forces Shaping the Rural Heartland* (Chapter 4). Kansas City: Federal Reserve Bank of Kansas City.

Barkema, A., M. Drabenstott, and K. Welch. (1991, May/June). "The quiet revolution in the U.S. food market." *Economic Review*, pp. 25–41. Federal Reserve Bank of Kansas City.

Drabenstott, M. (1998, 4th Quarter). "This little piggy market went to market: Will the new pork industry call the heartland home?" *Economic Review*, pp. 79–90. Federal Reserve Bank of Kansas City.

Fuguitt, G. V., D. L. Brown, and C. L. Beale. *Rural and small town America.* New York: Russell Sage Foundation, 1989.

Harris Infosource. (1998). Manufacturers database. Twinsburg, OH.

U.S. Bureau of the Census. (1993). "Social and economic characteristics: United States summary." *1990 Census of Population.* Washington, DC: U.S. Government Printing Office, 1993.

U.S. Department of Agriculture, Economic Research Service. (1994). Typology codes. USDA/ERS, Washington, DC.

U.S. Department of Labor, Bureau of Labor Statistics. (1999). Local area unemployment statistics. USDL/Bureau of Labor Statistics, Washington, DC.