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Structural Changes in U.S. Agriculture: Implications for Small Farms

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ABSTRACT

A descriptive analysis and a survey of literature were used in this assessment of the transformation of the structure of production agriculture. The changes in production agriculture have important implications for resource use, population distribution in rural communities, and the survival of small farms. The shifting structural change in production agriculture as a response to economic and technological adjustments is not a temporary phenomenon. The economic and natural base of agriculture will change toward greater capital intensity and concentration of ownership, and will raise public policy questions in relation to the survival of a large farm population.

Key Words: production agriculture, small farms, structural changes.

The trend toward greater economic concentration in agricultural production—fewer but larger farms—has been of considerable interest to agricultural researchers and public policymakers. Much of this interest is centered around: (*a*) the alarming rate at which the number of small to medium-sized farms has been declining and the increasing rate of average farm size over the years; (*b*) the disproportionate percentage of total agricultural production now being generated by a relatively small percentage of farms, in the larger size categories, followed by a steady downfall of social and economic conditions of the small farm sector; (*c*) the constant rising percentage of farm family income which is derived from nonfarm sources; (*d*) the migration of farm population from rural to urban centers for better economic opportunities and social services; and (*e*) the adverse impacts of large-scale farming on the environment (Brown, Christy, and Gebremedhin).

The movement toward greater concentration has been a persistent feature of production agriculture (Heady and Sonka). At the national level, average farm size has more than doubled in the past 50 years, from 216 acres of land in 1950 to 491 acres in 1992. On the other hand, land in farms has been falling slowly since the peak in 1950, with a total of 1,161 million acres. In 1992, not more than 946 million acres were in farming, and this trend of slow decline will continue into the next century.

The number of U.S. farms has been declining since 1920, when it reached an all-time high of nearly 6.4 million. The *U.S. Census of Agriculture* (U.S. Department of Commerce) reported 3.71 million farms by 1959, 2.94 million by 1974, and 1.93 million by 1992 (see table 1). Furthermore, a 1986 study published by the U.S. Congress/Office of Technology Assessment projected that the number of farms will shrink to about 1.25 million by the year 2000. This projection means that more than half a million farms now in production will disappear by the turn of the century.

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Table 1. U.S. Farm Numbers, Land in Farms, and Average Farm Size, 1920–92

Year	Number of Farms (million)	Land in Farms (million acres)	Average Farm Size (acres)
1920	6.40	956	148
1930	6.30	987	157
1940	6.10	1,061	174
1950	5.40	1,161	216
1954	4.80	1,158	242
1959	3.71	1,124	303
1964	3.16	1,110	352
1969	2.73	1,063	389
1974	2.31	1,017	440
1978	2.26	1,015	449
1982	2.24	987	440
1987	2.09	964	462
1992	1.93	946	491

Source: U.S. Census of Agriculture, U.S. Department of Commerce (1950–92).

U.S. Department of Agriculture (USDA) statistics show that the number of farms and the value of production are highly concentrated at opposite ends of the size scale. Smaller operations accounted for most farms, whereas larger operations accounted for most farm sales. Nearly 83% of all farms are noncommercial, with sales of less than $100,000 per year, accounting for only 17% of total farm production. Thus, commercial farms, with sales of more than $100,000 per year, accounted for only 17% of all farms in the U.S. but were responsible for 83% of total production in 1993 (USDA/Statistical Reporting Service).

This increased concentration of production agriculture, in correspondence with the decline in the number of farms, is a result of the interaction of multiple institutional and economic forces: technological developments, economies of size and capital requirements, forms of ownership, operators' managerial ability, market conditions, price instability, credit financing, off-farm employment opportunities, transportation networks connecting urban to rural areas, government regulations, and commodity programs. Since all of these factors have immediate and dramatic effects on the farm sector, the trend has given rise to widespread concern for the farm sector and the general rural economy.

Historically, farming has been the principal occupation and the primary source of family income in rural America. With the decline in the number of farmers, the agricultural link to the general economy has tremendously changed over the years. Currently, many rural economies are not as dependent on agriculture as was the case several decades ago; indeed, agriculture in many areas has become dependent on the general economy for nonfarm jobs. Off-farm employment has been an integral part of the emerging structure of production agriculture. The shifting structure of production agriculture, which is characterized by technological and economic changes, has forced many small farmers either to get large, get out of farming, or get off-farm work (Gladwin and Zabawa). For instance (as shown in table 2), in 1950, off-farm income contributed 31% of total farm household income compared to 55% in 1970, 62% in 1982, and 87% in 1993 (U.S. Congress/Office of Technology Assessment; Tweeten). Families operating small farms usually depend more on off-farm employment than those operating large farms (USDA/Economic Research Service; Tweeten).

In addition, the structural transformation in production agriculture has resulted in massive migration of farm families from the rural to urban centers due to better economic opportunities and social services. In the United States, the farm population has decreased drastically in the past 50 years, from 30.5 million in 1940 to 4.6 million in 1990. Higher wages and salaries, more attractive jobs, and better educational opportunities and other public services in cities—compared with limited employment op-

Table 2. Off-Farm Income as a Percentage of Total Household Income, 1950–93

Year	Percent
1950	31.0
1960	43.2
1970	55.0
1980	61.4
1982	62.0
1992	72.0
1993	87.0

Sources: Projections taken from U.S. Congress/Office of Technology Assessment, and from Tweeten.

portunities, lower relative farm wages, and low returns in agriculture in rural areas—have produced a large exodus of the farm population from rural agricultural communities to urban centers.

This situation has facilitated larger farm growth over the years, as well as created many problems for the low-skilled and undereducated workers who have been displaced from their rural settings and forced to adjust to the labor and lifestyle of urban areas. However, recent studies have noted a substantial population growth in rural and small towns, as a result of the search for a better quality of life and the prospects for economic opportunities, even though employment growth in the nation's rural and small town communities is expected to continue lagging behind growth in metro areas (Tweeten).

While a great deal of attention has been given to the overall question of structural change in agriculture, relatively little emphasis has been placed on the implications of this change for small farms. It has become increasingly difficult for small farms to compete with large farms as viable economic units in the shifting structure of production agriculture. It is reported that full-time small farm operators have abandoned production agriculture at an alarming rate. Also, since entry costs are relatively high, new and small farmers find it difficult to take up production agriculture. Structural changes in production agriculture have had the greatest negative impact on small farms. Furthermore, small farms are plagued with limited accessibility to capital markets and insufficient technical assistance from public and private institutions (Brown, Christy, and Gebremedhin).

Structural change in production agriculture not only affects economic issues, such as the number and size of farms, the ownership and control of farm resources, and the arrangements for input and output marketings, but it also has a direct impact on the broader and more personal issues of families and rural communities. This growing trend in the structural transformation of production agriculture will cause a great deal of uncertainty about the future survival of small farms as viable economic units and as a "way of life" for many rural farm families (Brown, Christy, and Gebremedhin). Thus, it appears that the direction and rate of changes in production agriculture have important policy implications on a variety of issues: resource use, enterprise combination, population distribution and labor mobility, the future survival and well-being of farm families, the economic viability and social vitality of rural communities, and the effectiveness and desirable nature of public policy.

Definitions and Characteristics of Small Farms

The term "small farm" is neither precisely defined for the agricultural research community nor for the general public. The definition of what constitutes a small farm and the concomitant categorization by size have gone through several metamorphoses in the United States (Crecink). The definitions of small farms are arbitrary, numerous, and vary by type of farm, geographic location, and even by the individual researcher. Farm size has been defined by various criteria, including acres of land operated, units of livestock in operation, value of farm output produced, total assets controlled, level of farm income to level of total family income, and days worked off-farm and on the farm (Lewis).

Most investigations of small farm characteristics combine two or more of these classifications to arrive at a more limited and conclusive definition. However, over the last several decades, small farms have been generally described as farms with limited resources, farms with a small volume of farm product sales, family farms, retirement farms, and part-time farms. Also, these farms have been—rightly or wrongly—closely identified with poverty situations. A common thread running through each of these characterizations is that somehow small farms fall outside the mainstream of commercial agriculture.

Historical Perspectives of Small Farms

A farm is considered small in the United States if its size does not allow for efficient utilization of existing agricultural technologies. U.S. farms have become more and more capital intensive, and yesterday's large farms have become today's small farms. Consequently, the definition of a small farm requires review over time before it loses its functional relevance (Singh and Williamson).

The 160-acre farm of the 1862 Homestead Act appears to have been considered a small operation at the time, even though it was large enough to use the most sophisticated technology of the time. Later, with the advent of new technology, came improvements in farm tools and techniques which increased the skills and capital investment to operate a much larger farm. However, farm size after 1950 was most commonly measured in terms of farm product sales, not acres of land requirements or total assets controlled. In the 1960s, small farms were said to be production units selling less than $10,000 in annual gross farm products. The dividing line crept up to $20,000 in annual gross farm product sales by the mid-1970s, and to $40,000 in the 1980s (Brewster). Today, the most frequently used definition of a small farm is one growing over $1,000 but less than $40,000 in annual farm product sales.

The gross farm product sales criterion, to distinguish between large and small farm groups, is the best single measure available; however, it has shortcomings. First, this definition can easily be misleading because of variations in input requirements among small farms and the extent to which inputs are produced on the farm or purchased (West). In addition, small farmers' objectives and ambitions do not usually coincide with those of large farmers. Small farmers are generally striving for survival, while the objectives of the large farmers are usually dominated by profit maximization. Farm product sales also give little insight into the distribution of the total income within a farm, and they conceal important information about the number and characteristics of farm households with low income. This criterion by itself does not identify economically disadvantaged farm families because it is common practice for many small farm families to combine farm and nonfarm income sources and other economic activity in order to make a living.

Second, the "gross farm product sales measure" is influenced by inflation. Inflation shifts some farms with constant real sales volume from one pecuniary sales class to another. Thus, rigid adherence to a dollar guideline could mean that due to volatile agricultural product prices, a farm can be considered small one year and large the next year. Indeed, farmers are particularly vulnerable to inflation because their costs are likely to rise faster than their revenues. The changes in prices obscure logical comparisons across time. When we observe a substantial shift to larger farms between 1969 and 1978, it could imply that major structural changes took place in a very short time period. Much of the increase in number of larger farms took place due to the rise in the index of prices received by farmers rather than a rise in the real output per farm (Tweeten, Cilley, and Popoola).

Some of the commonly recognized problems with using farm product sales as a measure of farm size in any given year are: (*a*) the effects of changing price levels are not easily accounted for in comparisons between years; (*b*) changes in crops or livestock inventories are not considered; (*c*) government payments are not included as a source of income; and (*d*) crop failures or livestock losses understate the size of a business when there are relatively few sales, although many acres, workers, or expenses may be involved. Despite these problems, gross sales persists as the most commonly used method of describing farm size and presenting size distributions. The farm size definition should take into account family size as well as labor, equity capital, economic incentives for farming, and income based on farm and nonfarm resources.

Heterogeneity of Small Farms

In assessing the structure of production agriculture, it appears that large farmers as a group are probably more alike than small farmers, since large farmers usually rely on the farm to provide family income and are expected to devote most of their time and energy to farm work and management (Hinson). Conversely, farms with a low level of farm product sales, or limited resources, make up a more diverse group. Some farms may have sufficient resources and growth potential to generate an acceptable level of family income. Some farmers who are full time and have few resource limitations may lack the basic economic incentives and motivation for farming

or may be preparing for retirement. Still other farmers are part time, i.e., their income is derived mostly from labor or resources devoted to the nonfarm sector.

On most small farms, one or more resources are limited. Some farmers are able-bodied and young, but have low farm product sales because they have just started farming with small operations, and may expand as they gain experience. Some farms may be growth and goal limited, but low-skilled farmers have few opportunities for additional farm and nonfarm earnings. Others may be aged and retired, have some physical disability, or may even depend heavily on social welfare, social security, or veteran payments. Many of these persons live under deplorable poverty conditions in the rural communities. In many cases, these are the people who the federal and state workers and researchers find most difficult to reach.

Many additional situations may also exist that make the definition of a small farm more complicated and ambiguous. This diversity suggests that small farms are many and varied, and that a heterogenous group exists because of the different characteristics of the small farm operations and the constant structural changes in production agriculture. In view of this fact, there should not be set critera for defining the characteristics of small farms. In many cases, criteria should depend on the individual researcher's perception about the agricultural sector and understanding of the characteristics of the rural communities. However, it is essential that the working definition of a small farm should have desirable attributes from a statistical perspective in terms of its clarity and measurement capacity, feasibility for data collection, and capability of being implemented using conventional statistical procedures (Carlin and Crecink).

Problems Faced by Small Farms

The trend toward fewer but larger farms and the grim reality of continuing financial crises in agriculture are the result of the interaction and changes of numerous economic and non-economic causal factors. Affecting all size farms, especially those with a low equity, are the macro-level economic forces which cause economic concentration (Gladwin and Zabawa); past increases in the value of farm land and equipment make it difficult for the beginning farmer to get started (Eginton and Tweeten); inflationary increases in the cost of production inputs and credit decrease farmers' profit margins and raise their level of permanent indebtedness (Van Blokland); technological changes which lead adopters to expand and a build-up of surplus commodities in the market are created, thus depressing and stagnating crop prices (Carter et al.); monetary as opposed to fiscal policies create a strong dollar and a downturn in exports (Schuh); and changes in international markets may result in a minor squeeze or major collapse of the local market (de Janvry). Some of the principal forces that shape the structure of production agriculture and the survival of small farms are discussed below.

Technology and Resource Endowment

The technological revolution in agriculture has led to increasingly larger farms over the years. The enterprise specialization and increased uniformity of farming, resulting from the adoption of the techniques of regional monocultural production, have increased the vulnerability and reduced the adaptability of such changes in small farm operations. Utilizing economic principles to guide production, the larger farmer has adopted new technology and better cultural practices generated from agricultural research and development. Technological developments in agriculture have increased the nation's agricultural output and accrued benefits to large and rich farmers—but not without great cost. As a result of these technological developments, displaced farm workers and small farmers have incurred massive social and economic cost (Hightower; Singh and Williamson).

Small farmers are often alienated from the mainstream of modern agricultural activities. They are confronted with many difficulties because they produce in an industry geared toward serving large-scale production units. Tradition plays a large role in the day-to-day management of the small farm. New technology is very slow in replacing old techniques which have been handed down for generations. Factors inhibiting adoption of technology on small farms include lack of knowledge, limited quantities of resources (land, capital, and skilled labor), fear of risk, limited managerial ability, as well as inability to justify economically the adoption of certain types of technology for use on small-scale

farm operations (West). All these factors weaken the small farmers' survival and competitive position and cause many to leave agriculture in search of off-farm jobs.

The ownership and control of land and technology plus the distribution mechanisms are becoming increasingly concentrated in the hands of a few individuals and/or corporations. This is a trend which, if carried to an extreme, could have severe implications for the survival of small farms (Madden and Tischbein). The social, ecological, and economic vitality of rural and urban communities is directly related to patterns of ownership, control, use, and distribution of agricultural resources. Prices and technology, along with initial resource endowment, managerial ability, and environmental factors, determine the ability of individual farmers to generate income. The process of adjustment to price changes and technology explains changes in the size and productivity of farms and the farming industry over the years. In a competitive market economy, low productivity and low income earnings often lead small farms to a long-run situation of disinvestment and eventual relocation into other off-farm economic sectors.

Farm Credit Financing

Small farmers are continuously plagued by credit problems. Without an adequate source of credit, they cannot invest in land or modern technology to increase production and expand the farm base. The capital investment possibility has become a question of survival for many small farms. Traditionally, most small farms have financed the major share of capital requirements for farming operations from internal savings. Other farms, because of their small size and nonfarm income earnings, can be equity financed. Still others minimize credit requirements by reducing input use and selecting low cash cost enterprises. Some farms have cut back production by selling land when faced with a huge debt load and with no other alternatives.

Despite the fact that there is a low borrowing rate observed among small farmers, the need for credit in the small farm business remains an overwhelming characteristic. Yet interest among many small farmers to borrow for such purposes is found to be lacking, as they wish to remain debt free and have a complacent attitude toward the present pattern of farm capital investment for production purposes. Family subsistence and risk avoidance are necessarily first priority considerations for survival of small farm families.

Even though no shortage of loan funds in the farm sector is evident, marginal farm operators who perceive credit financing as an essential factor in farming continue to have problems getting farm credit from conventional lending institutions. The small farm operators are usually disqualified from farm credit loans because of their disadvantaged economic condition and the general conservative lending practices of the financial institutions. The farmers have low equity positions and can offer little security, which implies high cost for lenders. The low asset and small owned acreage of small farms are stumbling blocks for credit finance. To obtain a loan, the small producers may have to pay a higher rate of interest. Since most small farmers possess limited information about available sources of credit, they usually do not compare interest charges or other measures of credit's true cost.

Only a few lending agencies currently have the ability and the mandate to serve low-equity or beginning farmers. In general, many lending institutions seek only large borrowers in order to minimize their service costs per dollar loaned. These lending institutions often limit access of small farm operators to the capital market by imposing rigid rules on credit lending in order to fully protect the loan capital, thereby restricting the risk of loss. Nevertheless, small farm operators continue their survival with the traditional capital financing practices and sources for reasons of convenience and choice (Singh and Williamson).

Farm Input Prices

In recent years, the cost of agricultural inputs has risen much more rapidly than that of agricultural output, causing a cost-price squeeze. Consequently, the net income earned by small farmers has declined due to this cost-price squeeze. Small and large farmers alike are affected by the cost-price squeeze, but the impact of this problem is felt most severely by small farmers. Small farms produce at higher cost per dollar of output than larger farms. Farmers have not been given fair prices by input supply and marketing firms who manipulate prices and absorb income that should have gone to farm-

ers. To solve this problem, many small farms have turned to production activities that rely heavily on labor resources rather than significant levels of capital.

The price paid for inputs varies among individual farms and changes over time. Large producers typically can buy inputs at lower prices than the small producers, either because the farmer's size yields simple market power in the supplier's market, or because the supplier charges actual lower costs for moving a large volume to an individual producer. Changes in input prices are the result of changes in basic supply and demand conditions, as well as changes in competitive conditions in the input market. Recent changes in the prices of energy inputs are examples of both of these types of influences. As input prices vary among firms or change over time, the relative competitive positions of a farm business are affected. The optimum input mix changes and farms may be better or worse off depending on their relative use of the input involved (West).

Market Structure and Activities

The market structure for most farm products has changed in response to the development of highly efficient communication and pricing systems. These developments and changes have significant impact upon the survival of small farms. Small farms are seldom in a position to benefit directly from the developments of these technological practices. General developments in marketing services—such as developments in transportation, storage, the advent of mass retailing patterns, accompanying volume and standardization requirements, integration of segments in the production and marketing systems, and public regulation of marketing activities—have also created serious problems for small farm operators.

Successful marketing is essential for the survival of farm operations. Lack of markets where small farmers can sell their products is a growing concern. As marketing activities have shifted from a decentralized to a centralized system, production has shifted to areas capable of massing large quantities for shipment and specialization on individual farms. Mass retailing, product standardization, and volume specialization are methods with which small farms cannot compete and are unable to utilize. Marketing firms have increasingly turned to large farms or have developed an integrated system which bypasses the small farms (West). The new methods of marketing, which have replaced organized open markets, set volume requirements so high that small-scale producers are often excluded from the marketing process.

Small farmers do not produce enough output to influence price, and they have high input cost relative to large farmers because they do not buy farm inputs in bulk. Small farmers, with their relatively low volume of sales, find it difficult to gain access to centralized systems on an individual basis, and are severely restricted when it comes to marketing alternatives. They have been forced to seek other means to gain access to systems, such as pooling production to gain the advantage of a high volume, or using other market outlets for their products. Direct marketing outlets, such as roadside markets, farmers' markets, and pick-your-own operations, have increased market access for some small farms (West).

Another market problem faced by small farmers is lack of bargaining power and market information. They need to know the advantages and disadvantages of each market outlet, the ease and difficulty of access to each outlet, and information on the relationships of price levels among and within outlets. Variation in prices in each market outlet translates directly into income variation. Since most small farmers have very little reserve to carry through a bad year, price variation is quite important to their survival.

Nonfarm Income and Employment

The most critical problem confronting small farmers today is maintaining a sufficient level of income. As a growing proportion of the total farm family's income comes from nonfarm sources, off-farm employment has become a critical and an important alternative income source to small farmers (Brown, Christy, and Gebremedhin; Sharples and Prindle). Off-farm work is prevalent among operators of all farm sizes, but most prominent on smaller farms. The average farm family in the United States depended on off-farm income for 87% of its household income in 1993 (USDA/Economic Research Service). However, families operating small farms usually depend more on off-farm employment than families operating large

farms. In many cases, the availability of off-farm employment is essential to the continuation of small farm operations. The lower the total farm families' income, the more dependent farm families are on off-farm income to maintain family well-being.

Currently, most small farm operators seek a job away from their farms for at least a short time in order to earn supplementary family income. Some small farm operators hold full-time jobs in the cities and do their farming at night and on weekends. But, many of the off-farm jobs they hold in rural small towns are in the secondary labor market, paying low wages commensurate with their basic educational backgrounds and practical experience. In some cases, off-farm earnings have provided some small farm families with an adequate standard of living, in addition to providing an opportunity to continue operating their farms, and living in the community of their choice. Furthermore, for these few farmers, the farm business is used as a means of reducing tax liability in addition to providing residential, community, or other satisfactions (Lin, Coffman, and Penn). Many small farmers have chosen farming as an occupation because of the values they attach to farm work, including the opportunity to be one's own boss.

Government Support Programs

Federal programs are often supported by farmers because of the inherent benefits they supply, such as additional farm income through acreage allotments, farm commodity programs, and tax policies. Although these commodity price and support programs have the stated objectives of benefitting all farmers, the distribution of benefits is skewed toward the larger producer. Furthermore, such programs frequently have adverse long-run economic effects on the farm sector, encouraging excessive output and substitution of capital for farm labor—which in turn increases the size and decreases the number of farms. However, a number of provisions tend to lower the tax burden on farm income by allowing the use of cash rather than accrual accounting, the offsetting of nonfarm income with farm losses, the allowance for the expense of certain capital investments, lower taxes on capital gains, low corporate taxes, investment credits, and accelerated depreciation. The major beneficiaries of the special farm tax preferences appear to be those farms with a high income or those farms in the strongest position from the standpoint of assets and technical efficiency (Singh and Williamson).

It has also been reported that the decline in the number of farms can be linked to the unequally large share of government payments that went to the largest farms (Schertz). Large-size commercial farms received 39% percent, mid-size commercial family farms received about 33%, and the remainder (28%) went to smaller farms, who are not totally dependent on agriculture for all their income. Despite the increasing amount of federal government spending, commodity programs have done little to halt the decline in the number of small farms or to improve the incomes of these farms. While technical problems make it impossible to measure the precise impact of government policies, there can be little doubt that past and present policies have had a net effect of displacing small farmers. Thus, national agricultural policies are not necessarily applicable to all small farms.

Research and Extension Services

Most agricultural research, conducted by land-grant institutions, has been directed toward the development of crops, livestock, and agricultural machinery and equipment—but this research has not necessarily addressed the needs of small farmers (Marshall and Thompson). The research was conducted under the belief that benefits would filter down, and the small farmer would also be able to use the results of the research conducted. This trickle-down has not occurred; instead, the research has strengthened the concentration process even more than before (Hightower; Singh and Williamson).

Agricultural research and cooperative extension services have provided the basis for highly innovative agriculture which is geared to capital-intensive, large-scale farming. While the U.S. Department of Agriculture and the land-grant institutions have made a limited effort to solve problems impeding the economic improvement of small farm operations, they have not evaluated the economic and social impacts of production efficiency, nor have they determined the assistance that small farm operators need to adjust to the change brought about by such research.

In general, established means of communication, both in research and extension, have failed to work for low-income farmers. The Agricultural Research Service and the Cooperative Extension Service are supposed to be responsible for disseminating research results to all categories of farms. However, small farmers do not seek information from these agencies as readily and frequently as do large farmers. Although agency personnel have claimed to work with the most receptive farmers on the premise that knowledge would "trickle down" to others, this strategy has proven unsuccessful over the years (Singh and Williamson; Marshall and Thompson).

Summary and Concluding Remarks

The changing structure in production agriculture, as a response to ongoing economic adjustments, is not a temporary phenomenon. It is an arena in which the economic and natural resource base of farming and rural communities will be changing constantly. Emerging modern agricultural technology will move and change the structure of production agriculture in the same profound ways and directions as before. Production agriculture will change toward more sophisticated and challenging management and marketing, larger and fewer commercial farms, greater capital intensity, greater separation of management from farm ownership, and further concentration of land and capital into a new agriculture. Like most other sectors, agriculture will become industrialized and the rural community will rapidly become an industrial and service economy.

Thus, the direction and speed of these changes in the structure of production agriculture raise public policy questions in light of the survival of small farms. The survival of small farms is important because of their social and economic role in the rural community. Small farms constitute the majority of farm enterprises in the country. Their survival implies more viable rural communities and a potential demand for public and private goods and services which have been overlooked over the years.

Emphasis on low-income families is appropriate for public policy purposes because public policy concerns itself with people who are not likely to benefit from market or nongovernmental forces. Small farms are diverse and vary in their characteristics and geographic locations. For many small farm families who are poor or aged or disabled, social welfare programs are more important than income from farming or commodity programs. Thus, in order to understand the characteristics and needs of small farms and to make the necessary public policies, it is essential to decide whether the concern is solely about the production of food and fiber or whether it encompasses the well-being of families living on farms and the communities in which they reside.

References

Brewster, D. E. "What Is a Small Farm?" In *Research for Small Farms.* Misc. Pub. No. 1422, USDA/Agricultural Research Service, Washington DC, July 1982.

Brown, A., R. D. Christy, and T. G. Gebremedhin. "Structural Changes in U.S. Agriculture: Implications for Survival of African American Farmers." *Rev. Black Polit. Econ.* 22,4(1994):51–71.

Carlin, T. A., and J. Crecink. "Small Farm Definition and Public Policy." *Amer. J. Agr. Econ.* 61,5(December 1979):933–39.

Carter, H., W. Cochrane, L. Day, R. Powers, and L. Tweeten. "Research and the Family Farm." Report prepared for the Agricultural Experiment Station Committee on Organization and Policy, Cornell University, Ithaca NY, 1981.

Crecink, J. C. "Small Farms: Their Distribution, Characteristics, and Households." Agr. Econ. Res. Rep. No. 161, Agr. and Forestry Exp. Sta., Mississippi State University, April 1986.

de Janvry, A. "Historical Forces That Have Shaped World Agriculture." In *Agriculture, Change, and Human Values,* eds., R. Haines and R. Lanier, pp. 14–28. Gainesville FL: Gainesville Humanities and Agricultural Program, University of Florida, 1982.

Eginton, C., and L. Tweeten. "Impacts of National Inflation on Entrance and Equity Growth—Opportunities on Typical Commercial Farms." Paper presented at the annual meetings of the Southern Agricultural Economics Association, Atlanta GA, 1982.

Gladwin, C. H., and R. Zabawa. "Survival Strategies of Small Part-Time Farmers: A Response to Structural Change." In *Strategy for Survival of Small Farmers—International Implications.* Tuskegee AL: Human Resources Development Center, Tuskegee Institute, 1985.

Heady, E. O., and S. T. Sonka. "Farm Size, Rural Community Income, and Consumers' Welfare." *Amer. J. Agr. Econ.* 56,3(August 1974):534–42.

Hightower, J. *Hard Tomatoes, Hard Times: The Failure*

of the Land Grant College Complex. USDA, Agribusiness Accountability Project, Washington DC, 1972.

Hinson, R. A. "Characteristics of Small Commercial Farms in Three Louisiana Farming Areas." Res. Rep. No. 622, Dept. of Agr. Econ., Louisiana State University, Baton Rouge, November 1983.

Lewis, J. A. "Implications of Alternative Definitions of Small Farm." In *Toward a Federal Small Farms Policy.* NRC Rep. No. 9, National Rural Center, Washington DC, November 1978.

Lin, W., G. Coffman, and J. B. Penn. *U.S. Farm Numbers, Sizes, and Related Structural Dimensions: Projections to Year 2000.* Tech. Bull. No. 1625, USDA/ASCS, Washington DC, July 1986.

Madden, J. P., and H. Tischbein. "Toward an Agenda for Small Farm Research." *Amer. J. Agr. Econ.* 61,5(December 1979):940–46.

Marshall, R., and A. Thompson. *Status and Prospects of Small Farmers in the South.* Atlanta: Atlanta Southern Regional Council, Inc., 1976.

Schertz, L. P. "Another Revolution in U.S. Farming." USDA/Economic Research Service, Washington DC, 1979.

Schuh, G. E. "Policy Options for Improving the Trade Performance of U.S. Agriculture." National Agricultural Forum, Washington DC, 1984.

Sharples, J., and A. Prindle. "Income Characteristics of Farm Families in the Corn Belt." *Agr. Fin. Rev.* 34(1973):13–18.

Singh, S. P., and H. Williamson, Jr. "Perspectives on the Small Farm (Small, Low-Income Farms in Tennessee)." Cooperative Research Program, School of Agr. and Home Econ., Tennessee State University, Nashville, 1985.

Tweeten, L. G. "The Twelve Best Reasons for Commodity Programs: Why None Stands Scrutiny." *Choices* (2nd Quarter 1995):4–7, 43–44.

Tweeten, L. G., G.B. Cilley, and I. Popoola. "Topology and Policy for Small Farms." *S. J. Agr. Econ.* 12,2(1980):77–85.

U.S. Congress, Office of Technology Assessment. *Technology, Public Policy, and the Changing Structure of American Agriculture.* Pub. No. OTA-F-285. Washington DC: Government Printing Office, March 1986.

U.S. Department of Agriculture, Economic Research Service. *Economic Indicators of the Farm Sector: National Financial Summary, 1992.* Washington DC: Government Printing Office, 1993.

U.S. Department of Agriculture, Statistical Reporting Service. *1993 Agricultural Statistics.* Washington DC: Government Printing Office, 1994.

U.S. Department of Commerce. *U.S. Census of Agriculture.* USDC/Economic and Statistics Administration, Washington DC. Various years, 1950–92.

Van Blokland, P. J. "Trends in Agricultural Finance with Reference to Florida." Florida Food and Resour. Econ. Pub. No. 38, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 1981.

West, G. G. "Agricultural Economics Research and Extension Needs of Small-Scale, Limited-Resource Farmers." *Amer. J. Agr. Econ.* 61,1(July 1979): 49–56.