THE FARM OF THE FUTURE

CHAIRMAN: JOHN BLACKMORE, UNIVERSITY OF MASSACHUSETTS

THE ORGANIZATION AND STRUCTURE OF SOME REPRESENTATIVE FARMS IN 1975

H. L. STEWART
Agricultural Research Service, USDA

The paramount agricultural problem of our time is that of depressed farm incomes in a period of rapid economic development and high levels of employment. Excess productive capacity, generated by output-increasing technology and inelastic markets, continues to create chronic, price-depressing surpluses which tend to transfer to others the benefits of agriculture's increasing efficiency. Yet the farmer has no choice. If he is going to stay in this competitive business of farming, he needs to adopt the techniques that will help him maintain his income by reducing unit costs or increasing his volume of business—even though ultimately these same innovations intensify the woes of agriculture by adding still more to troublesome surpluses.

The impact of these changes on the structure of agriculture has been great. Size of farm has increased rapidly, and capital requirements at an even greater rate. Farm people have been displaced. A bugaboo commonly referred to as "vertical integration" has cast a shadow across our time-honored institution of family farms.

No longer can even the agricultural fundamentalist believe that these are only temporary phenomena. The forces generating these changes will continue to modify the organization and structure of agriculture for many years and in many ways—some highly desirable, some less so. To attempt to foresee the nature and magnitude of these changes in different farm situations is a very large order, as well as a hazardous one. Thus, we shall interpret our subject rather narrowly. With the hope that we might contribute to a better understanding of some of the cause-effect relationships which are molding the structure of our agriculture, we shall focus our attention primarily on changes in number, size, organization, and capital and managerial requirements of a few selected types of commercial farms. We shall exclude consideration of farm ownership and entry, of the increasingly important part-time and part-retirement farms, and of the size and organization of our total agricultural plant. I believe, however, that the general tenor of the conclusions is consistent with the projections of Bachman and others, which suggest that by 1975, the number of commercial farms will be around 2 million and the average size of commercial
farms as measured by volume of sales, about $17,000, compared with $7,500 in 1954.¹

**Trends in Structure of American Agriculture**

Historical changes in the structure of American agriculture are a matter of record. I shall note them briefly, however, because they cast their shadows before them, setting the pattern for changes both in the aggregate and in individual firms.

Largely in response to the economic impetus associated with World War II, to the continued rise in prices of labor relative to those of labor-saving techniques, and to the availability of nonfarm employment opportunities, farmers have adopted a whole array of technological and management improvements which have increased productivity and induced structural changes in farming. Farm output per man-hour has increased some threefold since 1939,² a period in which off-farm employment opportunities have been readily available. Total labor used in agriculture has been cut in half. Since 1930, more people have moved from farms than remain on farms.

Accompanying this reduction in labor requirements and farm population have been a marked reduction in number of farms, and an increase in average size of farm, in capitalization, in specialization, and in increased dependence on income from off-farm work and nonwork sources.

**Table 1. Structural Changes in Agriculture, United States, Selected Years, 1939-59**

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>1939</th>
<th>1944</th>
<th>1954</th>
<th>1959</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm population</td>
<td>Millions</td>
<td>30.8</td>
<td>25.5</td>
<td>22.1</td>
<td>21.2</td>
</tr>
<tr>
<td>Number of farms</td>
<td>Millions</td>
<td>6.4</td>
<td>6.0</td>
<td>5.2</td>
<td>4.6</td>
</tr>
<tr>
<td>Number of commercial farms</td>
<td>Millions</td>
<td>4.2</td>
<td>3.9</td>
<td>3.1</td>
<td>—</td>
</tr>
<tr>
<td>Size of commercial farms</td>
<td>Acre</td>
<td>220</td>
<td>255</td>
<td>336</td>
<td>—</td>
</tr>
<tr>
<td>Hired workers per farm</td>
<td>Number</td>
<td>.42</td>
<td>.37</td>
<td>.40</td>
<td>.42</td>
</tr>
<tr>
<td>Investment per farm</td>
<td>Dollar Index</td>
<td>6,094¹</td>
<td>10,328</td>
<td>23,592</td>
<td>38,455</td>
</tr>
<tr>
<td>Production inputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inputs, nonpurchased</td>
<td>(1947–49 = 100)</td>
<td>94</td>
<td>101</td>
<td>102³</td>
<td>101</td>
</tr>
<tr>
<td>Inputs, purchased</td>
<td>(1947–49 = 100)</td>
<td>117</td>
<td>115</td>
<td>90²</td>
<td>82</td>
</tr>
<tr>
<td>Man-hours of work</td>
<td>(1947–49 = 100)</td>
<td>79</td>
<td>90</td>
<td>111²</td>
<td>117</td>
</tr>
<tr>
<td>Productivity</td>
<td>(1947–49 = 100)</td>
<td>123</td>
<td>120</td>
<td>78</td>
<td>66</td>
</tr>
<tr>
<td>Farm output per man-hour</td>
<td>(1947–49 = 100)</td>
<td>84</td>
<td>96</td>
<td>107²</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64</td>
<td>81</td>
<td>140</td>
<td>191</td>
</tr>
</tbody>
</table>

¹ 1940.
² 1958.

## Table 2. Changes in Structural Features of Selected Types of Commercial Family-Operated Farms, 1944 to 1959

<table>
<thead>
<tr>
<th>Type of farm</th>
<th>1959 Compared with 1944</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cropland harvested</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td><strong>Dairy farms:</strong></td>
<td></td>
</tr>
<tr>
<td>Central Northeast</td>
<td>132</td>
</tr>
<tr>
<td>Eastern Wisconsin</td>
<td>132</td>
</tr>
<tr>
<td><strong>Other livestock:</strong></td>
<td></td>
</tr>
<tr>
<td>Hog, beef-fattening,</td>
<td>123</td>
</tr>
<tr>
<td>Corn Belt</td>
<td>123</td>
</tr>
<tr>
<td>Cattle ranches, Intermountain</td>
<td>102</td>
</tr>
<tr>
<td>Egg farms, New Jersey</td>
<td>100</td>
</tr>
<tr>
<td><strong>Crop farms:</strong></td>
<td></td>
</tr>
<tr>
<td>Cash grain, Corn Belt</td>
<td>108</td>
</tr>
<tr>
<td>Wheat, grain sorghum, So. Plains</td>
<td>97</td>
</tr>
<tr>
<td>Wheat, small grain, No. Plains</td>
<td>109</td>
</tr>
<tr>
<td>Cotton, Southern Piedmont</td>
<td>87</td>
</tr>
</tbody>
</table>


2 In constant dollars.

3 Total land in farm.

4 Laying hens.

The input mix also has been modified greatly. Purchased inputs have increased by almost half during the last two decades in contrast with a 30-percent decrease in nonpurchased inputs. Almost overnight, agriculture has become one of the higher capital-using industries. We have reached a point at which about two-thirds of our agricultural production inputs are affected by the terms of trade with other, more highly organized, sectors of the economy.

Changes in structure are greater on some sizes and classes of farms than on others. For example, although the total farm labor force has declined significantly, the exodus has come primarily from the smaller farms. There is some evidence to suggest, too, that short-time, seasonal workers constitute a higher proportion of the labor force in recent years than was the case previously. Average numbers of hired workers per farm in the

---


United States have been relatively stable, in contrast to a decline in the number of hours of labor hired on commercial family-operated farms (table 2).

Encompassed in the net reduction of nearly 2 million farms during the last two decades have been substantial increases in numbers of part-time and residential farms, and in the larger commercial farms. These increases were more than offset by decreases in numbers of small commercial farms. Of some 3.4 million small commercial farms in 1939 (those with less than $5,000 in sales at 1954 prices), some 400,000 had moved into higher income groups by 1954. But, at least in part because of capital and market restrictions that limited opportunities to take advantage of technological development, more than a million of these farms were either absorbed by larger units or they were reduced to part-time or residential units.

Factors Influencing Structure

The nature and degree of change in the structure of American agriculture have been influenced greatly, and in the years aheads they will be influenced even more, by the pull and haul of economic forces outside the agricultural sector. Opportunities to increase efficiency and reduce costs of production by adopting both known and as yet undeveloped technology will continue. But it is inevitable that agriculture will become increasingly dependent on other sectors, not only as a market for its products, but also as a source of its production inputs and an alternative employment for a part of its variable resources, especially labor.

As the general economy develops and the relative position of agriculture declines, impacts of the changing structure of demand for our agricultural products will become increasingly important in its influence on the organization and structure of different types of farms.

A number of analyses have been made of prospective changes in demand, and of production prospects compared with demand, by commodities and groups of commodities. These analyses vary in detail, partly at least because of the high degree of substitutability within various groups of commodities on both the demand and the production side. But the anticipated direction and relative strength of demand for various groups of commodities have been quite consistent, as has the usual implication that excess capacity will continue to characterize agriculture for some time to come.

Daly projected an increase in demand in 1975 about 25 percent above current production levels (1956-58) for crops and 46 percent for livestock and livestock products. The projected increase in demand for livestock

---

products varied from a little more than a third for dairy and poultry products to nearly half for meat animals. Rogers and Barton found a substantial variation in the probable ease with which we will be able to provide the quantities of various groups of products desired. After allowing for projected increases in crop yields and efficiency of feed use by livestock, and for the excess of current production above demand, they concluded that even if technical inventions should come to a halt, we could meet our prospective demands by 1975 with about one million fewer acres of oil crops and 4 million fewer acres of food grains than we harvested in 1956-58, but we would need to increase our cotton acreage by nearly 5 million acres and our feed grain acreage by some 15 million acres. While these needs can be met readily with acreage currently in the Soil Bank, they do suggest that the type or types of production-control programs that may be in effect in the years ahead, as well as technological developments yet to come, will have significant but variable impacts on different types of farms.

In addition to the impact of market and other institutional restrictions, structural changes on farms of different types will be influenced greatly by the economics of size to be achieved through the spreading of fixed costs, by opportunities to increase volume of business and operators' labor income by substituting additional capital for labor or land, by the nature of current and alternative production techniques, by risk and uncertainty, and by the fixity of production resources and the availability of alternatives for their use. Changes to be made by farms representative of specific situations will be further conditioned by maladjustments in the current organizations of the farms, the availability of buildings, equipment, foundation herds and capital needed to facilitate adjustments, the length of the operators' planning periods as influenced by such factors as stage in the life cycle, and the various motivations and value judgments of the operators, including their aversion to risk and drudgery.

### Prospective Changes in Commercial Farms

#### Dairy farms

No drastic change in the organization and management of typical dairy farms seems likely by 1975. The size of dairy herds will continue to increase, but family farms will continue to dominate the dairy industry. Various analyses bearing on the economies of size of the dairy herd seem to substantiate this conclusion. Day and associates, for example, demonstrate a leveling-out of labor savings per cow when the herd

---


reaches a size of 35 to 40 animals. Burkett concludes "total capital per
animal unit falls rather sharply until a size of about 30 animal units is
reached. It then raises as herd size increases." Fellows and his associates
conclude that "operators of one-man farms (35 cows) can achieve a unit
cost level approximately equal to the level on farms of larger size when a
similar level of management efficiency is used." 

In an analysis of the effect of dairy systems on economies of herd size
in the Corn Belt, Barker shows that the average short-run cost curve
decreases rapidly at first, then more gradually as herd size is increased.
Average costs increase sharply when the herd approaches 34 or 35 cows
with a stanchion parlor, about 41 to 43 cows with stanchion barns and
three-stall parlors, and between 53 and 58 cows with six-stall parlors and
12-cow herringbone systems.

Preliminary results in Minnesota indicate that a quarter-section dairy
farm with 22 cows, a 26-cow stanchion barn, and a total investment of
about $46,000, could maximize profits by increasing the milking herd to
43 cows if the stanchion-barn system were retained, and to 50 cows if an
8-cow herringbone system were adopted. The herringbone operation
would have only a slight income advantage over the stanchion operation
with current price-cost relationships. However, this labor efficient system
would have an increasing advantage with increases in the relative price
of labor.

Another factor that might retard a drastic change in the organization
and structure of dairy farms by 1975 is the fact that innovations in live­
stock production are adopted slowly. This is partly because of the bio­
logical nature of livestock production and the resultant high priority that
must be placed on the reliability of equipment upon which livestock de­
pend. It is partly because of the fixity of resources committed to livestock
production and the integrated character of systems of equipment. Bulk
tank and other specialized dairy equipment is not very flexible as to alter­
native uses or expansion possibilities. This is true also of stanchion barns,
although there is a growing conviction that the addition of a holding shed
represents a feasible means of providing flexibility in size of herds using
stanchion barns. Farmstead equipment must be tailored not only to the
buildings available but also to the field equipment—and vice versa. The

---

9 W. K. Burkett, Farm Size and Capital Acquisition Problem on New Hampshire
10 I. F. Fellows, G. E. Frick and S. B. Weeks, Production Efficiency on New Eng­
Feb. 1952.
11 Randolph Barker and Earl O. Heady, "Economy of Innovations in Dairy Farm­
12 Unpub. data developed by W. B. Sundquist and L. M. Day, Farm Econ. Res.
old field baler, for example, must go when materials handling is mechanized at the farmstead.

Capital rationing may be still another factor that will act to retard revolutionary changes in the structure of dairy farms. In contrast to an average capitalization of around $40,000 for commercial family-operated dairy farms with 22 to 28 cows per farm, current work at Minnesota indicates that it would require an investment of about $17,000 to expand a 22-cow stanchion barn dairy to a 43-cow operation, and $23,000 to expand it to a 50-cow herringbone operation. With these high and increasing capital requirements, and with more than two-thirds of our milk cows in herds of less than 30 cows per farm, it seems doubtful whether a significant proportion of our dairy farms will achieve by 1975 more than an efficient family-size operation of 35 to 40 cows, notwithstanding the many opportunities to increase operators' incomes by substituting additional capital for labor or land. Numbers of dairy farms will continue to decline and more and more of the small herds will drop out as a result of increasing capital and sanitation requirements, coupled with better employment opportunities in off-farm pursuits.

During a period of declining agriculture and relatively favorable investment opportunities in nonfarm sectors, an influx of capital in the amounts required for large-scale dairy operations seems improbable except in unusual circumstances. Exceptions will include unusual locational and associated specialization advantages, such as those of the drylot dairies in southern California. They might include dairy farms integrated with a feed business, with the entrepreneur interested primarily in maintaining the volume of his feed business. But such operations probably will continue to be atypical.

If the demand for dairy products by 1975 increases at the projected level indicated earlier, about 37 percent above current levels, and if production per cow increases by about a fourth, as has been projected, the downward trend in cow numbers will be reversed, and total numbers of cows will increase by about 10 percent. Typical family-operated dairy farms probably will increase cow numbers by as much as the 25 or 30 percent that occurred during the last 15 years. Operators with stanchion barns likely will achieve herds centering around 30 or 35 cows per farm, and those with loose housing at a somewhat higher level.

Some operators will increase the acreages in their farms but the usual practice in the Northeast will be to intensify forage-production programs at the expense of grain production, and to buy more concentrates. In the

---

13 Sundquist et al., op. cit.
Midwest, there will be a tendency to intensify both forage and grain production and perhaps to increase the acreage of each.

Other livestock farms

Other livestock farms have much in common with dairy farms. They, too, offer opportunities to increase incomes through specialization, reductions in investment-output ratios, and substitution of additional capital for labor or land. This is especially true on farms where the quantity or quality of labor is limiting and where increases in the relative price of labor have made labor-saving techniques an increasingly good buy. However, reduction in unit costs usually tend to level out within the potential size range of family farms. For despite the apparent trend toward specialization, the bulk of our livestock production will continue to come from farms on which the farm family provides most of the labor and management.

Scoville found unit costs on a large-scale livestock farm to be only 5 percent lower than on a comparable one-man farm. Similarly, Mosher found that "the optimum use of land, labor and capital was found on farms of 260 to 339 acres in northern Illinois." The extent to which managerial limitations affect economies of scale is not very clear. Most of our analyses assume that managerial skill increases in proportion to size of farm. Yet our experience suggests that management is especially limiting in livestock production. Certainly few skilled livestock men are available for hire. Wilkins reports that the main point brought out by a recent Indiana study was "that a farmer's ability to manage the hog business has more influence on costs than the number of sows and litters raised each year, so long as facilities are used to best advantage." Livestock farms of the Corn Belt will continue to expand in size, to decrease in numbers, and to provide their share of any increase in the supply of red meat that the market may take. Some increase in specialization of production seems probable also. Forage limitations will encourage some operators to expand the hog rather than the beef enterprise. Those with adequate capital and managerial ability may expand hog production substantially in order (1) to take advantage of labor and other economies associated with central farrowing and confinement finishing, and (2) to provide the quantity, quality, and uniformity of product required by the market. Labor, as well as capital and managerial limitations, will prevent

most operators from expanding to the 1,000 to 1,200 hogs that one man can raise. But in contrast to the average of 170 hogs currently raised on family-operated hog-beef fattening farms, production of some 500 to 600 hogs per farm may not be uncommon in the Corn Belt. According to Van Arsdall's preliminary investigations at Illinois, facilities for such an enterprise would require an investment of some $10,000 to $12,000. His findings indicate that the investment in central farrowing facilities and confinement finishing quarters may approximate $20 per pig capacity.19 These hog farmers will increase feed grain production by shortening their rotations and using more fertilizer, but they will need to buy more concentrates.

Other livestock producers, especially those in the fringe area around the Corn Belt, who are not in position to expand their hog enterprises substantially may increase the size of their beef enterprises in an effort to decrease unit costs, increase volume, and achieve a product more amenable to specification buying. Still other Corn Belt producers will eliminate all livestock enterprises, take off-farm jobs, and shift to cash-crop production as part-time operations.

With 9 in 10 livestock producers still using manual techniques in their livestock operations, except for tractor-powered transportation, high labor costs and a scarcity of dependable and qualified labor will induce the larger operators to acquire considerably more materials-handling and other improved equipment. There is evidence, for example, that a mechanized distribution system has become the most economical method of delivering feed to feed bunks with a herd of 50 steers.20 Some of the smaller operators also will acquire such equipment as a matter of convenience and aversion to drudgery.

Cattle ranches

Cattle ranch organization probably will change less in the next 15 years than will the livestock farms of the Corn Belt. Already highly specialized, and with very limited production alternatives, their opportunities for change are limited. They too, however, will be influenced by the trend toward large-scale retailing of meat, and its effects on packing plants, packer buyers, contract feeders, and order buyers. Cow-calf and stocker cattlemen—the primary producers of much of our feeder cattle—will be under compulsion to modify both size of business and quality and timing of product to meet large-scale marketing demands reflected by the order buyer and the contract feeder.

Specialization and lower investment-output ratios of large-scale feeding operations will encourage some expansion in such operations. This

---

20 Van Arsdall, ibid.
will be especially true in the western and southwestern areas where the impact of an expanding market coincides with the availability of livestock, excess supplies of feed grains, and the forages required to supplement them. Managerial limitations and associated risks and uncertainties will be major limiting factors in such developments. In contrast, the availability of farm-grown feeds and of otherwise unmarketable operator and family labor and management will continue to maintain the competitive position of efficient farm feeders in the Midwest. They will continue to represent much of the rancher’s market for feeder cattle. A premium on young cattle resulting from continued large supplies of relatively cheap feed grains could encourage the marketing of light feeder cattle to either farm or large-scale feeders.

Poultry farms

The widely publicized changes made in recent years in the broiler industry may well portend what is to come in the egg business. Size of laying flocks will increase, though generally not beyond the limits of the farm family to provide most of the labor. But the family poultry farm may well be in jeopardy through loss of much of the managerial function bargained away by contract.

Poultry production has become a high-risk industry. Rapid developments in technology, shifts in interregional competition, and depressed prices are forcing out the small, inefficient operators. Marketing arrangements are especially pertinent. Quantity buying to specification is eliminating the market for small producers. Corporate food chains accounted for 43 percent of all grocery sales in the United States in 1958.21

The broiler industry continues to adjust to new production and marketing techniques. Broiler producers and contractors alike are learning that the comfortable margins enjoyed earlier are a thing of the past. No longer are small, part-time producers encouraged in the broiler business. Even the typical current flock of some 10,000 to 20,000 birds is no longer adequate to yield a return to both labor and capital. Units of some 35,000 to 50,000 birds per flock, with four flocks produced per year, are required to provide sufficient capital accumulation potential to amortize in less than 25 years minimum investment costs of $1.00 per square foot of housing space.22

The egg industry is showing a marked tendency to follow the pattern set by broilers. Margins are down. The squeeze to increase efficiency of production, which has eliminated many small producers, will continue. Production in 1975 may be largely under contract, with the producer

---

providing labor, housing and equipment and the contractor making many of the managerial decisions. Farm flocks as we have known them will be practically eliminated, chiefly because farmers cannot provide either the quantity or quality of product required by specification buyers. Specialized poultry farms will prevail, with modal size laying flocks of around 6,000 to 10,000 birds, and with many producers having up to 35,000 to 50,000 birds.

*Crop farms*

The structural characteristics of specialized cash crop farms are especially likely to be determined by restrictions imposed by demand and associated production-control programs, and by limitations imposed by risk and uncertainty. This is true especially of wheat farms, where both demand and production alternatives are limited and yield uncertainties are extreme.

Mechanization has greatly increased the size of crop farm that the farm family can handle. Self-propelled combines and diesel tractors continue the pressure to expand size of farm. But beyond the limits of the acreage which, with a balanced "line" of equipment, will minimize unit costs, opportunities to achieve increasing returns to size are more limited than is sometimes supposed. Rude shows increasing volume of business but only minor reductions in investment-output ratios in moving from 800- to 1,700-acre Montana wheat farms when balanced "lines" of equipment are used. Janssen found that a two-man Corn Belt cash-grain farm could handle about twice as many resources as a one-man farm, but that certain inefficiencies and capacity limits of discrete machines limit the amount of land that three- and four-man farms could handle.

Heady and colleagues conclude that a Corn Belt cash-grain "farm of 240 acres, one falling within most definitions of family farms, is large enough to realize the major reductions in costs." Heady found moderately decreasing unit costs over a wide acreage, but he concluded that although most operators believe greater profits could be achieved with larger units, "the uncertainties of price and production dampen tendencies to strike out (borrow funds to operate a larger unit) and endanger the equities they have built up." This area of risk and uncertainty, like the area of managerial limitations, represents one of the least understood, yet one of the most impor-

---


tant factors influencing the structure of farms. This is especially true in the higher risk, cash-grain areas where a better understanding of economies of risk and uncertainty may one day modify our conclusions about economies of size.

The size and structure of specialized wheat farms seem destined to change even less in the next 15 years than those of almost any other major type of farm. Conceivably, production-control programs could encourage diversification of production on wheat farms. But it seems more likely that market and program restrictions, together with risk and uncertainty, will continue to restrict changes as they have in the past. In addition to the usual price and production uncertainties, market uncertainties will serve as an additional deterrent to an inflow of capital from outside sources.

It seems probable that the average size of specialized wheat farms may increase another 15 or 20 percent by 1975 as some of the smaller farms are absorbed by other operators in an attempt to enhance returns through decreased unit costs or larger volumes of business. The average acreage of wheat per farm probably will not increase greatly from current levels if restrictive types of production-control programs continue, but the acreage of feed grains may be increased. Should production of wheat for feed be permitted on unallotted acres, the acreage of wheat would be increased at the expense of grain sorghums and barley. Should all production controls be eliminated, the average acreage of wheat per farm would increase more rapidly. Numbers of farms would decrease proportionately as the smaller, less efficient units were absorbed.

Few wheat farmers will go into livestock production in a big way. In areas where forage production is dependable, livestock production can be a profitable supplementary enterprise when wheat production is restricted. But wheat farmers are noted for their aversion to intensive livestock enterprises, and extensive livestock enterprises have been shown repeatedly to be an unprofitable alternative to wheat in the specialized areas. Large-scale drylot feeder enterprises are attracting considerable attention in some of the wheat areas where feed grain production has expanded greatly. Their future will be governed by some of the uncertainties mentioned earlier. But it is doubtful whether major livestock enterprises will become an integral part of our wheat farms.

Conclusions

While the structure of American agriculture will continue to change, the impacts will be much greater on the small, marginal units than on typical medium-to-large family-size operations.

Typically, the family farm will achieve greater specialization of function without losing management control. It will increase size but decrease number of enterprises. It will hire more functions formerly performed by the operator, such as spraying, dusting, fertilizing, and even aid in management, including perhaps the purchasing and marketing of livestock. The family farm will continue to increase in size and to adopt other labor-using and output-increasing innovations essential to survival in the competitive business of farming.

Important differences exist between types of farms and individual farm operators in the changes in size, organization, and management that are both feasible and essential for survival. But with a few notable exceptions, the family farm, with the operator and his family providing most of the labor and management will continue to be the predominant production unit in most types of farms.

Vertically integrated operations will dominate the poultry industry, largely because of marketing requirements associated with large-scale retailing. Large-scale or factory-type operations will become increasingly important in livestock-feeding operations in the West and Southwest where there is an exceptional confluence of an expanding market and livestock, feed grain, and forage supplies. But even in these regions it will be held in check by managerial limitations and associated risks and uncertainties. In the Midwest, the availability of farm-grown feeds, and of otherwise unmarketable operator and family labor and management, will more than offset advantages of large-scale specialization that are unachievable in efficient family-size operations.

As output per farm increases, resultant pressures on the market will require further reductions in numbers of farms and even greater increases in efficiency. Farm operators will become increasingly dependent on non-farm sectors of the economy for both their markets and their production inputs. More and more farm people will need to turn to nonfarm pursuits for employment—many for their full-time vocation, others for a part-time supplement to their income from farming. The latter will tend to deter the trend toward larger farms—the former to facilitate it. The proportionate numbers of farmers requiring off-farm employment will vary between types of farms in accordance with required changes in the organization and structure of their farms.

Factors limiting desirable changes in the organization and structure of farms by 1975 will include risk and uncertainty, managerial requirements and capital requirements, all of which will increase greatly. Capital requirements are the subject of the following paper. And to comprehend the impacts of risk and uncertainty and of managerial limitations in almost any farm situation will require a great deal more study.