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Structure and Finances of U.S. Farms

2005 Family Farm Report

Robert A. Hoppe
David E. Banker



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Robert A. Hoppe and David E. Banker

Abstract

Most farms in the United States—98 percent in 2003—are family farms. They are organized as proprietorships, partnerships, or family corporations. Even the largest farms tend to be family farms, although they are more likely to have more than one operator. Very large family farms and nonfamily farms account for a small share of farms but a large—and growing—share of farm sales. Small family farms account for most of the farms in the United States but produce a modest share of farm output. Median income for farm households is 10 percent greater than the median for all U.S. households, and small-farm households receive substantial off-farm income. Many farm households have a large net worth, reflecting the land-intensive nature of farming.

Keywords: Agricultural Resource Management Survey (ARMS), family farms, farm businesses, farm financial performance, farm-operator household income, farm operators, farm structure, farm type, multiple-operator farms, multiple-generation farms, small farms, contracting

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See the companion brochure, *America's Diverse Family Farms: Structure and Finances* (EIB-13)

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Summary

Farming in the United States is very diverse, ranging from very small retirement and residential farms to enterprises with annual sales in the millions of dollars. Farms are operated by individuals on a part-time basis, by multiple generations of a family, and by managers of nonfamily corporations. Some specialize in a single product, while others produce a wide variety of products. But despite their diversity of scale, business structure, and production mix, most U.S. farms are family farms. The characteristics of family farms and the farmers who operate them have implications for the economic well-being of farm households and for farm policy.

What Is the Issue?

Agricultural policymakers require information on how U.S. farming is organized. The Economic Research Service (ERS) produces a periodic report with that information. The *2005 Family Farm Report* is the most recent in the series, providing agricultural policymakers with an accurate, detailed, and unbiased source of information on how farming in the United States is organized, including the relationship of farm size and type to agricultural production, financial performance, sources of farm household income, the extent of off-farm work, and use of production contracts.

What Did the Study Find?

Most U.S. farms—98 percent in 2003—are family farms, defined as operations organized as proprietorships, partnerships, or family corporations that do not have hired managers.

Distribution of farms, total production, assets, and production under contract, by farm type, 2003

| Farm type | Farms | Value of production | Farm assets | Production under contract ¹ |
|--|-------|---------------------|-------------|--|
| <i>Percent of U.S. total</i> | | | | |
| Small family farms: ² | | | | |
| Limited-resource | 11.1 | 1.4 | 7.1 | 0.5 |
| Retirement | 14.6 | 1.5 | 10.2 | 0.5 |
| Residential/lifestyle | 42.1 | 5.2 | 27.1 | 1.5 |
| Farming-occupation | | | | |
| Low-sales | 17.2 | 6.6 | 16.0 | 3.3 |
| Medium-sales | 6.4 | 12.3 | 11.0 | 7.6 |
| Large-scale family farms: ² | | | | |
| Large family farms | 4.0 | 14.4 | 9.7 | 11.5 |
| Very large family farms | 3.1 | 44.7 | 13.7 | 59.0 |
| Nonfamily farms ² | 1.7 | 13.7 | 5.1 | 16.1 |

¹Includes value of production of commodities under production or marketing contracts.

²Small farms have sales of less than \$250,000; large-scale farms have sales of \$250,000 or more; no sales limit for nonfamily farms.

Source: USDA, ERS, 2003 Agricultural Resource Management Survey, Phase III.

Larger family farms have more operators. Because farms are generally family businesses, family members other than the primary operators often serve as secondary operators. About two-thirds of the additional operators are the spouses of the primary operators. The number of operators per farm also tends to increase with size, because today's commercial farms often require more management and labor than an individual can provide. The number of operators per farm reaches 1.9—on average—for very large family farms. About a third of the very large multiple-operator farms have operators spanning more than one generation.

Small family farms account for most U.S. farms and hold most farm assets... Small family farms accounted for 91 percent of the farms in the United States in 2003. They also held about 71 percent of all farm assets, including 70 percent of the land owned by farms. As custodians of the bulk of farm assets—including land—small farms have a large role in natural resource and environmental policy. Small farms accounted for about 82 percent of the land enrolled by farmers in the Conservation Reserve and Wetlands Reserve Programs.

... But very large family farms and nonfamily farms produce a growing share of agricultural output. Large and very large family farms, plus nonfamily farms, made up 9 percent of U.S. farms in 2003 but accounted for 73 percent of the value of production. Production has shifted sharply to very large farms and nonfamily farms since the late 1980s, mainly from small farms with sales between \$10,000 and \$249,999. Shifts in production away from small farms in that sales class are likely to continue, given their negative operating profit margin (on average) and the large and growing share of their operators who are at least 65 years old. (Sales classes are expressed in 2003 dollars in this summary and throughout the report.)

Nevertheless, small farms currently make significant contributions to the production of specific commodities, including hay, tobacco, cash grains and soybeans, dairy products, and beef cattle. Most production by small farms is concentrated among low- and medium-sales farms.

Large-scale farms are more likely than small farms to use contracts. Less than 10 percent of limited-resource, retirement, residential/lifestyle, and low-sales farms use production or marketing contracts. Twenty-eight percent of medium-sales farms have contracts, but this is much less than the share of large and very large farms that have contracts, 45 percent and 63 percent, respectively. Production under contract is concentrated among very large family farms, which account for 59 percent of the total production under marketing or production contracts.

Contracting has grown at a slow and steady rate over the years, but change is more rapid for some commodities. The share of total agricultural production under contract grew by only 5 percentage points, from 34 percent to 39 percent, between 1994-95 and 2003. But during the same period, the share of tobacco production covered by contracts went from 1 percent to 55 percent, while the contracting share of hogs increased from 31 percent to 57 percent.

Payments from conservation and commodity-related programs go to different types of farms. There are two main types of government payments—those from commodity-related programs and those from conservation programs. The distribution of commodity program payments is roughly proportional to the production of program commodities. As a result, medium-sales farms and large-scale farms received about three-quarters of commodity-related government payments in 2003. In contrast, the Conservation Reserve and Wetlands Reserve Programs target environmentally sensitive land rather than commodity production. Retirement, residential/lifestyle, and low-sales small farms received 64 percent of conservation program payments in 2003.

Small-farm households rely on off-farm income. Average operating profit margins and average rates of return on assets and equity are negative for small farms, but positive for large, very large, and nonfamily farms. So, how do so many small farms continue to exist? Small-farm households typically receive substantial off-farm income and do not rely primarily on the farms for their livelihood. Most off-farm income is from earned sources, either wage-and-salary jobs or self-employment. Even households operating large and very large farms also receive earned off-farm income of about \$30,000 on average. For households receiving substantial off-farm income, changes in tax laws and the health of the nonfarm economy are probably more important than payments from farm programs.

Combining farm and off-farm income, the median farm household income in 2003 (\$47,600) was 10 percent greater than the median for all U.S. households (\$43,300). Only operators of limited-resource and retirement farms had a median income below the U.S. level.

How Was the Study Conducted?

The Agricultural Resource Management Survey (ARMS) is the main source of data in the *2005 Family Farm Report*. The ARMS is an annual survey designed and conducted by ERS and another USDA agency, the National Agricultural Statistics Service (NASS). Various censuses of agriculture and ERS farm sector income estimates are also used, particularly when following trends over long periods of time. The report uses the farm classification system developed by ERS to examine farm structure in the United States.

Introduction

Farming in the United States is diverse, ranging from very small retirement and residential farms to enterprises with annual sales in the millions of dollars. Farms are operated by individuals on a part-time basis, by multiple generations of a family, and by managers of nonfamily corporations. Some specialize in a single product, while others produce a wide variety of products.

This report presents comprehensive information about the structural and financial characteristics of the various types of family farms in the United States. It examines important trends currently affecting family farms, following Boehlje (1992, p. 219), who defines the structure of an industry or sector—including the farm sector—along five dimensions. They are:

- (1) The size distribution of firms
- (2) The technology and production characteristics of those firms including type of activity and level of specialization
- (3) The characterization of the workforce (both managers/entrepreneurs and employees) including age, education, experience, skill level, part time versus full time status, etc.
- (4) The resource ownership and financing pattern, including tenancy, leasing and debt/equity sources and relationships
- (5) The inter- and intrasector linkages, including contract production and vertical and horizontal integration.

Each section of this report deals with one or more of those five dimensions of the structure of agriculture.¹

As in previous recent years, the Agricultural Resource Management Survey (ARMS), an annual survey, is the main source of data in the *Family Farm Report*. The ARMS is jointly designed and conducted by the Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS), both agencies of the U.S. Department of Agriculture (USDA). The report also uses data from the Farm Costs and Returns Survey (FCRS)—the predecessor to ARMS—and from various censuses of agriculture and ERS farm sector income estimates, particularly when following trends over long periods of time.²

Because U.S. farms are diverse, ERS developed a farm classification system to examine farm structure (see box, “Farm Types, 2003”). The farm classification system categorizes farms into homogeneous groups, based primarily on annual sales of the farms and the major occupation of their operators. By using these homogeneous groups, a clearer picture emerges of the status of farms in the United States today.

The 2003 classification includes a new definition of limited-resource farms (U.S. National Archives and Records Admn., 2003, p. 32520) developed to provide a consistent definition applied across all USDA agencies. The new definition is based on low household income persisting for 2 years and low gross sales of agricultural products. The household income data necessary for this definition were collected for the first time in the 2003 ARMS.

¹Farm structure is generally defined broadly, often with a list of topics covered. For example, the definition used by Penn (1979, p. 5) over 25 years ago lists 10 components that overlap substantially with Boehlje’s definition, quoted in the text.

²For information on longrun trends in U.S. agriculture, see Dimitri and Efland (2005) and USDA, National Agricultural Statistics Service (2005).

Farm Types, 2003

Small family farms

(sales less than \$250,000)¹

Limited-resource farms. Small farms with sales less than \$100,000 in 2003, and low operator household income. Household income is considered low if it is less than the poverty level for a family of four in both 2003 and 2002, or it is less than half the county median household income both years. Operators may report any major occupation except hired manager.²

Retirement farms. Small farms whose operators report they are retired.³

Residential/lifestyle farms. Small farms whose operators report a major occupation other than farming.³

Farming-occupation farms. Small family farms whose operators report farming as their major occupation.

Low-sales farms. Sales less than \$100,000.³

Medium-sales farms.⁴ Sales between \$100,000 and \$249,999.

Large-scale family farms

(sales of \$250,000 or more)

Large family farms. Sales between \$250,000 and \$499,999.

Very large family farms. Sales of \$500,000 or more.

Nonfamily farms

Nonfamily farms. Farms organized as nonfamily corporations or cooperatives, as well as farms operated by hired managers.

Note: This farm classification focuses on the “family farm,” any farm organized as a sole proprietorship, partnership, or family corporation. Family farms exclude farms organized as nonfamily corporations or cooperatives, as well as farms with hired managers. Other definitions of the family farm exist, but they are usually more restrictive (Banker and MacDonald, 2005, pp 2-3, 81-82).

¹The National Commission on Small Farms selected \$250,000 in gross sales as the cutoff between small and large farms (U.S. Dept. Agr., Nat’l. Comm. on Small Farms, 1998, p. 28).

²Under the previous definition, limited-resource farms had sales less than \$100,000, farm assets less than \$150,000, and total operator household income less than \$20,000.

³Excludes limited-resource farms whose operators report this occupation.

⁴This type was called “high-sales” farms in earlier publications.

Beginning with this report, the *Family Farm Report* series will feature a special topic each year. The special feature this year is “multiple-operator farms.”

Multiple-Operator Farms

Some farms have more than one operator, defined as anyone who makes day-to-day-decisions about the farm business. Traditionally, farm data sources in the United States assumed each farm has only one operator. Recent surveys, however, count all farm operators, and there are 3.2 million operators on the 2.1 million U.S. farms (table 1).³ Thus, a “one-farm, one-operator” rule would understate the count of farm operators by about 1.1 million. Multiple-operator farms produce a large share of agricultural output, approximately 64 percent of the value of production.

Because farms are generally family businesses, one would expect family members other than the principal operator to make decisions. For example, about two-thirds of the additional operators—750,000 out of 1.1 million—are spouses. The number of operators per farm also tends to increase with size, because commercial farms often require more management and labor than an individual can provide. The number of operators per farm reaches 1.9 operators—on average—for very large family farms. About 67 percent of farms of that size have two or more operators (versus 47 percent for all U.S. farms). Seventy-one percent of dairy farms have multiple operators (fig. 1), which is understandable, given the high labor requirements of dairy enterprises.

About 17 percent of multiple-operator farms are multiple-generation farms, with at least a 20-year difference between the ages of the oldest and youngest operators (table 1).⁴ Multiple-generation farms are more common when the principal operator is 65 years old or older. Multiple-generation farms make up 29 percent of multiple-operator farms when the principal operator is age 65 or older, compared with 17 percent for multiple-operator farms in general. This helps explain the relatively large share of multiple-generation farms among limited-resource and retirement farms, since operators of these farms are more likely to be that age. In the remaining family farms, multiple-generation farms become more common as farm size increases, reaching approximately 31 percent of multiple-operator farms for very large farms.

³The “one farm, one operator” assumption was dropped when the Census of Agriculture and ARMS collected data for 2002. The census and ARMS produce similar estimates of the number of principal and secondary operators, multiple-operator farms, and multiple-generation farms. For more information, see “Appendix 1: Comparing ARMS and Census Estimates of Multiple Operator Farms.”

⁴Using a 20-year difference in operator ages to define multiple-generation farms is somewhat arbitrary. A 25-year or 30-year difference could also have been used. A 20-year cutoff is used here to be consistent with that used in the 2002 Census of Agriculture by NASS (Allen and Harris, 2005).

Table 1

Multiple-operator farms, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | | |
|---|----------------------|-----------------|---------------------------|--------------------|------------------|-------------------|---------------|--------------------|--------------|
| | Limited- resource | Retire- ment | Residential/ lifestyle | Farming occupation | | Large | Very large | Nonfamily farms | All farms |
| | | | | Low- sales | Medium- sales | | | | |
| <i>Number</i> | | | | | | | | | |
| Total operators (principal and secondary) | 327,335 | 441,363 | 1,358,207 | 535,856 | 215,927 | 141,411 | 129,102 | 64,892 | 3,214,092 |
| Principal operators (and number of farms) | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 35,048 | 2,121,107 |
| Spouses who are secondary operators | 58,303 | 95,914 | 358,014 | 130,934 | 49,757 | 28,206 | 22,045 | *9,795 | 752,970 |
| Other secondary operators | *34,002 | 36,616 | 107,590 | 41,110 | 31,336 | 28,911 | 40,401 | 20,049 | 340,016 |
| Operators (principal & secondary) per farm | 1.4 | 1.4 | 1.5 | 1.5 | 1.6 | 1.7 | 1.9 | 1.9 | 1.5 |
| <i>Percent of farms</i> | | | | | | | | | |
| Farms by number of operators: | | | | | | | | | |
| One | 63.0 | 60.6 | 50.9 | 55.8 | 47.0 | 44.7 | 33.5 | 42.5 | 53.3 |
| Two | 35.3 | 36.4 | 46.4 | 41.6 | 46.9 | 46.2 | 49.3 | 41.1 | 42.9 |
| Three | d | *2.6 | 2.3 | 2.0 | 5.3 | 7.7 | 12.4 | *9.9 | 3.0 |
| Four or more | d | d | d | d | *0.8 | 1.5 | 4.8 | *6.4 | 0.8 |
| <i>Number</i> | | | | | | | | | |
| Multiple-operator farms ¹ | 87,004 | 121,650 | 438,322 | 160,634 | 71,418 | 46,647 | 44,352 | 20,142 | 990,169 |
| <i>Percent</i> | | | | | | | | | |
| Multiple-operator farms' share of: | | | | | | | | | |
| All farms | 37.0 | 39.4 | 49.1 | 44.2 | 53.0 | 55.3 | 66.5 | 57.5 | 46.7 |
| Total value of production | 35.4 | 46.3 | 53.3 | 51.0 | 54.9 | 56.7 | 71.9 | 71.7 | 64.3 |
| <i>Number</i> | | | | | | | | | |
| Multiple-generation farms ² | *25,229 | 32,127 | 42,819 | 22,614 | 15,334 | 11,336 | 13,577 | 4,582 | 167,618 |
| <i>Percent</i> | | | | | | | | | |
| Multiple-generation farms' share of multi-operator farms | *29.0 | 26.4 | 9.8 | 14.1 | 21.5 | 24.3 | 30.6 | 22.8 | 16.9 |

d = Data suppressed due to insufficient observations.

* = Standard error is between 25 percent and 50 percent of the estimate.

¹Farms reporting more than 1 operator.²Farms reporting a difference of at least 20 years between the ages of the youngest and oldest operators.

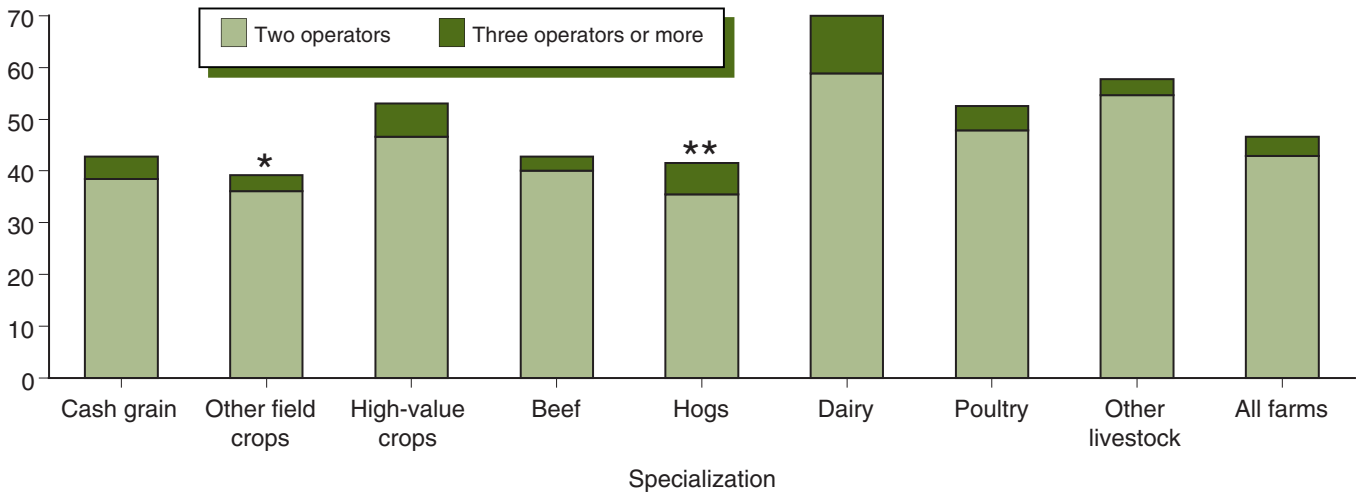
Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Figure 1

Multiple-operator farms by specialization, 2003

Dairy farms are most likely to have more than one operator

Percent of farms in group



*Standard error is between 25 percent and 50 percent of the estimate.

**Standard error is between 100 and 125 percent of the estimate.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

U.S. Farms: Numbers, Size, and Ownership

According to the Census of Agriculture, the number of U.S. farms fell sharply until the early 1970s after peaking at 6.8 million in 1935 (fig. 2). Falling farm numbers during this period reflected growing productivity in agriculture and increased nonfarm employment opportunities (Hoppe, 1994, p. 1). Growing productivity led to excess capacity in agriculture, farm consolidation, and farm operators leaving farming to work in the nonfarm economy. The decline in farm numbers slowed in the 1980s and nearly stopped in the 1990s. By 2002, about 2.1 million farms remained.⁵

Because the amount of farmland did not decrease as much as the number of farms, the remaining farms have more acreage, on average. Farms averaged 441 acres in 2002 versus 155 acres in 1935. But averages can be deceiving. Because of the diversity of today's farms, very few are near the average.

Share of Farms, Production, and Assets

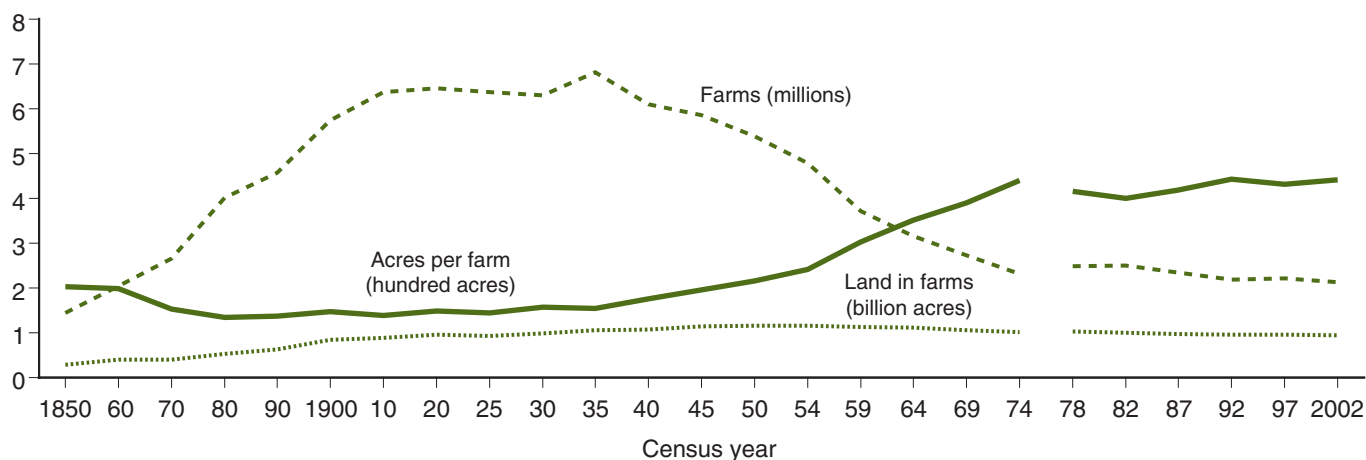
Ninety-eight percent of U.S. farms are family farms. The remaining 2 percent are nonfamily farms, which produce 14 percent of total agricultural output (fig. 3). Two features of family farms stand out. First, small family farms make up 91 percent of all U.S. farms. Second, large-scale family farms account for 59 percent of all production.

Nevertheless, small farms make significant contributions to the production of specific commodities. Small farms account for 63 percent of the value of production for hay, 58 percent for tobacco, 39 percent for cash grains (including soybeans), 37 percent for dairy products, and 33 percent for beef

⁵For a discussion of shifts in the distribution of farms and agricultural sales by farm size over time, see Hoppe and Korb (2005).

Figure 2
Farms, land in farms, and average acres per farm, 1850-2002

Most of the decline in farms occurred between 1935 and 1974



Note: The break in the lines after 1974 reflects the introduction of an adjustment to estimates of the farm count and land in farms. Beginning in 1978, the data are adjusted to compensate for undercoverage by the census of agriculture. For more information, see Allen (2004).

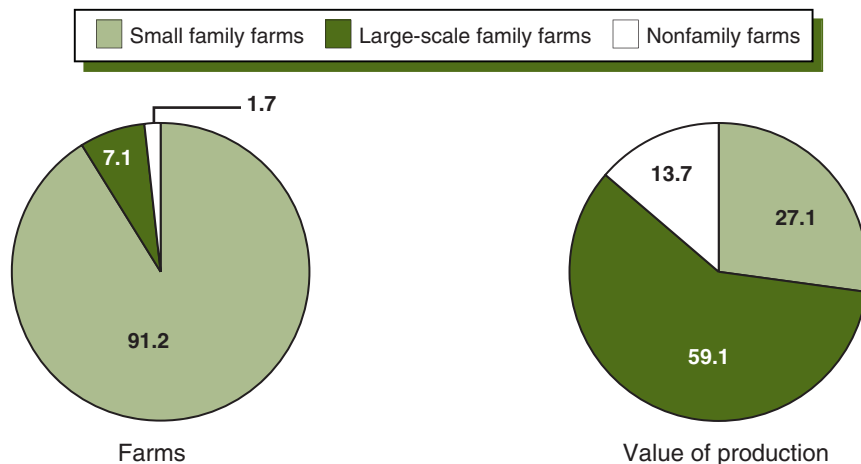
Source: USDA, Economic Research Service, compiled from Census of Agriculture data.

Figure 3

Share of total farms and value of production, 2003

Large-scale family farms and nonfamily farms account for 73 percent of production

Percent of U.S. farms or production



Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

cattle. At the other extreme, small farms account for only 8 percent of the value of production for hogs and 4 percent for poultry. Most small-farm production is concentrated among farming-occupation farms, which account for 19 percent of total U.S. production.

The share of assets and land held by small farms is substantially more than indicated by their 27-percent share of production. Small farms hold about 71 percent of all farm assets, including 70 percent of the land owned by farms (fig. 4). Because of their large land holdings—in aggregate—small farms are important in conservation efforts. Small farms account for 82 percent of the land enrolled in the Conservation Reserve Program (CRP) and Wetlands Reserve Program (WRP).

Shifting Shares

The 2003 ARMS data in figure 3 provide a current picture of distribution of farms and production among various types of farms. The 2003 distribution is different from the distribution in the recent past. Although we cannot extend the current ERS farm classification back before 2003,⁶ a condensed classification consistent with the current one can be extended to earlier years, as shown in table 2. Large, very large, and nonfamily farms are defined the same as in the 2003 version of the classification. Small family farms are classified into two subtypes, those with sales less than \$10,000 and those with sales between \$10,000 and \$249,999. Note that farm types for all years in table 2 are defined in 2003 dollars. Sales in 1989 and 1995 were adjusted using the Producer Price Index for farm products.⁷

Farm numbers and production. Two major changes occurred between 1989 and 2003. First, farm size shifted toward the smallest and the largest sales classes. Specifically, small farms with annual sales of less than \$10,000, very large farms, and nonfamily farms increased in number. At the

⁶Beginning in 2003, limited-resource farmers are defined as having low household income during the current year (2003) and during the previous year (2002). Earlier versions of the ARMS and FCRS did not collect household income for the previous year.

⁷The year 1989 was selected for analysis because it was the earliest year with data consistent with the current ARMS. The year 1995 was selected because it is midway between 1989 and 2003.

Table 2

**Farms, value of production, operator age, and profit margin,
by condensed farm type, 1989, 1995, and 2003**

| Item | 1989 | 1995 | 2003 |
|--------------------------------------|-----------|----------------|-----------|
| | | <i>Number</i> | |
| Number of farms | 2,148,740 | 2,068,000 | 2,121,107 |
| Small family farms | 1,996,845 | 1,915,246 | 1,935,109 |
| Less than \$10,000 in sales | 1,063,672 | 1,000,825 | 1,213,378 |
| \$10,000-\$249,999 in sales | 933,173 | 914,422 | 721,731 |
| Large-scale family farms | 127,083 | 121,563 | 150,950 |
| Large family farms | 87,369 | 75,153 | 84,294 |
| Very large family farms | 39,714 | 46,410 | 66,656 |
| Nonfamily farms | 24,812 | 31,190 | 35,048 |
| | | <i>Percent</i> | |
| Distribution of farms: | | | |
| Small family farms | 92.9 | 92.6 | 91.2 |
| Less than \$10,000 in sales | 49.5 | 48.4 | 57.2 |
| \$10,000-\$249,999 in sales | 43.4 | 44.2 | 34.0 |
| Large-scale family farms | 5.9 | 5.9 | 7.1 |
| Large family farms | 4.1 | 3.6 | 4.0 |
| Very large family farms | 1.8 | 2.2 | 3.1 |
| Nonfamily farms | 1.2 | 1.5 | 1.7 |
| Distribution of value of production: | | | |
| Small family farms | 42.3 | 37.6 | 27.1 |
| Less than \$10,000 in sales | 2.1 | 2.0 | 1.6 |
| \$10,000-\$249,999 in sales | 40.2 | 35.6 | 25.5 |
| Large-scale family farms | 51.5 | 48.0 | 59.1 |
| Large family farms | 19.9 | 14.9 | 14.4 |
| Very large family farms | 31.6 | 33.1 | 44.7 |
| Nonfamily farms | 6.2 | 14.5 | 13.7 |
| Operator 65 years old or more | 24.4 | 25.1 | 26.7 |
| Small family farms | 25.5 | 26.3 | 27.8 |
| Less than \$10,000 in sales | 28.8 | 28.5 | 28.0 |
| \$10,000-\$249,999 in sales | 21.6 | 23.8 | 27.4 |
| Large-scale family farms | 10.6 | 9.8 | 13.5 |
| Large family farms | 9.5 | 8.3 | 14.0 |
| Very large family farms | 12.8 | 12.3 | 12.8 |
| Nonfamily farms | *8.8 | d | *22.9 |
| Operating profit margin ¹ | 5.3 | d | d |
| Small family farms | -5.8 | -18.1 | -28.5 |
| Less than \$10,000 in sales | -57.3 | -68.7 | -98.0 |
| \$10,000-\$249,999 in sales | d | -10.4 | -13.3 |
| Large-scale family farms | 18.0 | 15.1 | 14.7 |
| Large family farms | 14.6 | 11.5 | 10.6 |
| Very large family farms | 20.3 | 16.9 | 16.4 |
| Nonfamily farms | **12.8 | *9.5 | 15.3 |

Note: The 1989 and 1995 farm types are defined in 2003 constant dollars. Sales were adjusted using the Producer Price Index (PPI) for farm products.

d = Data suppressed due to insufficient observations or because the standard error was greater than 75 percent of the estimate.

* = Standard error is between 25 percent and 50 percent of the estimate.

** = Standard error is between 51 percent and 75 percent of the estimate.

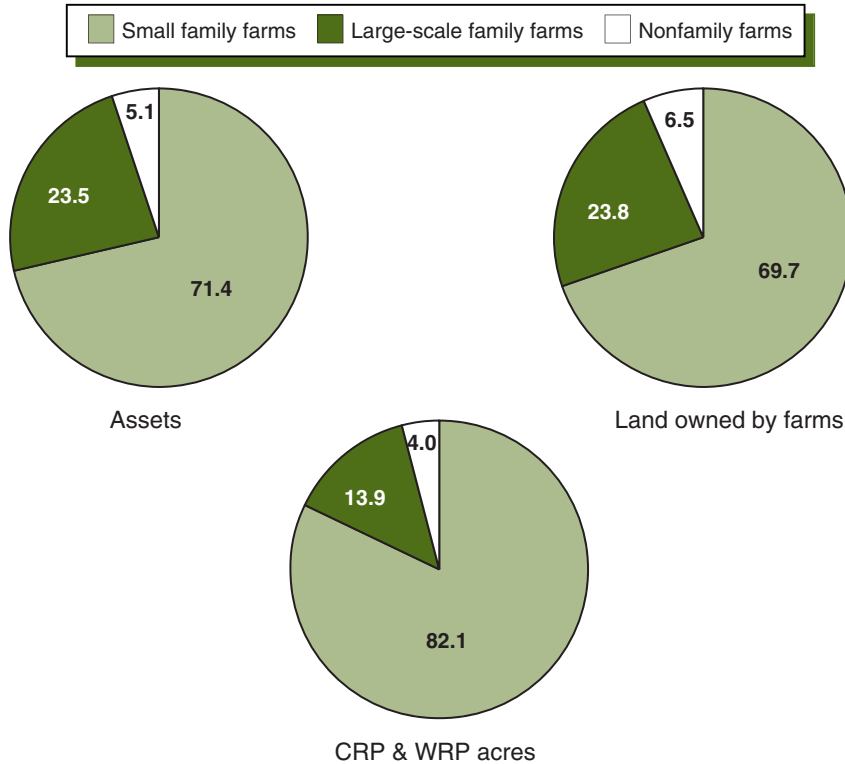
¹Operating profit margin = 100 percent X (net farm income + interest - charge for unpaid operators' labor and management)/gross farm income.

Source: USDA, Economic Research Service, 1989 and 1995 Farm Costs and Returns Survey and 2003 Agricultural Resource Management Survey, Phase III.

Figure 4

Share of farm business assets, acres owned, and acres enrolled in the Conservation Reserve and Wetlands Reserve Programs (CRP & WRP), 2003
Small farms account for most farm assets (including land)

Percent of U.S. farm assets, acres owned, or program acres



Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

same time, the number of small farms with annual sales between \$10,000 and \$249,999 declined.

Second, production shifted sharply to very large family farms and nonfamily farms. These types accounted for 58 percent of the value of production in 2003, compared with 38 percent in 1989, shifting mainly from farms with annual sales between \$10,000 and \$249,999 and—to a lesser extent—large family farms. Most of the shift in production to nonfamily farms occurred between 1989 and 1995, while the shift to large family farms occurred later, between 1995 and 2003. Shifts in production away from farms in the \$10,000 to \$249,999 sales class are likely to continue, given their negative operating profit margin—on average—and the large (and growing) share of their operators who are at least 65 years old.⁸

Concentration. Production shifts to very large farms are consistent with trends in concentration presented in figure 5. Concentration is measured here by the smallest percent of farms (starting with the largest farms and working down) needed to account for half of agricultural sales. During the 1987 to 2002 period in figure 5—roughly equivalent to the 1989 to 2003 period in table 2—the share of farms accounting for half of sales declined

⁸Changes in the distribution of farm assets followed a pattern similar to shifts in production. The share of assets held by very large farms increased from 9 percent in 1989 to 14 percent in 2003. At the same time, the share of assets held by farms with sales between \$10,000 and \$249,999 declined from 48 percent to 41 percent.

by more than half, from the largest 3.6 percent of farms to the largest 1.6 percent. Most of the longrun increase in concentration, however, occurred between 1900 and 1987.

Farm Size and Tenure

Variation in size—measured in either sales or acres—helps explain the distribution of agricultural production. The 1.4 million limited-resource, retirement, and residential/lifestyle farms account for only 8 percent of production because most of these farms are very small. Roughly three-fourths of the farms in each of the three groups have annual sales of less than \$10,000 (table 3). The average acreage operated by farms in these three groups is also small, ranging from 167 to 189 acres.

Although only 37 percent of farming-occupation/low-sales farms have sales of less than \$10,000, nearly three-fourths have sales of less than \$50,000. On average, low-sales farms operate 463 acres, or more than double the averages for the limited-resource, retirement, or residential/lifestyle farms. This acreage is small, however, compared with those for medium-sales small farms and the two types of large-scale farms, which ranged from 1,200 to 2,400 acres.

Thirty-seven percent of very large family farms and 10 percent of nonfamily farms have sales of at least \$1 million. These “million-dollar” farms number 28,300, 1.3 percent of all U.S. farms, but they account for 42 percent of the value of U.S. farm production.

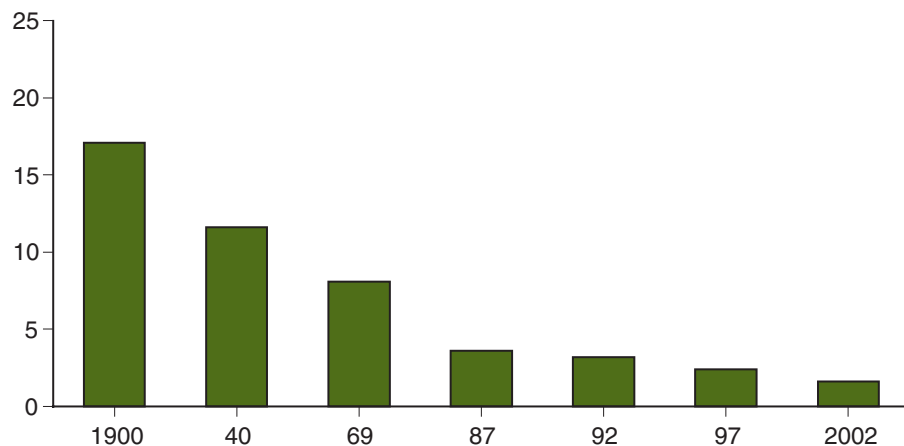
Nonfamily farms. More than half of nonfamily farms have annual sales of less than \$50,000. Owners of these smaller nonfamily farms may have acquired their farms through an inheritance or as an investment and then contracted out the operation of the farm to a manager who—most likely—

Figure 5

Percentage of U.S. farms accounting for half of U.S. farm product sales, selected census years from 1900 to 2002

Concentration has increased during the past century

Percent of U.S. farms



Note: This figure shows the percent of farms (starting with the largest and working down) accounting for 50% of farm product sales in a given census year. For example, the largest 2 percent of farms accounted for 50% of sales in 2002. In contrast, one needed to count down to the largest 17 percent of farms to get to 50% of sales in 1900.

Source: USDA, Economic Research Service, compiled from Census of Agriculture data and Peterson and Brooks (1993, p. 5).

Table 3

Farm size, and tenure, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | | |
|------------------------------|----------------------|-----------------|---------------------------|--------------------|------------------|-------------------|---------------|--------------------|--------------|
| | Limited- resource | Retire- ment | Residential/ lifestyle | Farming-occupation | | Large | Very large | Nonfamily farms | All farms |
| | | | | Low- sales | Medium- sales | | | | |
| <i>Number</i> | | | | | | | | | |
| Total farms | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 35,048 | 2,121,107 |
| <i>Percent of U.S. total</i> | | | | | | | | | |
| Distribution of: | | | | | | | | | |
| Farms | 11.1 | 14.6 | 42.1 | 17.2 | 6.4 | 4.0 | 3.1 | 1.7 | 100.0 |
| Value of production | 1.4 | 1.5 | 5.2 | 6.6 | 12.3 | 14.4 | 44.7 | 13.7 | 100.0 |
| <i>Percent of group</i> | | | | | | | | | |
| Sales class: | | | | | | | | | |
| Less than \$10,000 | 71.8 | 75.6 | 75.8 | 37.0 | na | na | na | 31.9 | 57.7 |
| \$10,000 to \$49,999 | 22.2 | 19.1 | 17.8 | 33.6 | na | na | na | 21.9 | 18.8 |
| \$50,000 to \$99,999 | 6.0 | 3.6 | 4.0 | 29.4 | na | na | na | *10.2 | 8.1 |
| \$100,000 to \$174,999 | na | 1.3 | 1.8 | na | 61.2 | na | na | *7.6 | 5.0 |
| \$175,000 to \$249,999 | na | *0.4 | *0.5 | na | 38.8 | na | na | *5.0 | 2.8 |
| \$250,000 to \$499,999 | na | na | na | na | na | 100.0 | na | 5.7 | 4.1 |
| \$500,000 to \$999,999 | na | na | na | na | na | na | 62.8 | *7.5 | 2.1 |
| \$1,000,000 or more | na | na | na | na | na | na | 37.2 | 10.1 | 1.3 |
| <i>Acres per farm</i> | | | | | | | | | |
| Land operated per farm | 189 | 182 | 167 | 463 | 1,165 | 1,676 | 2,379 | 1,471 | 437 |
| Owned | 146 | 189 | 124 | 315 | 584 | 780 | 1,046 | *1,053 | 268 |
| Rented in | 57 | 27 | 60 | 170 | 601 | 916 | 1,408 | *471 | 191 |
| Rented out | *14 | *34 | d | 22 | 19 | 20 | d | 53 | *23 |
| <i>Percent of group</i> | | | | | | | | | |
| Tenure: | | | | | | | | | |
| Full owner | 68.8 | 79.0 | 70.6 | 54.9 | 19.1 | 20.9 | 24.1 | 65.5 | 62.1 |
| Part owner | 24.3 | 19.4 | 25.5 | 36.5 | 68.2 | 66.4 | 58.7 | 23.7 | 31.7 |
| Tenant ¹ | *6.9 | 1.6 | 3.9 | 8.6 | 12.7 | 12.6 | 17.2 | 10.8 | 6.1 |

d = Data suppressed due to insufficient observations or because the standard error was greater than 75 percent of the estimate.

na = Not applicable.

* = Standard error is between 25 percent and 50 percent of the estimate.

¹Farms that rent all the land they operate. Also includes farms owning less than 1 percent of the land they operate.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

manages several such farms at the same time. Because these farms have a hired manager, they are classified as nonfamily farms. The relatively high average acreage for nonfamily farms reflects a small share of farms in the group with a large acreage.

Tenure. Renting land is no longer considered primarily a method for entry into farming. It has become a way to expand by controlling additional land without the debt and commitment of capital associated with ownership (Reimund and Gale, 1992, pp. 7-8). About two-thirds of the medium-sales farms and large-scale farms are part-owners, meaning that they own part of the land they operate and rent the rest. In addition, about 17 percent of very large family farms are tenants that own none of the land they farm. This is a larger tenancy percentage than is true for any other type of farm.

Specialization

Specialization varies by farm size. Small farms tend to specialize in raising beef cattle, other grazing livestock, and various crops (table 4). Poultry, hogs and high-value crops tend to be produced on larger farms. Medium-sales small farms and large family farms are most likely to specialize in grain.

Beef cattle. Beef cattle are by far the most common specialization among small farms, accounting for 35 percent to 41 percent of limited-resource, retirement, residential/lifestyle, and low-sales farms (table 4). Beef cattle—commonly cow-calf enterprises in the case of small farms—offer three advantages to operators of small-farms:

- (1) Cattle are less labor-intensive than many other enterprises, which may be attractive to an operator who is retired or holds a full-time job off the farm.
- (2) Cattle enterprises tend to be low-cost, which limits cash requirements.
- (3) Producing calves has the potential to produce losses that can be written off against off-farm income.

(For more details, see box “Why Beef Cattle?”)

Other Specializations. Other small-farm specializations vary by type of farm. One-fourth of limited-resource and residential/lifestyle farms specialize in “other livestock,” including horses, sheep, and goats. “Other field crops” is a common specialization for limited-resource, retirement, residential/lifestyle farms, and low-sales farms. This category also includes farms with all their crop acres in the CRP and WRP.

Some specializations are more common among farms with sales greater than \$100,000 (medium-sales and the two types of large-scale farms). Farms specializing in cash grains and soybeans account for more than 40 percent of medium-sales farms and large family farms. In addition, 20 percent of medium-sales farms specialize in dairy, approximately double the percentage for any other type. Very large family farms are at least twice as likely as any other type to specialize in poultry or hogs, accounting for 75 percent of poultry production and 61 percent of hog production.

Table 4

Farm specialization and diversification, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | | |
|--|----------------------|-----------------|---------------------------|--------------------|------------------|-------------------|---------------|--------------------|--------------|
| | Limited- resource | Retire- ment | Residential/ lifestyle | Farming-occupation | | Large | Very large | Nonfamily farms | All farms |
| | | | | Low- sales | Medium- sales | | | | |
| <i>Number</i> | | | | | | | | | |
| Total farms | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 35,048 | 2,121,107 |
| <i>Percent</i> | | | | | | | | | |
| Commodity specialization: ¹ | | | | | | | | | |
| Cash grain ² | 11.7 | 6.5 | 8.7 | 18.1 | 42.5 | 42.3 | 27.1 | 10.7 | 14.4 |
| Other field crops ³ | 17.8 | 32.6 | 20.5 | 14.8 | 9.0 | 9.6 | 10.9 | 33.0 | 19.7 |
| High-value crops ⁴ | 5.5 | 4.9 | 3.8 | 8.4 | 7.0 | 10.6 | 13.1 | 17.5 | 5.9 |
| Beef | 35.4 | 40.8 | 38.4 | 38.6 | 15.3 | 13.1 | 9.3 | 19.9 | 34.7 |
| Hogs | d | d | *0.8 | d | 1.4 | 3.1 | 6.9 | d | 0.9 |
| Dairy | 2.5 | d | d | 5.7 | 20.0 | 11.0 | 10.4 | *3.3 | 3.5 |
| Poultry | d | d | *1.0 | *0.9 | 2.1 | 7.6 | 20.4 | d | 1.8 |
| Other livestock ⁵ | 26.3 | 14.3 | 26.5 | 13.1 | *2.6 | 2.8 | *1.9 | *12.5 | 19.0 |
| <i>Number</i> | | | | | | | | | |
| Average number of commodities ⁶ | 1.8 | 1.3 | 1.4 | 2.2 | 3.6 | 3.4 | 3.3 | 1.5 | 1.9 |
| <i>Percent</i> | | | | | | | | | |
| Number of commodities: ⁶ | | | | | | | | | |
| No commodities ⁷ | 11.8 | 22.6 | 17.1 | 6.3 | d | d | d | 23.5 | 13.3 |
| One commodity | 39.1 | 38.4 | 42.1 | 29.8 | 12.1 | 14.1 | 19.7 | 40.4 | 35.4 |
| Two commodities | 29.0 | 28.2 | 29.2 | 37.5 | 23.6 | 23.4 | 19.4 | 19.1 | 29.4 |
| Three commodities | 10.9 | 7.5 | 7.6 | 10.6 | 16.7 | 21.0 | 22.9 | 7.7 | 10.1 |
| Four or more commodities | 9.2 | 3.3 | 4.0 | 15.8 | 47.5 | 41.5 | 37.8 | 9.3 | 11.9 |

d = Data suppressed due to insufficient observations.

* = Standard error is between 25 percent and 50 percent of the estimate.

¹Commodity that accounts for at least half of the farm's value of production.

²Includes wheat, corn, soybeans, grain sorghum, rice, and general cash grains, where no single cash grain accounts for the majority of production.

³Tobacco, peanuts, cotton, sugar beets, sugar cane, corn for silage, sorghum for silage, hay, canola, and general crops, where no single crop accounts for the majority of production. Also includes farms with all cropland in the Conservation Reserve or Wetlands Reserve Programs (CRP & WRP).

⁴Vegetables, fruits and tree nuts, and nursery and greenhouse.

⁵Includes sheep, goats, horses, mules, ponies, fur-bearing animals, bees, fish, and any other livestock. Also includes farms where no single livestock species accounts for the majority of production.

⁶Based on 26 commodities or commodity groups: barley, oats, wheat, corn for grain, corn silage, soybeans, sorghum for grain, sorghum silage, canola, fruit, vegetables, nursery products, peanuts, sugar cane, sugar beets, rice, potatoes, cotton, tobacco, hay, other crops, cattle, hogs, dairy, poultry, and other livestock.

⁷Includes farms with no production due to drought, other adverse weather, crop and livestock disease, etc. Also includes farms with all cropland in CRP & WRP.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Why Beef Cattle?

Beef cattle—particularly cow-calf enterprises—are a common specialization among small farms (Cash, 2002, p. 21). In a cow-calf enterprise, a breeding herd is operated with a few bulls. To generate revenue, the farmer sells steer calves, some of the heifer calves, and culled cows.

Nearly half of the farms with sales between \$10,000 and \$49,000 specialize in beef cattle (see the table below). About one-third of farms with sales less than \$10,000 also specialize in beef, as well as a similar share of farms with sales between \$50,000 and \$99,000. The two remaining sales classes classified as small farms are less likely to specialize in beef cattle. Even so, about one out of six of those farms also specialize in beef.

Small farms prefer beef cattle

| Sales class | Percent of farms specializing in beef |
|------------------------|---------------------------------------|
| Less than \$10,000 | 36.8 |
| \$10,000 to \$49,999 | 46.5 |
| \$50,000 to \$99,999 | 31.5 |
| \$100,000 to \$174,999 | 17.6 |
| \$175,000 to \$249,999 | 15.1 |
| \$250,000 to \$499,999 | 13.2 |
| \$500,000 to \$999,999 | 8.5 |
| \$1,000,000 or more | 10.8 |
| All farms | 34.7 |

Source: USDA, ERS, 2003 ARMS.

Why do so many small farms, particularly those with sales less than \$100,000, specialize in beef cattle? Beef cattle have three main advantages for small farms:

- Cattle operations are less labor-intensive than many other enterprises, making it easier to combine them with off-farm employment (Cash, 2002, p. 21). In contrast to hogs and chickens, cattle roam freely with little need for direct supervision, except when calving. Cattle are fairly self-sufficient, except in winter when forage is not available.
- Cattle operations tend to be low-cost, which limits cash requirements (Cash, 2002, p. 21). Variable costs generally are lower than those for field crop enterprises. Cattle eat grass and require little additional feed, except during the winter. Fixed costs for land, water access, and fencing make up a large share of the expenses for cow-calf enterprises. These costs, however, represent long-lived assets that only require repair.
- Under the existing tax code, losses from farming can be written off against income from other sources. The writeoff is unlimited, if the farm has the potential to be profitable and the filer is materially involved in operating the farm (Freshwater and Reimer, 1995, p. 220). Some farmers may take advantage of the writeoff by producing a commodity—such as calves—that allows them to group their expense and sales in different years to generate small profits in some years and large losses in others.

High-value crops. Production of high-value crops is heavily concentrated among very large family farms and nonfamily farms, which together account for 76 percent of the total. Although high-value crop enterprises are sometimes suggested as ways to boost the earnings of small farmers, no more than 9 percent of any small-farm type specializes in these crops. High-value crops can generate large sales per acre, but they require substantially more labor than cattle and they may require more effort to market.

Diversification

Farms today tend to be specialized, with individual farms typically producing very few commodities. Only 22 percent of U.S. farms produced more than two commodities in 2003. Sixty-five percent of U.S. farms produced only one or two commodities in 2003, and 13 percent had no production at all. Farms with no production include those with all their cropland in the CRP or WRP, as well as farms experiencing crop failure or loss of livestock from disease or other causes.

Farms become more diversified as size increases. Many small farms specialize in a single commodity or produce nothing at all. Medium-sales farms and large-scale farms are more likely to produce multiple commodities: three-fifths of farms in these groups produce three or more commodities.

Operator Age and Educational Attainment

One of the most striking characteristics of U.S. agriculture is the advanced age of principal farm operators compared with other self-employed workers. About 27 percent of farm operators report their age as 65 years or more (table 5). In contrast, the Bureau of Labor Statistics (BLS) estimates that only 7 percent of self-employed workers in nonagricultural industries in 2003 were that old (U.S. Dept. Labor, 2004, p. 219).⁹ Each farm type—except residential/lifestyle—also had a substantially larger share of operators who were at least 65 years of age than was true for the nonfarm self-employed. Only 6 percent of all principal farm operators were under age 35.

The advanced age of farm operators is understandable, given that the farm is the home for most farmers and that farmers can phase out of farming gradually over a decade or more (Ahearn et al., 1993, p. 7). Younger farmers enter the business a very slow rate, which tends to increase the average age for farmers as a whole. Improved health and advances in farm equipment allow farmers to farm later in life than in previous generations (Mishra et al., 2005, p. 14).

Operator age varies considerably by farm type. As one would expect, operators of retirement farms have the highest average age (69 years), and 94 percent are age 55 or more. Average ages for limited-resource and low-sales farms (62 years and 57 years, respectively) are high when compared with the averages for the other types of family farms. The limited-resource, retirement, and low-sales types each have a relatively large percentage of operators at least 65 years old.

⁹Nineteen percent of operators have retirement farms, but are still counted as farmers because they have sales of at least \$1,000. BLS excludes these operators from their estimates, because they are not—technically speaking—in the labor force. Excluding these operators from the ARMS estimate to be consistent with BLS methodology lowers the portion of operators at least 65 years of age to 14 percent. This is still double the 7-percent BLS estimate.

Table 5

Age and education of principal operators, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | | |
|---------------------------|----------------------|-----------------|---------------------------|--------------------|------------------|-------------------|---------------|--------------------|--------------|
| | Limited- resource | Retire- ment | Residential/ lifestyle | Farming occupation | | Large | Very large | Nonfamily farms | All farms |
| | | | | Low- sales | Medium- sales | | | | |
| | <i>Number</i> | | | | | | | | |
| Total principal operators | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 35,048 | 2,121,107 |
| | <i>Years</i> | | | | | | | | |
| Average age | 62 | 69 | 50 | 57 | 52 | 51 | 51 | 55 | 56 |
| | <i>Percent</i> | | | | | | | | |
| Age: | | | | | | | | | |
| Younger than 35 years | **9.2 | d | 6.5 | 5.9 | 7.7 | 6.9 | 6.7 | **9.9 | 5.9 |
| 35 to 44 years | 6.2 | d | 21.9 | 12.3 | 20.9 | 21.2 | 21.0 | 11.0 | 15.1 |
| 45 to 54 years | 18.5 | 5.5 | 38.6 | 25.4 | 32.0 | 35.9 | 37.2 | 37.8 | 28.7 |
| 55 to 64 years | 12.2 | 23.1 | 26.4 | 25.4 | 23.7 | 22.0 | 22.3 | 18.4 | 23.6 |
| 65 years or older | 53.8 | 70.6 | 6.6 | 30.9 | 15.7 | 14.0 | 12.8 | *22.9 | 26.7 |
| Education: | | | | | | | | | |
| Some high school or less | 33.8 | 15.8 | 5.0 | 13.7 | 8.8 | 5.8 | 5.0 | d | 11.6 |
| Completed high school | 45.6 | 43.3 | 41.2 | 49.1 | 46.7 | 41.0 | 35.9 | *26.1 | 43.3 |
| Some college | 10.5 | 22.9 | 30.1 | 22.2 | 23.7 | 29.6 | 29.3 | 23.7 | 25.0 |
| Completed college | 10.0 | 18.0 | 23.7 | 15.1 | 20.8 | 23.6 | 29.8 | 40.1 | 20.2 |

d = Data suppressed due to insufficient observations.

* = Standard error is between 25 percent and 50 percent of the estimate.

** = Standard error is between 51 percent and 75 percent of the estimate.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

The advanced age of farmers raises concerns about the exit of large numbers of farmers from agriculture in the near future and finding younger farmers to replace them (Gale, 2002, p. 30). Finding replacement operators, however, may not be as hard as it seems. Older farmers can be replaced with younger farmers who will produce more on larger farms, and some replacement farmers already work as secondary operators on multiple-generation farms (Hoppe et al., 1996, p. 45; Gale, 1994, pp. 5, 34-35; Gale, RDP).

Educational attainment varies sharply by type of farm. Very few operators of limited-resource farms attended or completed college, compared with over half of residential/lifestyle farms. Educational attainment also increases with farm size. About 44 percent of medium-sales operators attended or completed college, a number that jumps to nearly 60 percent for operators of very large farms.

Farm Income and Financial Performance

Figure 6 (top panel) tracks the long-term trend in gross cash farm income (GCFI) using two alternative price deflators: the GDP chain-type price index and the farm Producer Price Index (PPI).¹⁰ The GDP deflator measures the general level of prices in the economy, while the farm PPI measures the level of farm prices. Deflating with the GDP price index shows how the purchasing power of GCFI changes relative to the rest of the economy. Deflating with the farm PPI shows the real changing quantities of agricultural output underlying GCFI, independent of changes in general price levels.

¹⁰For a discussion of adjusting farm income for price changes, see Gardner (2002, pp. 251-252, 280-281).

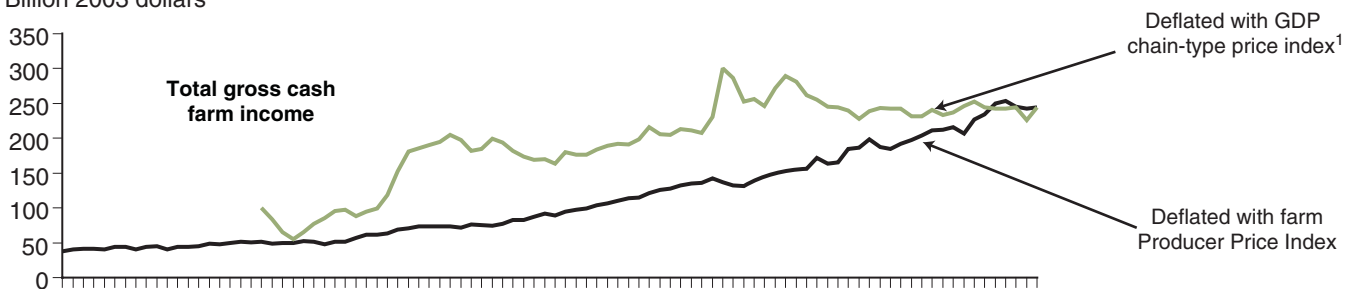
Using the GDP deflator, the real value of GCFI (in 2003 dollars) increased when the prices of farm products rose relative to the prices of nonfarm products (Gardner, 2002, p. 252), especially during World War II and the export boom of the early 1970s. Much of the time, however, agricultural prices fell relative to other prices, leading to prolonged periods of declining purchasing power for farm households.

Figure 6

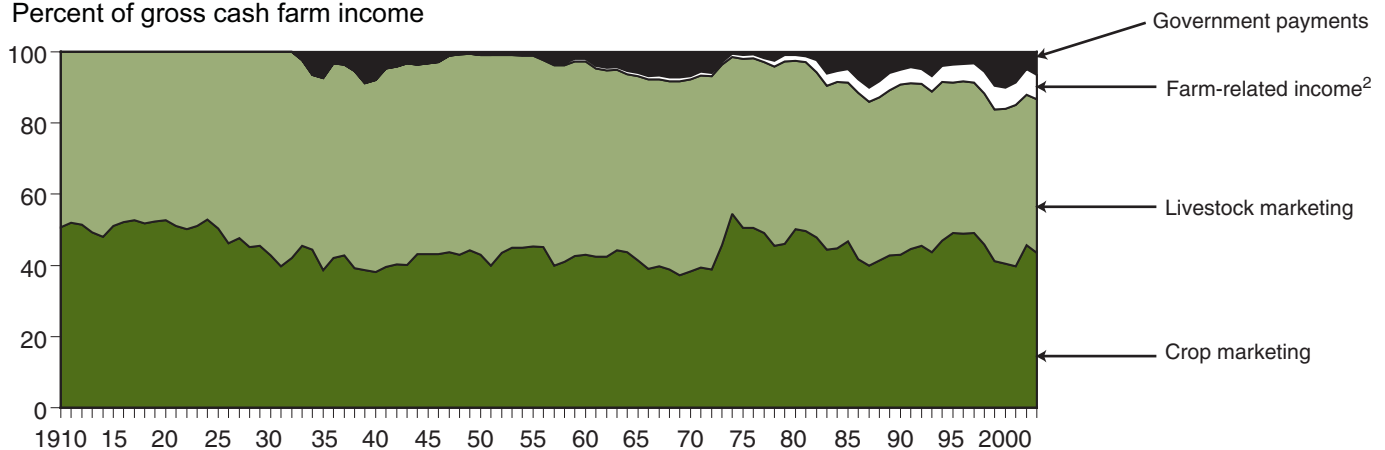
Gross cash farm income and its components, 1910-2003

Marketing of crops and livestock makes up most of gross cash farm income

Billion 2003 dollars



Percent of gross cash farm income



¹This price index is available only from 1929 forward.

²Income from custom labor, machine hire, recreational activities, forest product sales, and other farm sources.

Source: USDA, Economic Research Service, U.S. and State Farm Income Data.

Deflating with the PPI, on the other hand, shows that the real value of production has trended upward since the late 1930s or early 1940s, despite declining farm numbers and relatively stable farmland acreage shown in figure 2. Increasing GCFI, by this measure, reflects a relatively steady long-term increase in farm productivity that began in 1937 (Cochrane, 1993, pp. 362-363).

Crop and Livestock Marketing

Sales of crops and livestock are the largest sources of farm income, making up at least four-fifths of total GCFI in any given year (fig. 6, bottom panel). The shares of GCFI from crops or livestock have changed over time (Harrington et al., 1998, p 48). For example, receipts from livestock marketing were consistently greater than those from crops from the late 1920s through the early 1970s. Between 1972 and 1974, by contrast, the crop share of GCFI grew from 39 percent to 55 percent, while the livestock share declined from 54 percent to 44 percent. This reversal resulted from surging crop prices due to growing export demand for grains (Cochrane 1993, p. 155). Since 1974, crop and livestock shares of GCFI income have not differed by more than 6 or 7 percentage points.

Government payments and “other farm-related income,” the other sources of GCFI, are relatively small. The share of GCFI from government payments has ranged between 1 percent and 10 percent since they were first implemented in 1933. Note, however, that about three-fifths of U.S. farms receive no government payments at all. (Government payments are discussed in greater detail in a later section.) Other farm-related income increased gradually over time, reaching 7 percent of GCFI in recent years. This increase mostly reflects improvements in the data, because income sources were added to the category as additional data became available (Harrington et al., 1998, p. 49).

Farm Business Financial Performance

The farm sector income data presented in figure 6 are useful in understanding the changes in the level and sources of GCFI over time. But these data measure GCFI for the entire farm sector, which includes family and nonfamily farms, cooperatives engaged in farming, and contractors and share landlords who are not farmers (Harrington et al., 1998, p. 46). To focus more on farm businesses themselves and the households who operate them, data from ARMS are used.

Farm profits. Farm profits are strongly associated with farm size. Average operating profit margins increase with sales and are negative until sales reach \$175,000 (fig. 7). The same pattern holds in profitability measures for the various types of farms (table 6). The average operating profit margin and average rates of return on assets and equity are negative for small farms, but positive for large, very large, and nonfamily farms. These ratios are higher for very large farms than for large farms, reflecting very large farms’ higher level of sales.

Average profit measures obscure the wide variation in financial performance among farms. Many small farms are in fact profitable: between 15 percent

and 37 percent of farms in each small-farm type had an operating profit margin of at least 10 percent in 2003. In addition, most farms in each small-farm type generated a positive net farm income, although average net farm income was low compared with larger farms. For more information about small farms that perform well financially, see the *2004 Family Farm Report* (Hoppe et al., 2005).

Financial ratios. On average, limited-resource and residential/lifestyle farms had an operating expense ratio greater than 100 percent in 2003. In other words, operating expenses exceeded their gross cash farm income. The remaining small farms—retirement, low-sales, and medium-sales—generated enough income to cover expenses, although costs amounted to about 90 percent of gross cash farm income for retirement and low-sales farms. Farms with sales of at least \$100,000—medium-sales small farms and large-scale farms—had similar operating expense ratios, between 70 percent and 75 percent. A ratio at this level provided a larger margin between expenses and income than that experienced by retirement and low-sales small farms.

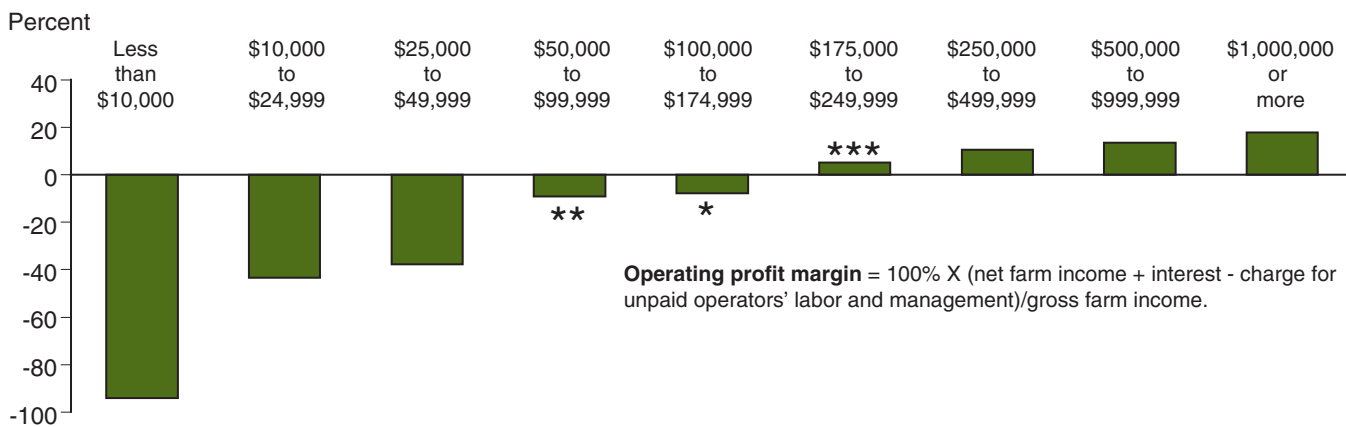
Farms with annual sales of at least \$100,000 have a higher debt-asset ratio than smaller family farms. As a result they are also more likely to be marginally solvent (positive net farm income, but with a debt-asset ratio above 40 percent).¹¹ In contrast, limited-resource, retirement, residential, and low-sales small farms were more likely to fall in the marginal-income category (negative net farm income, but with a debt-asset level of no more than 40 percent). This reflects their higher operating expense ratios, which means they are more likely to generate negative net income. Vulnerable farms, with negative net income and a debt asset-ratio more than 40 percent, are relatively rare in all farm types. In fact, most farms have a favorable financial position, regardless of farm type.

¹¹In the late 1980s, ERS developed a measure of financial position that considered both income and solvency. Under this classification system, farms were classified as having a favorable, marginal-income, marginal-solvency, or vulnerable financial position. For definitions of the four categories, see footnote 6 in table 6.

Figure 7

Operating profit margin by sales class, 2003

Operating profit margin increases with sales



*Standard error is between 25 percent and 50 percent of the estimate.

**Standard error is between 51 and 100 percent of the estimate.

***Standard error is between 126 and 150 percent of the estimate.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Table 6

Selected financial ratios, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | | |
|---|--------------------|------------|-----------------------|--------------------|---------|-------------------|------------|-----------------|-----------|
| | Limited-resource | Retirement | Residential/lifestyle | Farming-occupation | | Large | Very large | Nonfamily farms | All farms |
| Low-sales | | | | Medium-sales | | | | | |
| <i>Number</i> | | | | | | | | | |
| Total farms | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 35,048 | 2,121,107 |
| Profitability measures: | | | | | | | | | |
| Rate of return on assets ¹ | -4.7 | -1.3 | *-2.6 | -2.4 | ***-0.2 | 2.5 | 7.0 | **5.1 | ***-0.1 |
| Rate of return on equity ² | -5.3 | -1.5 | *-3.6 | -3.2 | *-1.2 | 1.7 | 6.9 | **4.7 | -1.0 |
| Operating profit margin ³ | -95.4 | -29.3 | -49.8 | -28.1 | ***-1.1 | 10.6 | 16.4 | *15.3 | ***-0.9 |
| Farms with operating profit margin \geq 10% | 15.4 | 26.4 | 24.3 | 20.5 | 36.7 | 52.4 | 59.3 | 49.0 | 26.4 |
| <i>Dollars per farm</i> | | | | | | | | | |
| Income measure: | | | | | | | | | |
| Net farm income | d | 5,705 | ***1,122 | 10,154 | 41,486 | 84,721 | 246,070 | **98,018 | 18,303 |
| <i>Percent</i> | | | | | | | | | |
| Farms with negative net farm income | 40.1 | 28.3 | 42.3 | 35.3 | 20.6 | 19.6 | 18.3 | 43.7 | 35.8 |
| Financial efficiency measure: | | | | | | | | | |
| Operating expense ratio ⁴ | 140.9 | 92.2 | 125.5 | 86.9 | 74.4 | 71.5 | 74.4 | 83.3 | 81.0 |
| Solvency measure: | | | | | | | | | |
| Debt-asset ratio ⁵ | 4.2 | 2.4 | 9.0 | 7.9 | 11.5 | 15.0 | 19.0 | ***13.2 | 10.2 |
| Solvency & income measure: | | | | | | | | | |
| Financial position: ⁶ | | | | | | | | | |
| Favorable | 58.7 | 71.4 | 54.4 | 61.8 | 72.3 | 71.7 | 66.1 | 52.0 | 60.8 |
| Marginal-income | 34.7 | 27.4 | 36.5 | 31.4 | 17.2 | 15.4 | 13.4 | 32.6 | 31.2 |
| Marginal-solvency | d | d | 3.3 | 2.9 | 7.1 | 8.7 | 15.5 | *4.4 | 3.4 |
| Vulnerable | d | d | 5.8 | 3.9 | 3.4 | 4.2 | 4.9 | **11.1 | 4.6 |

d = Data suppressed due to insufficient observations or because the standard error was greater than 175 percent of the estimate.

* = Standard error is between 25 percent and 50 percent of the estimate.

** = Standard error is between 51 percent and 75 percent of the estimate.

*** = Standard error is between 76 percent and 175 percent of the estimate.

¹Return on assets = (net farm income + interest - charge for unpaid operators' labor and management) / total assets.

²Return on equity = (net farm income - charge for unpaid operators' labor and management) / net worth.

³Operating profit margin = (net farm income + interest - charge for unpaid operators' labor and management) / gross farm income.

⁴Operating expense ratio = total cash operating expenses / gross cash farm income.

⁵Debt-asset ratio = Total liabilities/total assets.

⁶Financial performance classification based on farm income and debt-asset ratio:

- Favorable: positive net farm income and debt-asset ratio no more than 40 percent.
- Marginal-income: negative net farm income and debt-asset ratio no more than 40 percent
- Marginal-solvency: positive net farm income and debt-asset ratio greater than 40 percent.
- Vulnerable: negative net farm income and debt-asset ratio greater than 40 percent.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Sources and Levels of Operator Household Income

How can so many small farms exist, given their poor financial performance relative to large-scale family farms? Households operating small farms typically receive substantial off-farm income. Average off-farm income ranges from \$14,500 for limited-resource households to \$90,400 for households operating residential/lifestyle farms (table 7).¹² Most off-farm income is from earned sources, either a wage or salary job or self-employment. For households operating limited-resource or retirement farms, however, more than half of off-farm income comes from unearned sources—such as Social Security, pensions, dividends, interest, and rent—reflecting the advanced age of operators on those farms.

Off-Farm Work

Participation in off-farm work varies by farm type. At one extreme, neither the operator nor spouse worked off-farm on 70 percent of limited-resource and retirement farms (table 8). At the other extreme, both the operator and a spouse worked off-farm on 61 percent of residential/lifestyle farms. In the remaining types, the operator, a spouse, or both worked off-farm in 47 to 57 percent of farm households.

Operators and spouses on residential/lifestyle farms are much more likely to work off-farm at least 2,000 hours per year—equivalent to a full-time job—than are their counterparts on other farms. Once sales exceed the \$100,000 level (medium-sales small farms and large-scale farms) spouses account for most of the involvement in off-farm work. Since the operators on these farms spend an average of 2,800 hours or more per year working on their farms, their ability to work off-farm is limited. Yet, even households operating large and very large farms average about \$30,000 in off-farm earned income (table 7).

Dual-Career Households

In other words, many farm households are dual-career, holding off-farm jobs as well as farming (Hoppe, 2001, pp. 45 and 49). This is most obvious on residential/lifestyle farms, but is also true to a lesser extent on large and very large farms. About 44 percent of all farm households were dual-career in 2003, with a spouse working off the farm and the principal operator engaged in farming (with or without off-farm work). According to the 2003 Current Population Survey, about 43 percent of all U.S. households had two or more workers in 2003, so farm households are about as likely to be dual-career as U.S. households in general.

In some ways, dual-career farm households are more like nonfarm households than they are like “traditional” farm households (Hoppe, 2001, p. 50). According to the traditional view of farming, people living in farm households use their labor primarily to farm and to maintain the household. The household receives most of its income from farming and may directly consume a portion of farm production. Off-farm work may occur, but only

¹²See “Appendix 2: Measuring Operator Household Income and Net Worth,” for information on how operator household income is defined.

Table 7

Income and wealth of principal operator households, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | All family farms |
|--|--------------------|------------|-----------------------|--------------------|--------------|-------------------|------------|------------------|
| | Limited-resource | Retirement | Residential/lifestyle | Farming-occupation | | Large | Very large | |
| | | | | Low-sales | Medium-sales | | | |
| <i>Number</i> | | | | | | | | |
| Total households | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 2,086,059 |
| <i>Dollars per household</i> | | | | | | | | |
| Mean household income | 7,212 | 49,688 | 85,890 | 49,807 | 60,722 | 102,405 | 214,232 | 68,515 |
| Farm earnings ¹ | -7,249 | d | -4,477 | *2,331 | 29,528 | 62,327 | 171,958 | 7,649 |
| Off-farm income | 14,461 | 49,327 | 90,367 | 47,476 | 31,195 | 40,078 | 42,274 | 60,865 |
| Earned ² | *5,867 | 16,597 | 79,379 | 31,436 | 20,577 | 30,788 | 28,184 | 46,041 |
| Unearned ² | 8,594 | 32,730 | 10,988 | 16,040 | 10,618 | 9,290 | 14,089 | 14,825 |
| <i>Percent</i> | | | | | | | | |
| Share of income from off-farm sources ³ | 200.5 | 99.3 | 105.2 | 95.3 | 51.4 | 39.1 | 19.7 | 88.8 |
| Households with: | | | | | | | | |
| Negative farm earnings | 69.6 | 63.3 | 74.1 | 47.8 | 23.8 | 21.6 | 19.1 | 60.3 |
| Negative total household income ⁴ | 18.6 | 2.7 | *0.8 | 5.6 | 13.3 | 12.9 | 14.1 | 5.6 |
| <i>Dollars per household</i> | | | | | | | | |
| Household net worth | 446,337 | 638,224 | 550,537 | 629,039 | 972,626 | 1,248,315 | 1,881,987 | 663,491 |
| Farm net worth | 368,907 | 399,277 | 342,092 | 498,094 | 847,508 | 1,076,420 | 1,645,788 | 484,784 |
| Nonfarm net worth | 77,430 | 238,946 | 208,445 | 130,945 | 125,117 | 171,895 | 236,199 | 178,707 |
| <i>Percent</i> | | | | | | | | |
| Share of net worth from the farm | 82.7 | 62.6 | 62.1 | 79.2 | 87.1 | 86.2 | 87.4 | 73.1 |

Note: Household income and net worth are calculated only for family farms.

d = Data suppressed due to insufficient observations or because the standard error was greater than 75 percent of the estimate.

* = Standard error is between 25 percent and 50 percent of the estimate.

¹Net farm income in the previous table includes cash and noncash items, is based on accrual accounting, and is calculated for the farm business. Farm earnings—in contrast—is based on cash items only, with the exception of a deduction for depreciation. Farm earnings also exclude the share of net income generated by the farm paid to other households, such as the households of partners. Net farm income and farm earnings are not directly comparable. For more information about the definition of farm earnings, see Appendix 2.

²Earned income comes from off-farm self-employment or wage or salary jobs. Unearned income includes interest and dividends, benefits from Social Security and other public programs, alimony, annuities, net income of estates or trusts, private pensions, regular contributions of persons not living in the household, net rental income from nonfarm properties, and royalties for mineral leases.

³Income from off-farm sources can be more than 100 percent of total household income if earnings of the operator household from farming activities are negative.

⁴Household income can be negative if the loss from farming is larger than income from off-farm sources. Alternatively, farming and off-farm activities may both result in a loss, or off-farm activities may result in a loss that is larger than farm earnings.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Table 8

Farm and off-farm work performed by principal operators and their spouses, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | All family farms |
|--|--------------------|------------|-----------------------|--------------------|--------------|-------------------|------------|------------------|
| | Limited-resource | Retirement | Residential/lifestyle | Farming-occupation | | Large | Very large | |
| | | | | Low-sales | Medium-sales | | | |
| <i>Number</i> | | | | | | | | |
| Total farms, households, and principal operators | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 2,086,059 |
| Total spouses | 102,241 | 205,449 | 667,223 | 258,613 | 100,836 | 67,364 | 51,356 | 1,453,083 |
| <i>Percent of households</i> | | | | | | | | |
| Principal operator is married | 43.5 | 66.5 | 74.8 | 71.1 | 74.8 | 79.9 | 77.0 | 69.7 |
| Off-farm work by principal operator and spouse: | | | | | | | | |
| Only operator ¹ | 23.0 | 6.3 | 39.1 | 13.1 | 7.6 | 8.1 | 7.1 | 23.6 |
| Only spouse | 5.0 | 18.4 | 0.0 | 27.1 | 36.0 | 36.5 | 31.9 | 12.8 |
| Neither ² | 68.1 | 70.7 | 0.0 | 43.5 | 43.8 | 42.6 | 53.3 | 32.0 |
| Both | *3.9 | 4.6 | 60.9 | 16.3 | 12.5 | 12.9 | 7.8 | 31.6 |
| <i>Hours per household</i> | | | | | | | | |
| Mean hours worked, principal operator | 1,703 | 991 | 2,787 | 2,156 | 3,083 | 3,085 | 3,009 | 2,327 |
| Onfarm | 1,395 | 913 | 887 | 1,787 | 2,894 | 2,857 | 2,839 | 1,377 |
| Off-farm | *308 | 79 | 1,900 | 369 | 190 | 228 | 170 | 951 |
| Mean hours worked, spouse ³ | 747 | 673 | 1,800 | 1,642 | 1,912 | 1,742 | 1,541 | 1,535 |
| Onfarm ³ | 425 | 207 | 355 | 619 | 883 | 762 | 768 | 456 |
| Off-farm ³ | *322 | 466 | 1,445 | 1,023 | 1,029 | 979 | 773 | 1,078 |
| <i>Percent of households</i> | | | | | | | | |
| Works on farm at least 2,000 hours: | | | | | | | | |
| Principal operator | 24.3 | 8.3 | 6.6 | 43.4 | 85.4 | 81.7 | 86.0 | 25.9 |
| Spouse ³ | 5.3 | *2.4 | *3.7 | 9.7 | 14.7 | 12.2 | 12.8 | 6.2 |
| Works off-farm at least 2,000 hours: | | | | | | | | |
| Principal operator | *5.7 | *1.6 | 72.2 | 9.0 | 4.1 | 6.1 | 4.9 | 34.0 |
| Spouse ³ | *7.8 | 14.0 | 49.4 | 32.0 | 30.3 | 28.9 | 20.1 | 35.0 |

* = Standard error is between 25 percent and 50 percent of the estimate.

¹Includes households where the operator works off-farm and there is no spouse.

²Includes households where the operator does not work off-farm and there is no spouse.

³Calculated only for households where a spouse is present.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

to support the farm. In contrast, dual-career farm households routinely allocate labor, management, and other resources between farming and nonfarm activities, just as nonfarm households allocate their resources among different economic activities.

Level of Operator Household Income

Mean (or average) farm-operator household income in 2003 was \$68,500, or 16 percent greater than the mean for all U.S. households (fig. 8). Mean income may not be the best choice for comparison because a few very-high-income households can raise the mean well above the income earned by most households. Using medians rather than means yields similar results, however. Median farm-operator household income in 2003 was \$47,620, or 10 percent greater than the median for all U.S. households. Only two types of households, those operating limited-resource or retirement farms, received median household income below the U.S. median.

Net Worth

The income that farm-operator households derive from farming does not reflect the large net worth of many farm-operator households (table 7). For example, for farmers operating farms with sales of at least \$100,000, average household net worth ranges from \$972,600 for medium-sales small farms to \$1.9 million for very large family farms.

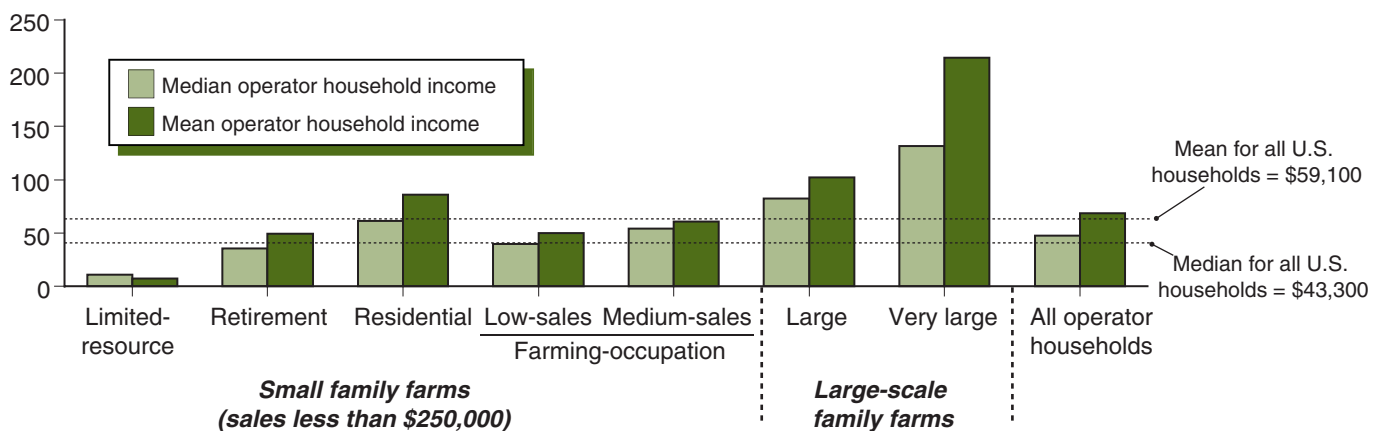
Unlike income, most of which comes from off-farm sources, net worth from the farm makes up most of the wealth of farm households, regardless of farm type. The farm accounts for 63 percent to 87 percent of operator household net worth, reflecting the land-intensive nature of farming.

Figure 8

Median and mean income of principal operator households, 2003

Farm households tend to have higher income than U.S. households in general

\$1,000 per household



Note: Median income falls at the midpoint of the distribution of income for households in a group. Half of the households have income above the median, while the other half has income that below that level.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III, for farm households. U.S. Bureaus of the Census, 2004 Current Population Survey for all U.S. households.

Government Payments

Government payments are set by legislation and can be an important source of income to farms participating in farm programs. Government payments (measured in dollars or as a percentage of GCFI) fluctuate widely from year to year (fig. 9). Most of the recent variation has been due to changes in commodity-related payments, triggered by changing market conditions, policy decisions, natural disasters, and other factors. Payments from conservation programs—mostly from CRP—have been relatively stable since 1987, ranging between \$1.7 billion and \$2.6 billion, measured in 2003 dollars.

Government payments peaked twice at 10 percent of GCFI. The first time was in 1987, just after the end of the farm financial crisis.¹³ The second peak occurred in 2000, due to large ad hoc and emergency payments enacted by Congress in response to falling export demand and crop failures in parts of the Nation (Gardner, 2002, p. 220). Payments reached 7 percent of GCFI in 1993, due largely to high feed grain production and disaster payments for droughts and floods (Harrington et al., 1998, p. 48).

¹³The farm financial crisis is generally dated from 1982 to 1986 (Stam and Dixon, 2004, p. 19).

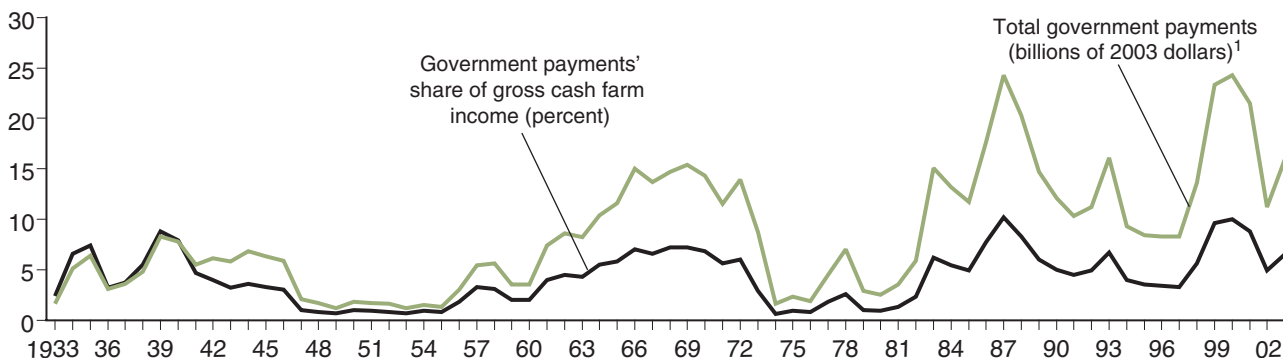
Recipient Farms

About 39 percent of farms received government payments in 2003, and the relative importance of government programs varies by farm type (fig. 10). For example, between 71 and 84 percent of medium-sales small farms and large-scale farms receive government payments, due largely to participation in commodity programs. These farms receive 77 percent of commodity program payments, roughly proportional to their share of harvested acres of program crops (fig. 11). Very large family farms alone receive 32 percent of commodity-related payments.

Figure 9

Government payments and their share of gross cash farm income, 1933-2003

Government payments peaked at 10 percent of gross cash farm income in 1987 and 2000



¹Deflated with GDP chain-type price index. Deflating with the GDP price index shows the purchasing power of government payments relative to the rest of the economy.

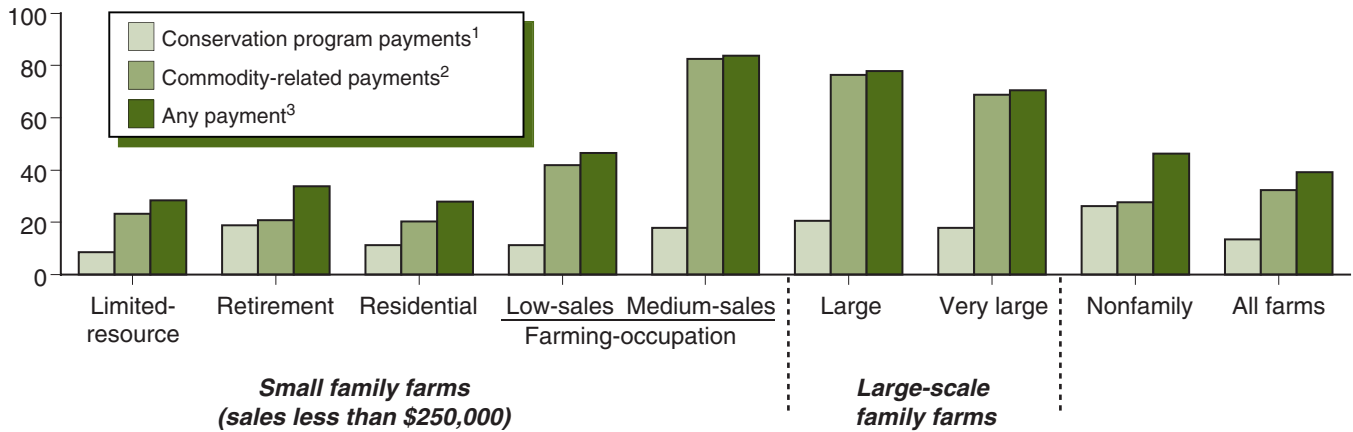
Source: USDA, Economic Research Service, U.S. and State Farm Income Data.

Figure 10

Farms receiving payments from conservation or commodity programs, 2003

Most medium-sales and large-scale farms receive payments from commodity programs

Percent of farms in group



¹Payments from the Conservation Reserve Program (CRP), the Wetlands Reserve Program (WRP) and the Environmental Quality Incentives Program (EQIP).

²Direct payments, counter-cyclical payments, loan deficiency payments, marketing loan gains, net value of commodity certificates, peanut quota buyout, milk income loss contract payments, etc.

³Receives payments from the conservation programs and/or commodity-related programs. Because some farms receive both types of payments, the number of farms receiving commodity payments plus the number of farms receiving conservation payments sums to more than the number of farms receiving any government payment.

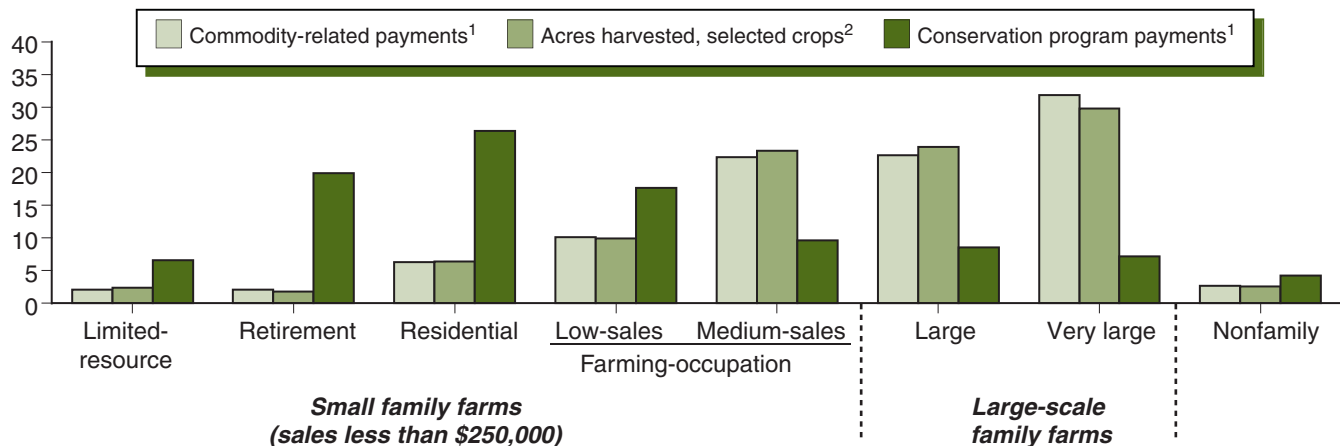
Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Figure 11

Distribution of payments from conservation and commodity programs, 2003

Acres of program commodities explain the distribution of commodity program payments

Percent of U.S. payments or harvested acres



¹For definitions of commodity-related payments and conservation program payments, see the previous figure.

²Food and feed grains, soybeans, other oilseeds, cotton, and peanuts.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Conservation Programs

CRP and WRP target particular types of land rather than the production of specific commodities. Retirement and residential/lifestyle farms receive 46 percent of conservation payments, and low-sales farms account for another 18 percent. The three groups' high share of conservation payments reflects their large numbers (74 percent of all farms), their large share of farmland (50 percent of the land owned by farms), and their tendency to enroll large shares of their land in CRP and WRP when they do participate. CRP and WRP enrollments account for 46 percent of the land operated on participating retirement farms, 28 percent on residential/lifestyle farms, and 23 percent on low-sales farm. By contrast, enrollment ranges from 5 percent to 9 percent for participating medium-sales small farms and large-scale farms.

Residential/lifestyle operators' main reported occupation is off the farm, which limits the amount of time they spend farming. Since WRP and CRP have relatively low labor requirements, residential/lifestyle farmers may find the programs financially attractive, particularly if their farms are not highly profitable. Given their life-cycle position, many retired and low-sales farmers have land available to put into conservation uses (Lambert et al., 2006, pp. 20-26).

Farm Business Arrangements

U.S. farms use a variety of business arrangements that link them to other firms and individuals. The extent of these linkages varies by farm type, but they include arrangements to access or control productive resources. The key to agricultural production is the control of assets, but control can be accomplished through renting land and other assets rather than through buying them. Similarly, farms can use hired labor, contract labor, or custom work rather than family labor. Farms may also link to other firms through marketing or production contracts to sell or otherwise remove the commodities they produce.

Accessing Resources

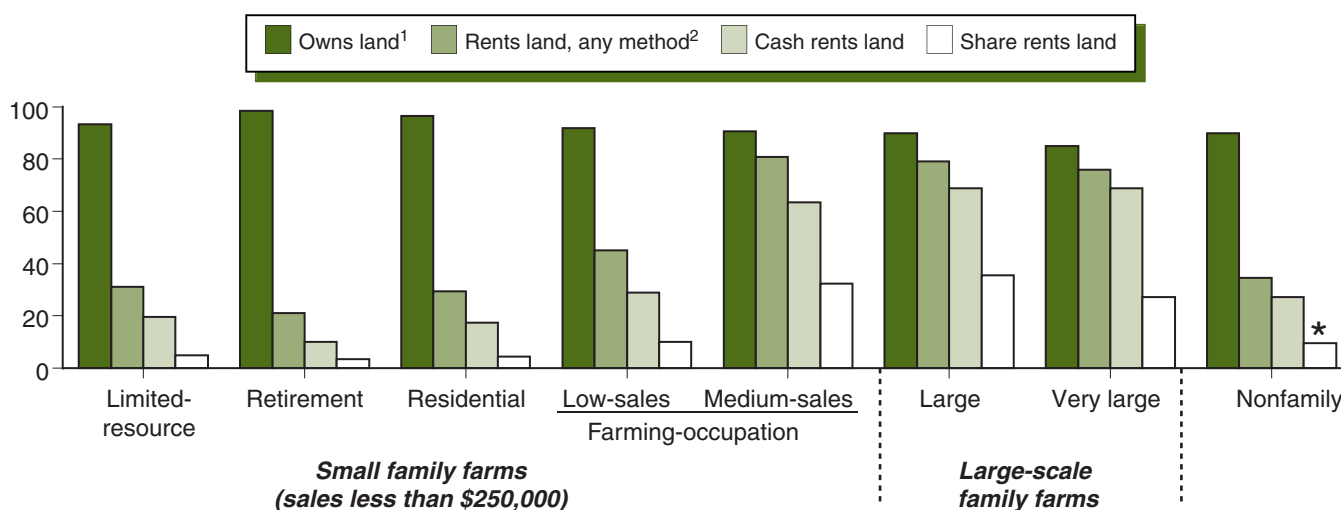
Land ownership is more common than renting in each farm type (fig. 12), with at least 9 out of 10 farms owning land. Renting land, however, is also very common among family farms with sales of at least \$100,000, namely medium-sales farms, large family farms, and very large family farms. Three-fourths of farms in each of the three types rent land. The relatively large share of farms in these types reporting share renting—between 27 and 36 percent—reflects their heavy specialization in cash grains. Thirty-nine percent of cash-grain farms rent for shares, and cash-grain farms account for 72 percent of all land rented for shares.

Figure 12

Methods of accessing land, 2003

Ownership of land is common

Percent of farms in group



* = Standard error is between 25 and 50 percent of the estimate.

¹Share of farms that owns land is slightly higher than the sum of full owners and part owners in table 3. Farms owning a small share (less than 1 percent) of the land they operate are tenants in table 3, but are classified as owning land here.

²Includes operations renting land free of charge, not shown separately. Farms may rent for both cash and shares. Thus the percent cash renting and percent renting for shares may total to more than the percent renting under any method.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

No fewer than one-fourth of the farms in each type report using custom work, and at least one-fifth of the farms in each type report using hired or contract labor (fig. 13). The operator, however, provides between half and three-quarters of all farm labor in each small-farm type and two-fifths on large farms (table 9). The frequency of machinery leasing is fairly low among small farms, but becomes important as farm size increases to the large and very large categories (fig. 13). There may be a size threshold below which machinery leasing is not economical to farms or suppliers.

Contracting

Contracts can potentially provide benefits to both producers and contractors (MacDonald and Banker, 2005, pp. 52-53; MacDonald et al., 2004, pp. 24-30). Farmers get a guaranteed outlet for their production with known compensation, while contractors get an assured supply of commodities with specified characteristics, delivered in a timely manner. ERS defines two types of contracts in ARMS—marketing contracts and production contracts (see box, “Types of Contracts”). Although contracts account for about two-fifths of U.S. agricultural production, the share varies by commodity (fig. 14). For example, U.S. farmers produce virtually all sugar beets and poultry

Types of Contracts

A contract is a legal agreement between a farm operator (contractee) and another person or firm (contractor) to produce a specific type, quantity, and quality of agricultural commodity. Farmers typically use two types of contracts, marketing contracts and production contracts. The characteristics of each type of contract are described below.

| Characteristic | Marketing contract | Production contract |
|---|---|---|
| Items specified in contract | Price (or pricing mechanism), product qualities & quantities, and delivery schedule | Fees received by the farmer. Also, farmer and contractor responsibilities for inputs and practices |
| Finalization of contract | For crops: before harvest For livestock: before animals are ready to be marketed | Before production of the commodity |
| Ownership of commodity | Remains with the farmer during production | Commodity belongs to the contractor during production |
| Contractor involvement in production | Minimal | Often provide specific inputs, production guidelines, and technical advice |
| Inputs | Farmer provides all inputs | Contractor provides specified inputs. In livestock contracts, for example, contractors typically provide feed, veterinary services, transportation, and young animals |
| Compensation to farmer | Contract sets a price (or pricing formula) and outlet for the commodity | Farmer is paid a fee for services rendered. Fee is based on input costs, quantity produced, or both |

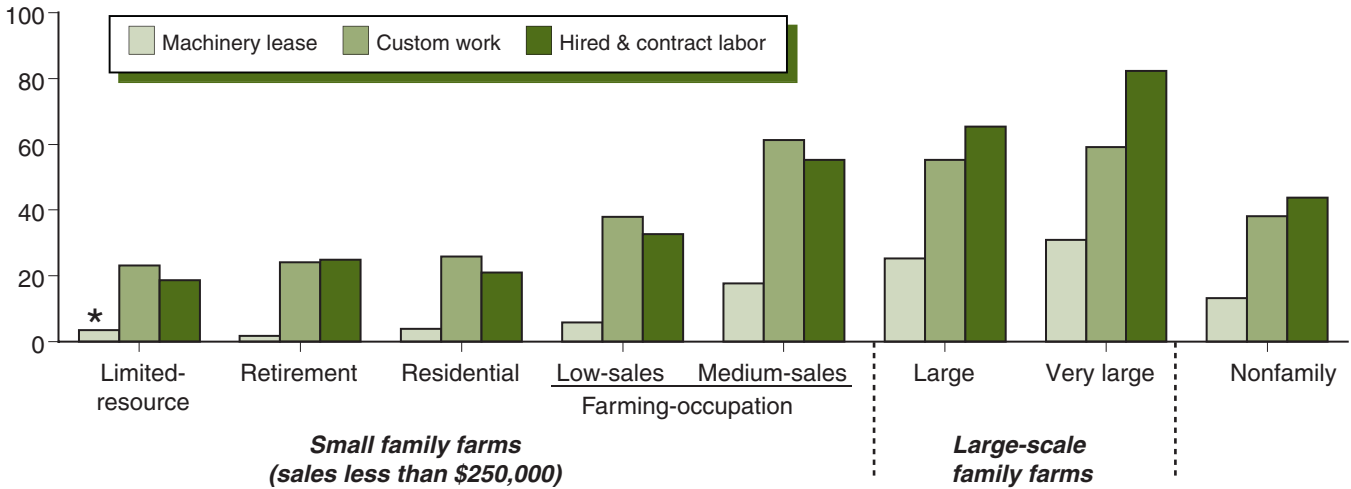
Source: MacDonald and Banker (2005); MacDonald and Korb (2006).

Figure 13

Selected methods of input procurement, 2003

Custom work and hired & contract labor are common, even among small farms

Percent of farms in group



** = Standard error is between 25 and 50 percent of the estimate.*

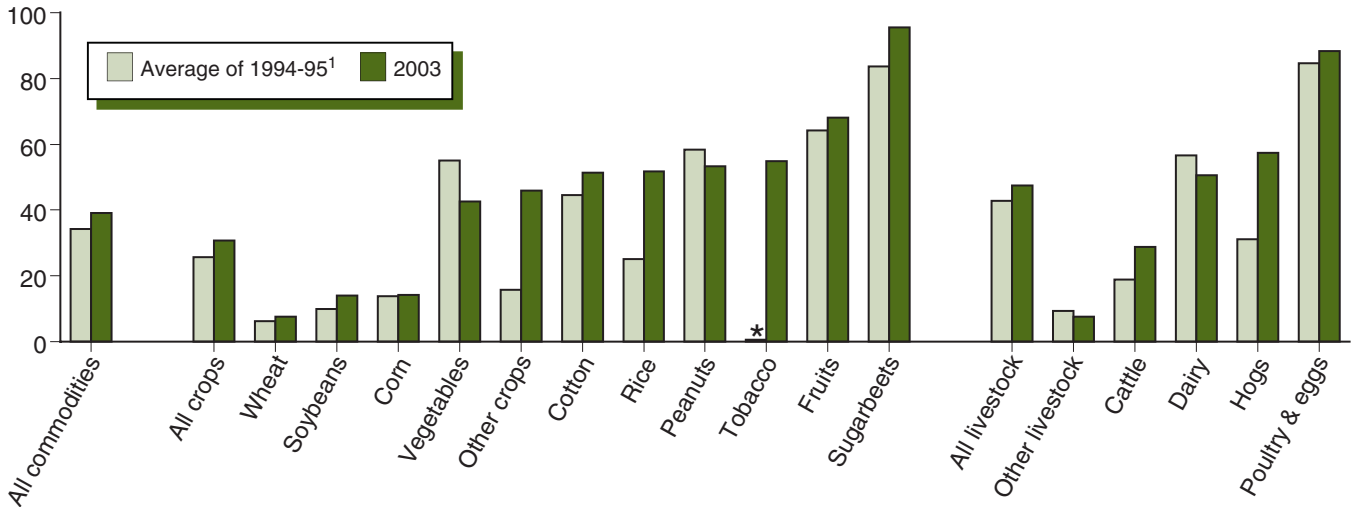
Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Figure 14

Share of value of production under marketing or production contracts for selected commodities, 1994-95 and 2003

Tobacco and hogs sold or removed under contract increased dramatically

Percent of value of production



** = Standard error is between 25 and 50 percent of the estimate.*

¹An average of 1994 and 1995 was used to provide a more statistically reliable estimate.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Table 9

Sources of labor hours for farming, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | | |
|--|--------------------|------------|-----------------------|--------------------|---------|-------------------|------------|-----------------|-----------|
| | Limited-resource | Retirement | Residential/lifestyle | Farming-occupation | | Large | Very large | Nonfamily farms | All farms |
| Low-sales | | | | Medium-sales | | | | | |
| <i>Number</i> | | | | | | | | | |
| Total farms | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 35,048 | 2,121,107 |
| <i>Annual hours per farm</i> | | | | | | | | | |
| Mean hours worked | 1,973 | 1,294 | 1,451 | 2,751 | 5,197 | 6,703 | 16,493 | 10,865 | 2,784 |
| Principal operator (paid & unpaid hrs.) | 1,395 | 913 | 887 | 1,787 | 2,894 | 2,857 | 2,839 | 1,553 | 1,380 |
| Spouse (paid & unpaid hrs.) | 185 | 138 | 266 | 440 | 661 | 609 | 592 | *280 | 317 |
| Other operators (paid & unpaid hrs.) | *86 | 73 | 79 | 134 | 502 | 855 | 1,456 | *650 | 199 |
| Unpaid workers | 231 | 88 | 145 | 207 | 375 | 360 | 296 | *167 | 185 |
| Hired labor | *45 | 56 | *43 | 126 | 618 | 1,640 | 9,666 | *6,260 | 564 |
| Contract labor | 32 | 28 | 32 | 57 | 148 | 382 | 1,643 | d | 139 |
| <i>Percent of total hours</i> | | | | | | | | | |
| Share of total hours worked by: | | | | | | | | | |
| Principal operator | 70.7 | 70.5 | 61.1 | 65.0 | 55.7 | 42.6 | 17.2 | 14.3 | 49.6 |
| Spouse | 9.4 | 10.6 | 18.3 | 16.0 | 12.7 | 9.1 | 3.6 | *2.6 | 11.4 |
| Hired labor | *2.3 | 4.3 | *3.0 | 4.6 | 11.9 | 24.5 | 58.6 | *57.6 | 20.3 |
| <i>Annual person equivalents per farm</i> | | | | | | | | | |
| Average person equivalents ¹ | 0.987 | 0.647 | 0.726 | 1.375 | 2.599 | 3.352 | 8.247 | 5.432 | 1.392 |
| <i>Percent of farms</i> | | | | | | | | | |
| Farms by person equivalents: ¹ | | | | | | | | | |
| Less than .5 | 35.2 | 53.5 | 45.3 | 18.6 | d | d | d | 31.6 | 34.6 |
| .5 to .999 | 26.7 | 26.3 | 31.1 | 23.4 | 4.8 | 4.9 | 1.9 | 10.8 | 24.6 |
| 1 to 1.999 | 30.1 | 16.2 | 18.1 | 37.6 | 36.5 | 23.7 | 13.6 | 15.3 | 23.7 |
| 2 to 2.999 | 4.3 | *2.6 | *4.0 | 12.1 | 26.1 | 27.2 | 18.4 | *11.9 | 8.1 |
| 3 to 3.999 | *1.8 | *0.9 | *1.1 | 5.1 | 17.3 | 16.6 | 14.0 | *8.5 | 4.0 |
| 4 to 4.999 | d | d | d | *2.1 | 8.5 | 9.7 | 11.0 | *4.7 | 1.9 |
| 5 or more | d | d | **0.3 | *1.1 | 5.9 | 16.5 | 40.9 | 17.1 | 3.0 |

d = Data suppressed due to insufficient observations or because the standard error was greater than 75 percent of the estimate.

* = Standard error is between 25 percent and 50 percent of the estimate.

** = Standard error is between 51 percent and 75 percent of the estimate..

¹Note that one annual person equivalent equals 2,000 hours, or 50 weeks per year times 40 hours per week.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

under contract. Contracting also accounts for at least half of the production of cotton, rice, peanuts, tobacco, fruits, dairy products, and hogs. At the other extreme, only a small portion of wheat, soybeans, and corn—all traditional field crops—is grown under contract.

Growth over time. The aggregate data show slow and steady growth in contracting over the years, but change can be more rapid for some commodities. For example, figure 14 shows that the share of total agricultural production under contract grew by only 5 percentage points between 1994-95 and 2003, from 34 percent to 39 percent. During the same period, however, the share of tobacco production covered by contracts went from 1 percent to 55 percent. Cigarette manufacturers replaced cash auctions with contract marketing because contracts better enabled them to acquire enough of the specific types of tobacco they needed. The contracting share of hogs also increased rapidly, from 31 percent to 57 percent, driven in part by product differentiation. Processors wanted more control over the characteristics of the hogs they acquired, which helped them provide a consistent quality of meat to consumers (MacDonald and Banker, 2005, pp. 55-59).

Variation by type of farm. Use of contracts varies by farm type, as shown in table 10. The share of limited-resource, retirement, and residential/lifestyle farms using contracts is relatively low, ranging from 2 percent to 5 percent. For the remaining types of family farms, the use of contracts increases with sales, ranging from 8 percent of low-sales farms to 63 percent for very large family farms. The share of their production under contract also increases with sales, from 19 to 52 percent.

Although a relatively small percentage of each small-farm type has contracts, small farms make up 57 percent of the farms with contracts, reflecting the large number of small farms. A small percentage times the large number of farms in each type results in a large number of small farms with contracts. Production under contract, in contrast, is concentrated among very large family farms, which account for 59 percent of the total.

Table 10

Farms with contracts and value of production under contract, by farm type, 2003

| Item | Small family farms | | | | | Large-scale farms | | | |
|--|------------------------------|-----------------|---------------------------|--------------------|---------|-------------------|---------------|--------------------|--------------|
| | Limited- resource | Retire- ment | Residential/ lifestyle | Farming-occupation | | Large | Very large | Nonfamily farms | All farms |
| Low- sales | | | | Medium- sales | | | | | |
| | <i>Number</i> | | | | | | | | |
| Total farms | 235,030 | 308,832 | 892,602 | 363,812 | 134,833 | 84,294 | 66,656 | 35,048 | 2,121,107 |
| | <i>Percent of group</i> | | | | | | | | |
| Farms with contracts ¹ | 5.1 | *2.4 | 3.2 | 8.2 | 28.0 | 45.4 | 63.3 | 18.4 | 9.6 |
| Value of production under contract ² | 12.5 | 11.9 | 11.3 | *19.2 | 24.2 | 31.3 | 51.7 | 45.9 | 39.1 |
| | <i>Percent of U.S. total</i> | | | | | | | | |
| Farms with contracts ¹ | 5.9 | 3.7 | 14.2 | 14.6 | 18.6 | 18.9 | 20.8 | 3.2 | 100.0 |
| Value of production under contract ² | 0.5 | 0.5 | 1.5 | 3.3 | 7.6 | 11.5 | 59.0 | 16.1 | 100.0 |

* = Standard error is between 25 percent and 50 percent of the estimate.

¹Includes farms with production contracts, marketing contracts, or both.

²Includes the value of production of commodities under production or marketing contracts.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Conclusions

This report has four major findings important to understanding farms and farm-operator households today and in the future:

- (1) Large family farms, very large family farms, and nonfamily farms account for most production. Shifts in production away from small farms are likely to continue.
- (2) Small-farm households may farm for reasons other than generating a profit. Nevertheless, within each farm type, some farms have an operating profit margin of at least 10 percent.
- (3) Three-fifths of U.S. farms do not receive government payments. For households operating these farms, changes in taxes and the nonfarm economy are probably more important than government payments.
- (4) Primary operators of farms are older than other self-employed persons. Secondary operators on multiple-generation farms may have a role in replacing aging primary operators as they exit farming.

Shifts in Production

Large-scale family farms and nonfamily farms accounted for only 9 percent of farms in 2003, but created 73 percent of the value of production. Small family farms nevertheless account for significant portions of specific commodities: hay, tobacco, cash grains (including soybeans), dairy products, and beef cattle.

Production has shifted toward very large family farms and nonfamily farms since the late 1980s, mainly from small farms with annual sales between \$10,000 and \$249,999 and, to a lesser extent, large family farms. Shifts in production away from small farms with sales between \$10,000 and \$249,999 are likely to continue. These small farms have negative operating profit margins, on average, and a large and growing share of operators who are age 65 or older. The operators of many small farms with sales between \$10,000 and \$249,999 are not being replaced as they age, because it is difficult to make a profit at that scale.

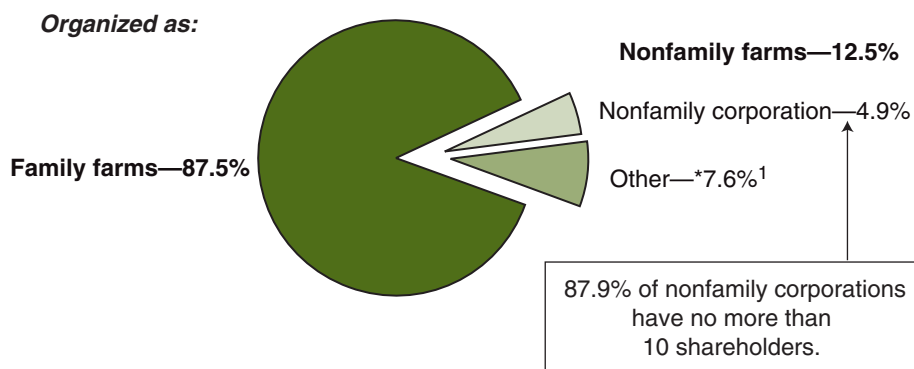
The larger farms most likely to increase their share of production over time are still overwhelmingly family operations. For example, 88 percent of the 28,300 farms with sales of \$1 million or more in 2003 were family operations (fig. 15). In addition, direct ownership of million-dollar nonfamily farms by large, publicly held corporations is negligible and is likely to remain so. Only 6 percent of million-dollar farms were organized as nonfamily corporations, and 88 percent of these corporations had no more than 10 shareholders.

Figure 15

Organization of farms with sales of \$1 million or more, 2003

Most million-dollar farms are organized as family farms

Total number of million-dollar farms = 28,300



* = Standard error is between 25 percent and 50 percent of the estimate.

¹Proprietorships, partnerships, or family corporations with hired managers. Also includes estates, trusts, and cooperatives.

Source: USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III. (Number of shareholders is from version 1).

Small Farms and Profits

Farm financial data suggest that many small family farms—particularly those with sales less than \$10,000—are not operated as profit-maximizing enterprises. Their owners may accept losses in order to meet goals other than operating a profitable farm, such as: receiving long-term capital gains; sheltering off-farm income from taxes; living the rural lifestyle that farming provides; and having the opportunity to pass the farm on to children and grandchildren. These farms are likely to continue in operation as long as the operator households have off-farm income large enough to meet living expenses and farm losses are not unduly large (Hoppe, et al., 2005, pp. 34 and 46). A very negative operating profit margin, on average, did not stop farms with sales less than \$10,000 from increasing in number between 1989 and 2003.

Despite negative average profit measures for each type of small farm, a portion of farmers in each group manage to operate profitable farms. Between 15 percent and 37 percent of each small-farm group has an operating profit margin of at least 10 percent. Some farmers operate profitable small farms to provide for their livelihoods, or at least a portion of their livelihoods.

Government Payments, Taxes, and the Nonfarm Economy

Sixty-one percent of farms in 2003 did not participate in any farm programs. More farm families are directly affected by tax policy than farm policy, since all operators of family farms are subject to income and property taxes. One provision of the U.S. tax code allows farmers to write farm losses off

against other income. There is no limit to the writeoff, as long as the farm has the potential to be profitable and the filer is materially involved in operating the farm (Freshwater and Reimer, 1995, p. 220). This provision is especially important to operators of residential/lifestyle farms who have substantial off-farm earned income.

Because many farm households, particularly those operating small farms, are dual-career and bring in a large share of their income from off-farm earnings, macroeconomic and monetary policies affecting the nonfarm economy are also important. Finally, the status of retirement programs and returns on investments are important to operators of retirement farms and to older operators in other farm types as they approach retirement.

Replacing Aging Farmers

The advanced age of principal operators raises concerns about exits from agriculture and the future of farming (Gale, 1994, p. 10; Gale 2002, pp 30-31). The traditional pool of replacement farmers has been young people who grew up on farms, but this pool has declined due to off-farm migration and the declining number of children born to farm women (Gale 1994, pp. 6-7). Previous research, however, concluded that finding replacement operators may not be a real problem for three principal reasons (Hoppe et al., 1996, p. 45; Gale, 1994, pp. 5, 34-35; Gale, RDP):

- Older farmers can be replaced with a smaller number of younger farmers producing more on larger farms.
- Roughly one-fifth of farm operators already classify themselves as retired. Any replacement of these operators by younger operators already has happened.
- Some younger replacement farmers currently work as secondary operators alongside older, primary operators on multiple-generation farms.

Because of the “one-farm, one-operator” rule previously used in farm data collection, the number of multiple-generation farms was unknown until recently. Data from the 2003 ARMS, however, put the number of multiple-generation farms at 167,600, which means they could provide replacement operators for only a fraction of the 2.1 million U.S. farms. In addition, some secondary operators on multiple-generation farms perform fairly specialized functions—such as marketing or field operations—and may not currently have the broad experience and skills necessary to take over a large farm.

On the other hand, relatively few replacement farm operators will be necessary for the larger, commercial-sized farms producing the bulk of farm products. The 2002 Census of Agriculture estimates that the 34,100 largest farms account for 50 percent of the sales of farm products, and the 143,500 largest farms account for 75 percent of sales (U.S. Dept. Agr., Nat'l. Ag. Stat. Serv., 2004, p. 45). Replacing the operators of these farms from multiple-generation farms involves much smaller numbers.

References

- Ahearn, Mary C., Janet E. Perry, and Hisham S. El-Osta. *The Economic Well-Being of Farm Operator Households, 1988-90*. AER-666. U.S. Dept. Agr., Econ. Res. Serv., January 1993.
- Allen, Rich. "How to Interpret New Demographic Information in the Preliminary 2002 Census of Agriculture Release." Paper presented at the 2004 Agricultural Outlook Forum. Arlington, VA, February 19-20, 2004. (Available at: http://agecon.lib.umn.edu/cgi-n/pdf_view.pl?paperid=12779&ftype=.pdf.)
- Allen, Rich, and Ginger Harris. "What We Know about the Demographics of U.S. Farm Operators." Paper presented at the 2005 Agricultural Outlook Forum. Arlington, VA, February 24-25, 2005. (Available at: <http://www.nass.usda.gov/census/census02/otheranalysis/demographicpaper022505.htm>.)
- Banker, David E., and James M. MacDonald, editors. *Structural and Financial Characteristics of U.S. Farms: 2004 Family Farm Report*. AIB-797. U.S. Dept. Agr., Econ. Res. Serv., March 2005.
- Boehlje, Michael. "Alternative Models of Structural Change in Agriculture and Related Industries," *Agribusiness*, Vol. 8, No. 3, May 1992, pp. 219-231.
- Cash, A. James, II. "Where's the Beef? Small Farms Produce Majority of Cattle," *Agricultural Outlook*, U.S. Dept. Agr., Econ. Res. Serv., AGO-297, December 2002, pp. 21-24.
- Cochrane, Willard W. *The Development of American Agriculture: A Historical Analysis*. Minneapolis: University of Minnesota Press, 1993.
- Dimitri, Carolyn, and Anne Effland. "Milestones in U.S. Farming and Farm Policy," *Amber Waves*, U.S. Dept. Agr., Econ. Res. Serv., Vol. 3, Issue 3, June 2005, pp. 10-11.
- Freshwater, David, and Bill Reimer. "Socio-economic Policies as Causal Forces for the Structure of Agriculture," in *Farms, Farm Families, and Farming Communities*, a special issue of the *Canadian Journal of Agricultural Economics*. David H. Harrington, Leslie Whitener, Ray D. Bollman, David Freshwater, and Philip Ehrensaft, editors. 1995, pp. 209-222.
- Gale, Fred. "America's Aging Farmers: Who Will Take Their Place?" *Rural Development Perspectives*, U.S. Dept. Agr., Econ. Res. Serv., Vol. 8, No. 3, no date, pp. 20-24.
- Gale, Fred. *The New Generation of American Farmers: Farm Entry and Exit Prospects for the 1990's*. AER-695. U.S. Dept. Agr., Econ. Res. Serv., October 1994.
- Gale, Fred. "The Graying Farm Sector: Legacy of Off-farm Migration," *Rural America*, U.S. Dept. Agr., Econ. Res. Serv., Vol. 17, Issue 3, Fall 2002, pp. 28-31.

- Gardner, Bruce L. *American Agriculture in the Twentieth Century: How It Flourished and What It Cost*. Cambridge: Harvard University Press, 2002.
- Harrington, David H., Robert A. Hoppe, R. Neal Peterson, David Banker, and H. Frederick Gale, Jr. "Changes in the Farm Sector," in *Financing Agriculture into the Twenty-first Century*. Marvin Duncan and Jerome M. Stam, editors. Boulder, CO: Westview Press, 1998.
- Hoppe, Robert A. *Farming Operations and Households in Farming Areas: A Closer Look*. AER-685. U.S. Dept. Agr., Econ. Res. Serv., May 1994.
- Hoppe, Robert A. "Farm Households Are Often Dual Career," *Rural America*, U.S. Dept. Agr., Econ. Res. Serv., Vol. 16, Issue 2, Summer 2001, pp. 41-51.
- Hoppe, Robert A., and Penni Korb. "Large and Small Farms: Trends and Characteristics," in *Structural and Financial Characteristics of U.S. Farms: 2004 Family Farm Report*. David E. Banker and James M. MacDonald, editors. AIB-797. U.S. Dept. Agr., Econ. Res. Serv., March 2005.
- Hoppe, Robert A., Robert Green, David Banker, Judith Z. Kalbacher, and Susan Bentley. *Structural and Financial Characteristics of U.S. Farms, 1993: 18th Annual Family Farm Report to Congress*. AIB-797. U.S. Dept. Agr., Econ. Res. Serv., October 1996.
- Hoppe, Robert A., Penni Korb, Robert Green, Ashok Mishra, and Carmen Sandretto. "Characteristics of Top-Performing Farms," in *Structural and Financial Characteristics of U.S. Farms: 2004 Family Farm Report*. David E. Banker and James M. MacDonald, editors. AIB-797. U.S. Dept. Agr., Econ. Res. Serv., March 2005.
- Jones, Carol A., Hisham El-Osta, and Robert Green. *Economic Well-Being of Farm Households*. EB-7. U.S. Dept. Agr., Econ. Res. Serv., March 2006.
- Lambert, Dayton, Patrick Sullivan, Roger Claassen, and Linda Foreman. *Conservation-Compatible Practices and Programs: Who Participates?* ERR-14. U.S. Dept. Agr., Econ. Res. Serv., February 2006.
- MacDonald, James, Janet Perry, Mary Ahearn, David Banker, William Chambers, Carolyn Dimitri, Nigel Key, Kenneth Nelson, and Leland Southard. *Contracts, Markets, and Prices: Organizing the Production and Use of Agricultural Commodities*. AER-837. U.S. Dept. Agr., Econ. Res. Serv., November 2004.
- MacDonald, James M., and David E. Banker. "Agricultural Use of Production and Marketing Contracts," in *Structural and Financial Characteristics of U.S. Farms: 2004 Family Farm Report*. David E. Banker and James M. MacDonald, editors. AIB-797. U.S. Dept. Agr., Econ. Res. Serv., March 2005.
- MacDonald, James M., and Penni Korb. *Agricultural Contracting Update: Contracts in 2003*. EIB-9. U.S. Dept. Agr., Econ. Res. Serv., January 2006.

- Mishra, Ashok K., Ron L. Durst, and Hisham S. El-Osta. "How Do U.S. Farmers Plan for Retirement?" *Amber Waves*, U.S. Dept. Agr., Econ. Res. Serv., Vol. 3, Issue 2, April 2005, pp. 12-18.
- Penn, J.B. "The Structure of Agriculture: An Overview of the Issue," in *Structure Issues of American Agriculture*. AER-438. U.S. Dept. Agr., Econ., Stat., and Coop. Serv., November 1979.
- Peterson, R. Neal, and Nora L. Brooks. The Changing Concentration of U.S. Agricultural Production During the 20th Century: *14th Annual Report to the Congress on the Status of the Family Farm*. AIB-671. U.S. Dept. Agr., Econ. Res. Serv., July 1993.
- Reimund, Donn A., and Fred Gale. Structural Change in the U.S. Farm Sector, 1974-87: *13th Annual Family Farm Report to Congress*. AIB-647. U.S. Dept. Agr., Econ. Res. Serv., May 1992.
- Stam, Jerome M., and Bruce L. Dixon. *Farmer Bankruptcies and Farm Exits in the United States, 1899-2002*. AIB-788. U.S. Dept. Agr., Econ. Res. Serv., March 2004.
- U.S. Department of Agriculture, National Agricultural Statistics Service. *2002 Census of Agriculture*, Vol. 1, Geographic Area Series, Part 51, United States Summary and State Data. AC-02-A-51. June 2004.
- U.S. Department of Agriculture, National Agricultural Statistics Service. *Trends in U.S. Agriculture: A Walk through the Past and a Step into the New Millennium*. Accessed Nov. 1, 2005 at: www.usda.gov/nass/pubs/trends/.
- U.S. Department of Agriculture, National Commission on Small Farms. *A Time to Act: A Report of the USDA National Commission on Small Farms*. Miscellaneous Publication 1545 (MP-1545). January 1998.
- U.S. Department of Labor, Bureau of Labor Statistics. *Employment and Earnings*. Vol. 51, No. 1. January 2004.
- U.S. National Archives and Records Administration, Office of the Federal Register. *Federal Register*. Vol. 68, No. 104, May 30, 2003.

Comparing ARMS and Census Estimates of Multiple-Operator Farms

The long-held “one farm, one operator” assumption was dropped when the Census of Agriculture and ARMS collected data for the year 2002. Both the census and the survey collected information on the principal and secondary farm operators. The census and ARMS asked respondents to report the total number of operators on their farms and provide more detailed information—such as age and occupation—for up to three operators. Subsequent censuses and surveys will continue to collect this information.

ARMS and the census provide counts of the total number of farms, the total number of operators, the number of multiple-operator farms, and the number of multiple-generation farms. This appendix compares selected estimates from the 2003 ARMS—used extensively in this Family Farm Report—with corresponding estimates from the census (appendix table). The survey and census provide generally consistent estimates.

The ARMS estimate of the total number of operators is about 3 percent higher than the census estimate, reflecting an adjustment made to the 2003 ARMS data. Some farmers reported to ARMS that they were the only operator, but later reported that their spouses were also operators. The count of operators in ARMS was adjusted upward to include the spouses in these cases. (The Census of Agriculture did not ask if the spouse was as an operator, so the census count could not be adjusted.) Without the adjustment, the ARMS count of all operators falls within 1 percentage point of the count from the Census of Agriculture. The situation is similar for the count of multiple-operator households. The unadjusted estimate is closer to the census estimate than is the adjusted estimate. The ARMS estimate of multiple-generation farms is fairly close to the corresponding census estimate, within 13 percentage points.

Appendix table

The 2002 Census of Agriculture and 2003 ARMS show similar estimates of farms, operators, multiple-operator farms, and multiple-generation farms

| Item | 2002 Census | 2003 ARMS | 2003 ARMS, without spouse adjustment |
|---|-------------|-----------|--|
| Number of farms (and principal operators) | 2,128,982 | 2,121,107 | 2,121,107 |
| ARMS estimate as percentage of census | na | 99.6 | 99.6 |
| Total operators (principal and secondary) | 3,115,172 | 3,214,092 | 3,090,153 |
| ARMS estimate as percentage of census | na | 103.2 | 99.2 |
| Number of multiple-operator farms | 803,127 | 990,169 | 866,229 |
| ARMS estimate as percentage of census | na | 123.3 | 107.9 |
| Number of multiple-generation farms ¹ | 193,631 | 167,618 | 167,618 |
| ARMS estimate as percentage of census | na | 86.6 | 86.6 |

na = Not applicable.

¹Farms reporting a difference of at least 20 years between the ages of their youngest and oldest operators.

Source: Allen and Harris (2005) and USDA, Economic Research Service, 2003 Agricultural Resource Management Survey, Phase III.

Measuring Operator Household Income and Net Worth

The Current Population Survey (CPS), conducted by the U.S. Census Bureau, is the source of official U.S. household income statistics. Thus, calculating an estimate of farm household income from the Agricultural Resource Management Study (ARMS) that is consistent with CPS methodology allows income comparisons between farm-operator households and all U.S. households.

The CPS definition of farm self-employment income is net money income from the operation of a farm by a person on his own account, as an owner or renter. CPS self-employment income includes income received as cash, but excludes in-kind or nonmoney receipts. No adjustments are made to the CPS income measure to reflect inventory changes, since inventory change is a nonmoney item. The CPS definition departs from a strict cash concept by deducting depreciation, a noncash business expense, from the income of self-employed people.

Farm self-employment income from the ARMS is the sum of the operator household's share of farm business income (net cash farm income less depreciation), wages paid to the operator, and net rental income from renting farmland. Adding other farm-related income of the operator household yields earnings of the operator household from farming activities. (Other farm-related earnings consist of net income from a farm business other than the one being surveyed, wages paid by the farm business to household members other than the operator, and commodities paid to household members for farm work.)

ARMS is also the source of data for estimates of operator households' net worth. The net worth of farm-operator households is defined as the difference between their assets and liabilities. It is calculated as the sum of the operator household's farm net worth and nonfarm net worth. If the net worth of the farm is shared with other households (such as the households of shareholders in a family corporation), only the operator household's share is included. For a detailed comparisons of the wealth and income for farm households and all U.S. households, see Jones et al. (2006).