

Special Feature: The Shift to Large Farms

During the past two decades, data from the census of agriculture show a marked increase in the number of farms selling at least \$250,000 in farm products. The growth in the number of these large farms was accompanied by a similar shift in production. We sort farms in each of the five censuses of agriculture—1982, 1987, 1992, 1997, and 2002—into sales classes in order to track these changes.

When using agricultural sales to measure trends in farm size over time, it is important to adjust for changes in agricultural prices, which will change revenue without any changes in the physical volume of production. Accordingly, we adjust sales of agricultural products for price changes using the Producer Price Index (PPI) for farm products, which is also the USDA/NASS index of prices received by farmers. Sales classes from the various censuses of agriculture presented here are expressed in 2002 constant dollars.

Distribution of Farms

The number of farms with sales of at least \$250,000 grew steadily from 1982 to 2002 (table 9), increasing from 85,000 to 152,000. The share of all farms in this group grew from 4 percent to 7 percent. Most of these farms had sales between \$250,000 and \$499,999—even by the end of the period—but the number of farms with sales of at least \$500,000 grew more rapidly. The number of farms with sales between \$500,000 and \$999,999 more than doubled, while the number of million-dollar farms more than tripled.

The number of farms in the other sales classes declined in each of the four intercensus periods, with the exception of farms selling less than \$10,000. Farms with sales that low declined during the first two intercensus periods, but increased during the last two periods. The increase during the last two periods was due to growth in “point farms,” or farms with sales less than \$1,000 that might normally have sales that high and satisfy the criteria necessary to be considered a farm.⁹ Because of the growth in point farms, farms with sales less than \$10,000 now account for 59 percent of all U.S. farms, up from 49 percent in 1982.

Most of the increase in point farms, however, was due to a minor change in the census farm definition and an adjustment for undercoverage in the census farm count. Beginning in 1997, establishments that enrolled all their cropland in CRP or WRP were counted as farms, even if they did not sell at least \$1,000 in farm products (Hoppe and Korb, 2002, p. 25).¹⁰ With the 2002 census, NASS adjusted the census farm count to compensate for undercoverage (Allen, 2004), which had the largest effect on farms near the \$1,000 cutoff in the farm definition (USDA, NASS, 2004, p. C-11).¹¹

Distribution of Agricultural Sales

In addition to the shift in the number of farms in the various sales classes, even more dramatic shifts occurred in the distribution of total agricultural

⁹If a place does not have \$1,000 in sales, a “point system” assigns values for acres of various crops and head of livestock to estimate normal sales. “Point farms” are farms with less than \$1,000 in sales but points worth at least \$1,000. See “What is the Definition of a Farm?” on the NASS website (http://www.nass.usda.gov/Census_of_Agriculture/Frequently_Asked_Questions/index.asp#1).

¹⁰Enrollment in the CRP began in 1986 and enrollment in the WRP began in 1992 (Hellerstein, 2006). Since neither program existed in 1982, the farm count from the 1982 census and the farm counts from the 1997 and 2002 censuses are comparable, as far as the treatment of CRP/WRP farms is concerned.

¹¹Undercoverage is much less an issue for sales than for the farm count. The five censuses prior to 2002 included an average of 92 percent of farms but 98 percent of production (USDA, NASS, 1999, p. C-5).

Table 9

Number of farms by constant-dollar sales class (2002 dollars), 1982 to 2002

Constant-dollar sales class (2002 dollars) ¹	Census year					Intercensus period			
	1982	1987	1992	1997	2002	1982 to 1987	1987 to 1992	1992 to 1997	1997 to 2002
	<i>Number of farms</i>					<i>Percent change</i>			
Total farms	2,240,976	2,087,759	1,925,300	1,911,859	2,128,982	-6.8	-7.8	-0.7	11.4
Less than \$10,000	1,106,092	1,016,863	927,234	1,009,084	1,263,052	-8.1	-8.8	8.8	25.2
Point farms ²	254,097	235,562	212,580	277,248	570,919	-7.3	-9.8	30.4	105.9
Other farms	851,995	781,301	714,654	731,836	692,133	-8.3	-8.5	2.4	-5.4
\$10,000 to \$49,999	586,007	547,150	490,530	430,065	414,063	-6.6	-10.3	-12.3	-3.7
\$10,000 to \$19,999	257,391	251,361	228,504	204,384	197,967	-2.3	-9.1	-10.6	-3.1
\$20,000 to \$24,999	79,954	76,069	68,069	58,444	58,190	-4.9	-10.5	-14.1	-0.4
\$25,000 to \$39,999	167,510	149,905	133,059	115,582	109,310	-10.5	-11.2	-13.1	-5.4
\$40,000 to \$49,999	81,152	69,815	60,898	51,655	48,596	-14.0	-12.8	-15.2	-5.9
\$50,000 to \$99,999	250,694	217,871	187,062	157,635	140,479	-13.1	-14.1	-15.7	-10.9
\$100,000 to \$249,999	213,264	207,999	202,779	179,091	159,052	-2.5	-2.5	-11.7	-11.2
\$250,000 or more	84,919	97,876	117,695	135,984	152,336	15.3	20.2	15.5	12.0
\$250,000 to \$499,999	57,691	64,195	74,354	78,330	81,694	11.3	15.8	5.3	4.3
\$500,000 to \$999,999	18,242	22,058	28,583	36,469	41,969	20.9	29.6	27.6	15.1
\$1,000,000 to \$2,499,999	6,494	8,409	10,634	15,448	20,724	29.5	26.5	45.3	34.2
\$2,500,000 to \$4,999,999	1,448	1,811	2,392	3,386	4,611	25.1	32.1	41.6	36.2
\$5,000,000 or more	1,044	1,403	1,732	2,351	3,338	34.4	23.4	35.7	42.0

Note: Constant-dollar sales classes cannot be prepared before 1982 due to incomplete census records for individual farms prior to that year.

¹Sales class is expressed in constant 2002 dollars, using the Producer Price Index for farm products to adjust for price changes.

²Point farms have sales of less than \$1,000 (current dollars), but are still considered farms because they would be expected to normally sell at least \$1,000 of agricultural products. Point farms are defined here in current dollars—rather than constant dollars—because they are identified in each census based on current dollars.

Source: USDA, Economic Research Service, compiled from census of agriculture data.

sales. The share of total sales accounted for by farms with sales of \$250,000 or more increased steadily from 47 percent in 1982 to 76 percent in 2002 (fig. 14). Farms with sales of \$1,000,000 to \$4,999,999 and \$5 million or more doubled their share of sales between 1982 and 2002. The two largest sales classes now account for nearly one-fourth of agricultural sales each, although the two groups together make up only 1 percent of farms.

Farms with sales of at least \$5 million specialized in relatively few commodities in 2002. About 34 percent specialized in high-value crops, with cattle feedlots (19 percent), dairy (14 percent), and poultry/eggs (14 percent) also common. Farms with sales between \$1,000,000 and \$4,999,999 tended to specialize in a wider variety of commodities: high-value crops (26 percent), poultry and eggs (19 percent), dairy (13 percent), hogs and pigs (11 percent), grains and oilseeds (9 percent), and field crops other than grain (8 percent).

Larger shares of the two sales classes were located in the Pacific region than in any other region: 22 percent for farms with sales between \$1,000,000 and \$4,999,999 and 32 percent for farms with sales of \$5 million or more (table 10). California alone had 17 percent of the farms in the former sales class and 26 percent of the \$5-million-plus farms. About 60 percent of California farms with sales of \$1 million or more specialized in high-value crops, and another 24 percent specialized in dairy.

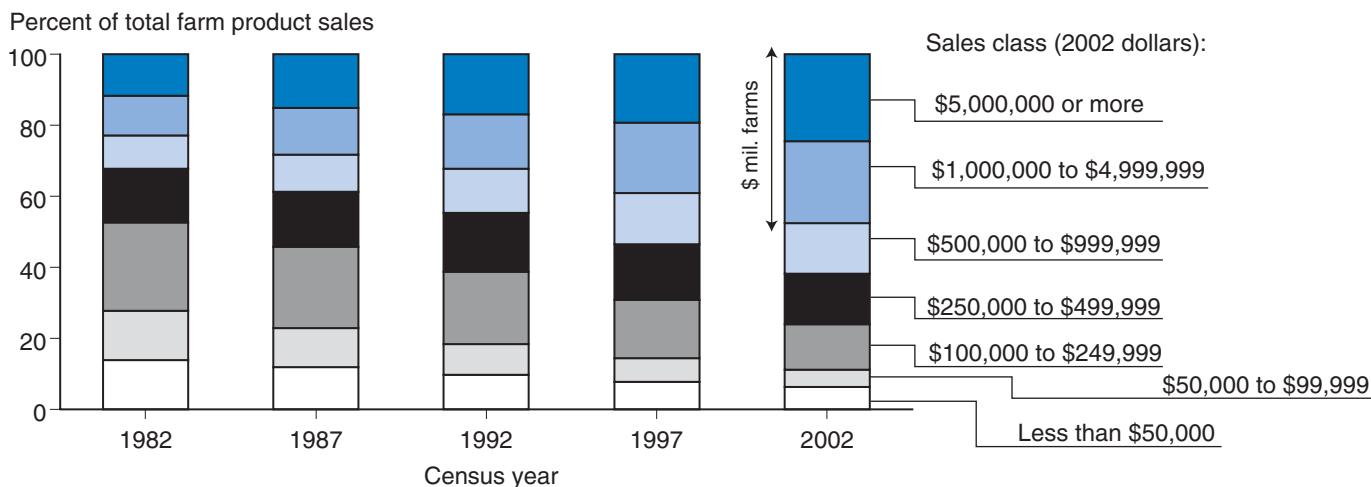
Typical Enterprise Size

The shift of sales to larger sales classes is also reflected by an increase in “typical enterprise size” over time. The typical enterprise size aims to capture the size of farm enterprise from which most of a particular commodity came. Specifically, we define it as the median (midpoint) of the

Figure 14

Distribution of farm product sales by constant-dollar sales class¹ (2002 dollars), 1982-2002

Million-dollar farms' share of sales increased from 23 percent in 1982 to 48 percent in 2002



¹Sales class is expressed in constant 2002 dollars, using the Producer Price Index for farm products to adjust for price changes.

Source: USDA, Economic Research Service, compiled from census of agriculture data.

Table 10

Farms with sales of at least \$1 million, by region, 2002

Item	Sales of \$1,000,000 or more		
	Total	\$1,000,000 to \$4,999,999	\$5,000,000 or more
	<i>Number</i>		
Farms	28,673	25,335	3,338
	<i>Percent of U.S. total</i>		
Farms by region:			
Northeast	6.2	6.3	5.1
Lake States	8.3	8.8	4.6
Corn Belt	12.9	13.6	7.5
Northern Plains	8.4	8.0	12.1
Appalachian	9.0	9.5	5.0
Southeast	11.1	11.2	10.2
Delta	6.3	6.9	1.9
Southern Plains	6.5	6.2	8.5
Mountain	8.2	7.6	13.0
Pacific	23.0	21.8	32.0

Northeast: CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, and VT; Lake States: MI, MN, and WI; Corn Belt: IL, IN, IA, MO, and OH; Northern Plains: KS, NE, ND, and SD; Appalachian: KY, NC, TN, VA, and WV; Southeast: AL, FL, GA, and SC; Delta: AR, LA, and MS; Southern Plains: OK and TX; Mountain: AZ, CO, ID, MT, NV, NM, UT, and WY; Pacific: AK, CA, HI, OR, and WA.

Source: USDA, Economic Research Service, compiled from the 2002 Census of Agriculture.

distribution of production by enterprise size. For crops, the median defined here identifies the enterprise size at which half of a commodity's harvested acreage came from larger enterprises and half came from smaller enterprises. For example, the typical enterprise size for corn in 2002 of 450 acres (table 11) means that half of all harvested acres of corn is on farms harvesting more than 450 acres of corn and half is on farms harvesting less than 450 acres.¹²

For dairy, the measure captures the midpoint of the distribution of cows by herd size—half of dairy cows are in larger operations and half are in smaller operations. For poultry and other livestock, the measure captures the midpoint of broiler, cattle, or hog sales by enterprise size. Enterprise size differs from farm size, because a farm may have multiple crop or livestock enterprises.

The well-documented shift to larger livestock enterprises is most evident for hogs. The typical enterprise size increased nearly twentyfold, from sales of 1,200 head in 1987 to 23,400 in 2004. This increase is consistent with the rapid consolidation of the hog industry occurring in recent years (McBride and Key, 2003, pp. 5-10). Typical fattened cattle and dairy enterprises also grew in size, approximately doubling and tripling (respectively) during the 15-year period.

The growth in size between 1987 and 2002 was less extreme for broiler and cow/calf enterprises, around 70 percent for both enterprises. Much of the growth in broiler enterprise size occurred long before 1987, and cow-calf enterprises are a common specialization for small farms. The typical size for cow-calf enterprises is still just 84 calves per year.

¹²This measure is the median of acres harvested by enterprise size, not the median of farms by enterprise size. Under the latter method, farms would be arrayed by acres harvested and the median divides *farms* into two equal groups, not the acres harvested. By using acres harvested, our definition of median identifies the enterprise size at the midpoint of enterprises arrayed by a measure of production.

Table 11

Typical enterprise size for selected commodities, 1987 to 2002

Selected commodity	Census year				Change, 1987 to 2002
	1987	1992	1997	2002	
	<i>Typical annual sales¹</i>				<i>Percent</i>
	<i>(head per farm)</i>				
Poultry/livestock:					
Broilers	300,000	384,000	480,000	520,000	73.3
Hogs	1,200	1,880	11,000	23,400	1,850.0
Fattened cattle	17,532	23,891	38,000	34,494	96.7
Cattle, less than 500 pounds	50	60	65	84	68.0
	<i>Typical herd size²</i>				<i>Percent</i>
	<i>(head per farm)</i>				
Dairy production	80	100	140	275	243.8
	<i>Typical acres harvested³</i>				<i>Percent</i>
	<i>(acres per farm)</i>				
Field crops:					
Corn	200	300	350	450	125.0
Soybeans	243	300	380	480	97.5
Wheat	404	562	693	784	94.1
Cotton	450	605	800	920	104.4
Rice	295	400	494	607	105.8
Vegetables:					
Asparagus	160	200	200	236	47.5
Lettuce	949	1,168	1,461	2,225	134.5
Bell peppers	88	130	180	200	127.3
Potatoes	350	422	556	810	131.4
Sweet corn	100	120	173	222	122.0
Tomatoes	400	450	589	700	75.0
Tree crops:					
Apples	83	94	122	129	55.4
Almonds	203	234	292	361	77.8
Oranges	450	732	769	1,015	125.6
Peaches	92	95	100	105	14.1

Note: Census records do not have all the data necessary to derive typical enterprise size prior to 1987.

¹Median head sold. Half of the sales of a given species were from farms with more than the typical sales and half were from farms with less than the typical sales.

²Median head of dairy cows as of December 31 of the census year. Includes dry cows and cows in milk. Half of the cows were on farms with more than the typical number of cows and half were on farms with less than the typical number of cows.

³Median acres harvested. Half of all harvested acres of a commodity were on farms harvesting more than the typical number of acres and half were on farms harvesting less than the typical number of acres.

Source: USDA, Economic Research Service, compiled from census of agriculture data.

Enterprise size has also increased in crop production. Typical acres harvested roughly doubled for each of the field crops, for most types of vegetables, and for oranges. Peach enterprises have been more stable, increasing by only 14 percent between 1987 and 2002.

Business Organization

Despite the shift in farm product sales to larger farms and increasing enterprise sizes, most farms continue to be organized as sole proprietorships, partnerships, or family corporations. These farms have consistently made up about 99 percent of the farm count since 1978 (fig. 15), the initial year of the current census series on business organization. They also accounted for more than 90 percent of agricultural sales each year. Marked shifts have occurred in the distribution of sales among these farms between 1978 and 2002, however. Family corporations' share of sales grew by 7 percentage points, and partnerships' share grew by 2 percentage points, while proprietorships' share shrank by 10 percentage points. Nevertheless, sole proprietorships still accounted for 90 percent of farms and 52 percent of sales in 2002.

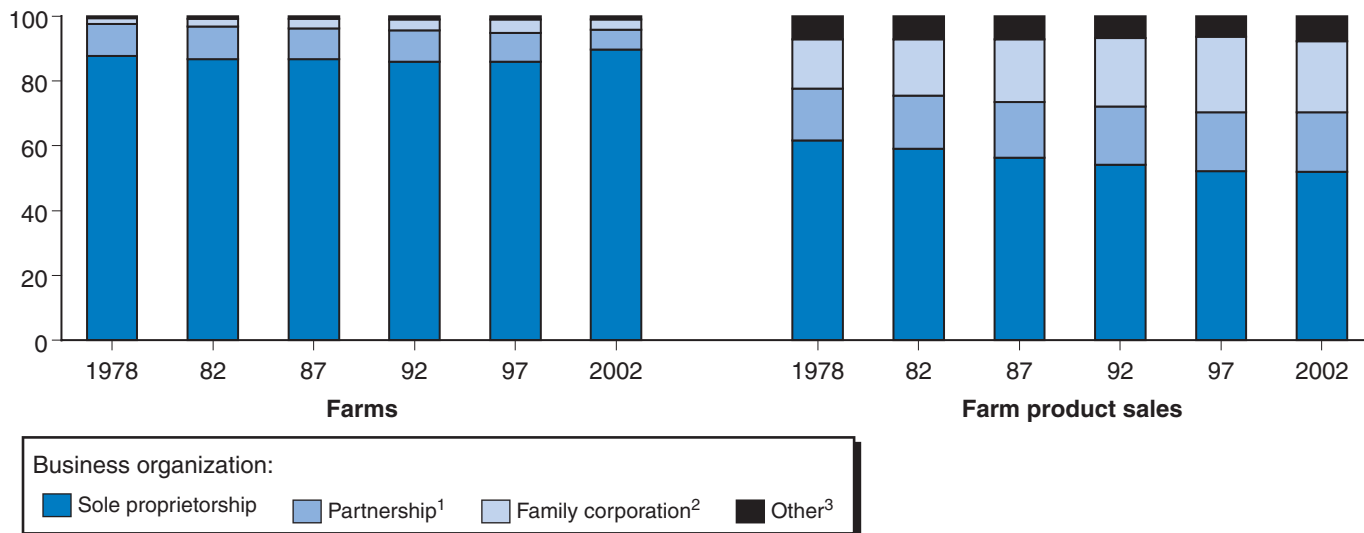
Nonfamily corporations make up a relatively minor and stable share of farm numbers and sales. Nonfamily corporations—part of the “other organization” category in figure 15—accounted for 0.2-0.4 percent of all farms and 6-7 percent of agricultural sales each census year. Most of these nonfamily

Figure 15

Distribution of farms and farm product sales, by business organization, 1978-2002

Family corporations' share of sales grew the most

Percent of farms or sales



¹Includes informal partnerships as well as partnerships registered under State law.

²Prior to the 2002 census, family-held corporations were defined in the questionnaire as having more than 50 percent of their stock owned by persons related by blood or marriage. No specific definition was used in the 2002 census.

³Includes nonfamily corporations, cooperatives, estates or trusts, institutional farms, etc.

Source: USDA, Economic Research Service, compiled from census of agriculture data.

corporations are not large, publicly held companies. Between 80 and 87 percent of them, depending on the year, had no more than 10 stockholders.

Regardless of farm type, proprietorships make up the bulk of family farms: approximately 90 percent of each small farm type, 77 percent of large farms, and 60 percent of very large farms (table 12). Given the age distribution of farmers, one would expect to find some farms in estates or trusts. In fact, 50 percent of nonfamily farms fall in the “other organization” category, which includes estates and trusts.

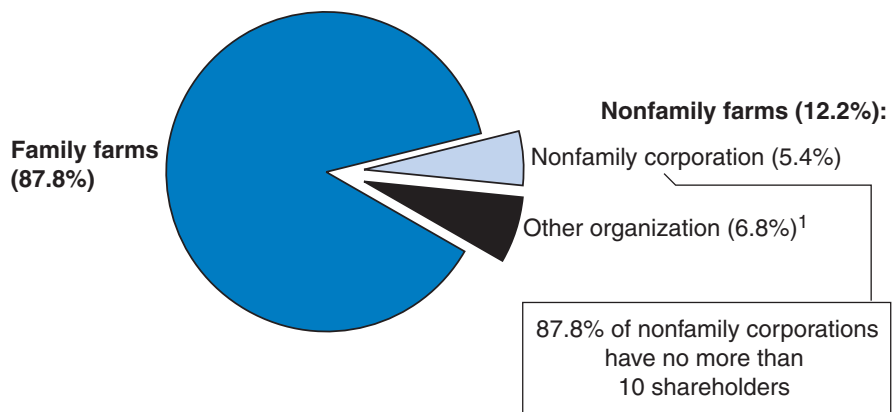
Only 19 percent of nonfamily farms are organized as nonfamily corporations. Direct ownership of large farms by large, publicly held corporations is negligible and is likely to remain so. For example only 5 percent of the 34,500 million-dollar farms were organized as nonfamily corporations in 2004, and 88 percent of these corporations had no more than 10 shareholders (fig. 16).

Figure 16

Organization of farms with gross sales of \$1 million or more, 2004

Most million-dollar farms are organized as family farms

Total million-dollar farms = 34,480



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

Source: USDA, Economic Research Service, 2004 Agricultural Resource Management Survey, Phase III. (Number of shareholders is from version 1 of ARMS.)

Table 12

Business organization of farms, by farm type, 2004

Item	Small family farms					Large-scale family farms		Nonfamily farms	All farms
	Limited-resource	Retirement	Residential/lifestyle	Farming-occupation		Large	Very large		
				Low-sales	Medium-sales				
	<i>Number</i>								
Total farms	197,734	338,671	837,542	395,781	133,299	86,087	71,708	47,103	2,107,925
	<i>Percent</i>								
Farms by organization:									
Sole proprietorship ¹	96.1	94.7	92.8	93.1	87.3	77.3	59.8	14.6	89.6
Partnership ²	1.8	1.7	4.6	4.1	6.8	11.3	18.3	*6.0	4.7
Corporation	d	#3.7	*2.6	2.7	*5.9	11.4	21.9	29.3	*4.6
Family ³	d	#3.7	*2.6	2.7	*5.9	11.4	21.9	10.0	*4.1
Nonfamily ³	na	na	na	na	na	na	na	19.3	0.4
Other organization ⁴	na	na	na	na	na	na	na	50.1	1.1
Farm product sales by organization:									
Sole proprietorship ¹	93.5	87.4	89.8	90.2	86.8	76.8	51.5	**15.1	57.7
Partnership ²	*2.7	*3.7	6.4	*6.1	*6.7	11.5	20.8	*6.4	13.7
Corporation	d	*8.9	**3.8	3.7	*6.4	11.7	27.7	58.6	25.4
Family ³	d	*8.9	**3.8	3.7	*6.4	11.7	27.7	14.7	18.2
Nonfamily ³	na	na	na	na	na	na	na	44.0	7.2
Other organization ⁴	na	na	na	na	na	na	na	*19.9	*3.2

d = Data suppressed due to insufficient observations.

na = Not applicable.

* = 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 greater than 75 percent of the estimate.

¹Includes informal partnerships, such as those between spouses. (In the census of agriculture, informal partnerships are classified as partnerships.)

²Includes only partnerships registered under State law.

³A corporation is classified as a family corporation if more than 50 percent of the stock is held by people related by blood or marriage. Other corporations are classified as nonfamily.

⁴Estates, trusts, and cooperatives.

Source: USDA, Economic Research Service, 2004 Agricultural Resource Management Survey, Phase III.