



United States  
Department  
of Agriculture

AIS-86

December 2008



A Report from the Economic Research Service

[www.ers.usda.gov](http://www.ers.usda.gov)

# Agricultural Income and Finance Outlook

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There has been considerable volatility in both commodity and input markets in recent months. Beginning in late 2007, commodity prices increased sharply to reach record levels and have recently begun to recede from these highs. Falling crop and livestock prices occurred at the same time that prices for many production items continued to rise, or at least until energy and feed prices started to pull back in late fall. Meanwhile, prices for capital items such as farmland have also continued to advance.

Beyond the farm gate, problems in capital markets, both in the United States and abroad, have affected the U.S. and global economies. U.S. farming has not been isolated from these events, as evidenced by changes in both the prices for farm products and for inputs. Questions are being raised about how falling commodity prices and rising costs may affect cash flow, farm profitability, and the ability of farmers to repay loans. There are also questions about how the “credit crunch” may affect farmers’ ability to borrow.

This report examines historic and the most recent sector-level and farm-level data and concludes that the American farm sector as a whole is in a relatively strong financial position entering 2009. Despite recent price declines, 2008 remains a historically strong year for the agricultural economy. The past four years have witnessed exceptional earnings for U.S. agriculture. Including the forecast for 2008, crop and livestock production values each will have established new highs in three of the last five years (2004, 2007, and 2008). Likewise, agriculture’s net value added to the U.S. economy will have established three new record highs. Net cash income has also established multiple record highs between 2004 and 2008.

The late 1980s and early 1970s were the last comparable periods when U.S. farming enjoyed multiple years of sustained high levels of output and income. However, there is considerable variation in the financial strength and performance of farm businesses and of farm households by region, farm type, and size of operations. For example, farm business net cash income for mixed grain farms is forecast to be up 38 percent in 2008; wheat, up 64 percent; and corn farms, up 53 percent over 2007. However, farm business net cash income for cotton and rice farms is forecast down 46 percent; specialty crops, down 13 percent; and beef cattle, down 17 percent.

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Approved by USDA’s  
World Agricultural  
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## **Farm Sector Financial Performance Remains Strong**

*Although there is considerable uncertainty regarding macro-economic events, commodity prices, and input costs going into 2009, farm sector financial performance remains strong despite volatile financial and commodity markets.*

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The story for the farm sector in 2008 has two main themes: a large increase in the value of crop production but rising costs of production as well. The value of crop production, at \$181 billion, is forecast to exceed its previous record (set in 2007) by \$30 billion, a 20-percent increase. Prices of major crops (corn, soybeans, wheat) were trending upward in late 2007 and continued doing so in the first part of 2008 during the marketing of the remainder of the 2007 harvest. These prices have declined in recent months as the 2008 harvests have occurred but are still high by historical standards. Consequently, with large harvests to sell at high prices, 2008 has proven to be another good year for the U.S. farm economy as a whole, driven by strong demand for feed crops, oilseeds, and food grains.

Global consumer demand for cotton products has slowed and U.S. cotton production has declined considerably due to high expected net returns for competing crops and less favorable weather conditions, leading to an expected \$1.1 billion decline in 2008 cash receipts. The average price received in 2008 for fruits and tree nuts is expected to be about 6 percent less than the average 2007 price and there are expectations of declines in quantities sold in 2008 for avocados, sweet cherries, peaches, pears, grapefruit, lemons, and especially pecans. However, anticipated increases in quantities sold for other fruit and tree nut commodities will result in higher overall cash receipts for this broad commodity class.

The values of both crop and livestock production have trended steadily upward since 1970. However, the year-to-year movements in the two measures have not always been synchronized—in 2008, the rise in the value of crop production is expected to be nearly six times that of livestock. This disparity will cause income circumstances to vary across farms depending on their mix of commodities and inputs.

## **Continued Growth in Farm Sector Income Supports Rising Farm Real Estate Values**

Steady growth in farm income and in nonfarm demand for farmland, accommodating interest rates, and generally rising (although increasingly volatile) commodity prices have supported continued appreciation in land values and in farm business and farm household wealth. From 2000-2004, farm business equity grew at a compound annual rate of 6.7 percent, while net cash income rose by 7.5 percent. From 2005-2008, farm business equity grew at a compound annual rate of 6.7 percent as net cash income grew at compound annual rate of 3.4 percent. Also, average interest rates on farm business debt ranged between 6.4 percent in 2004 to 7.1 percent in 2008. In the overall

macro-economy, gross domestic product (GDP) grew by a compound average rate of 1.8 percent from 2000-2004 and by 2.0 percent between 2005-2008.

Farm asset, debt, and equity values are expected to continue rising through the end of 2008. The value of U.S. farm business assets is forecast to increase by about 6.3 percent in 2008. The value of farm real estate assets is expected to rise by 6.8 percent. The value of debt in the farm sector is projected to increase an additional 1.7 percent in 2008. Farm sector equity is expected to continue rising in 2008 as farm asset values rise faster than farm debt. Farm sector net worth (equity, or assets – debt) is expected to exceed \$2.1 trillion in 2008, up from about \$2.0 trillion in 2007. Farm wealth has steadily recovered from the farm equity losses experienced during the farm crisis of the 1980s, both in nominal and in real dollars.

### ***Structural Changes Allow Farm Investors Continued Access to Capital Markets***

Various factors are affecting the financial structure and performance of farm operators, and the financial health of rural communities. Among these factors are changes in the capital structure of U.S. agriculture, methods of financing investments in land and other capital goods, and changes in input prices and purchase strategies. While farm-level data indicate almost 70 percent of operations carry no outstanding debt, it is important to look at the distribution of debt among U.S. farms. Many of the producers who carry no debt are smaller, older or part-time operators who depend on off-farm jobs to support their household. Additional factors affecting the financial structure and performance of farms and the financial health of rural communities include farmers' participation in energy markets, growth of the renewable energy industry, and changes in farm community linkages with local and non-local input suppliers. While a sectorwide measure of net farm income traditionally formed the basis of farm household income estimates for farm families, this is no longer the case. Off-farm work by farm operators and their spouses has increased steadily since the mid-1960s. Now, about 80 percent of total farm household income is derived from off-farm employment. This off-farm employment and income has helped farm operators to diversify and to stabilize their total income flows and has provided additional capital for both farm and nonfarm investments.

### ***Changes in U.S. and World Agricultural and Financial Markets***

Changes in the macro-economy have major effects on U.S. agriculture. The main factors linking agriculture to the U.S. and global macro-economy are exchange rates, foreign and domestic income, rural employment, interest rates, and energy costs (see [www.ers.usda.gov/Briefing/Macroeconomics/](http://www.ers.usda.gov/Briefing/Macroeconomics/)). International and domestic macroeconomic shocks can cause major changes in the values of these variables. As the U.S. faces increased competition in world markets from other suppliers, U.S. producers and agri-business firms are adapting to this global market environment by maintaining and creating new supply chains and business structures to maintain competitive positions.

Nonetheless, the farm production sector still faces vulnerabilities as it enters 2009. These include:

1. the relative importance of input price rises in affecting farm operator profit margins
2. farmland value volatility
3. the overall debt structure and solvency of farm businesses
4. access of farm households to credit
5. off-farm income during a national recession.

## Farm Income Outlook

- *Despite recent price declines, 2008 remains a historically strong year for the agricultural economy. The past four years have witnessed exceptional earnings for U.S. agriculture. Including the forecast for 2008, crop and livestock production values will each have established new highs in 2004, 2007, and 2008.*
- *Likewise, agriculture's net value added to the U.S. economy will have established three new record highs. Net cash income has also established multiple record highs between 2004 and 2008. The late 1980s and early 1970s were the last comparable periods when U.S. farming enjoyed multiple years of sustained high levels of output and income.*
- *Direct government payments (DGP) are expected to total \$12.5 billion in 2008, up from \$11.9 billion paid out in 2007.*
- *Farm-related income from machine hire and custom work, sales of forest products, livestock feeding, insurance indemnities, agritourism, and co-op patronage dividend fees generated \$42.46 billion in 2008*
- *Expenditures for purchased inputs are expected to jump \$34 billion (20 percent) in 2008). The percentage of total production expenses represented by individual expenses varies by farm type.*
- *In the face of sharply rising prices of fuels and fertilizers, farmers are developing strategies to reduce these costs.*
- *Forecasts of farm business and farm household income highlight the diversity of the farm sector.*

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In 2007, net farm income was at a record level and ended the year strong with many key economic indicators at very favorable levels. Commodity prices were above recent levels and in some cases (wheat, soybeans, corn, milk) continued to rise. Exports were strong as the weak dollar made U.S. commodities more competitive in international markets, and ending-year stocks of many commodities were low.

Commodity prices continued to surge and remained relatively high through the first half of 2008, even though they have backed off their highs for the year as the National and world economies have softened. This has resulted in lower effective demand as growth in national economies has slowed and consumers have reduced and retrenched.

### Net Farm Income Forecast at \$86.9 Billion in 2008

Net farm income is forecast to be \$86.9 billion, little changed from the previous record of \$86.8 billion farmers are estimated to have earned in 2007, and 42 percent above the 10-year average of \$61 billion. (table 1) Net cash income, at \$90.7 billion, is forecast to be \$3.3 billion (4 percent) above 2007 and 33 percent above its 10-year average of \$68 billion. Net cash income is projected to rise more than net farm income because of the carryover of 2007 crops, which are being sold in 2008 (see tables, [www.ers.usda.gov/data/farmincome/finfidmu.htm/](http://www.ers.usda.gov/data/farmincome/finfidmu.htm/)).

Table 1

**Value added to the U.S. economy by the agricultural sector  
via the production of goods and services, 2004-08<sup>1</sup>**

United States	2004	2005	2006	2007	2008f
	<i>\$ billion</i>				
Value of crop production	124.4	115.2	119.2	150.8	181.1
Food grains	8.9	8.6	9.1	12.8	19.2
Feed crops	27.4	24.7	29.4	42.5	60.2
Cotton	4.8	6.3	5.6	6.2	5.1
Oil crops	17.9	18.5	18.5	22.6	28.7
Fruits and tree nuts	15.5	17.4	17.2	17.8	18.5
Vegetables	16.2	17.0	18.5	20.0	22.0
All other crops	23.0	23.4	24.3	25.1	26.1
Home consumption	0.1	0.1	0.1	0.1	0.1
Value of inventory adjustment <sup>2</sup>	10.7	-0.8	-3.5	3.8	1.1
Value of livestock production	124.4	126.5	119.0	138.1	143.4
Meat animals	62.4	64.8	63.6	65.0	67.0
Dairy products	27.4	26.7	23.4	35.4	34.8
Poultry and eggs	29.5	28.7	26.5	32.6	36.7
Miscellaneous livestock	4.3	4.6	4.8	4.9	5.0
Home consumption	0.2	0.3	0.3	0.3	0.4
Value of inventory adjustment <sup>2</sup>	0.6	1.3	0.5	-0.1	-0.5
Revenues from services and forestry	33.9	35.0	38.4	40.3	42.4
Machine hire and custom work	3.4	2.8	2.7	2.5	2.9
Forest products sold	2.4	2.5	2.5	2.4	2.4
Other farm income	11.3	10.9	12.3	11.8	12.3
Gross imputed rental value of farm dwellings	16.8	18.8	20.9	23.6	24.8
Value of agricultural sector production	282.7	276.7	276.6	329.2	366.9
less: Purchased inputs	137.4	144.0	153.6	171.4	205.3
Farm origin	57.5	56.9	61.0	68.8	80.3
Feed purchased	29.7	28.0	31.4	38.1	46.9
Livestock and poultry purchased	18.1	18.5	18.5	18.8	18.2
Seed purchased	9.6	10.4	11.0	11.9	15.2
Manufactured inputs	31.6	35.4	37.5	43.7	58.9
Fertilizers and lime	11.4	12.8	13.3	16.7	7.5
Pesticides	8.6	8.8	9.0	10.0	10.9
Petroleum fuel and oils	8.2	10.3	11.3	13.0	16.4
Electricity	3.4	3.5	3.8	3.9	4.2
Other purchased inputs	48.3	51.6	55.2	58.9	6.0
Repair and maintenance of capital items	11.9	11.9	12.5	13.6	15.6
Machine hire and customwork	3.6	3.5	3.5	3.7	4.2
Marketing, storage, and transportation expenses	7.2	8.8	9.0	9.8	10.9
Contract labor	3.1	3.1	3.0	3.8	4.1
Miscellaneous expenses	22.4	24.4	27.2	28.0	31.3

See footnotes at end of table.

—continued

Table 1

**Value added to the U.S. economy by the agricultural sector  
via the production of goods and services, 2004-08<sup>1</sup>—Continued**

United States	2004	2005	2006	2007	2008f
	<i>\$ billion</i>				
plus: Net government transactions	5.4	15.8	6.2	1.5	1.7
+ Direct Government Payments	12.970	24.396	15.789	11.903	12.5
- Motor vehicle registration and licensing fees	0.5	0.6	0.6	0.6	0.6
- Property taxes	7.0	8.0	9.0	9.8	10.2
Gross value added	150.7	148.6	129.2	159.3	163.3
less: Capital consumption	23.1	24.9	26.1	26.9	28.4
Net value added	127.6	123.6	103.1	132.5	134.9
less: Payments to stakeholders	41.8	44.3	44.6	45.7	48.0
Employee compensation (total hired labor)	20.2	20.5	21.2	21.8	22.7
Net rent received by nonoperator landlords	10.0	10.6	9.4	8.8	10.6
Real estate and nonreal estate interest	11.6	13.2	14.0	15.1	14.7
Net farm income	85.8	79.3	58.5	86.8	86.9

<sup>1</sup> 2008 forecast.

<sup>2</sup> For explanation of terms, see [http://www.ers.usda.gov/Briefing/FarmIncome/Glossary/def\\_icg.htm](http://www.ers.usda.gov/Briefing/FarmIncome/Glossary/def_icg.htm)

Source: USDA, Economic Research Service.

The story for the farm sector in 2008 has two main themes: a large increase in the value of crop production but a rise in production costs as well. The value of crop production, \$181 billion, is forecast to exceed its previous record (set in 2007) by \$30 billion, a 20-percent increase (fig. 1). Prices of major crops (corn, soybeans, and wheat) were trending upward in late 2007 and continued doing so in the first part of 2008 when the remainder of the 2007 harvest was marketed. These prices have declined in recent months as the 2008 harvests have occurred but are still high by historical standards.

The values of livestock production and livestock cash receipts are projected to increase about 4 percent in 2008. Higher sales are projected for most livestock sectors, including broilers, hogs, eggs, cattle and turkeys.

Corn production is projected to be about 12 billion bushels, the second highest on record. Soybean production is projected to be near 3 billion bushels, the fourth highest on record. Consequently, with large harvests to sell at relatively high prices, 2008 has proven to be another good year for the farm economy as a whole, driven by strong demand for feed crops, oilseeds, and food grains.

Net value added to the national economy is forecast to be up 2 percent in 2008. Its projected value of \$134.9 billion would be \$2.4 billion over 2007 and 30 percent over its 1998-2007 average. The values of both crop and livestock production have trended steadily upward since 1970. However, the year-to-year movements in the two measures have not always been synchronized—in 2008 the rise in the value of crop production is expected to be more than five times that of livestock.

## Measuring Agriculture's Value Added and Net Farm Income

The USDA measures U.S. agriculture's value added and net farm income using the farm-sector approach and the farm-level approach. Both are used to generate data in the tables and figures throughout this publication. Table and figures relying on value-added measures from the sector accounts are attributed to "Source: USDA, ERS." Tables and figures relying on value-added measures from the farm-level accounts are attributed to "Source: USDA, Agricultural Resource Management Survey."

The farm-sector approach relies on both farm-level data obtained from the USDA's survey of individual farm-level operations, the Agricultural Resource Management Survey (ARMS), and data from USDA and other sources (see table 1). ARMS farm-level data are unique in that they allow researchers to identify and distinguish characteristics of the individual farms that generated particular observations or values used to construct the data. Data sources other than ARMS do not identify or distinguish characteristics of the individual farms that generate their data. When researchers have to rely on nonfarm-level data, the resulting analyses are restricted to constructing U.S. total values for the different value-added sectors.

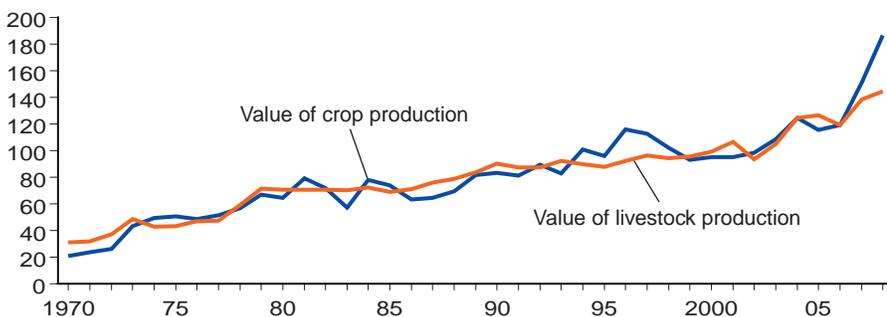
The farm-level approach relies on the same format as the farm-sector approach but relies almost entirely on farm-level data. The advantage of using farm-level data is that it allows different breakdowns of the U.S. totals for each of the value-added accounts in the farm sector estimate. The farm-level format has the same rows as the farm-sector format but its use of farm-level data allows different partitions of the national estimates for each line item. Farm-level data makes it possible to identify and distinguish contributions of U.S. value-added contributions from farm operations in different States and regions (see fig. 2 and table 3), distribution of value added among stakeholders and equity holders (see table 2), specialization of farm output (see fig. 3 and table 3), and sizes of farm operation (see fig. 4 and table 4).

ARMS produces an annual farm-level estimate of value added consistent as possible with sectorwide measures of value added and its components. Weighted estimates of farm-level value added are compared with sectorwide estimates produced from multiple sources of data as a check for consistency.

Figure 1

### Value of crop production and livestock production, 1970-2008

\$ billion



Note: 2008 forecast.

Source: USDA, Economic Research Service.

Net value added and net farm income have followed the value of commodity production over both the long term and in year-to-year fluctuations. Because farmers typically do not vary their production mix dramatically from year to year, purchases of production inputs have been relatively stable. Thus, the

direction and magnitude of annual changes in the value of livestock production have arisen primarily from market prices for livestock and livestock products. On the other hand, variability in the value of crop production is determined by both market prices and production levels. Crop production varies with changes in yields due to weather, plant disease, and pests.

## Not All Farmers Share Equally in Income Gains

Because of the diversity of U.S. agriculture, annual change in economic fortunes can vary greatly across commodities and regions. States that are leading producers of corn, soybeans, and wheat stand to benefit the most in 2008. Their primary commodity prices are rising faster than other crops, while their expenses are roughly equivalent with other commodities. Thus, the Midwest and Corn Belt should be big beneficiaries of commodity price trends. Livestock producers are expected to see larger increases in production expenses than crop producers due to their heavy reliance on feed.

A number of States in the East, Southeast, and Mountain regions are experiencing drought conditions to varying distress. These States account for too little farm production to have a major impact on national farm income measures. Farmers in these regions are also typically seeing a greater rise in production costs for such things as irrigation and feed/hay. When gross farm income is lower and production costs are higher, net income for individual producers can quickly turn negative for operations affected by drought.

Farm-level data obtained from the USDA's Agricultural Resource Management Survey (ARMS) can be used to measure where U.S. agriculture's value added is generated and how it is distributed among its sources and earners. Farm equity holders' share of net value added rises and falls with increases and decreases in U.S. agriculture's net value added, consistent with their role as residual income recipients. Among the 3 equity holder groups, family farm operators most clearly reflect this relationship over time, table 2. Most of U.S. agriculture's value added, stakeholder payments, and net farm income is expected to be derived from farm operations located in

Table 2  
**Distribution of net value added among resource owners, 2004-08**

	2004	2005	2006	2007	2008
	<i>Percent</i>				
Stakeholders:	34.3	34.5	44.3	35.6	33.3
Hired labor	16.5	17.5	21.9	16.9	15.6
Lenders	7.9	8.4	11.3	9.1	7.8
Nonoperator landlords	9.9	8.6	11.1	9.1	9.9
Equity holders	65.7	65.5	55.7	64.9	66.7
Family farm operators	45.3	43.8	34.4	44.6	45.9
Nonfamily farm operators	7.3	8.0	9.3	8.4	7.6
Contractors	13.2	13.6	12.0	11.9	13.2
Total	100.0	100.0	100.0	100.0	100.0

Note: 2008 forecast.

Source: USDA, Agricultural Resource Management Survey.

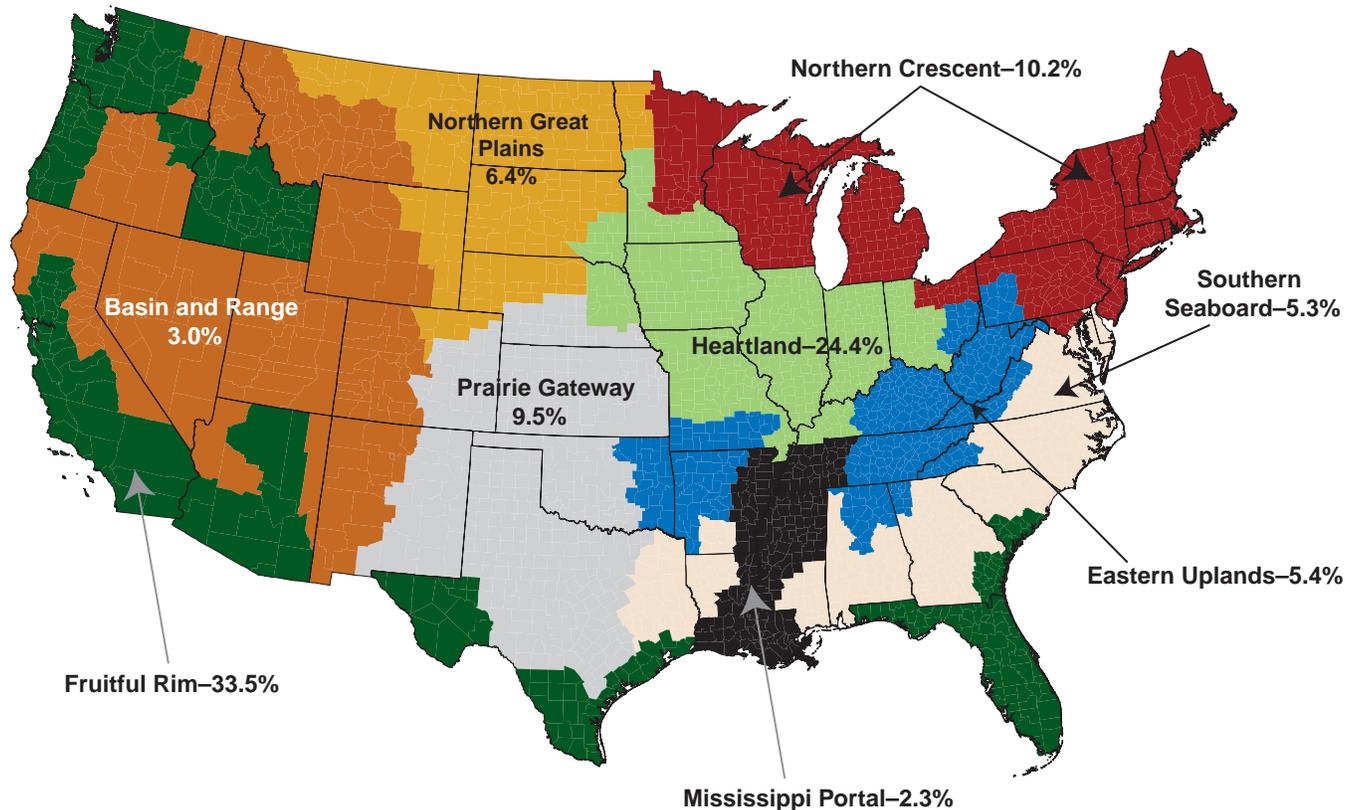
the U.S. Fruitful Rim, from farms specializing in crop production, and from farms that are commercial-sized in their operational outputs.

Farms in the Fruitful Rim, though accounting for only 11 percent of all U.S. farm operations in 2007, are the source of one-third of U.S. agriculture's net value added (fig. 2). This region dominates other ERS resource regions in crop value of production and ranks No. 3 in livestock value of production. Over 70 percent of U.S. agriculture's net value added is expected to be generated by crop farms in 2008 (fig. 3). These farm operations are expected to produce 68 percent of U.S. agriculture's stakeholder payments and almost 58 percent of its net farm income (table 3). While commercial farms accounted for about 1 out of every 10 farm operations in 2007, they are expected to create over three-quarters of U.S. agriculture's 2008 net value added and net farm income (fig. 4). About half of U.S. agriculture's net value added in 2008 is expected to come from farm operations with at least \$1 million in sales (table 4).

### Value of Crop and Livestock Receipts Expected to Reach All-Time High in 2008

In general, 2008 is projected to be a good income year for U.S. crop producers, particularly for feed crops, oilseeds, and food grains. The strength in 2008 U.S. farm income is primarily the result of commodity prices that

Figure 2  
Distribution of U.S. net value added by farm resource region, 2008

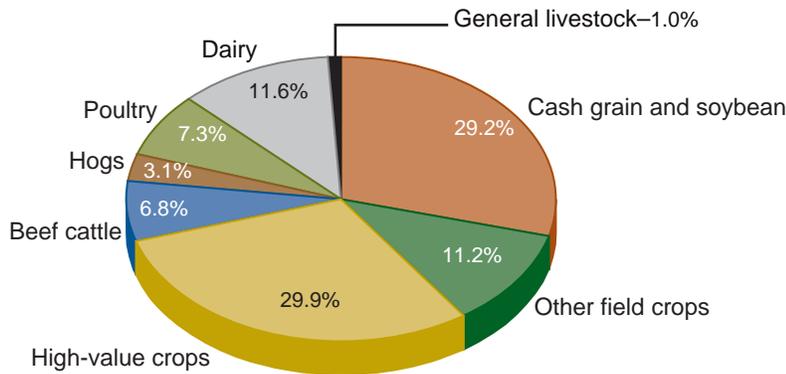


Note: 2008 forecast.

Source: USDA, Agricultural Resource Management Survey.

Figure 3

**Distribution of U.S. net value added by farm production specialty, 2008**



Note: 2008 forecast.

Source: USDA, Agricultural Resource Management Survey.

Table 3

**Shares of U.S. value of production (VOP), stakeholder payments, and net farm income by production specialty, 2008**

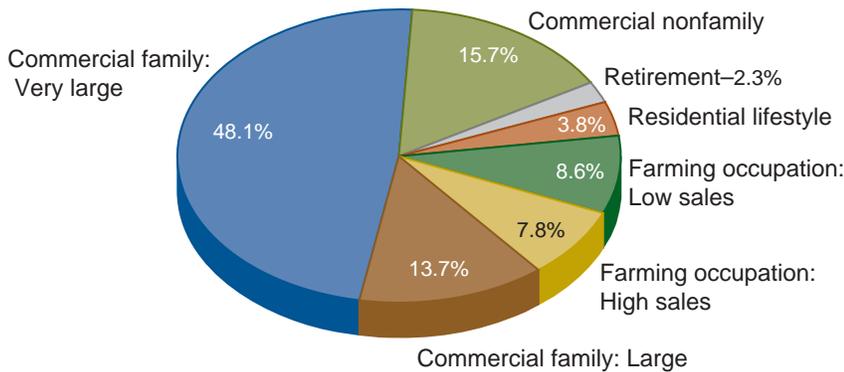
Type of production	Farms in 2007	Crop VOP	Livestock VOP	Stakeholder payments	Equity holder net income
		<i>Percent</i>			
Crops farms	43.6	94.7	4.5	68.0	70.0
Cash grain and soybean	12.9	37.7	3.4	26.6	25.9
Other field crops	24.8	16.3	0.9	11.8	12.2
High-value crops	5.9	40.7	0.2	29.6	31.9
Livestock farms	56.4	5.3	95.5	32.0	30.0
Beef cattle	33.9	2.4	38.8	32.5	5.1
Hogs	0.9	1.1	11.0	9.7	3.4
Poultry	1.7	0.3	18.5	20.8	9.8
Dairy	2.8	0.9	23.0	28.8	13.0
General livestock	17.1	0.6	4.3	3.7	-1.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Notes: 2008 percentages are USDA forecasts while the percent of farms is based on 2007 data.

Source: USDA, Agricultural Resource Management Survey.

Figure 4

**Distribution of U.S. net value added by farm typologies, 2008**



Note: 2008 forecast.

Source: USDA, Agricultural Resource Management Survey.

Table 4

**Share of net value added (NVA), value of production (VOP), net farm income, and stakeholder payments by sales class, 2008**

Sales class	Farms in 2007	NVA	Crop VOP	Livestock VOP	Stakeholder payments	Equity holder net income
<i>Percent</i>						
\$1million and above	1.8	50.0	42.9	61.4	47.6	52.0
\$500,000 - \$999,999	2.3	12.7	15.2	11.5	13.9	11.9
\$250,000 - \$499,999	4.5	14.1	17.2	9.6	15.1	13.4
\$100,000 - \$249,999	8.0	9.8	12.2	8.5	11.1	9.0
Below \$100,000	83.4	13.4	12.5	9.0	12.3	13.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Notes: 2008 percentages are USDA forecasts while the percent of farms is based on 2007 data.

Source: USDA, Agricultural Resource Management Survey.

have exhibited volatility during the year but have remained strong by historic measures. In the livestock sector, prices for cattle and milk are expected to remain well above their average levels over the last 10 years. Prices for a number of major commodities rose throughout 2007, and attained unexpectedly high levels for corn, wheat, soybeans, and milk. Higher prices are principally due to strong demand from the domestic biofuels industry and from foreign buyers. As a result, U.S. farmers are receiving high prices despite their high levels of production.

The growing use of crops in the production of biofuels has increased demand for these commodities, putting upward pressure on prices. Corn producers are the primary beneficiaries, but soybeans are also used in biodiesel production. Prices of other feed crops and oilseeds have also risen as corn and soybean consumers have sought lower cost alternatives. The resulting competition for acreage has also raised prices of minor oilseed crops, pulses, potatoes, and processing vegetables as processors and shippers struggle to find reliable supplies of these crops. Inadequate rainfall in competitor countries and increased international consumption (from growth in population and rising incomes) has reduced world supplies of corn and soybeans.

Global consumer demand for cotton products has slowed, and U.S. cotton production has declined considerably. High expected net returns for competing crops and less favorable weather conditions led to an expected \$1 billion decline in 2008 cash receipts. The average price received in 2008 for fruits and tree nuts is expected to be about 6 percent less than the average 2007 price, and there are expectations of declines in quantities sold in 2008 for avocados, sweet cherries, peaches, pears, grapefruits, lemons, and pecans. However, anticipated increases in quantities sold for other fruit and tree nut commodities will result in higher overall cash receipts for this broad commodity class.

The combination of reduced global food supplies and higher incomes in developing countries with large populations translated into rising effective demand for farm commodities, regardless of origin. In addition, the U.S. dollar has depreciated significantly against major foreign currencies in recent years. The lower value of the dollar amounts to greater effective demand for

U.S. exports, boosting farm-level prices to a level that more than offsets the increase in production costs resulting from higher prices on imported production inputs, particularly fuel and fertilizers (nitrogen and potash).

The value of crop production is expected to increase by almost \$30 billion in 2008, accounting for over 80 percent of 2008's expected increase in the value of agricultural sector production. Leading that increase are feed crops, which consist of corn, hay, barley, oats, and sorghum grain. Average corn yields are up almost 3 bushels per acres while record high ear counts are expected in many areas. Food, seed, and industrial use is expected to increase by 23 percent while corn for ethanol use is projected to be up 1 billion bushels from 2007. Corn prices rose almost \$1 per bushel from the first to second quarter of 2008, remained stable in the third quarter, but are expected to decline about \$1.05 per bushel in the final quarter. In 2008 annual cash receipts from corn are anticipated to increase about \$16 billion based on an expected annual price increase of \$1.19 per bushel, while quantity sold is expected to increase by over 15 percent from 2007.

Cash receipts for food grains (wheat, rice, and rye) in 2008 are expected to increase \$6.5 billion from 2007, with wheat accounting for \$5.5 billion of that increase. Wheat achieved record yields in 2008 and all wheat harvested is up almost 5 million acres from 2007. Despite declining quarterly prices throughout 2008, the 2008 annual wheat price is expected to reach \$7.75 per bushel, up from \$5.75 in 2007. While oil crops include peanuts, sunflower, and canola, cash receipts from oil crops are comprised almost entirely of soybean sales (93 percent in 2008). Soybean cash receipts are expected to increase almost \$5.5 billion in 2008 as an expected 14 percent decline in annual quantity of soybeans sold is more than offset by an expected annual price increase of almost \$3.27 per bushel. While prices received in 2008 for fruits and tree nuts are expected to be about 6 percent less than 2007, increases in overall sales are expected to increase 2008 cash receipts.

Livestock, dairy, and poultry cash receipts are forecast to be nearly \$144 billion in 2008, a 4-percent increase over 2007; the animal sector is projected to account for 44 percent of agricultural commodity receipts. This is \$5.7 billion more than 2007, the previous record high, and \$17 billion higher than the 2004-2007 average. Export demand, driven in part by both a weaker U.S. dollar and a rising global standard of living, is one of the main factors contributing to record-level cash receipts.

Cash receipts for cattle and calves are expected to move slightly upward to a new high of \$50.6 billion, despite the input cost crunch many producers and feeders are experiencing. Producers liquidated breeding stock in response to higher feed costs and drought in major hay-producing areas of the country. The beef trade with South Korea has been slow; however, exports to other traditional customers remain strong.

Hog producers' cash receipts increased 8 percent to \$16 billion in 2008 despite lower prices earlier in the year that had many feeders operating below break-even price levels. Hog prices are forecast to rebound due to the boom in pork exports, which were up 68 percent over 2007 during the months of January to August.

America's dairy sector saw a slight (1.6 percent) decrease in cash receipts during 2008 after experiencing record levels in 2007; cash receipts are forecast to be \$34.8 billion. While supplies were up about 2 percent, 2008 third and fourth quarter prices are forecast to be down significantly compared to 2007 levels. High retail prices for milk are meeting resistance from a struggling domestic economy.

Cash receipts for broilers are anticipated to be \$23.6 billion in 2008, a 10-percent increase over 2007. While supplies increased marginally, average prices were forecast to be up 7 percent in 2008. These prices are buoyed by an increased demand for exports, which are up 21 percent compared with 2007. Cash receipts from egg production are expected to increase 18 percent, reaching \$7.9 billion in 2008. While production has remained flat compared with 2007, the farm price for eggs has increased 15 percent. The laying population, suppressed by high feed costs, remained tight for most of the year despite historically higher prices.

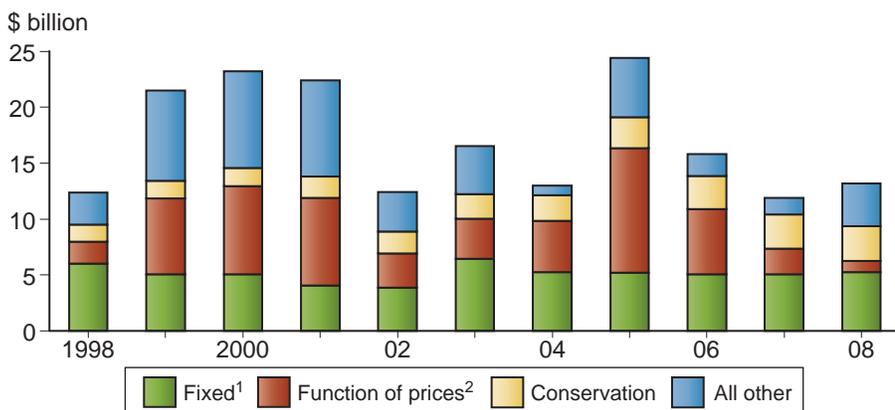
### Government Payments Forecast To Be Higher in 2008

Direct government payments are expected to total \$12.5 billion in 2008, up from the \$11.9 billion paid out in 2007 (fig. 5). Direct payments under the Direct and Countercyclical Program (DCP) in 2008 are forecast at \$5.95 billion. Since direct payment rates are fixed in legislation and are not affected by the level of program crop prices, there has been relatively little change in the volume of direct payments from year to year.

Both countercyclical program payments and marketing loan benefits vary with market prices. Due to historically high commodity prices early in 2008, price-sensitive payments are expected to be low this year at \$720 million and countercyclical marketing loan benefits to be \$90 million. Cotton payments

Figure 5

#### Government payments, 1998-2008



Note: 2008 forecast.

<sup>1</sup>Production flexibility contract payments and direct payments, where payment rates are fixed by legislation.

<sup>2</sup>Countercyclical payments, loan deficiency payments, marketing loan gains, and certificate exchange gains; where payment rates vary with market prices

Sources: USDA, Farm Service Agency (FSA), Natural Resources Conservation Service, (NRCS), and Commodity Credit Corporation (CCC).

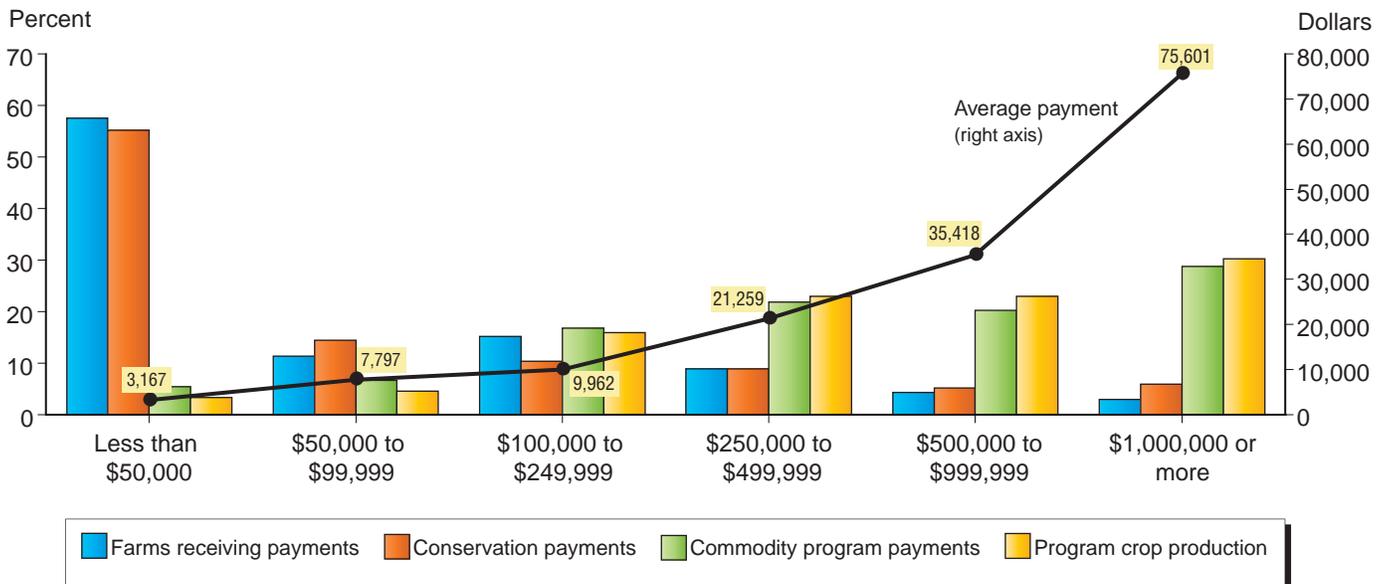
account for almost 87 percent of countercyclical payments and 93 percent of all marketing loan payments. The other crops receiving marketing loan benefits are wool, mohair, and pelts. Marketing loan benefits are not available to the remaining program crops at current price levels.

Conservation program payments of \$3.15 billion in 2008 reflect programs being brought up toward funding levels authorized by current legislation. Other payments are forecast at \$3.3 billion and are primarily made up of Tobacco Transition Program (TTP) payments and ad hoc and emergency relief payments. At a projected \$600 million in payments to producers, TTP payments are less than the budgeted outlays in 2008 because a significant number of tobacco producers and quota owners cashed out of the 10-year program by taking single lump-sum payments in previous years. Ad hoc and emergency program payments, forecast at almost \$2.7 billion in 2008, include all programs providing disaster and emergency assistance to farmers.

Under Title IX, Agricultural Assistance, of the U.S Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act of 2007, most of these payments are being paid out to farmers in 2008. Section 743 of the Consolidated Appropriations Act of 2008 further extends the period of loss eligibility for disaster assistance and is expected to provide an additional \$602 million in disaster assistance payments to be paid out in 2008 and 2009.

According to the 2007 ARMS, 834,000 farms, or 40 percent of all farms in the US, received government payments. As farm gross sales increase, a pattern emerges in which a decreasing share of farms receive a larger share of government payments (fig. 6). Farm operations with less than \$50,000 in sales accounted for 58 percent of all farms receiving government payments,

Figure 6  
**Distribution of farms receiving government payments, by sales class, 2007**



Sources: USDA, Economic Research Service based on the 2007 Agricultural Resource Management Survey and data from USDA, Natural Resources Conservation Service (NRCS), Commodity Credit Corporation (CCC), Farm Service Agency (FSA). Commodity program payments include direct, countercyclical payments, and all marketing loan benefits.

with payments averaging \$3,167 per farm. At the other end of the scale, farms generating over \$1 million in sales represent less than 3 percent of all farms receiving government payments but received over 22 percent of all government payments, averaging \$80,386 per farm. Part of the upward trend in average farm payments by sales class in figure 6 is explained by the distribution of two broad classes of payments in 2007.

Although farms in the smallest sales category receive about 55 percent of \$3 billion in conservation payments, they only receive 5 percent of the total outlays paid out by commodity programs. For both of these programs, payments are distributed among many participants, so average payments are relatively low. In contrast, farms generating sales of \$500,000 or more represented only 7 percent of all payment farms, but received almost half of all commodity program payments—a higher volume of program outlays distributed across fewer farms.

### **Farm-related Income Projected to Reach \$17.5 Billion**

Many operators use their farm assets to generate income from nonproduction activities. These sources of farm-related income include activities such as machine hire and custom work, sales of forest products, livestock feeding, insurance indemnities, farm recreation (agritourism), and co-op patronage dividend fees (fig. 7). Total farm-related income was \$16.6 billion in income in 2007. It is forecast to generate \$17.5 billion in 2008, comprising 4.7 percent of the projected U.S. value of agricultural production.

Nationally, machine hire and custom work is forecast to be \$2.9 billion in income in 2008. ARMS data from the 2007 survey show that crop farms accounted for two-thirds of total machine hire and custom work income, and commercial operations accounted for about 55 percent. Another major component of farm-related income, forest product sales, is forecast to be \$2.4 billion in income in 2008. According to 2007 ARMS data, over half of this income was earned by rural residence farms. Beef cattle and general livestock farms accounted for more than half of the total as did two regions, the Southeast and Northeast.

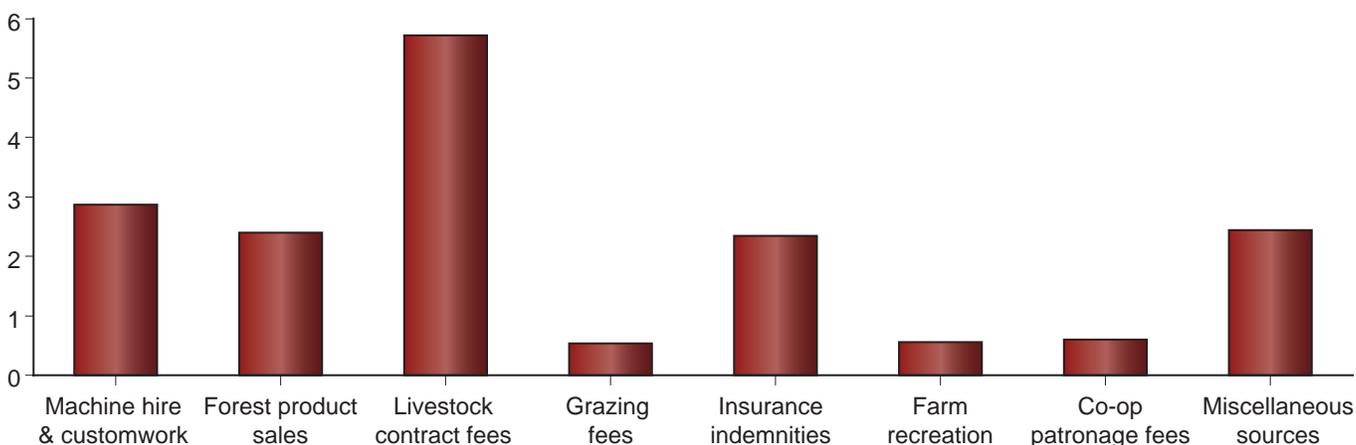
The largest component of farm-related income is livestock feeding fees, forecast to exceed \$6.3 billion in 2008. These fees are made up of livestock contract production fees and grazing fees. Livestock contract production fees are forecast to reach \$5.7 billion in income in 2008, are paid by contractors such as poultry and hog firms to farmers who raise the animals to maturity. These farmers receive a fee per head from the livestock company for each animal raised. Contract production fees are most important for poultry operations (\$3.4 billion in 2007), followed by beef cattle (\$1.4 billion), and hogs (\$900 million). Over 90 percent of these fees are collected on commercial farms in the Southern Seaboard, Heartland, and Eastern Upland regions. Livestock grazing fees are forecast to generate about \$550 million in income nationally in 2008. In 2007, 60 percent of grazing revenues were generated by livestock operations.

Total insurance indemnities are forecast to provide \$2.3 billion in income in 2008, a similar level compared to the prior year. Federal Crop Insurance

Figure 7

**Farm-related income by source, 2008**

\$ billion



Note: 2008 forecast.

Source: USDA, Economic Research Service.

Corporation (FCIC) receipts accounted for \$2.1 billion of this total, with crop farms receiving nearly 80 percent of these dollars. Overall, commercial farms received about two thirds of FCIC payments, with crop farms receiving the majority of these receipts. Over half of FCIC receipts were earned in either the Northern Plains or Lake State regions, while more than 50 percent were earned by corn, cash grain, or wheat farms. Other insurance indemnities were fairly evenly split between crop and livestock operations.

On-farm recreation is another significant source of farm-related income. In 2008, farm recreation is forecast to generate \$560 million in income. Sometimes called agritourism, farm recreation refers to a wide variety of activities, including hunting, fishing, horseback riding, ranch stays, winery tours, on-farm rodeos, and petting zoos. Survey data from 2006 show that outdoor recreation (hunting, fishing, and horseback riding) is the largest component of farm recreation, generating 43 percent of recreation income nationwide, followed by hospitality services (bed and breakfast and/or ranch stays), accounting for 33 percent.

In 2007, about 39,500 farms, representing 1.9 percent of farms nationwide, were involved in some form of recreation. About half of all recreation farms are located in the South, which, together with the Midwest, accounted for more than 56 percent of all farm recreation income reported nationwide. Although half of farms receiving recreation income are rural residence farms, they earn just one in six recreation dollars. Survey results indicate that over 60 percent of outdoor recreation income was earned by beef cattle and general livestock operations in 2007, possibly reflecting the popularity of horseback riding and dude ranches on these types of farms.

A final source of farm-related income is co-op patronage dividend fees. Forecast to generate \$600 million in income in 2008, co-op patronage dividend fees—refunds paid to a member on the basis of the quantity or value of business that the member did with the cooperative—were largest for commercial operations, accounting for over 60 percent of all receipts received

nationwide in 2007. Operations specializing in general crops were the largest recipient of co-op patronage dividend fees, while over half of all fees were earned by farms in the Midwest.

## U.S. Farm Production Expenses Expected to Rise In 2008

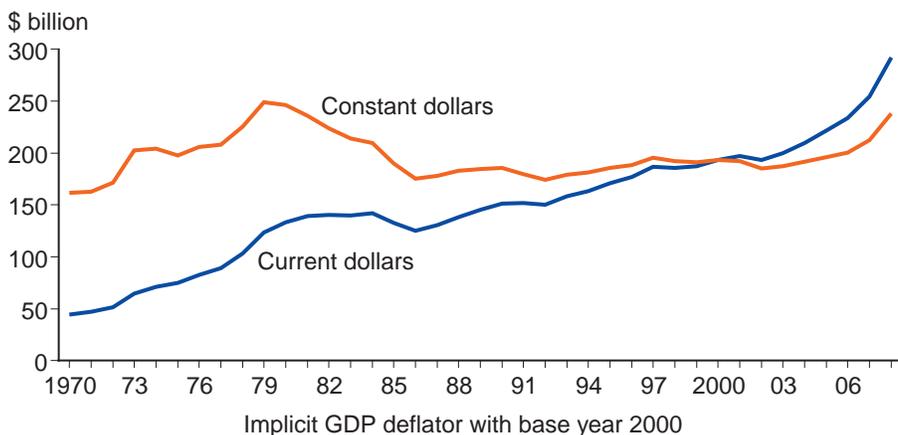
Total production expenses are expected to jump \$38.1 billion (15.0 percent) in 2008 to a nominal record-high \$292.5 billion. If realized, total expenses will constitute 77 percent of gross farm income, slightly more than in 2007. The 2008 increase will be the sixth straight since 2002 (fig. 8).

The rapid climb in prices paid for inputs (PITW) is the primary factor in the increase in expenses. The increase in PITW for 2008 would be the largest in the period 1970-2008. In particular, feed, fuel, fertilizer, and seeds have seen sizeable price increases. Fuel expenses are spread across farm types but tend to be a larger proportion of total expenses on crop farms. The impact of the hike in prices for fertilizer and seeds is also felt most on crop farms. On average, fuel, fertilizer, and seed costs comprise around one-third of the expenses on field crop farms. The effect of the increase in prices paid for feed is most evident on livestock farms, where 96 percent of all feed expenditures are concentrated. Commercial livestock farms accounted for 82 percent of sector-wide feed costs.

For the third straight year, feed expenses in 2008 are forecast to have the largest increase of all expenses as they increase \$8.7 billion (23 percent) to a record-high. The principal cause of the rise in 2008 feed expenses is the projected 23-percent increase in prices paid for feed, due primarily to increases in corn and soymeal prices. Corn accounts for 91 percent of feed grains used for feed and soymeal is the principal oil crop product used as feed. On the quantity side, the number of grain-consuming animal units (GCAUs) is forecast up 2 percent. Feed costs account for more than 36 percent of the expenses on poultry, dairy, and hog farms. On commercial poultry farms, they constitute 52 percent of total expenses.

Figure 8

### Total production expenses for U.S. farms, 1970-2008



Note: 2008 forecast.

Source: USDA, Economic Research Service.

The principal crop-related expenses are forecast to be \$51.8 billion, an increase of \$13.1 billion (34 percent). One indicator of crop-related expenses, acres planted of the principal 14 field crops, is projected to increase 1 percent, but the production of corn, the heaviest user of crop-related inputs, was down 7 percent. The corn harvest in 2007 was the largest on record, so its percentage of total crop-related expenses was particularly high during the year. In 2007, 29 percent of all crop-related expenses were on corn farms and 21 percent on commercial corn farms, while corn farms comprised 7 percent of all farms and commercial corn farms were 2 percent of all farms. Seventy-three percent of crop-related expenses were incurred on commercial farms, which were 11 percent of all farms.

Seed expenses are forecast to increase \$3.3 billion (28 percent) in 2008. Seed prices are projected to rise 27 percent in 2008, continuing their rapid climb since 2000 due to bio-technology advancements and the resultant improved yield potential, according to *Crop Production Cost and Outlook*, published by the Farm and Agricultural Policy Research Institute, Ames, IA. April prices for field crop seeds were up markedly. For instance, all corn seeds (biotech and non-biotech) were 24 percent higher than in 2007.

Fertilizer expenses will be a greater concern to crop farmers than fuel costs in 2008, as they are forecast to rise \$10.4 billion (64 percent). Increases in fertilizer prices, due to international demand and rising natural gas prices, are driving the annual increase. Prices paid for fertilizer in September 2008 stood 127 percent higher than in September 2007. Fertilizer prices are expected to fall during the last quarter of the year and along with a combination of factors may induce farmers to delay purchasing fertilizer. One reason for the pullback is the recent drop in wholesale fertilizer prices. Wholesale prices for urea have fallen 40 percent and December Average Prices (DAP) prices have dropped 20 percent during the last two months. Another factor that points to lower fertilizer prices in 2009 is that the cost of natural gas, the primary source for nitrogen fertilizers, is forecast to decline in the fourth quarter of 2008 and fall 13 percent in 2009.<sup>1</sup> Operators will probably wait, therefore, to see how much fertilizer prices fall before making purchases. In addition, many fertilizer dealers are requiring cash payments for fertilizer to be delivered in 2009, and the volatility in commodity prices and the credit market has made farmers cautious in their plans.

Fuel and oil expenses are forecast to increase \$3.4 billion (26 percent) in 2008. Prices paid for fuels were up 60 percent in July, 2008 over July, 2007. However, prices paid for fuels have fallen since then. By the end of October, fuel prices had fallen 24 percent and were only 15 percent higher than in October 2007. Further, Refiner's Acquisition Cost (RAC) is projected to fall 45 percent in the fourth quarter.<sup>2</sup> On November 18, the price of crude oil closed below \$55 per barrel, down from nearly \$150 per barrel in July (see [www.oil-price.net](http://www.oil-price.net)). This fall in prices is significant because questions about the timing of input purchases on the 2003 ARMS showed farmers purchasing 50 percent of their fuels in the third and fourth quarters (see figs. 9-14).

## Farmers Used Strategies to Reduce Fuel and Fertilizer Costs in 2008

Over the past six years, the price of fuels and fertilizers has increased sharply and, by historical standards, remain high (fig. 15). Through September 2008,

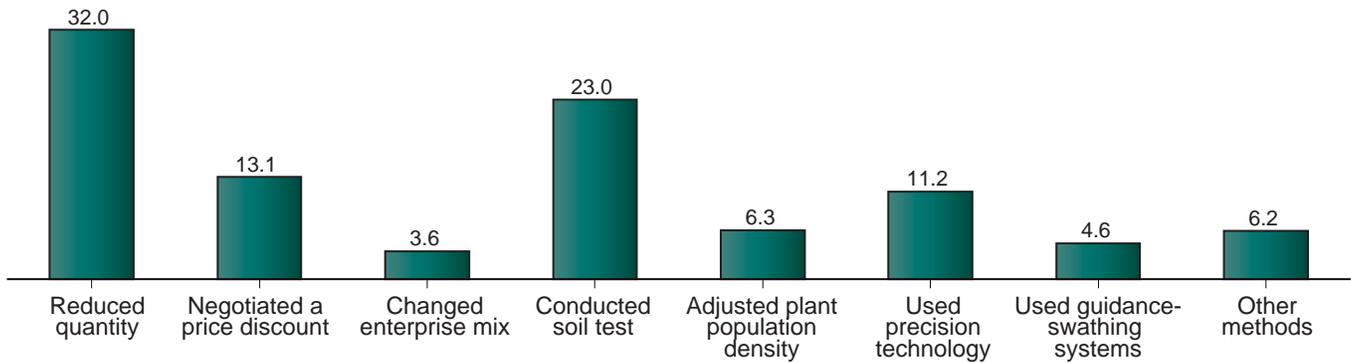
<sup>1</sup> As reported by U.S. Department of Energy, Energy Information Administration.

<sup>2</sup>As reported by U.S. Department of Energy, Energy Information Administration.

Figure 9

**How farms reduced fertilizer expenses, 2006**

Percent of farms

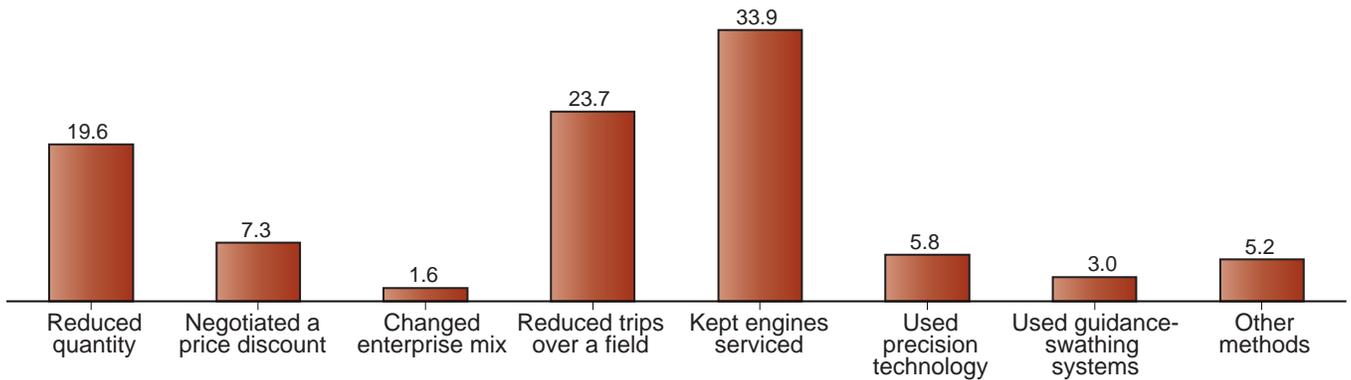


Source: USDA, Agricultural Resource Management Survey.

Figure 10

**How farms reduced fuel expenses, 2006**

Percent of farms

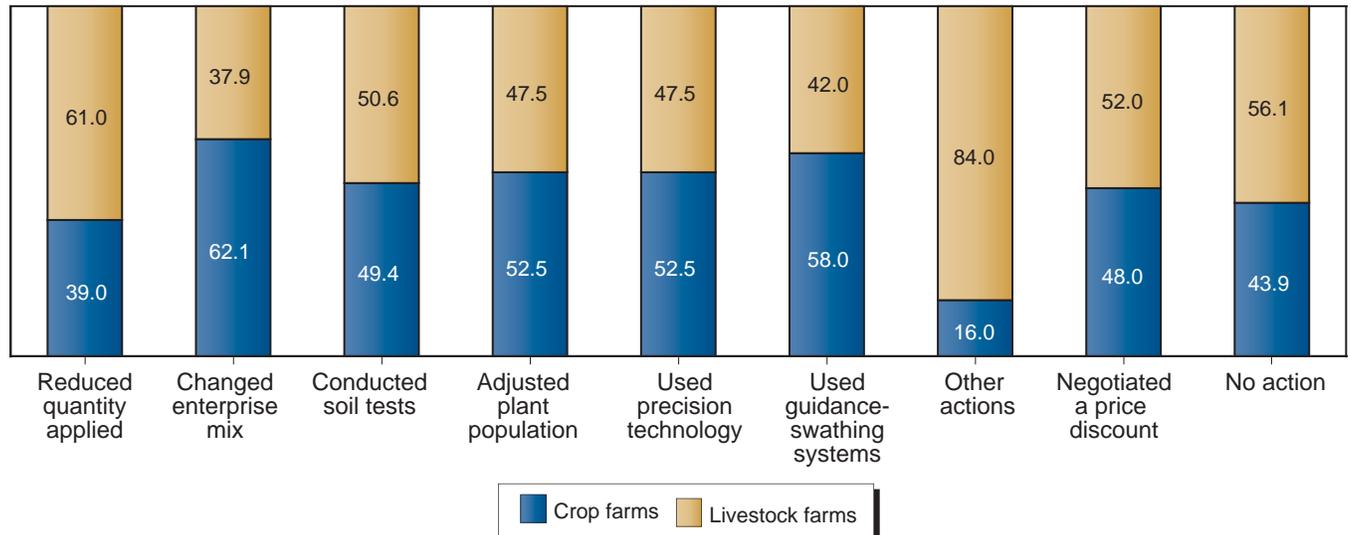


Source: USDA, Agricultural Resource Management Survey.

Figure 11

**How crop and livestock farms reduced fertilizer expenses, 2006**

Percent of farms

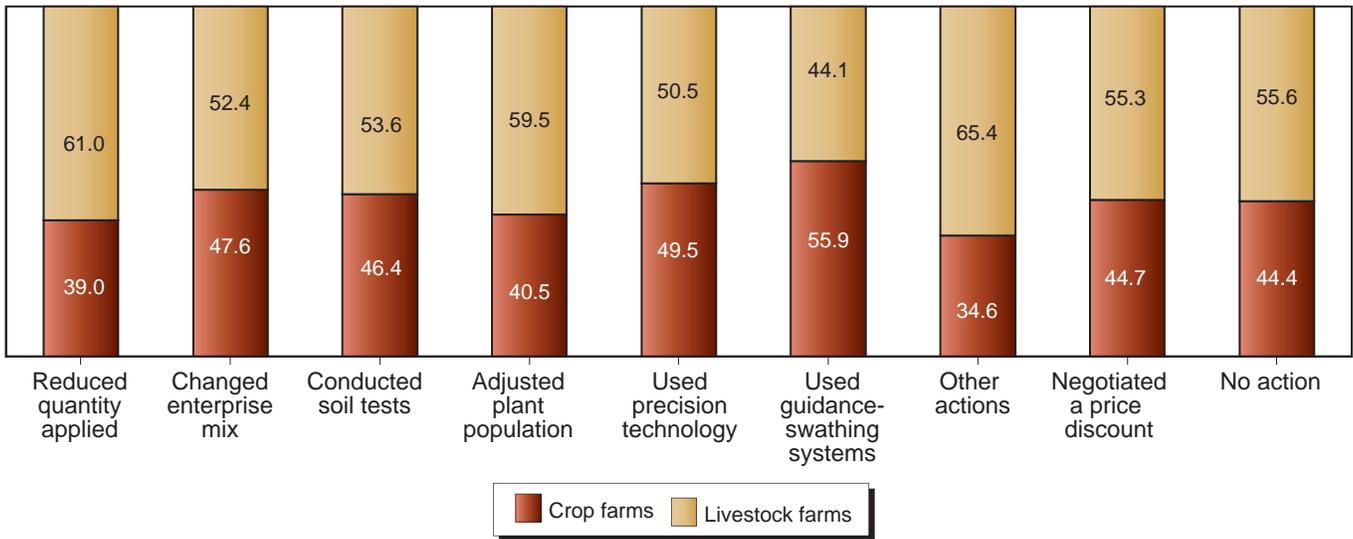


Source: USDA, Agricultural Resource Management Survey.

Figure 12

**How crop and livestock farms reduced fuel expenses, 2006**

Percent of farms

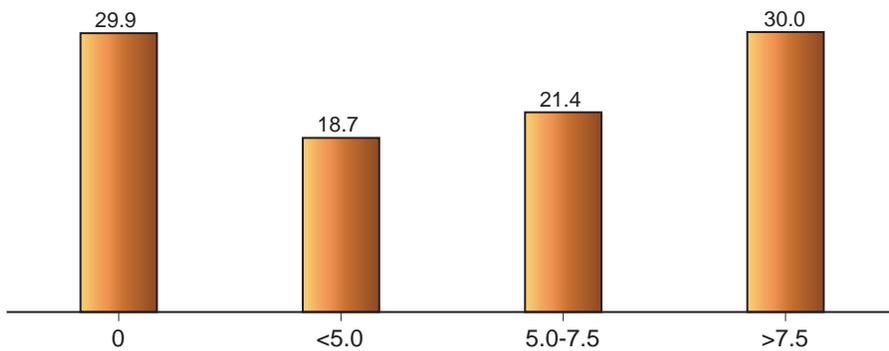


Source: USDA, Agricultural Resource Management Survey.

Figure 13

**Price discounts negotiated by farms reducing fertilizer expenses, 2006**

Percent of farms

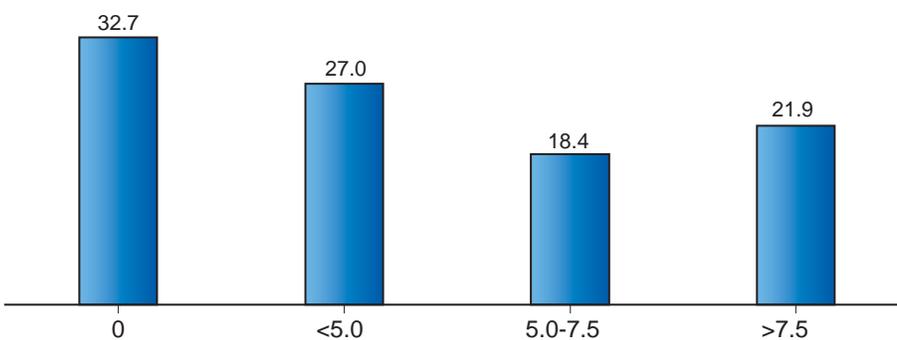


Source: USDA, Agricultural Resource Management Survey.

Figure 14

**Price discounts negotiated by farms reducing fuel expenses, 2006**

Percent of farms

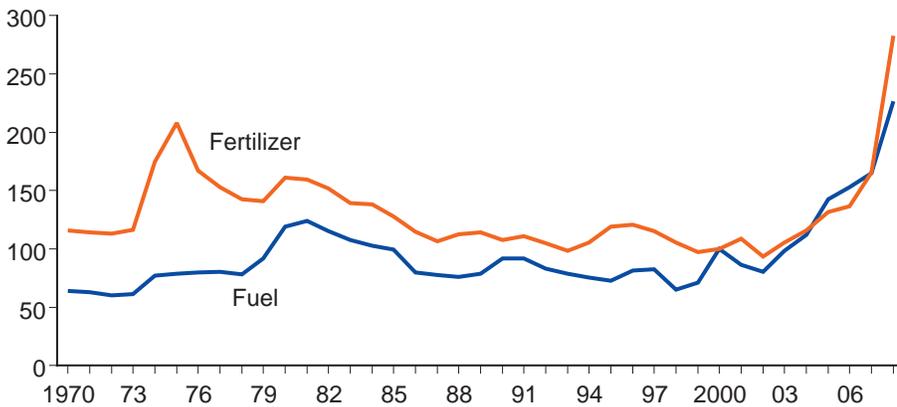


Source: USDA, Agricultural Resource Management Survey.

Figure 15

**Prices paid indexes for fuels and fertilizers, 1970-2008**

2000=100



Note: 2008 forecast. Fuel index reflects annual average of real prices paid for diesel, gasoline/gasohol, and LP gas. Fertilizer index reflects annual average of real prices paid for mixed fertilizers, nitrogen, and potash and phosphate. Real prices calculated using implicit GDP price deflator with 2000 as base year.

Source: USDA, National Agricultural Statistics Service and U.S. Department of Commerce, Bureau of Economic Analysis.

the inflation-adjusted annual average of prices paid for diesel, gasoline/ gasohol, and LP (liquefied petroleum) gas had risen 182 percent since 2002, and 38 percent in 2008. The inflation-adjusted annual average of prices paid for mixed fertilizers, nitrogen, and potash and phosphate has risen 202 percent, 71 percent in 2008.

However, prices paid for fuels declined in August and September and Refiner Acquisition Cost (RAC) is forecast 11 percent lower in the fourth quarter than in the third quarter.<sup>3</sup> The prices paid for certain fertilizers have also fallen over the last two months.

The impact of these price changes varies with type of farm, with wheat, corn, soybean, and cotton producers among the heaviest relative users of fuels and oils and fertilizer. Higher energy prices have encouraged farm operators to employ energy-efficient farming practices. According to the 2006 ARMS, 524,000 operators, representing about a quarter of all farmers, took specific actions to help reduce fuel or fertilizer costs. Commercial farms were most likely to engage in strategies aimed at reducing fuel usage (47 percent) and fertilizer usage (40 percent) when responding that they had utilized one or more cost-saving activity.

To reduce fuel usage, the most common practices were to regularly service engines, reduce the number of trips over a field, and reduce the quantity of fuel used. The most common practices employed to reduce fertilizer expenses were conducting soil tests, reducing the quantity of fertilizer used, using precision technology for fertilizer, pesticide, and seeding applications, and adjusting the plant population.

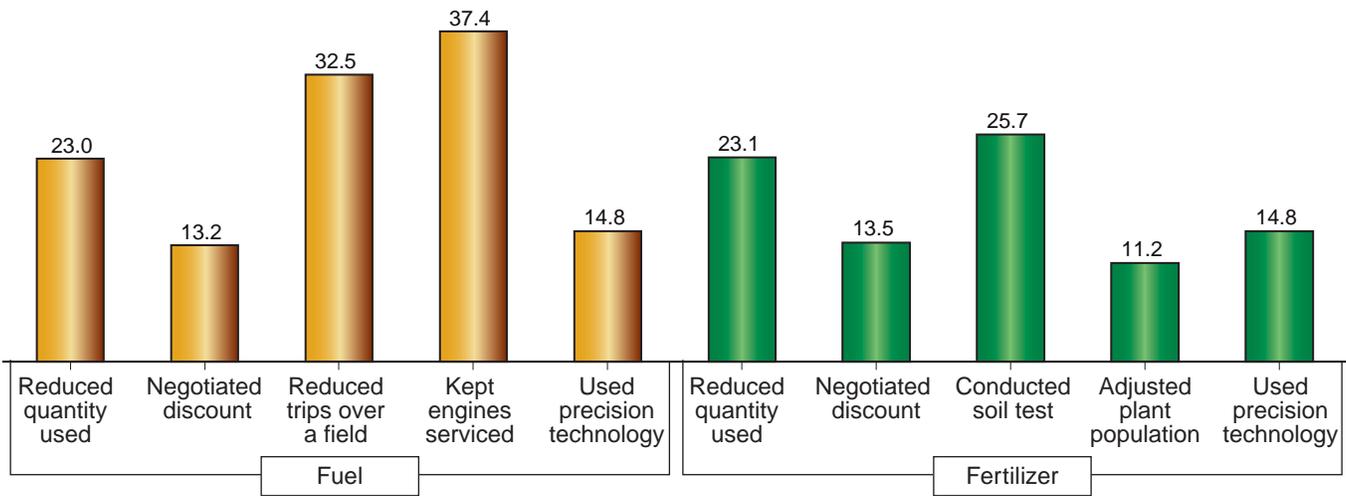
Farm operators who took actions had relatively higher per-acre fertilizer, fuel, and other cash costs, and had lower net farm income relative to those who did not take any actions to reduce those two energy inputs (fig. 16). As a result,

<sup>3</sup>As reported by U.S. Department of Energy, Energy Information Administration.

Figure 16

**Commercial farms using input reduction strategies, 2006**

Percent of farms



Source: USDA, Agricultural Resource Management Survey.

they may have greater economic incentive to lower their energy costs. Farm operators taking actions to reduce both energy inputs are more educated and younger than those who did not take any actions.

**Farm Expense Categories Vary By Farm Type in 2008**

The percentage of total production expenses represented by expenditure category varies by farm type, so the percentage of an expense occurring on all farms is less relevant than its percentage on each type of farm. In 2007, according to ARMS, 84 percent of fertilizer, seed, and pesticides (crop-related) expenditures were on crop farms, while 96 percent of feed and livestock and poultry (livestock-related) purchases were on livestock farms. Sixty-seven percent of total gross rent expenses were on grain and oilseed farms. Fruit and nut, vegetable, nursery and greenhouse, and dairy farms accounted for 61 percent of all labor expenses.

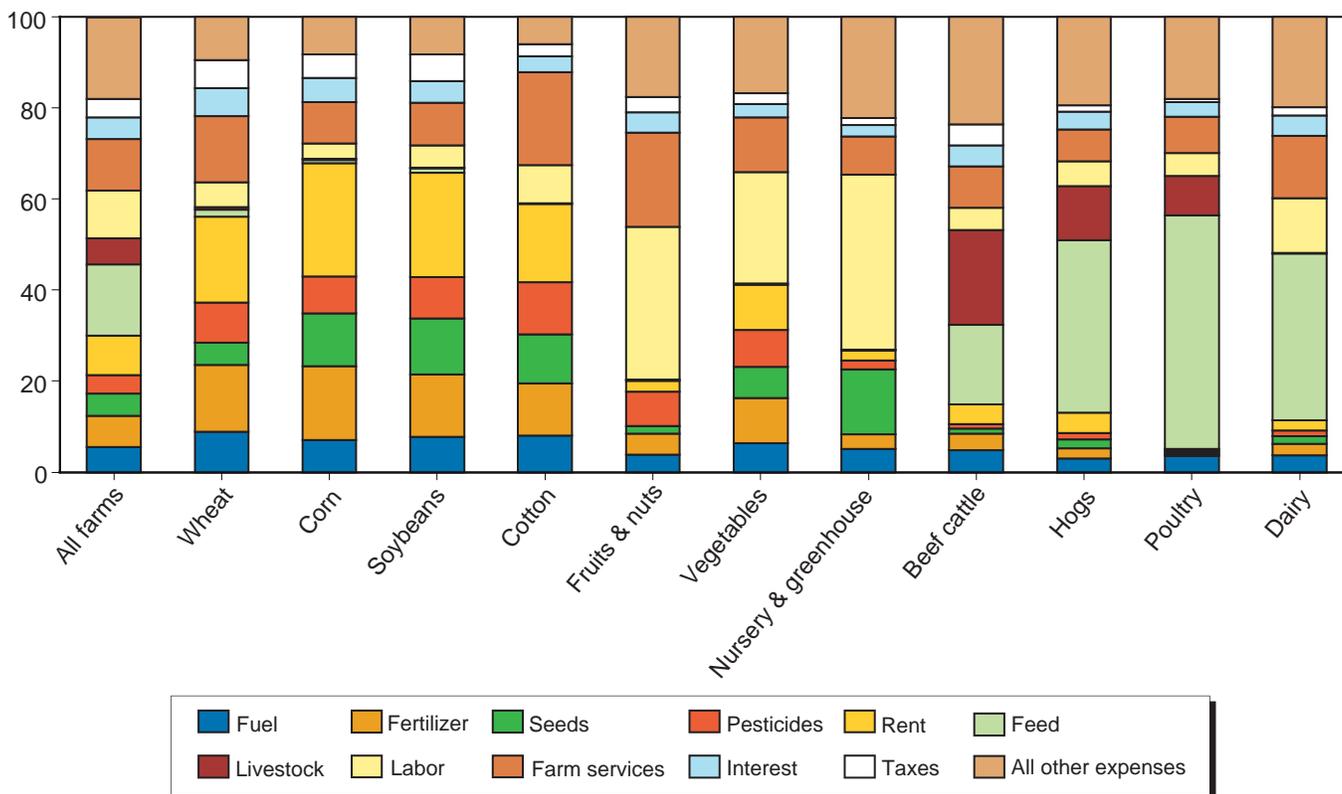
Figure 17 shows the percentage of total expenses accounted for by each expenditure category on particular farm types. About one-third of the expenses on grain and oilseed farms were crop-related. Gross rent made up another 20 percent on average. Livestock-related expenses were around 40 percent of the expenses on livestock farms. Labor expenses averaged 33 percent of expenses on fruit and nut, vegetable, and nursery and greenhouse farms.

Size of farm is another consideration. Commercial farms accounted for 73 percent of total expenses while comprising 10.5 percent of all farms. Seventy-three percent of crop-related expenses were on commercial farms, with 63 percent on commercial crop farms, which represented 6.2 percent of all farms. Eighty-six percent of livestock-related expenses were on commercial farms, with 84 percent on commercial livestock farms, which comprise 4.2 of all farms.

Figure 17

**Farm expenditures, 2006**

Percent of total expenditures



Source: USDA, Agricultural Resource Management Survey.

Because of the increases in their prices during the last two years, fuel and fertilizer expenditures have been of special concern. Figure 18 shows one factor that mitigates the impact of these expenses is that they represented around 5.5 and 7 percent of expenses respectively for the farm sector as a whole. However, their importance varies by type of farm. Both tend to be greater percentages of total expenses on crop farms. Of the crop farms represented, fuel and fertilizer are the most prevalent on wheat and corn farms, where they represent more than 23 percent of expenses.

In 2007, crop farms accounted for 49 percent of all expenses while comprising 43 percent of farms. Livestock farms represented the other 51 percent of expenses and 57 percent of farms.

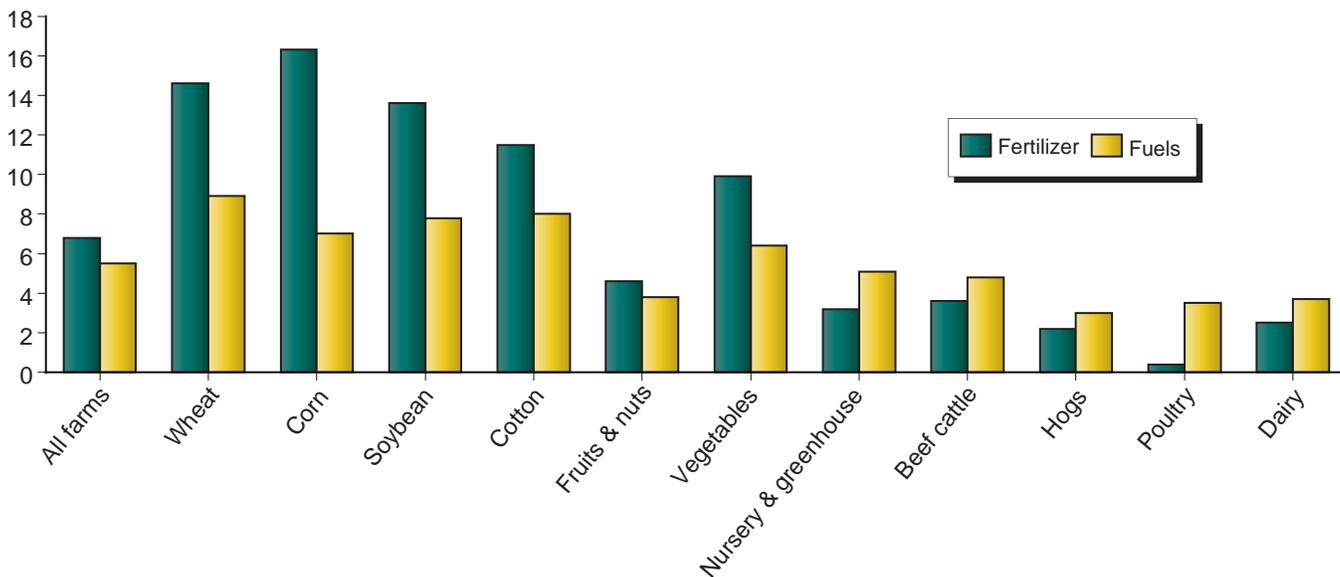
**Cross Walk Between Farm-level Measures of Net Income and Farm-Sector Estimates**

U.S. agriculture consists of farm businesses that are diverse in economic size and commodity production. Ownership from the viewpoint of farmland tenure or sources of capital, along with age, occupation, and other attributes of the operator and his or her household may also be considered in characterizing business diversity. These characteristics of farmers, farm operations, and farm households may affect the amount of economic output of farms that is retained as net income, but do not have much, if any, effect on how the income earned by a specific business or a particular production activity may be shared.

Figure 18

**Fertilizers and fuels share of expenses by farm type, 2007**

Percent of total expense



Source: USDA, Agricultural Resource Management Survey.

Ownership structure and what type of business arrangement owners may have incorporated into the organizational structures of their businesses can affect what share of output or value-added accrues to the business or goes to non-equity business participants as a payment for services. Even more, organizational structure decisions may affect how many parties may stake a claim on some share of business income itself. Here, we provide information on aspects of business organization that may affect the incomes of businesses and primary operator households. It is worth noting that these are important distinctions when examining the micro-finances of agriculture, but are irrelevant when measuring the value of the sectors output or determining its value added to the economy. For purposes of sector accounting, the entire continuum of production agriculture is treated as if it were one farm.

Many farms, particularly farms with larger sales volume, may include multiple operators and owners in their organizational structures. The presence of multiple operators was first explored for U.S. farms in 2002 through questions included in the Census of Agriculture and in the ARMS. The ARMS has continued to collect data on multiple operators and has been extended to include information about multiple owners. In 2007, 38.1 percent of farms reported multiple operators and 57.6 percent multiple owners. Most multiple owner farms were jointly owned by the operator and his or her spouse. Still, about 9 percent of farms were co-owned by other than operator-spouse arrangements. Owners and operators do not need to be the same individual or entity.

Some single-owner farms may have multiple operators while some multiple-owner farms may have a single operator. In 2007, for example about 21 percent of farms featured multiple owners and a single operator while around 2 percent of farms had one owner and multiple operators. The presence of multiple owners, even if some are only providing equity capital and not

actively engaged in the day-to-day operator on the business, would affect how many parties may have a claim to income or any increase in equity generated by the business.

Business arrangements adopted for use in a farm operation may, by themselves, affect the amount of income available for distribution to residual claimants. Contracts for production are an example. Others include joint ventures, alliances, shared ownership of assets, informal partnering, and vertical linkage with a larger business operation. These types of arrangements may determine how much of the value generated from production may remain within the farm as income available for distribution to equity holders. For example, it is common in contract boiler production for the farmer to receive only a small percentage of the farm gate value of the bird as payment for services rendered. In 2007, just over 2 percent of farms reported a production contract, with the share rising to over 20 percent of farms with over \$500,000 in sales. Likewise, about one percent indicated that the farm was a part of another business. Depending upon how operating agreements were structured between farms and their business partners, a share of output may not be reflected in the income of the farm.

The ARMS accounts for business ownership, governance, operating and financial structures of farms. These data help identify providers of production factors such as landlords, lenders, contractors, and other entities. Information about who provides factors of production and under what kinds of arrangements help determine claims of the returns generated by farms. Since the scope and coverage of ARMS is fully representative of U.S. agriculture, the first step in developing a cross walk between sector-wide estimates of income and farm-level estimates is to use sector-wide measurement conventions to develop an ARMS-based measure of value-added consistent with the national accounts. In 2007, ARMS supported an estimate of \$127 billion compared with the sector-wide estimate generated from composite sources of \$132.5 billion. Netting out payments to stakeholder with a contractual claim on payments—landlords, lenders, and hired laborers—left an estimate of net income of \$82 billion for the farm survey and \$87 billion for the sector-wide measurement.

Beyond just the aggregate number, the survey-based data reveal that farm businesses, particularly family farm operations, do not retain all of the income generated in the sector (see fig. 4). In 2007, contractors are estimated to have earned \$15.1 billion of agriculture's net income. Nonfamily farms are estimated to have earned another \$10.6 billion.

Just as important to analyses of farm performance, a cross walk can be developed to convert net farm income to a measure of cash income. This is done by accounting for depreciation, labor noncash benefits, inventory, receipts that are deferred at the farm level, and nonmoney sources of income such as consumption of farm goods and services. In 2007, the indication of net farm income per farm developed from survey data was \$31,723. Using the sector-wide accounting conventions resulted in an estimate of \$32,500. The cross walk between sectorwide and farm-level estimates enables ERS to jointly consider and report on differences in financial circumstances for the variety of participants and stakeholders that make up U.S. agriculture using measures of income prepared at different levels of measurement—sector, farm, and farm household.

## Farm Business Income Forecasts

- *The official USDA farm definition encompasses 2.1 million widely diverse operations. To concentrate analysis of business performance on those farms with significant labor allocation to farming and household dependence on business income several of the farm typology classifications are excluded.*
  - *The projected change in income prospects for farm businesses will not affect all farm operations in the same manner or to the same degree. Farm business net cash income is forecast up 11 percent on mixed grain farms in 2008; up 29 percent on wheat farms; and up 25 percent on corn farms. Farm business net cash income is forecast down 45 percent on cotton and rice farms; down 17 percent on specialty crops farms; and down 27 percent on beef cattle farm businesses.*
  - *There is considerable diversity in the farm business net cash income forecasts for 2008, due largely to the geographic concentration of commodity production.*
  - *Regions with a relatively high concentration of cash grain and soybean production such as the Heartland, Northern Great Plains, are the only areas forecast to have increases in average net cash incomes. Conversely, regions where livestock commodities dominate, particularly dairy or in which there is a relatively large concentration of specialty crops production or cotton and rice production are forecast to have the largest declines in average net cash income.*
- 

Agriculture is a diverse sector represented by a complex mix of business enterprises. This section focuses on farm businesses, which generate the majority of economic activity in the sector (see box, “Defining Farm Businesses”). Results reported here are designed to highlight the diversity of financial outcomes based on applying sector level forecast of receipts and expenses to the latest Agriculture Resource Management Survey (ARMS). Cash flow projections are summarized across various groupings of farm businesses such as region, commodity specialization, and size categories. The model is static and therefore does not account for changes in crop rotation, weather, and other local production impacts that occurred after the base year.

Average net cash income for farm businesses (intermediate and commercial operations, including non-family farms) is projected to be \$59,800 in 2008. This would be almost 12 percent below the 2007 estimate and nearly identical to the previous 5-year average. The projected change in income prospects will not affect all farm businesses in the same manner or to the same degree. There is considerable variation in business structure, including the extent to which assets are owned, the mix of crop and livestock produced, the contribution of government payments to gross income, and the relative importance of energy inputs and borrowed capital to production costs. The characteristics of several classifications of farms, including commodities produced and geographic locations, reflect this diversity.

The combination of higher prices and production is projected to boost crop receipts for farms that specialize in wheat production by 34 percent in 2008. Cash expenses are forecast to increase by 26 percent, led by a 64-percent

## Defining Farm Businesses

The official USDA farm definition (an operation with \$1,000 of gross agricultural sales or the potential to generate such sales) encompasses 2.1 million diverse operations. Farms vary in their level of business activity, resource allocation, goals, and a host of other attributes. ERS developed a typology of farms to categorize farms into more similar groups based on gross sales, major occupation, and total household earnings (for more information see *Structure and Finances of U.S. Farms: Family Farm Report, 2007 Edition*, [www.ers.usda.gov/Publications/EIB24/](http://www.ers.usda.gov/Publications/EIB24/)). In order to concentrate analysis of business performance on those farms with significant labor allocation to farming and household dependence on business income, several of the farm typology classifications are excluded. These include limited resource farms, retirement farms, and residential/lifestyle farms. A majority of those farms have negative business income and, as a result, depend wholly on off-farm sources of income to support their households (see information in household income section). Farm businesses, for purposes of performance analysis, include the nearly 800,000 remaining family and nonfamily farms whose survey answers indicated that farming was the primary activity of the operator.

Table 5  
Change in average net cash income by type of farm business, 2008f

Commodity specialization	Percent change in net cash income	Key determinants of change
<b>Program crops</b>		
Mixed grain	11	Crop receipts 30% above 2007. Cash expenses 26% higher. Fertilizer was the largest expense item, forecast to increase by 64%.
Wheat	29	Crop receipts up 34%. Cash expenses forecast 26% higher. Fertilizer was the largest expense item, forecast to increase by 64%.
Corn	25	Crop receipts 31% above 2007. Cash expenses 27% higher, with fertilizer and seed having the largest expense component increases.
Soybeans and peanuts	22	Crop receipts up 31%. Cash expenses 27% higher. Fertilizer, seed, and fuel forecast to have the largest increases.
Cotton and rice	-45	Crop receipts up 10%, government payments up by 41%. Cash expenses 29% higher, with fertilizer, seed, fuel, and utilities increasing the most.
<b>Non-program crops</b>		
Other field crop	-21	Crop receipts forecast to increase by 15%. Government payments up by 25%. Cash expenses forecast to increase by 23%.
Specialty crop	-17	Crop receipts 7% higher. Cash expenses 17% higher, with fertilizer (64%), seed (28%), and fuels (26%) increasing more than other expense components.
<b>Livestock</b>		
Beef cattle	-27	Livestock receipts up by 2%. Cash expenses 11% higher. Fertilizer, fuel, and feed were the largest expense item increases at 64%, 26% and 23%.
Hogs	-8	Livestock receipts up by 5%. Crop receipts up by 30%. Cash expenses 16% higher. Feed is projected to increase by 23%.
Poultry	-2	Livestock receipts up by 8%. Cash expenses 14% higher. Feed is projected to increase by 23%.
Dairy	-40	Livestock receipts same as 2007. Cash expenses 17% higher. Feed is projected to increase by 23%.
Other livestock	-94	Livestock receipts up by 3%. Cash expenses 13% higher. Feed was the largest expense component.

Note: 2008 forecast.

Source: USDA, Agricultural Resource Management Survey.

rise in fertilizer costs. Average net cash income is forecast to increase by 29 percent, which would be the largest year-over-year increase among both crop and livestock farms (table 5). Crop receipts for farms that specialize in corn and soybeans are forecast to rise by 31 percent. Expense increases are similar for these farms, with average cash expenses expected to increase by 27 percent. Average net cash incomes are forecast to be 25 percent higher than 2007 for corn farms and 22 percent higher for farms that specialize in soybean and peanut production. For corn farms, net cash income would be 36 percent above the previous 5-year average. In contrast, average net cash incomes of soybean and peanut farm businesses would be 3 percent lower than the 5-year average.

Among crop farms, the largest reduction in net cash income is forecast for farms that specialize in cotton and rice, at 45 percent. For these farms, the 2008 forecast would also be more than 50 percent below the previous 5-year average. While both receipts and government payment increases help to boost gross cash income by 13 percent, expense increases are much larger. On farms that specialize in cotton and rice production, fertilizer accounts for almost a third of cash expenses and is forecast to rise by 64 percent. Projected cost increases also squeeze out gains in receipts, although to a lesser magnitude, for specialty crop (net cash income down 17 percent) and other field crop producers (net cash income down 21 percent).

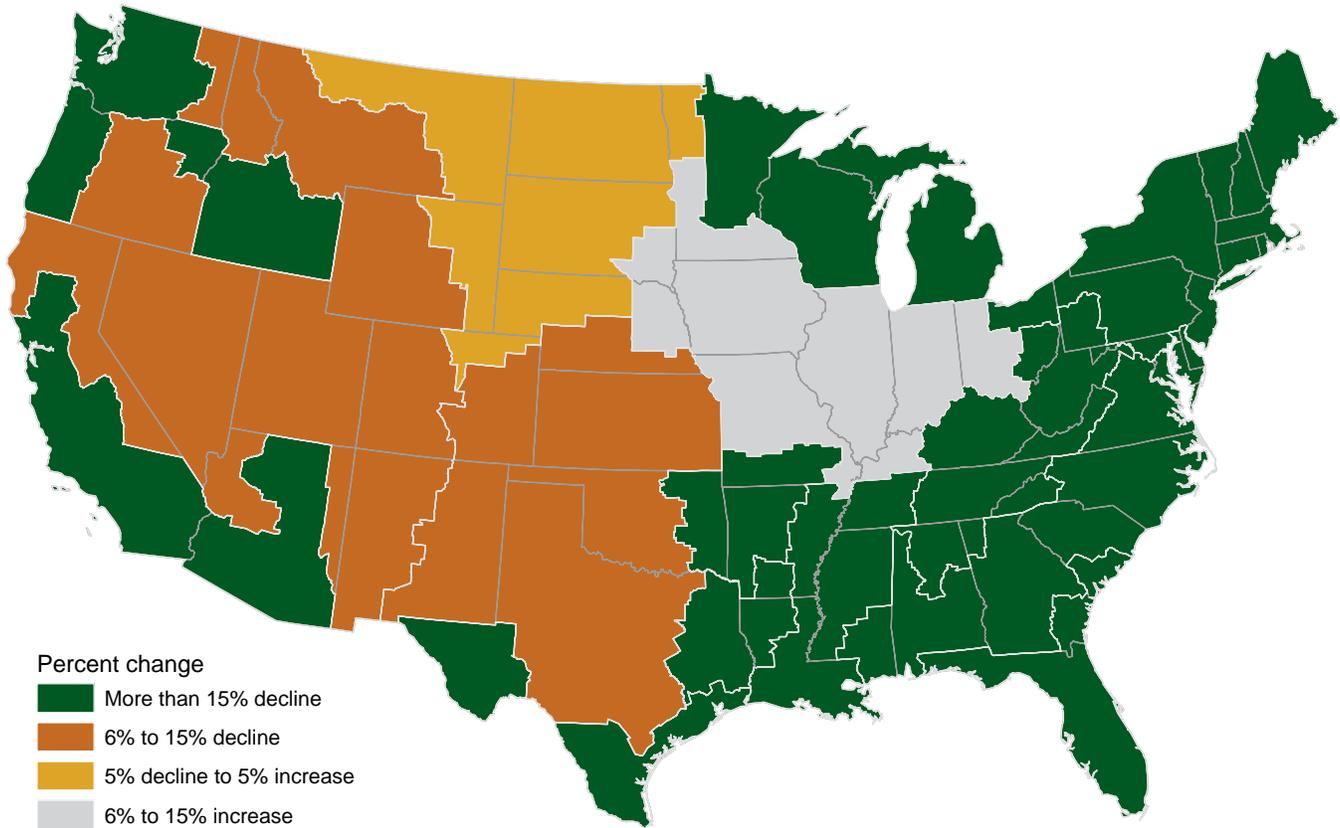
Strong exports, particularly for broilers are helping to boost receipts for poultry farms, with 2008 livestock receipts forecast to be 8 percent higher than 2007. Increasing costs for feed and energy related inputs are expected to push total cash expenses 14 percent above 2007 levels. The result is a projected 2-percent decline in average farm business net cash income. However, average farm business net cash income would be 42 percent above the previous 5-year average, leaving poultry farms in one of the strongest earnings positions among livestock businesses at the end of 2008. Dairy farm incomes were at an all-time high in 2007. In response, milk supply increased during much of 2008, but so have feed costs; the net result is downward pressure on prices while costs of production have increased. The forecast is for net cash income to decline by 40 percent for dairy farm businesses, to 11 percent below the previous 5-year average.

Despite higher feed costs, pork production should be higher in 2008. Prices are also expected to be about 1 percent above 2007 levels. As a result receipts for farm businesses that specialize in hog production are forecast to be 5 percent higher than in 2007. Cash expenses are forecast to be up 16 percent, yielding average net cash incomes 8 percent below 2007 levels, and about 3 percent below the previous 5-year average. Beef cattle net cash income is expected to decline for the third consecutive year. Market receipts, while rising by 2 percent from 2007, are not keeping pace with increases in production costs, which are projected to increase by 11 percent in 2008.

There is considerable regional diversity in the farm business net cash income forecasts for 2008, which is due in large part to the geographic concentration of commodity production (fig. 19). Regions with a relatively high concentration of cash grain and soybean production, such as the Heartland, Northern Great Plains, are the only areas forecast to have increases in average farm business net cash incomes. Conversely, regions where livestock commodities

Figure 19

**ERS farm resource regions, change in net cash income, 2008**



Note: 2008 forecast.

Source: USDA, ERS, Agricultural Resource Management Survey.

dominate, particularly dairy, or where there is a relatively large concentration of specialty crops (vegetables, fruits, nursery, or greenhouse), cotton, or rice production are forecast the have the largest declines in average farm business net cash income. These would include the Northern Crescent, Eastern Uplands, Fruitful Rim, Southern Seaboard, and Mississippi Portal. Among these regions, the Fruitful Rim is the only area where 2008 average farm business net cash income is projected to be higher than the previous 5-year average. With cattle being the most common farm type, average farm business net cash income is projected to be 16 percent below 2007 and 13 percent less than the previous 5-year average in the Basin and Range region. The smallest decline in average net cash income is forecast for the Prairie Gateway where the 2008 forecast is expected to be 11 percent below 2007 and 8 percent lower than the previous 5-year average.

## Farm Household Income, Net Worth, and Well-Being

- *Average farm operator household income is forecast to be \$86,798 in 2008, up less than 1 percent from the 2007 estimate.*
- *Current income can be an unreliable indicator of the well-being of farm operator households.*
- *Equity, or net worth, is a useful indicator of this longer-term performance.*
- *In 2007, the average net worth of farm operator households was \$898,179, and the median net worth was \$533,975.*
- *Although operator households typically derive most of their wealth from farm assets, farm households have a broad portfolio of nonfarm investments, including financial investments and nonfarm real estate.*
- *Large-farm, or commercial-farm households had a 2007 average household income of \$179,225.*

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Average farm operator household income is forecast to be \$86,798 in 2008, up less than 1 percent from the 2007 estimate (see boxes, “How Does USDA Define Farm Operator Households?” and “How is Household Income Defined?”) This contrasts with a 2006-07 increase in farm operator household income of 6.1 percent. The slight increase in farm household income expected in 2008 is the result of an increase in off-farm income that just compensated for the decline in average farm income. Average farm household income from farm sources is forecast to be \$5,900 in 2008 (down more than 30 percent from the 2007 estimate); average off-farm income is forecast to be \$80,897 (up 4.2 percent).

The average share of farm household income from farm sources is forecasted to be 7.3 percent in 2008, compared to 10.0 percent in 2007. The long-term trend has farm operator households increasing their reliance on off-farm income. Approximately, 70 percent of farm operator households have either an operator or spouse working at an off-farm job. Only for the households that operate the largest 8 percent of farms (with sales of \$250,000 or more) is average farm income greater than off-farm income in a typical year.

Unlike average household income, median farm household income fell between 2006 and 2007, to \$52,455; this represents a decline of 6.4 percent (table 6). (Median household incomes are not available for 2008.) The median is the income level at which half of all households have lower incomes and half have higher incomes. As a result, median incomes are less influenced by very high and very low income households than are averages; median income generally is lower than average income, and is less variable.

### Farm Household Net Worth

Current income can be an unreliable indicator of the well-being of farm operator households. Many farm households generate low earnings, or even losses, from the farm business in a given year, but may experience much better financial performance over the long run. Equity, or net worth, the difference between assets and debts as of the last day of the year, is a useful indicator of this longer-

## How Does USDA Define Farm Operator Households?

The farm operator household population includes everyone who shares the dwelling unit with a principal operator of a family farm. This includes students away at school who are supported by the principal operator household and, if not away at school, would be sharing a dwelling unit with the principal operator.)

A farm is defined as any place from which \$1,000 or more of agricultural products were produced and sold, or *normally would have* been sold, during the year. Since the definition allows farms to be included even if they did not have at least \$1,000 in sales, but *normally would have*, USDA's National Agricultural Statistics Service developed a system for determining how much a farm *normally would have* sold in a given year. If a place does not have \$1,000 in sales, a "point system" assigns dollar values for acres of various crops and head of various livestock species to estimate a normal level of sales. Point farms are farms with less than \$1,000 in sales but have points worth at least \$1,000. More than one-quarter of farms have no sales in a typical year, and at least another 30 percent have positive sales of less than \$10,000.

The current definition of a family farm (beginning with the 2005 estimates) is based on the Agricultural Resource Management Survey, and is a farm where the majority of the business is owned by individuals related by blood, marriage, or adoption. In 2007, 97.8 percent of U.S. farms were classified as family farms, and although the definition has changed slightly over time, this share has been stable for at least a decade. The farm operator is the person who runs the family farm, making the day-to-day management decisions. In the case of multiple operators, the respondent for the farm survey identifies who the principal farm operator is during the data collection process. USDA provides financial information for principal farm operators of family farms and their households, referred to as farm-operator households in this publication. For farms where there is more than one operator and the multiple operators do not share a housing unit, detailed household data and off-farm income are not collected for the additional operators on either the Census of Agriculture or the ARMS—household data is only collected for a single principal operator. In addition, USDA does not provide information on the financial position of farm-operator households who operate nonfamily farms.

term performance, since a net worth position at a point in time reflects the accumulation of wealth over time. In short, the typical farm operator household is in a historically strong financial position. In 2007, the average net worth of farm operator households was \$898,179, and the median net worth was \$533,975. (USDA does not forecast farm operator household net worth for 2008. The 2007 estimate is based on farm survey data, collected in 2008, for the end of the calendar year 2007.) The debt-to-asset ratio of farm operator households in 2007 was 10 percent, with average assets of \$1,001,298 and average debt of \$103,118.

About three-quarters of the total assets of farm operator households is associated with farm assets, including the households' personal dwellings on the farm. In 2007, farm-owned operator dwellings represented 10 percent of total household assets and all other farm assets represented 65 percent (fig. 20). The relatively high share of value in dwellings reflects the fact that many farms are small and a major portion of their value is in the farm operator household dwelling. Although operator households typically derive most of their wealth from farm assets, farm households have a broad portfolio of nonfarm investments, including financial investments and nonfarm real estate.

## How is Household Income Defined?

USDA's definition of farm household income parallels that of the U.S. Census Bureau's definition of household income for all U.S. households in the Current Population Survey (CPS). The CPS definition includes all cash income of the household, except in the case of self-employment income (like farming) the definition departs from a strictly cash concept by deducting depreciation, a noncash business expense, from the income of self-employed people.

There are several factors that affect how much of the farm business income is earned by the household of the principal operator, including:

- Some farms have multiple operators who do not share a single household. In such cases, household income is calculated only for the principal farm operator's household and includes only that household's share of farm business income.
- Also, if a farm is organized as a C-corporation, the profit that the firm generates is retained by the business until the business pays out those earnings in the form of dividends. In 2006, for C-corporations, farm business dividends paid to the principal operator household are included in household farm income. (The remaining profit of C-corporations is retained by the farm business or paid to other shareholders and not reflected in the principal farm operator household income.)
- Operators of C- and S-corporations may also pay themselves a wage for operating the farm and those payments are included both as an expense to the business and an income to the farm household when they are paid.

In addition, other farm-related earnings, such as rental income from another farming operation, are included as income in the calculation of earnings of the operator household from farming activities. Earnings of the operator household from farming activities as defined in the USDA measure are not a complete measure of the returns provided by the farm. It leaves out some resources the farm business makes available to the household.

For example, depreciation is an expense deducted from income that may not actually be spent during the current year. Increases in inventories are excluded from the earnings measure, but they could be sold to raise cash. Non-money income, such as the imputed rental value of a farm-owned dwelling, represents a business contribution to household income because it frees up household cash that would otherwise be spent on housing.

Finally, farm losses, or negative farm earnings, of the operator household can reduce the income taxes paid on off-farm sources of income. In order to calculate total operator household income, the earnings of the operator household from farming activities is added to the income from off-farm sources. Off-farm income may come from a variety of sources, including wages and salaries, off-farm self-employment, interest, dividends, private pensions, Social Security, veteran benefits, and other public programs.

## Farm Size and Household Income

Farm household income varies, of course, across groups with different demographic and farm characteristics. A key distinction among farm households is related to farm size, largely due to USDA's very liberal definition of a farm, which includes many small farms that produce little, if any, agricultural

Table 6

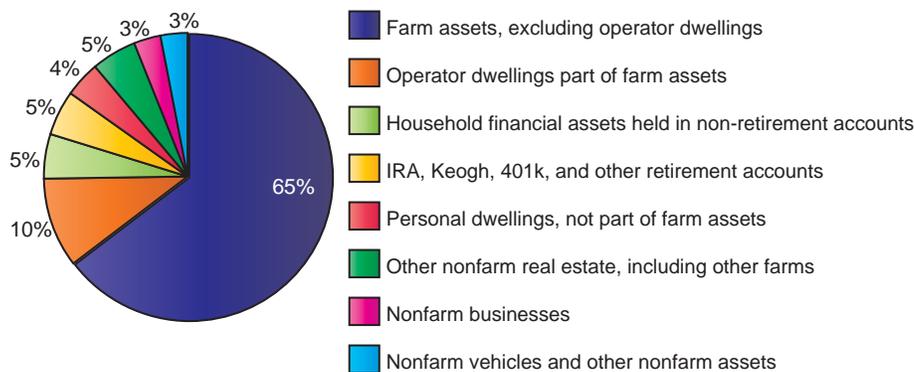
**Farm operator household income, 2002–2007, by year**

Item	2002	2003	2004	2005	2006	2007
	<i>Number</i>					
Number of farms	2,114,826	2,084,715	2,060,822	2,034,048	2,021,903	2,018,706
	<i>Dollars per family farm</i>					
Net cash business income of farm	11,336	14,979	20,624	20,566	16,762	18,616
Net cash earnings of the household from farming activities	3,477	7,884	13,564	13,996	8,750	8,605
Off-farm income of the household	62,284	60,713	67,279	67,091	72,502	77,618
Earned income	46,520	45,843	48,818	46,034	51,674	58,206
Off-farm wages and salaries	38,161	37,674	38,416	34,876	38,481	48,015
Off-farm business income	8,360	8,169	10,402	11,158	13,193	10,191
Unearned income	15,764	22,755	18,461	35,052	20,827	19,412
Total household income of farm operators, average	65,761	68,597	80,843	81,086	81,251	86,223
Total household income of farm operators, median	46,491	47,692	53,595	53,918	56,022	52,455
U.S. household income (average)	57,852	59,067	60,466	63,344	66,570	67,609
	<i>Percent</i>					
Farm income as a percent of total farm household income	5.3	11.5	16.8	17.3	10.8	10.0
Average farm household income as a percent of U.S. household income	113.7	116.1	133.7	128.0	122.1	127.5

Note: For information on the accounting of income, see box "How is Household Income Defined?".

Source: USDA, Agricultural Resource Management Survey.

Figure 20

**Composition of farm household assets, 2007**

Source: USDA, Economic Research Service.

commodities in a given year along with farms that produce more than \$10 million in product. Small farms are commonly defined to be those with sales of less than \$250,000 and large farms, also referred to as commercial farms, have sales of \$250,000 or more. In an ERS typology based on farm size and major occupation of the principal operator, small farms include residence farms and intermediate farms. The major occupation of residence farm operators was not farming or the operator indicated that he or she was retired from farming. Intermediate farms have a principal operator who indicated that farming was his or her major occupation; the major occupation of residence farm operators was not farming or the operator indicated that he or she was retired from farming.

Large or commercial-farm households (8 percent of family farms) had a 2007 average household income of \$179,225 (fig. 21). More so than other households, they rely on farm income, which made up 75 percent of their total 2007 household income. Income from farm sources is less important to operator households of intermediate family farms (27 percent of family farms). With farm income contributing 4 percent of total income in 2007, total household income for these households was \$50,301, down 23 percent from 2006. The remaining family farms, 65 percent of the total, are classified as residence farms. The total household income of residence farm operators is estimated at \$89,237 in 2007, an increase of 19 percent from 2006.

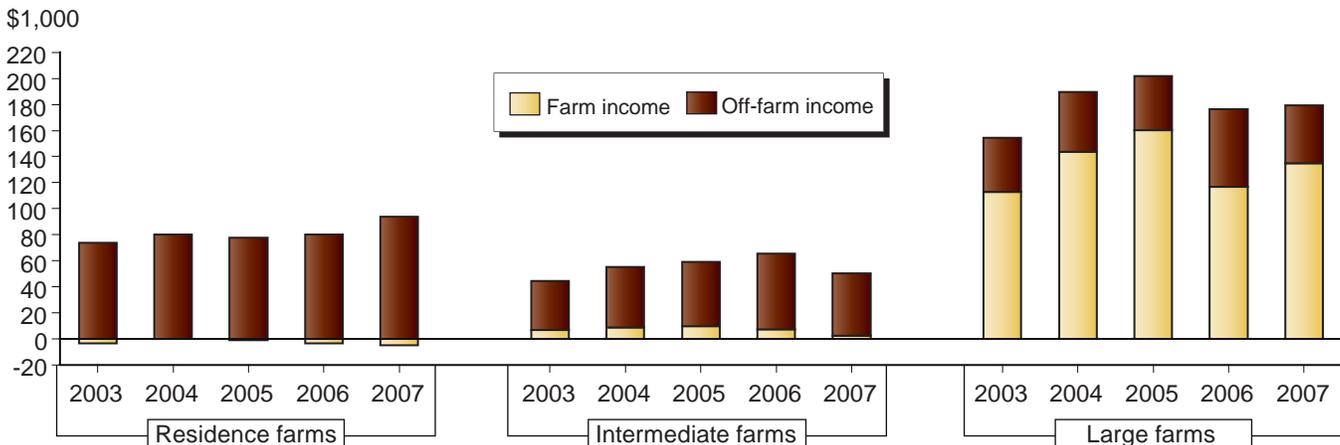
## Well-Being of Farm Households Compared With the U.S. Population

In 2007, average farm household income was \$86,223, or 28 percent higher than that of all U.S. households (\$67,609). Since the 1980s, ERS has reported a money income measure for farm operator households that is comparable to the measure that the U.S. Census Bureau reports for all U.S. households. Since 1996, average income among farm households has exceeded the average income of all U.S. households (fig. 22). Off-farm income, the largest component of farm household income, has exceeded the U.S. average household income from all sources since 1998. A cumulative distribution of 2007 household income for farm operator households, all U.S. households, and U.S. households with self-employment income illustrates their different income performance (fig. 23). The median income of farm households in 2007 (\$52,455) was greater than the median for all U.S. households (\$50,233), but less than for just those U.S. households with self-employed persons. Farm operator households are still more likely to have negative household incomes than either self-employed or all U.S. households.

The net worth of farm households is closely related to the net worth of their farms. Unlike for nonfarm households, whose net worth is predominately in houses and other real estate, the major share of the net worth of farm households is in farm business wealth (including farmland). Consequently, as the

Figure 21

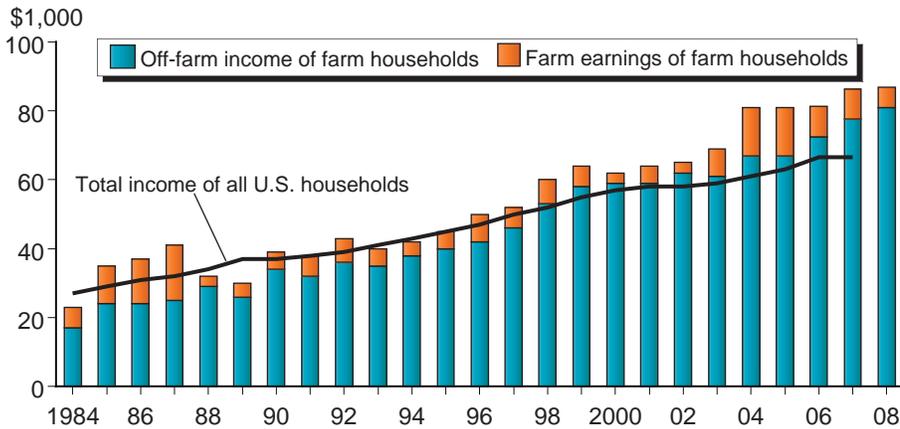
### Farm household sources by farm type, 2003-07



Source: USDA, Agricultural Resource Management Survey.

Figure 22

**Average farm operator household income, by source, compared with U.S. household income, 1984-2008**

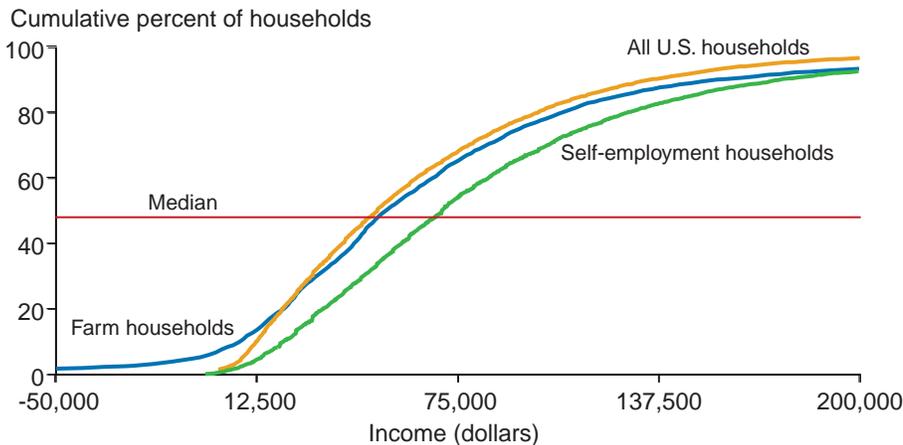


Note: 2008 forecast.

Sources: USDA, Agricultural Resource Management Survey, and U.S. Bureau of the Census, Current Population Survey.

Figure 23

**Cumulative income distributions of farm, all U.S., and U.S. households with self-employment income, 2007**



Note: Very high (above \$200,000) and very low (less than \$-50,000) incomes are not displayed.

Sources: USDA, Agricultural Resource Management Survey, and U.S. Census Bureau, Current Population Survey.

average net worth of farms has increased over time, so has the net worth of farm operator households. The latest information available on net worth of all U.S. families is for 2004, according to the Federal Reserve System's Survey of Consumer Finances. The median value of net worth for all U.S. households was \$93,100 in 2004, compared with \$456,914 for farm households. This puts the median net worth of farm operator households at about five times the median net worth of U.S. families. Farm households have greater net worth in part because capital assets, such as farmland and equipment, are generally necessary to operate a successful farm business. Also, households with self-employed heads have greater net worth than the average U.S. household. Even so, farm operator households also have greater net worth than all U.S. households with a self-employed head do. Although more recent data from the SCF

will not be available until 2009, we can posit that the net worth gap between farm households and all U.S. households has increased since 2004 due to the rising value of farm land and equity held by farmers overall, coupled with declined residential real estate values.

## Farm Business Balance Sheet and Financial Performance

- *Steady growth in farm income, and in nonfarm demand for farmland, accommodating interest rates, and generally rising commodity prices have supported continued appreciation in land values and in farm business and farm household wealth.*
  - *Farmland and farm building values (dollars per acre) rose by about 8.9 percent in 2007 and are expected to rise another 6.8 percent in 2008.*
  - *Farm-sector debt is anticipated to stand at \$215.1 billion by the end of 2008, up to a new record level for the fifth consecutive year.*
  - *Farm business equity is expected to continue rising in 2008 as farm asset values rise more rapidly than farm debt. Farm sector equity by the end of 2008 is expected to be almost 6.8 percent higher than in 2007.*
  - *Indicators used to measure solvency of the farm sector remain favorable for 2008. The debt-to-asset ratio is forecast to be 9.2 percent in 2008, compared with 9.6 in 2007. This stands in sharp contrast to 1985 when it was 22.2 percent.*
  - *Total returns on farm business assets (from current income plus capital gains) are estimated at 10.0 percent in 2007.*
  - *The real net return on farm assets (RNROA) or “spread” is an indicator of the profitability of farm sector investments. The RNROA was as low as -16.7 percent in 1984 during the farm financial crisis of the 1980s, indicating that debt financing was unprofitable for the farm sector then. However, the RNROA is forecast at 4.7 percent in 2008, indicating that debt financing is profitable.*
- 

The current U.S. financial environment raises questions about how the farm economy is positioned with respect to economic and financial fundamentals, such as the amount of debt use among farms. We examine the most recent sector-level data and conclude that the farm sector is in a relatively strong financial position overall. However, using ARMS farm-level data, considerable variation can be found in the financial strength and performance of farm businesses and of farm households by region, by farm type, size farm, and by other factors.

These forecasts are tentative for several reasons. First, farmers' and ranchers' expectations about future prices and returns are not static. For example, the values and composition of farm financial assets are changing, reflecting the current turmoil in financial markets. Also, it is difficult to forecast the value of purchased inputs. Farmers and ranchers may be waiting to purchase fertilizers when fertilizer prices are more favorable. Thus, changing expectations about prices and returns affect their decisions about the timing and makeup of input purchases. Therefore, forecasts of the values of both real estate and nonreal estate assets, although based on the latest and best-available data, are still forecasts.

## Financial Strength of Farm Businesses and Farm Households Continues To Grow

Steady growth in farm income, in nonfarm demand for farmland, accommodating interest rates, and generally rising commodity prices have supported continued appreciation in land values and in farm business and farm household wealth (figs. 24-26). Consequently, farm wealth has continued to grow since recovery from the farm equity losses incurred during the 1980s farm financial crisis, both in nominal and in real dollars (fig. 27).

Farm asset, debt, and equity values are expected to continue rising through the end of 2008 (fig. 28). The value of U.S. farm business assets is forecast to increase by about 6.3 percent in 2008. The value of farm real estate assets (about 85 percent of farm sector assets) is expected to rise by 6.8 percent. The value of debt in the farm sector is projected to increase an additional 1.7 percent in 2008. Farm sector equity is expected to continue rising in 2008 as farm asset values rise faster than farm debt. Farm sector net worth (equity, or assets minus debt) is expected to exceed \$2.1 trillion in 2008, up from about \$2.0 trillion in 2007, table 7.

The value of yearend 2008 crop inventories is expected to grow by nearly 21.6 percent from 2007 while the value of livestock and poultry inventories is expected to fall slightly.

The value of machinery and motor vehicles is expected to rise by about \$1.0 billion in 2008, based on higher expected capital expenditures. Purchased inputs are expected to increase by about 4.1 percent and financial assets are expected to rise by about 4.5 percent.

Farmland and farm building values (dollars per acre) rose by about 8.9 percent in 2007 and are expected to rise another 6.8 percent in 2008 (fig. 29). The demand for farmland will continue to exert upward pressure on U.S. farmland values, especially in urban and urbanizing areas. However, the demand for farmland, machinery, and

Figure 24

### U.S. farm finances, 1960-2008

Annual compound percentage



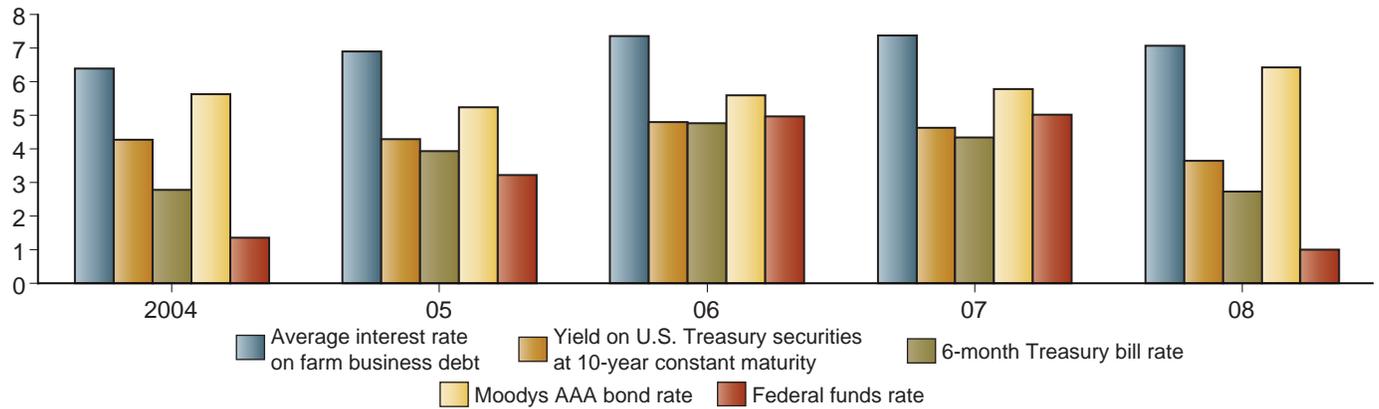
Note: 2008 forecast.

Source: USDA, Agricultural Resource Management Survey.

Figure 25

**Selected interest rates, 2004-08**

Percent



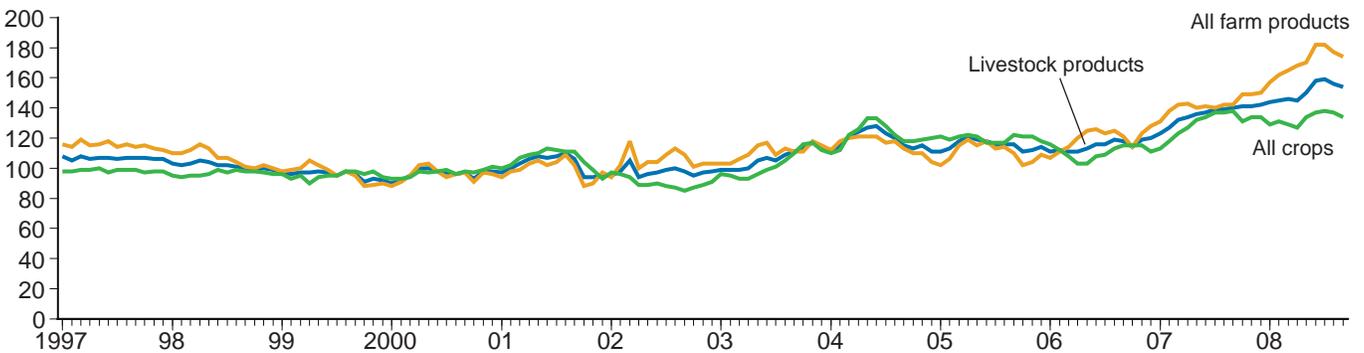
Note: 2008 forecast.

Source: Federal Reserve System and USDA, Economic Research Service.

Figure 26

**Prices received, major indexes (livestock, all farm products, all crops), 1997-2008**

Percent of total expenditures



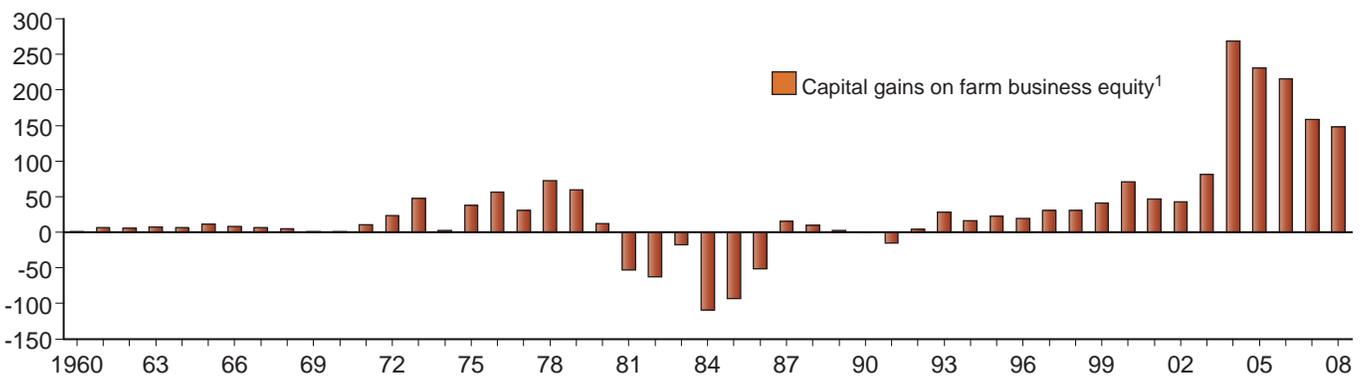
Note: 2008 forecast.

Source: USDA, National Agricultural Statistics Service.

Figure 27

**Farm business equity and capital gains, 1960-2008**

\$ billion



Note: 2008 forecast.

<sup>1</sup>Figures are adjusted for each year's inflation.

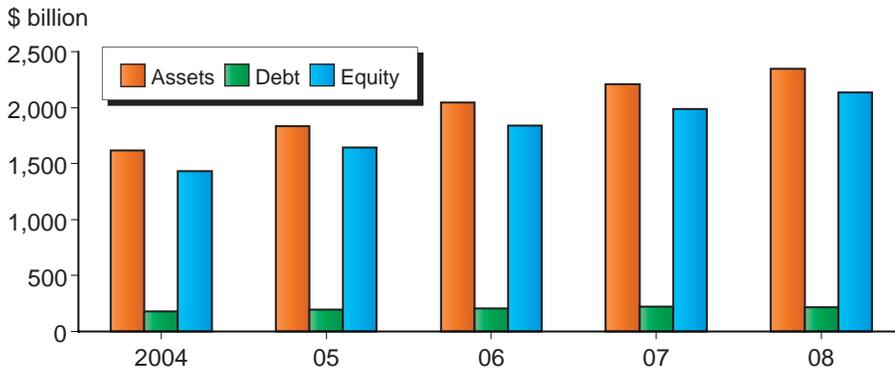
Source: USDA, Economic Research Service.

other farm assets has moderated somewhat since 2007, given the continued sluggish growth in the U.S. housing sector and decreasing demand for new housing.

Farm sector debt is anticipated to stand at \$215.1 billion by the end of 2008, up to a new record level for the fifth consecutive year (fig. 30). Real estate debt is expected to rise to \$111.1 billion, up 3.1 percent, while non-real estate debt is expected to be \$104.0 billion, a 0.3 percent increase. From the end of 2003 through the end of 2008, farm debt is expected to rise about \$40 billion, or about 23 percent.

Figure 28

**Farm business balance sheet, 2004-08**



Note: 2008 forecast.

Source: USDA, Economic Research Service.

Table 7

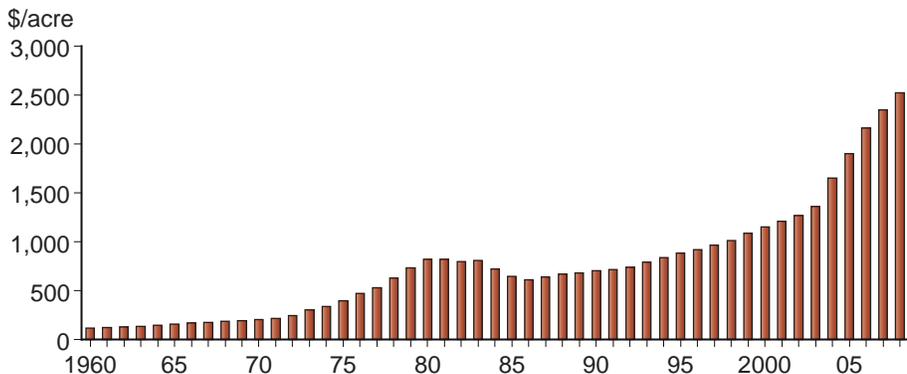
**Balance sheet of the U.S. farming sector, 2004-2008**

	2004	2005	2006	2007	2008	Pct.chng. 07-08
Farm assets	1,617,582	1,835,464	2,047,439	2,209,924	2,349,688	6.3
Real estate	1,340,582	1,549,227	1,755,794	1,912,194	2,042,245	6.80
Livestock and poultry	79,420	81,097	80,747	80,649	80,607	-0.1
Machinery and motor vehicles <sup>1</sup>	101,944	106,892	108,084	108,546	109,568	0.9
Crops stored <sup>2</sup>	24,435	24,291	22,699	22,703	27,610	21.6
Purchased inputs	5,701	6,491	6,460	7,019	7,307	4.1
Financial assets	65,500	67,465	73,656	78,812	82,348	4.5
Farm debt <sup>3</sup>	182,965	193,230	196,392	211,520	215,147	1.7
Real estate debt	96,872	101,518	101,475	107,778	111,124	3.1
Farm Credit System	37,723	40,125	40,881	45,356	n.a.	
Farm Service Agency	2,222	2,050	2,107	2,054	n.a.	
Commercial banks	35,233	36,939	37,777	40,598	n.a.	
Life insurance companies	10,912	11,019	11,292	11,152	n.a.	
Individuals and others	10,782	11,384	9,212	8,391	n.a.	
Nonreal estate debt	86,093	91,712	94,917	103,742	104,023	0.3
Farm Credit System	21,896	24,218	27,540	32,252	n.a.	
Farm Service Agency	3,242	3,015	2,722	2,878	n.a.	
Commercial banks	45,830	48,520	50,995	55,475	n.a.	
Individuals and others	15,125	15,956	13,660	13,138	n.a.	
Farm equity	1,434,617	1,642,234	1,851,047	1,998,404	2,134,539	6.8
Selected ratios:						
Debt-to-equity	12.8	11.8	10.6	10.6	9.9	
Debt-to-asset	11.3	10.5	9.6	9.6	9.0	

Source: See appendix.

Figure 29

**Value per acre of land and all buildings, 1960-2008**

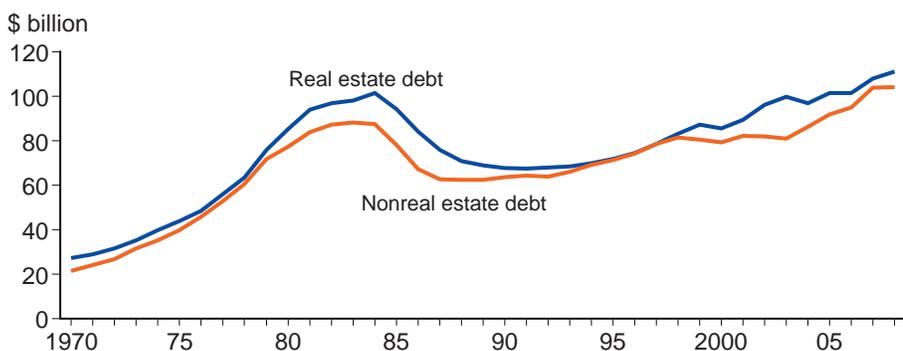


Note: 2008 forecast.

Source: USDA, National Agricultural Statistics Service.

Figure 30

**Farm business debt, 1970-2008**



Note: 2008 forecast.

Source: USDA, Economic Research Service.

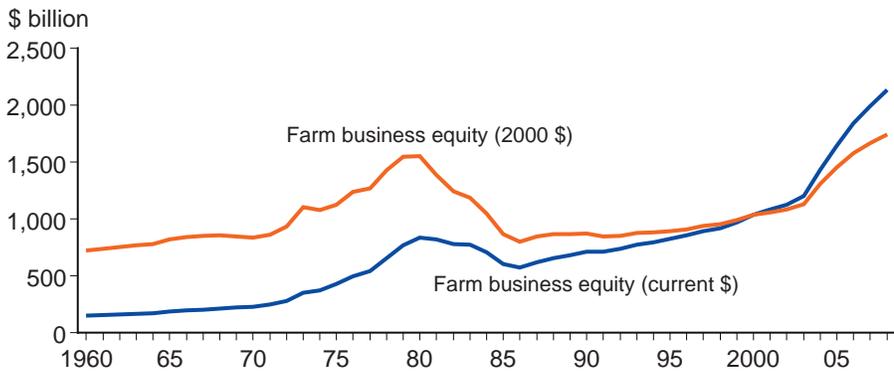
The recent rise in loan balances can be at least partially attributed to farmers’ positive views of the sector’s future. Strong farmland markets of the last several years attest to farmers’ long-term confidence. While many farmers have financed expansions with cash purchases, real estate debt levels rose over 6 percent in 2007 and are expected to rise almost 3 percent in 2008. Most borrowers in 2008 should have little difficulty cash-flowing their production loans, given relatively high commodity prices.

Farm real-estate debt is expected to account for almost 52 percent of total farm debt in 2008, up slightly from about 51 percent in 2007. Nonreal-estate debt is shifting toward Farm Credit System and commercial bank lending sources, which accounted for 84 percent of nonreal estate farm debt in 2007, up from 79 percent in 2004.

Farm business equity is expected to continue rising in 2008 as farm asset values rise more rapidly than farm debt. In today’s dollars, \$2,350 billion in assets minus \$215.1 billion in farm debt yields a sector net worth (equity) of about \$2,135 billion. Farm sector equity by the end of 2008 is expected to be almost 6.8 percent higher than in 2007 (fig. 31).

Figure 31

### U.S. farm business equity, 1960-2008



Note: 2008 forecast.

Source: USDA, Economic Research Service.

Indicators used to measure solvency of the farm sector remain favorable for 2008. The debt-to-asset ratio indicates the relative dependence of farm businesses on debt and their ability to use additional credit without impairing their risk-bearing ability. The lower the debt-to-asset ratio, the greater the overall financial solvency of the farm sector. The debt-to-asset ratio is forecast to be 9.2 percent in 2008, compared with 9.6 percent in 2007. The share of debt to total asset value has declined steadily from 15.2 percent in 1998, and stands in sharp contrast to 1985 when it was 22.2 percent (see: [www.ers.usda.gov/Data/FarmBalanceSheet/FINRATIO/DEFINITN.HTM/](http://www.ers.usda.gov/Data/FarmBalanceSheet/FINRATIO/DEFINITN.HTM/)).

### Profitability of Farm Sector Investments Is Rising

Rates of return on farm assets and equity are indicators of the profitability of farm sector investments. Total returns on farm business assets (from current income plus capital gains) are estimated at 10.0 percent in 2007 (with 5.0 percent growth in current income and 5.0 percent growth in capital gains). Total returns on farm business assets are forecast at 9.44 percent in 2008, reflecting both lower expected returns to farm assets and somewhat slower appreciation in farm asset values (fig. 32).

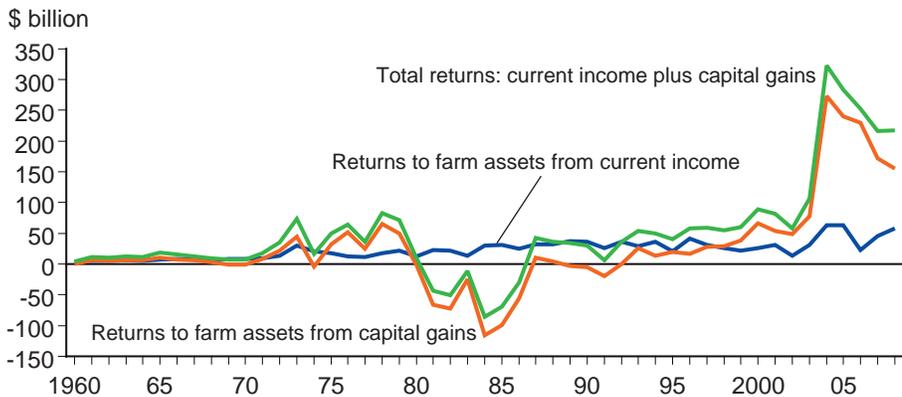
The total rate of return on farm assets includes both the rate of return from current income and the rate of return from capital gains and losses. Changes in returns to farm assets generate the swings in farm asset values and the resulting capital gains and losses in the farm sector (boom-bust cycles) (see fig. 27).

The real net return on farm assets (RNROA) or “spread” is an indicator of the profitability of farm sector investments. The “spread” measures the difference between the farm investor’s total return on farm assets less the real (inflation-adjusted) cost of debt.

At the U.S. level, the real net rate of return (RNROA) averaged about 7 percent in the 1970s, reaching 19.9 percent in 1973 (fig. 33). This was largely due to the large capital gains accrued on farm business assets. The (average) real cost of farm debt or cost of borrowing for the U.S. farm sector was negative in 1974, as the general inflation rate was greater than the (nominal) interest rate on farm debt. Since the RNROA was positive during the 1970s, debt financing was profitable for the farm business sector as a whole.

Figure 32

**Total returns to U.S. farm business assets, 1960-2008**

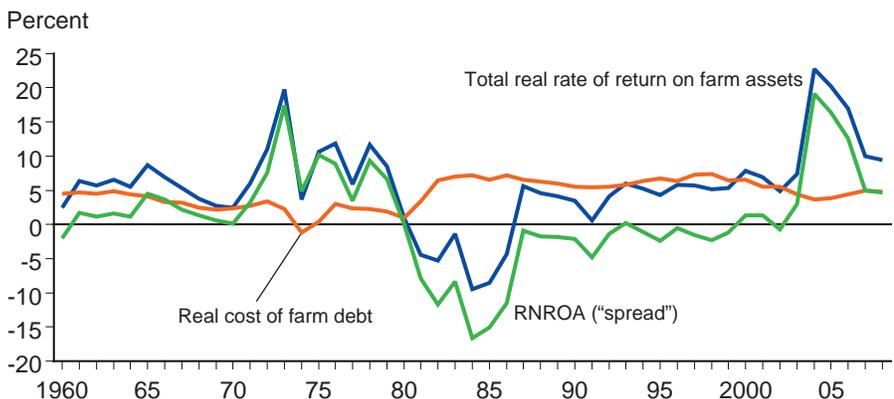


Note: 2008 forecast.

Source: USDA, Economic Research Service.

Figure 33

**Farm assets, debt, and RNROA ("spread"), 1960-2008**



Note: 2008 forecast.

Source: USDA, Economic Research Service.

However, in 1980 the situation changed dramatically. Capital gains on farm business assets became capital losses as farm asset and equity values adjusted to lower expected growth in farm income. Debt financing was unprofitable for the farm sector as a whole during 1981-1999 (except for 1993). Since 2003, debt financing has been profitable, with the RNROA ranging from 3.0 percent in 2003, 19.2 percent in 2004, and 4.7 percent in 2008. When the “spread”—the difference between the total rate of return on farm investments and the inflation-adjusted cost of borrowing—is positive, this means that (on average), use of debt to finance farm investments is profitable (the “spread” or net return—total rate of return minus the inflation-adjusted cost of debt financing—is positive).

The increase in the real net return on farm assets since 2003 is primarily due to lower real (inflation-adjusted) costs of borrowing (nominal interest rates are relatively low, as is the rate of inflation). Although the lower real cost of debt (borrowing) provides an incentive to increase borrowing, the increased total real return on owning farm assets such as farmland and farm machinery and equipment is the main impetus for rising debt levels.

## Agricultural Credit Use

- *Agricultural credit use and soundness are substantially different from those of households in the general economy and for many other types of small businesses.*
- *Debt is not universal; in fact, the majority of farms report no year-end obligations.*
- *Operating loans and lines of credit are an important component of any successful small business, including farming. Short-term credit provides a way to manage differences in timing between input purchases and additions to inventory and the eventual sale of commodities.*

## Debt Use and Structure

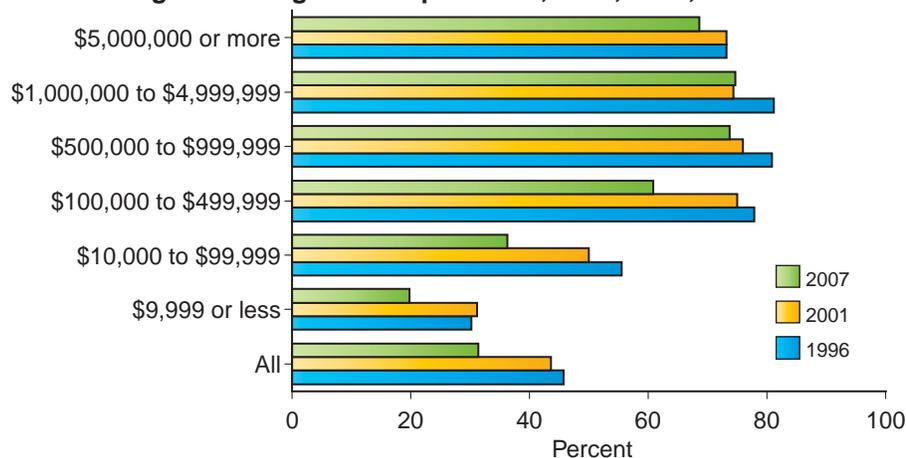
The current debt structure in the aggregate compares favorably with the situation that farmers found themselves in during the farm financial crisis of the 1980s. Farm operators as a whole have adopted a more conservative approach to financing their operations. Many more farmers are now paying cash for land, equipment, and inputs.

Farmers are also reducing their debt load by leasing assets such as land and machinery. While the sector data indicate almost 70 percent of operations carry no outstanding debt, it is important to look at the distribution of debt among U.S. farms. Farm-level data indicate that many of the producers who carry no debt are smaller, older, or part-time operators who depend on off-farm jobs to support their household. Debt use is more concentrated among capital intensive and larger operations that depend primarily on farm business income. A corollary to the concentration of farm debt is the fact that most farmers have decreased their usage of debt over time, reducing their risk exposure.

The sector data reveal that relatively fewer farmers now use debt to finance their operations than was the case in the 1980s. But figure 34 shows that much of this shift away from debt has occurred among farms earning less than \$500,000 per year. These operations avoid debt use by leasing assets or paying for inputs and assets with cash.

Figure 34

### Debt use higher for larger farm operations, 1996, 2001, 2007



Source: USDA, Agricultural Resource Management Survey.

While the proportion of larger farmers relying on debt has declined somewhat, they remain much more reliant on debt than do smaller, part-time operators. Large operations require significant amounts of inputs and investments in land, buildings, and machinery. Far fewer of these larger operations are able to cash-flow these expenses without taking on at least some seasonal debt.

The capital needs of farm operations vary significantly. Debt use is much higher in capital-intensive operations like corn and soybeans, hogs, dairy, and poultry. Concentrated livestock operations require large investments for production facilities as well as purchases of grain and feeder livestock. Row crop farms require the purchase of expensive and sophisticated machinery as well as increasingly expensive seed, chemical, and fertilizer. The intensity of debt use is shown in figure 35. Although the proportion of farms relying on debt has decreased among every farm type, there is still much more reliance on debt among dairy, poultry, hog, and cash grain producers when compared to less capital intensive operations.

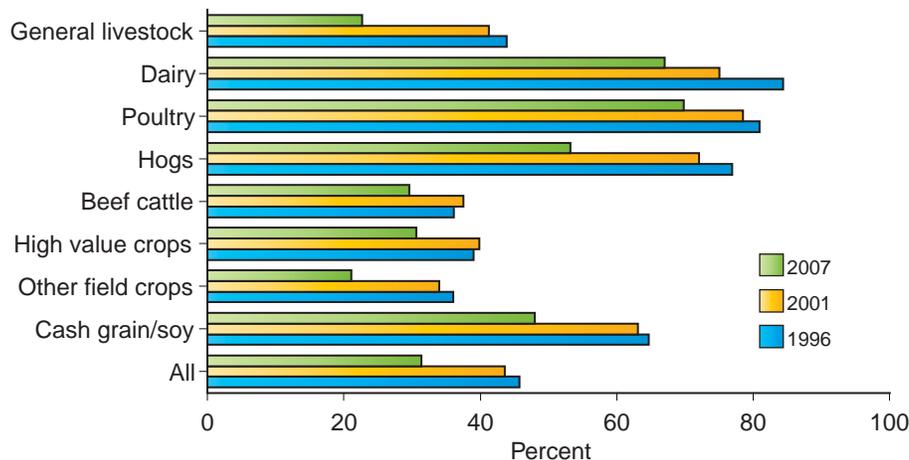
The shift from debt usage has been higher among the less capital-intensive operations. Many of these, especially beef cattle and general livestock, are smaller, pasture-based operations that require fewer inputs and often supplement income from off-farm jobs or serve as hobby or retirement farms. These producers are in a better position to function without debt and may not be comfortable with the risk that comes with incurring debt on farm operations.

Farm debt usage is higher among younger farmers. As farmers age, they generally are more averse to taking on debt and their long-term assets are more likely to be paid off. Also, many retirement-age farmers operate part-time operations or are transitioning farms to the next generation during their retirement. These operators' incomes are often supplemented by savings or retirement sources of income.

The percentage of farms relying on debt has decreased during the past two decades among every age group (fig. 36). The only farms that have not changed debt usage significantly over time are those owned by operators who are more than 65 years of age. As a group, these farmers have been more risk-averse than farms in the other age categories.

Figure 35

**Capital-intensive operations use more debt, 1996, 2001, 2007**



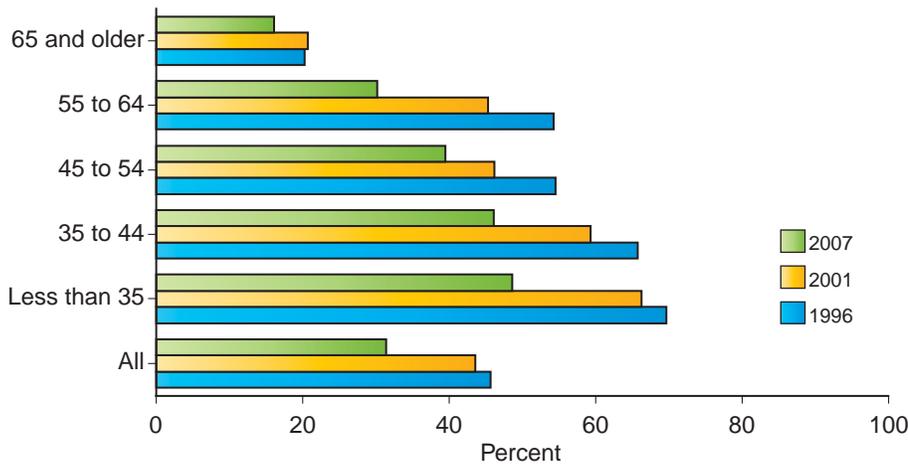
Source: USDA, Agricultural Resource Management Survey.

Geographical regions vary in their climate and population patterns, which in turn leads to variation in the types of farms operated. Given variation in farm types, we can expect regional variation in debt usage patterns. Figure 37 confirms this, but it also shows that the proportion of farm debt usage has decreased over the past 12 years in every region except the Delta.

Many of the larger farm operations are in the Northern Central portion of the country and are more likely to operate as full-time businesses that require large investments in real estate, equipment, and inputs. Farms in the Northern Plains, Corn Belt, and Lake States were also more likely to use farm debt than other regions.

Figure 36

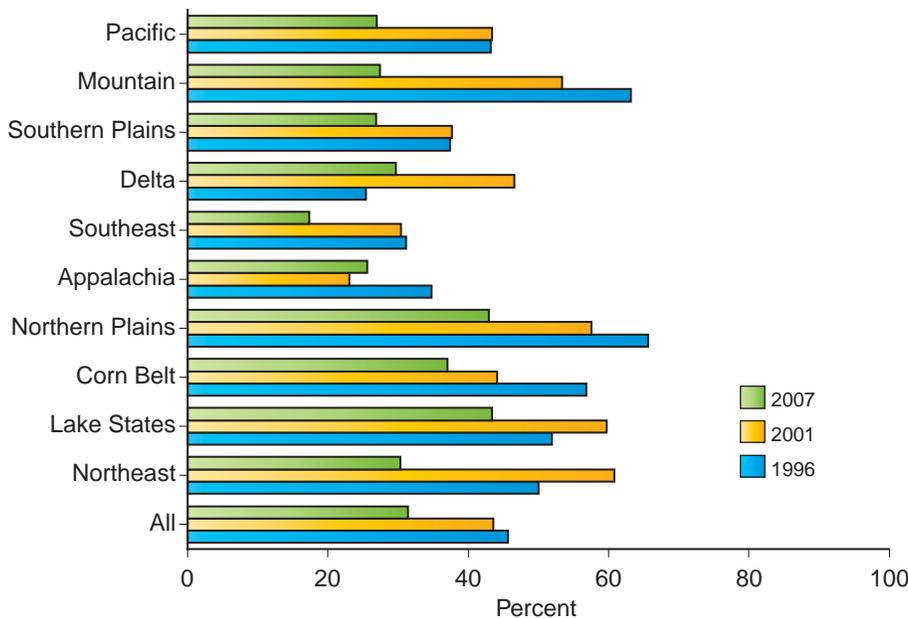
**Debt use declines with farmers' age, 1996, 2001, 2007**



Source: USDA, Agricultural Resource Management Survey.

Figure 37

**Farm debt usage by region, 1996, 2001, 2007**



Source: USDA, Agricultural Resource Management Survey.

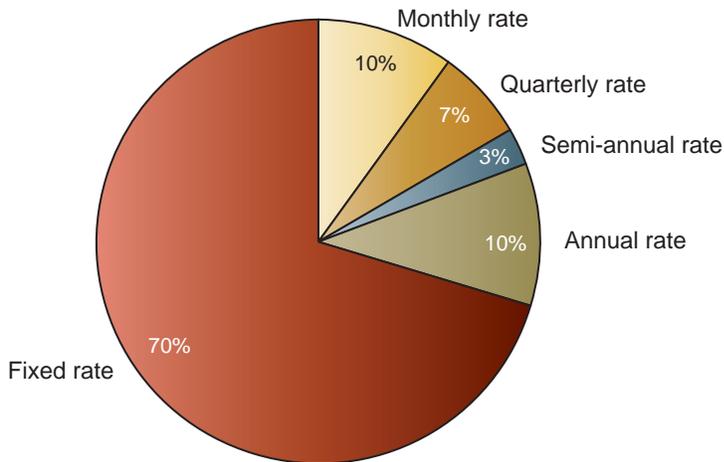
## Farmers Use a Variety of Finance Alternatives

Figure 38 shows that most farm loans have fixed-interest rates. With fixed-rate loans there is no risk of changes in principal and interest payments, while the rate on variable-rate loans can change due to changes in the cost of money to lenders. Interest-rate risk for fixed-rate loans is shared by lender and borrower, but with variable rates the risk is borne by the borrower. It is no surprise that so many farm loans have fixed interest rates since farmers have generally become more risk-averse. Most farmers will be protected if credit tightens and interest rates increase in the short run.

Farmers use multiple lenders to finance their farm operations. However, commercial banks provide more than half of all farm loans (fig. 39). Industry-specific lenders, such as the Farm Credit System and USDA's Farm Service

Figure 38

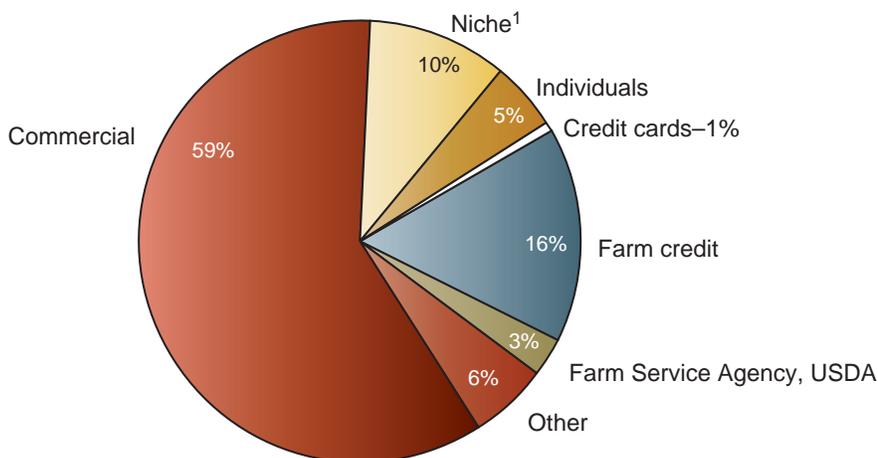
### Types of farm loans, 2007



Source: USDA, Agricultural Resource Management Survey.

Figure 39

### Sources of loans to farmers, 2007



<sup>1</sup>Niche lenders are most commonly captive finance arms of input suppliers such as equipment manufacturers.

Source: USDA, Agricultural Resource Management Survey.

Agency, specialize in loans for agricultural operations. Niche lenders such as equipment and input suppliers also lend to farms, and some family-business farms arrange unique financing terms between family members and neighbors.

Figure 40 shows that two-thirds of farm loans are secured for real estate, such as land, facilities, and out-buildings. The rest of farm loans are distributed between intermediate and long-term non-real estate loans (18 percent), used to cover machinery and breeding livestock investments, among other things; 15 percent of farm loans are short-term production loans used to purchase production inputs such as seed, fertilizer, and feeder livestock.

Although farms are, for the most part, considered small businesses, there are fundamental differences between farms and nonfarm small businesses, including some major differences in debt use and financial characteristics between farms and small businesses. The 2003 *Survey of Small Business Finances* conducted by the Federal Reserve Board provides the most recent data on debt usage in American nonfarm small businesses. When compared with the most recent ARMS data, some similarities as well as major contrasts between small business and farm financial structure are evident. On average, farms have more assets and equity built up and are less likely to rely on debt to finance their operations.

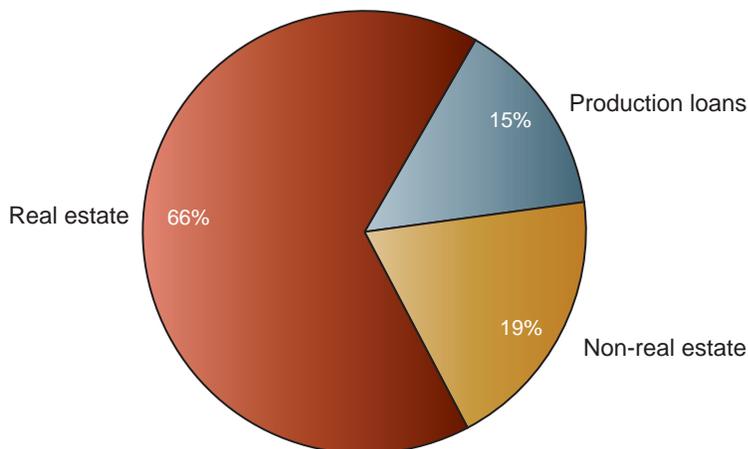
As is the case in farms, small businesses that do not use debt in their operation are, on average, smaller businesses with older operators. The debt-free small-business operators have a smaller net worth, much like their debt-free farming counterparts.

One of the sharpest contrasts between small businesses and farms is the usage of debt and degree of leverage. A strong majority (69 percent) of farms do not use any debt to finance their operations, while only 28 percent of small businesses do not use any debt in their operations.<sup>4</sup> In addition, a higher percentage of small business operators are considered highly leveraged when compared to farm operators (fig. 41).

<sup>4</sup>Federal Reserve Board, 2003 Survey of Small Business Finances.

Figure 40

**Majority of farm debt is in real estate, 2007**



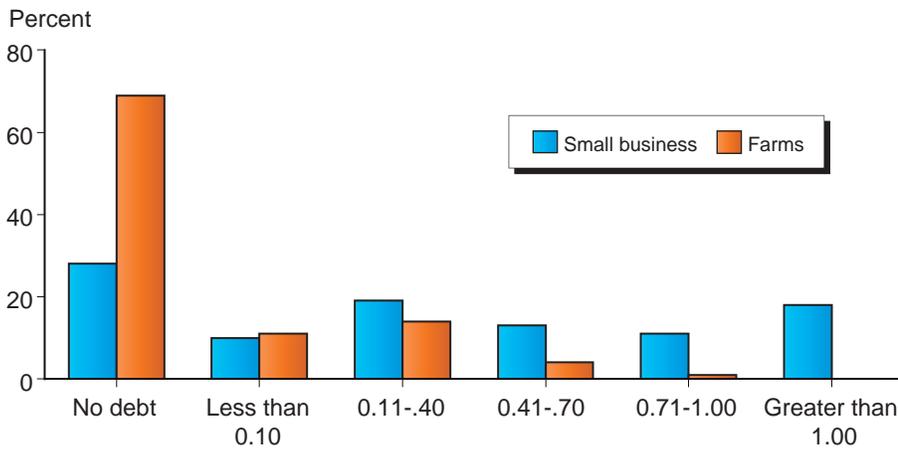
Source: USDA, Agricultural Resource Management Survey.

The leverage situation can impact credit availability; farms often have more physical assets that can be used as collateral in loans. According to the ARMS data, the number of farm operators who did not use loans because they were denied credits was about one percent. This is considerably lower than the 18 percent of small business operators that did not apply for credit for fear of rejection.

Loans to small businesses are generally riskier than loans to agricultural operators; the percentage of small businesses that were delinquent in payments was nearly 16 percent in 2003, considerably higher than for farm loans at less than 3 percent in 2007.<sup>5</sup> Agricultural loans perform better than commercial loans even when all business loans are taken into consideration (fig. 42).

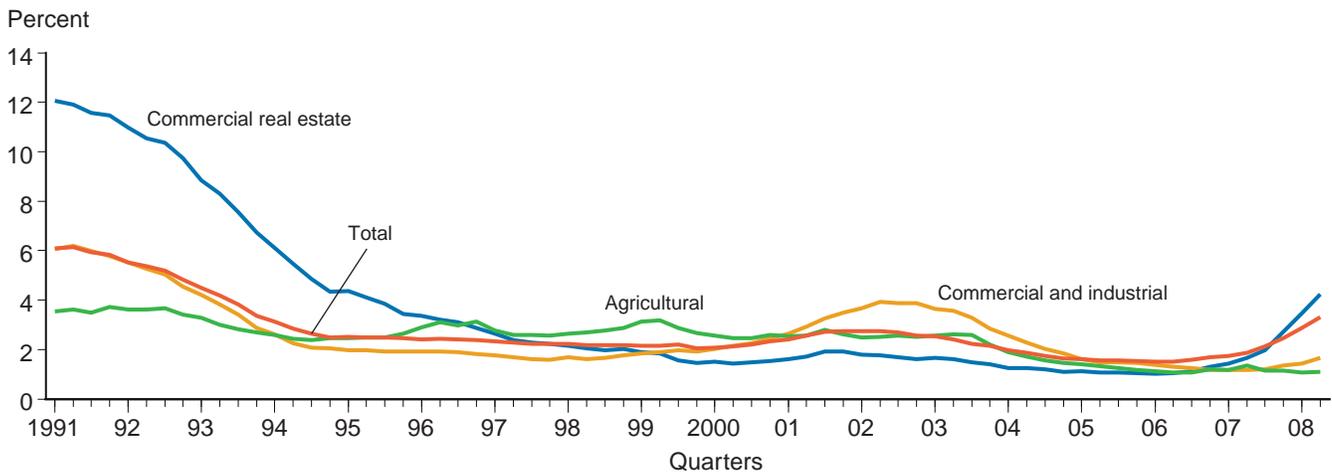
<sup>5</sup>Federal Reserve Board and the FCS Funding Corporation.

Figure 41  
**Farms share of debt-to-asset ratio, 2003 and 2007**



Note: 2008 forecast.  
 Source: USDA, Agricultural Resource Management Survey.

Figure 42  
**Loan default rates, 1991-2008<sup>1</sup>**



<sup>1</sup>2008 rate is for 1<sup>st</sup> quarter 2008.  
 Source: Federal Reserve Board.

## Importance of Operating Credit

Operating loans and lines of credit are an important component of any successful small business. Farming is no exception. Short-term credit provides a way to manage differences in timing between input purchases and additions to inventory and the eventual sale of commodities. Farmers have experienced dramatic increases in production costs over the last five years, with total cash expenses increasing by more than 40 percent. Financing of input purchases by farm businesses has kept pace with these cost increases. For all farm businesses, the average amount of cash expenses that are financed by short-term credit has range from 27-30 percent over the last five years. The total amount of credit used has risen from \$47 billion in 2003 to over \$58 billion in 2007 (fig. 43). Interest cost associated with the higher amounts of operating credit has risen by more than \$1,000 per farm since 2003. Given the outlook for increases in 2008 expenses, operating credit used in 2008 could increase by as much as \$8 billion.

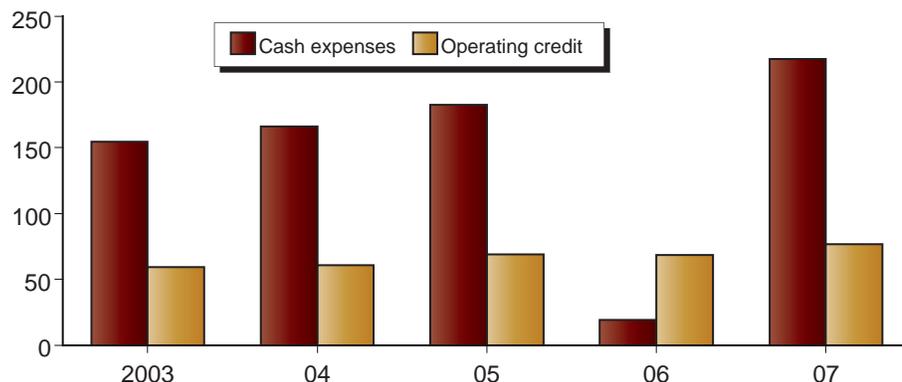
There is a noticeable difference between crop and livestock farms in the use of operating credit, with crop farms much more dependent on short-term financing for input purchases. Among crop farms, farm businesses that specialize in the production of cotton, rice, and corn were the largest relative users of operating credit in 2007. Wheat and mixed grain farms also financed relatively large shares of operating costs, with short-term loans averaging 49 percent and 45 percent of cash expenses. Beef cattle and hog farms were the heaviest users of operating credit among livestock farms, with each financing about 25 percent of cash expenses. There were stark regional differences in the use of operating credit that reflect the relative concentration of cash grain, cotton, and rice production where financing of operating costs tended to be more intensive. The highest proportion of cash expenses financed in 2007 occurred in the Mississippi Portal region, at 51 percent. Other regions with relatively high use of operating credit were the Northern Great Plains (40 percent), Heartland (37 percent), and Prairie Gateway (34 percent).

The use of operating credit generally increases with farm size until you reach the largest farms (those with gross sales of \$500,000 or more). The largest size financed an average 26 percent of cash expenses compared with 38

Figure 43

### Use of operating credit by farm businesses, 2003-07

\$ million



Source: USDA, Agricultural Resource Management Survey.

percent for farms with sales of \$250,000-\$499,999, and 29 percent for farms with sales of \$100,000 to \$249,999. These three groups accounted for 96 percent of total operating credit used in 2007. The largest farm sales category represents 4 percent of farms but accounted for nearly two-thirds of total operating credit.

The positive relationship between credit use and farm size is not unusual since credit needs tend to expand with the scope of operations. Size also is associated with various characteristics of the firm that could affect its ability to gain access to credit from external sources. For example, larger firms have more assets for collateral and typically have longer performance histories. While overall credit use increases with farm size, the need for operating credit is also dependent on the amount of working capital available to the firm and the amount of time that elapses between input purchases and sales.

## Gauging Farms' Financial Positions

- *Some potential areas of vulnerability for farm businesses and for farm household include:*
- *For the U.S. farm sector, current forecasts indicate that farm lenders hold a 9.1 percent stake in the total value of farm assets. While the amount of debt use in total has increased since reaching its low during the 1980s farm crisis, debt as a share of either assets or owned equity has fallen.*
- *Data reported by farmers for their farm operations mirror the perspective gained from use of composite estimates prepared for the farm sector from multiple data providers.*
- *The distribution of debt use in farming has changed in the past two decades. A much larger share of farmers reported no debt at yearend 2007 than in 1986, with the share rising from 39 percent of farms in 1986 to 69 percent of farms in 2007.*
- *Debt use varies by economic size of farm, with smaller operations more likely to be debt free.*
- *For the U.S., 2.1 percent of farmers reported asset and debt levels that resulted in a debt/asset ratio for their business of 0.6 or higher entering 2008. These farms held about one-fifth of the debt reported by farm operators, or about \$25 billion in total farm business debt. At the beginning of 2008, farmers reported \$3.40 in current assets for each dollar of current liabilities. This was up from \$2.90 a decade earlier and reflects favorable production and pricing circumstances in 2007.*
- *Farms characterized by relatively high debt, relatively little working capital in relation to production expenses, and estimated to not have met debt service obligations entering 2008 are likely to be among farms experiencing the most stressful circumstances. On December 31, 2007, the overall measure of financial performance indicator classified 3.5 percent of farms as vulnerable, having both negative net farm income and a debt-to-asset ration over 0.40.*
- *Debt repayment capacity indicates the amount of debt that can be carried by a farm relative to the debt owed. Debt capacity use has shrunk from about 46 percent entering the decade to about 32 percent in 2007. Indications based on income, debt and interest rates are the debt capacity use will shrink further in 2008, to about 31 percent.*

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Farmers' responses to income and finance questions included in the Agricultural Resource Management Survey and other annual farm finance surveys conducted over the past two decades provide insight into farms' financial leverage, liquidity positions, and debt repayment capacity. Taken together, the degree to which farms have leveraged themselves financially by combining debt and equity sources of capital in financing their business, their ability to access cash without disrupting on-going business activities, and their capacity to service existing financial obligations provide insight into whether farms and farm households may encounter difficulty in adjusting to changes in their economic environment. These same factors are also likely

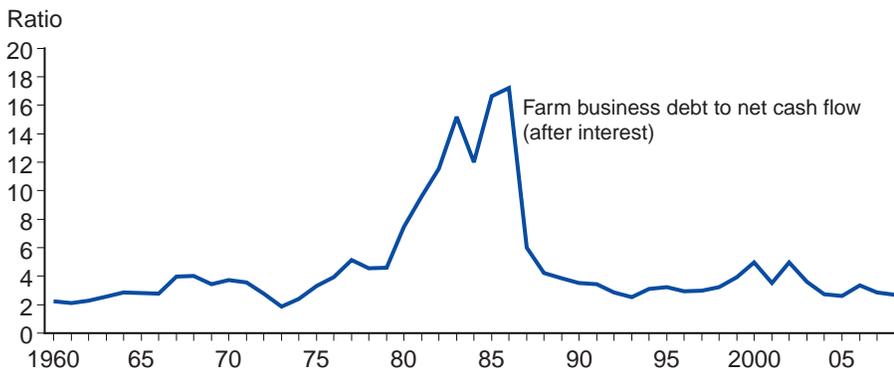
to influence whether they will encounter difficulty in maintaining access to existing financing arrangements or in acquiring new funding they may need to sustain, or grow, their farm operation. Assessing farms' financial leverage, liquidity, and debt service capability also provides a perspective about how resilient U.S. farms may be in adjusting to changes in their economic and financial environments.

## Debt Use as a Share of Net Cash Flow, Farm Assets, and Equity

For the U.S. farm sector—farms, landowners, contractors, investors, and other stakeholders in farming—current forecasts indicate that farm lenders hold a 9.1 percent stake in the total value of assets used in farming. While the amount of debt use in total has increased over the years, debt as a share of net cash flow, assets, and equity has been falling (figs. 44 & 45). Importantly, data reported by farmers for their farm operations mirror the perspective gained from use of composite estimates prepared for the farm sector from

Figure 44

### Farm business debt, 1960-2008

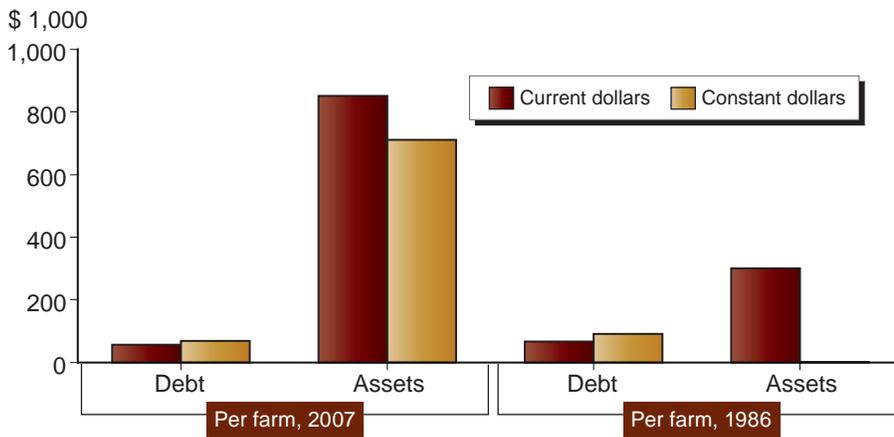


Note: 2008 forecast.

Source: USDA, Economic Research Service.

Figure 45

### Farm business assets and term debt, 1986 and 2007



Sources: USDA, Agricultural Resource Management Survey; USDA, Farm Costs and Returns Survey, 1986; GDP implicit price deflator was used to convert estimates to constant dollars.

multiple data providers. Debt-equity ratios prepared from farm-level data have fallen from 27.8 in 1986 to 8.6 in 2007, the most recent year for which reported data from farm-level sources are available (fig. 45). Given current projections of debt use and asset values, debt-asset and debt-equity ratios are expected to continue to drop through the end of 2008.

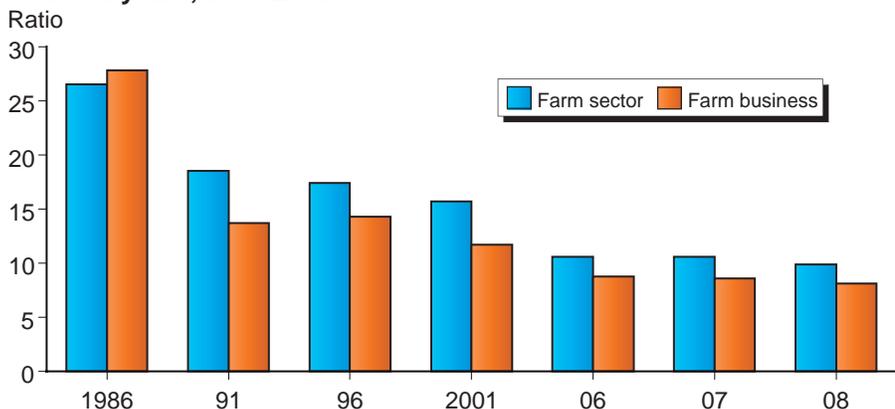
The distribution of debt use in farming has changed in the past two decades. A much larger share of farmers reported no debt at yearend 2007 than in 1986, with the share rising from 39 percent of farms in 1986 to 69 percent in 2007. For a more complete perspective about debt use in farming, respondents to USDA's farm finance surveys are first asked to report debt use in their operation from the current or any earlier years. From this starting point, followup questions are asked about lines of credit and the intra-year use of debt to finance production and business operations. Using this broader view, 63 percent of farmers reported no use of debt even to finance production within the 2007 calendar year. Taking no-debt owed and no-debt together suggests that an extra 6 percent of farmers use debt financing but do not carry a balance at yearend.

The share of farmers who practice debt-free farming may seem at odds with an industry that is viewed as being capital-intensive. To follow up on this seeming anomaly, debt use has been examined by characteristics of farm operation. Respondents who did not use debt or a line of credit in their business were asked the reason.

Debt use varies by economic size of farm, with smaller operations more likely to be debt free. Still, as much as 25 to 35 percent of commercial-size operations reported no use of debt (fig. 46). Farmers operating general field crop, high-value crop, beef, or general livestock were more likely to be debt-free than cash grain, hog, poultry, and dairy farms. Poultry and dairy farms were the most common users of debt, followed by hog operations and cash grain-soybean farms. When asked why debt was not used, the overwhelming reason provided in 2007 was that producers had sufficient funds, with 97 percent choosing this reason for the absence of debt in their business. Lenders have been noted to

Figure 46

**Debt-equity ratios for U.S. farm sector/farm businesses, selected years, 1986-2008**



Note: 2008 forecast.

Source: USDA, ERS, Farm Sector Accounts; USDA, Agricultural Resource Management Survey.

become more cautious if debt/asset ratios rise above 50 percent, according to *Interpreting Farm Financial Ratios*, by Amanda Blocker et al., 2006.

Along the same lines, benchmarking systems for farm finance generally point to a debt/asset ratio of 60 percent as a break point for high debt farms, according to *Your Annual Financial Check-up*, by Jack Davis, 2002. For the U.S., 2.1 percent of farmers reported asset and debt levels that resulted in a debt/asset ratio for their business of 0.6 or higher entering 2008. These farms held about one-fifth of the debt reported by farm operators, or about \$25 billion in total farm business debt. About one-third of these high-debt farms were intermediate or commercial-size farm businesses. The rest were rural residence farms. As a group, the commercial and intermediate farms, which more commonly make use of debt in their farming operations, held about \$19 billion of the \$25 billion of debt represented by high-debt farms.

Low debt or leverage positions help insulate farms from debt service obligations. Farm use of loan guarantees and loans subject to adjustment in interest rates provide insight into additional actions taken by farmers and their lenders to improve farm debt. In 2007, the 31 percent of farmers who used debt had taken steps to structure loan terms. Of farms that report use of debt, 25 to 30 percent report use of variable rate loans. We asked respondents to report attributes of individual loans for the four largest loans in their business. Based on these reports, 22 percent of loans which accounted for 30 percent of the balance owed were subject to variable rates in 2007. A combination of relative low use of debt and modest use of variable rate loans should provide most farms with additional flexibility to adapt to changes in their financial environment.

### ***Farms' Availability of Working Capital***

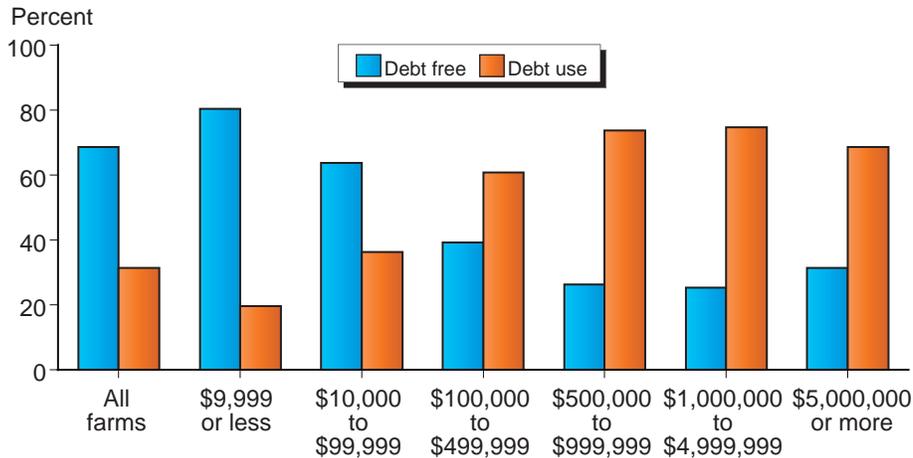
Moving from consideration of financial leverage to liquidity, or how fast assets can be converted to cash, provides another perspective about how resilient farms may be. Two common indicators of a farm's liquidity are the current ratio (current assets divided by current liabilities) and working capital (current assets minus current liabilities). These measures provide an indication of funds that are available to help insulate the farm from having to make unwanted adjustments as a result of short-term reductions in income or cash flow difficulties that arise from unexpected increases in input costs. At the beginning of 2008, farmers reported \$3.40 in current assets for each dollar of current liabilities (fig. 47). This was up from \$2.90 a decade earlier and reflects favorable production and pricing circumstances in 2007.

Even given the rise in production costs that has occurred, farmers reported working capital of about 57 cents for each dollar of production expense at the end of 2007. This is down from the 63 cents held in 2006, but is on par with the amount of working capital held a decade earlier. Both the current ratio and levels of working capital held by farmers indicate that their liquidity positions have been maintained even given the substantial rise in production costs incurred in recent years.

Working capital, defined as current assets minus current liabilities, is a dollar measure. To enable comparison among farms of different sizes we divide the amount of working capital available to a farm by its expenses to measure the share of expenses that could be covered by available farm resources without

Figure 47

**Share of farmers reporting owing debt at year-end 2007**



Source: USDA, Agricultural Resource Management Survey.

incurring debt or drawing on household assets. Commonly used financial benchmarks show a working capital to expense ratio below 10-25 percent indicates higher risk farms (Davis, 2002).

For our analysis we choose a working capital-expense ratio of less than 20 percent. Farm results for year-end 2007 indicate that about 42 percent of all farms had working capital of less than 20 percent of total farm production expenses. Most of these farms were rural residence farms. These rural residence operations were predominately one or two person businesses, comprised largely of the operator and his/her spouse. Over 90 percent of the primary operators of these farms either reported an off-farm primary occupation or not currently being in the workforce. More than two-fifths of spouses also reported working off-farm for a salary or wage.

Together intermediate and commercial farms accounted for 31 percent of farms with a working-capital-expense ratio below 20 percent. Intermediate farms, those with sales less than \$250,000 with farming being the operator’s primary occupation, were largely beef, general livestock, and other field operations. Commercial farms, those with sales over \$250,000, were primarily cash grain and soybean, poultry, high value crops, and dairy operations. While reporting a relatively low ratio of working capital to expenses, the intermediate farms in this group averaged almost \$9.66 in assets for each dollar of debt entering 2008 while commercial farms had nearly \$4.72. Moreover, nearly half of intermediate farms and 30 percent of commercial farms reported no farm debt.

Given the debt-asset positions of intermediate and commercial farms with relatively low amounts of working capital, a key factor may be how asset and debt holdings are structured for the business. Relatively few assets may be held in near liquid form to meet current liabilities owned by the operation. This means that these farmers would need to access other financial assets held by their household or tap into credit reserves of their business of unexpected expenses arise.

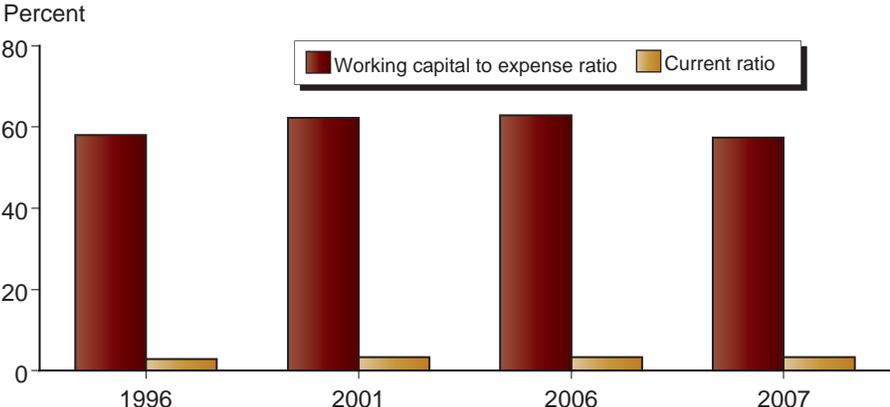
Knowing the amount and proportion of debt in a farm’s capital structure in conjunction with the amount of working capital available to the business provides an indication of how difficult it might be for farmers to obtain credit for operating their businesses. Given leverage positions and the amount of working capital in farm balance sheets, farmers likely had few problems acquiring financing in 2008. Farmers’ responses to questions about access to credit indicate that in 2007 around 3 percent had difficulty obtaining credit (either denied credit, did not apply for fear of denial, or were initially turned down and reapplied elsewhere).

Three key questions emerge from debt use and the amount of working capital held by farmers that may affect both access to credit and farmers’ ability to adjust quickly to changing circumstances. The first question is how many farmers are operating with a combination of relatively low equity and high debt? Farmers in this position may be more constrained in their access to loan funds since they would have less collateral and would be more exposed to repayment stresses if incomes were eroded due to higher costs or lower returns. To gauge how many farmers entered 2008 in this financial position, we measured the intersection of farmers in the bottom 25 percent of operations with regard to farm equity (farms with less than \$192,800 in equity, the bottom quartile break point on December 31, 2007) and those in a relatively high debt position (defined as holding debt in excess of 60 percent of assets).

Based on farm survey results, there were about 37,000 farms in the low equity-high debt position entering 2008 (fig. 48). These were largely one- to-two person(s) family owned businesses. More than three-fourths reported less than \$100,000 in sales for 2007. About a fourth of the operators of these farms reported farming as their primary occupation, but over 70 percent reported working off-farm for a wage or salary. Nearly three-fifths of spouses worked off-farm. On two-fifths of these farms, both the operator and spouse worked off-farm. As a group, low equity-high debt operations accounted for about 2 percent of farms and 11 percent of debt reported by U.S. farm operators in 2007.

The second question is how many farmers hold high debt loads and have variable rate loans, where interest rates on outstanding debt may change? These farms could face rising debt service obligations if there are upward

Figure 48  
**Measures of farm liquidity, selected years, 1996-2007**



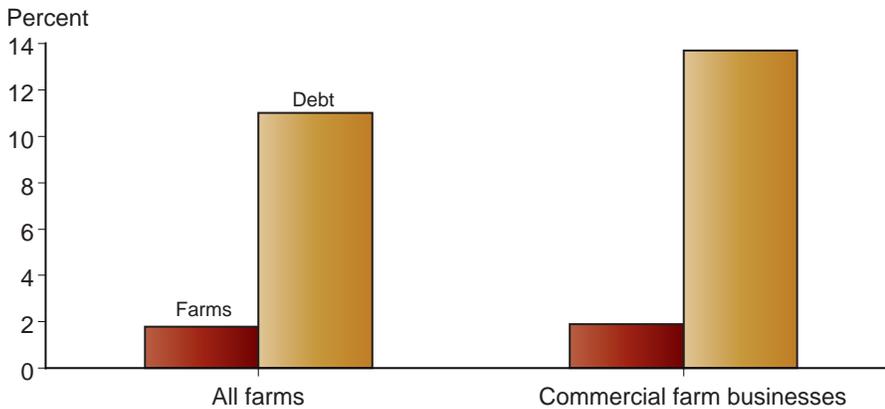
Source: USDA, Agricultural Resource Management Survey.

adjustments to interest rates. About 13,000 farms had relatively high debt and variable rate loan terms entering 2008 (fig. 49). Again, these farms were predominately one- or two-person(s) operations, run by the operator and his/her spouse. Only about one in five was commercial farms. As a group, high debt-variable rate loan farms accounted for less than 1 percent of farms but around 7 percent of debt. Only 37 percent of the debt with variable rate financing was used for real estate purchases. Overall, this group of farms carried relatively high debt loads, with over half having a debt-asst ratio in excess of 0.71.

The third question is how many farms have combine high debt and low amounts of working capital? These farms may face constraints in accessing loan funds. We analyzed farms with a working capital-expense ratio of less than 20 percent and debt over 60 percent of assets. The ARMS indicated that about 41,000 farms were in this financial circumstance at the beginning of 2008 (fig. 50). These farms were more commonly poultry, high value crops, cash grain, and dairy operations located in the Heartland, Prairie Gateway,

Figure 49

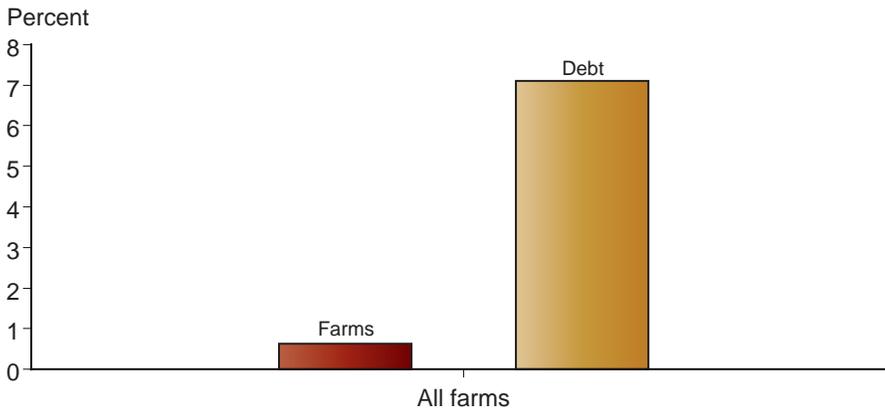
**Share of farms and debt reported being held by farms in low equity-high debt positions, all farm and commercial farm businesses, 2007**



Source: USDA, Agricultural Resource Management Survey.

Figure 50

**Share of farms reporting debt in excess of 60 of asset values and use of variable rate loans, 2007**



Source: USDA, Agricultural Resource Management Survey.

Northern Crescent, and Southern Seaboard. About 70 percent had sales less than \$100,000. Over 90 percent operated as one or two person proprietorships.

Farms classified as having high debt-low working capital accounted for 2 percent of farms and 17 percent of debt reported by U.S. farm operators. About 6,700 commercial-size farms were included in this group—about one-sixth of the entire group of high debt-low working capital farms. Commercial size farms in the group accounted for 58 percent of the debt reported by the group, again illustrating the concentration of debt use by U.S. farms.

***Farms With Low Levels of Working Capital, High Debt, and Less Than Full Debt Coverage***

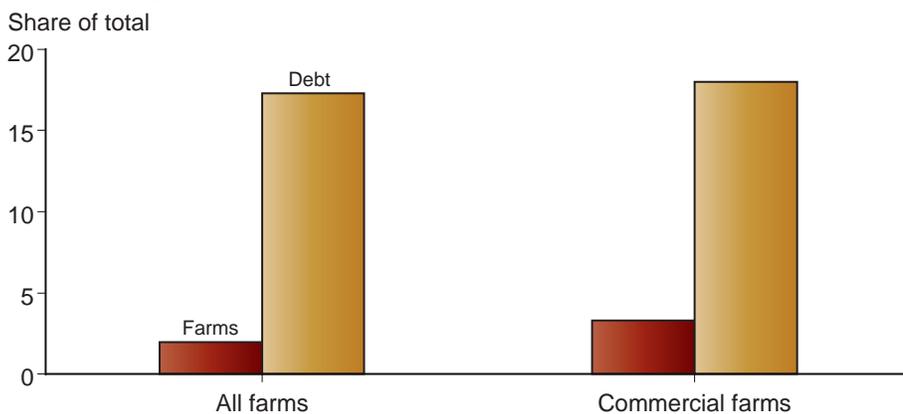
Farms characterized by relatively high debt, relatively little working capital in relation to production expenses, and estimated to not have met debt service obligations entering 2008 are likely among farms experiencing the most stressful circumstances (fig. 51). About 22,000 farms were in this position at the beginning of 2008 (fig. 52). This amounts to about 1 percent of all farms, a share that has remained stable for the past three years. Most (78 percent) of these farms were rural residence farms that generated less than \$100,000 in sales during 2007. Farms with relatively high debt, low working capital, and less than full term debt coverage reported owing about 6 percent of the farm debt reported by operators. Approximately 2,100 commercial-size farms were also members of this group and owed about 45 percent of the debt reported by this category of farm operators.

**Gauging Overall Financial Performance of Farm Businesses**

Neither leverage nor liquidity measures derived from farm balance sheets directly address farmers’ ability to service their financial obligations. Lenders evaluate creditworthiness based on a combination of factors, including personal characteristics, financial conditions confronting the business, value of collateral offered as loan security, and the repayment capacity of the farm operation. Repayment capacity, or for our purposes the ability to service financial obligations, more directly introduces income into assessments of financial performance.

Figure 51

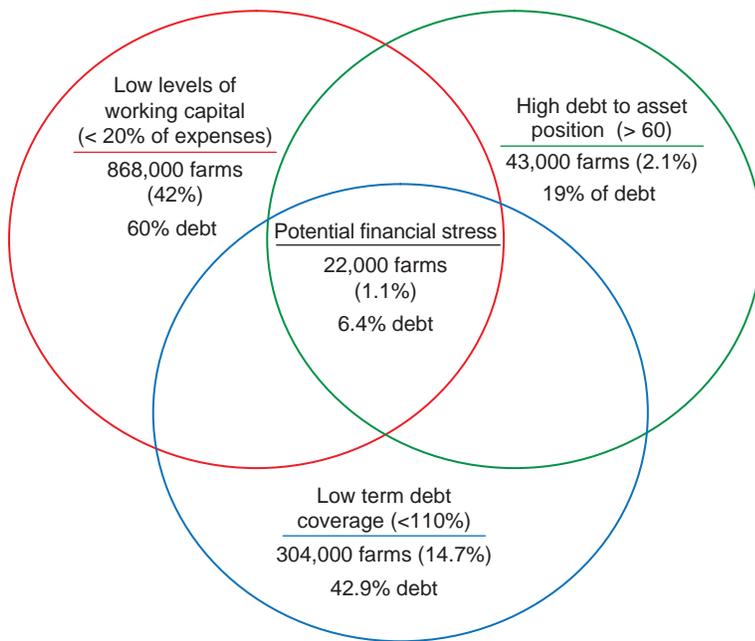
**Farms reporting debt over 60 percent of asset values and working capital less than 20 percent of expenses, 2007**



Source: USDA, Agricultural Resource Management Survey.

Figure 52

**Gauging solvency, liquidity, and debt coverage of U.S. farm businesses, 2007**



Source: USDA, Agricultural Resource Management Survey.

The Economic Research Service measures the overall financial performance of farms two ways. The first measure combines a farm’s net income and solvency position (see box, “Overall Financial Performance”). The second develops an indication of a farm’s debt repayment capacity utilization (see box, “Measuring Debt Repayment Capacity Utilization”). The measure of overall financial performance is not as comprehensive as the measure of debt repayment capacity used to assess a farm’s ability to meet its financial obligations. We use it here because it extends to the 1980s, which enables us to put today’s farm financial position into a longer term context.

On December 31, 2007 the overall measure of financial performance indicator classified 3.5 percent of farms as vulnerable, having both negative net farm income and a debt-to-asset ratio over 0.40 (fig. 53). The share of all U.S. farms classified as vulnerable has dropped since 1986 when nearly 12 percent of farms were in this financial position. At the other extreme, about 59 percent of farms were in a favorable financial position entering 2008. The percentage of income available for debt coverage has been rising from 1996 to 2007 (fig. 54). These farms had both positive income and relatively low farm debt. For comparative purposes, 48 percent were classified as favorable in 1986. The most striking change is likely the share of farms with a high debt burden (over 40 percent of asset values) and positive net farm income. This measure is down from 10 percent in the mid-1980s to around 2 percent entering 2008. This reflects both the larger share of farms debt free entering 2008 (63 percent at the end of 2007 versus 39 percent in 1986) and farms being in a less leveraged position. The substantial rise in asset values, particularly land, over the past 20 years has raised asset values relative to debt levels and contributed to the large reduction in financial leverage. Of the approximately 73,000 farms classified as vulnerable entering 2008, over 80 percent were rural-residence farms. Fewer than 10 percent were commercial-size farm businesses. For farms with over

## Overall Financial Performance Measurement

The Economic Research Service measures the overall financial performance of farms by combining a farm's net farm income and solvency position. Farms in a vulnerable financial position have debts in excess of 40 percent of the value of their assets and negative farm income. Farms in a favorable position have debts less than 40 percent of their assets and positive net farm income. Marginal solvency refers to positive-income, high-debt farms, while marginal income refers to negative-income, low-debt status. This measure of financial performance is rooted in the 1980s, when USDA annual farm finance surveys were first developed. Because of its original design, the measure is not able to support more extensive analyses of a farm's debt-service capability.

## Measuring Debt Repayment Capacity Utilization

**Income for debt coverage** = Net farm income + depreciation + interest on capital debt + interest on capital lease payments + net off-farm income – living expenses – income taxes

Debt repayment = Principal and interest on capital debt + capital lease payments

Total debt coverage ratio = Income for debt coverage / debt repayment

Debt coverage margin = Income for debt coverage – debt repayment

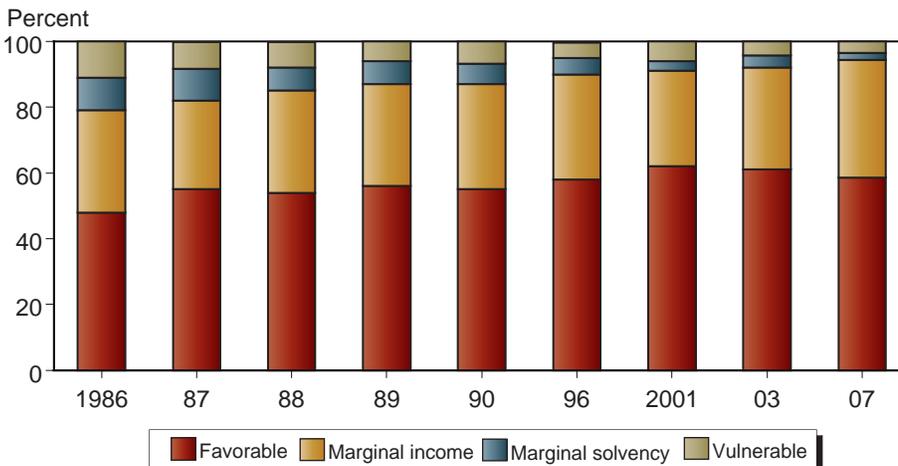
Maximum loan payment = Income for debt coverage / minimum debt coverage ratio

Debt repayment capacity = Maximum loan payment x  $(1 - (1+r)^{-n})/r$ .  
Where  $(1 - (1+r)^{-n})/r$  = present value of an annuity of \$1, at r percent for n periods

Debt repayment capacity utilization = Actual debt / debt repayment capacity

Figure 53

### Share of farms by overall financial performance position, selected years, 1986-2007



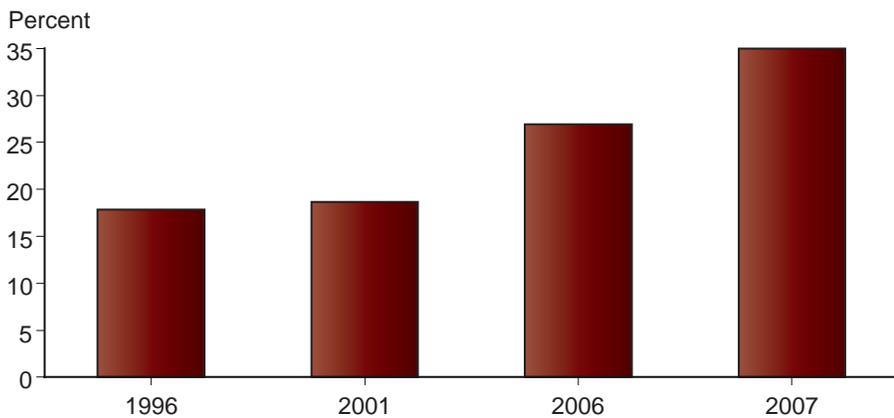
Source: USDA, Agricultural Resource Management Survey.

\$100,000 in sales 67 percent to 75 percent were classified as favorable, with low debt and positive net incomes (fig. 55).

Debt repayment capacity is defined as the maximum amount of debt supportable by the cash sources of income available for loan payments, indicating the amount of debt that can be carried by a farm relative to the debt that is owed. Debt capacity use has shrunk from about 46 percent entering the decade to about 32 percent in 2007. Indications based on income, debt and interest rates are that debt capacity use will shrink further in 2008, to about 31 percent (fig. 56). The amount of income available above all expenses that could be made available to service financial obligations, or debt coverage margin, has grown from about \$19,000 on average for all farms to nearly \$35,000 per farm. Debt coverage margins have expanded even more for larger commercial-size farms. The larger commercial farms who also are more likely to use debt in their farming operations. The enhanced availability of debt coverage margins should provide farms, on average, with a greater ability than they had a decade ago to adjust to any reduction in income that might arise from either reduced revenues or higher costs.

Figure 54

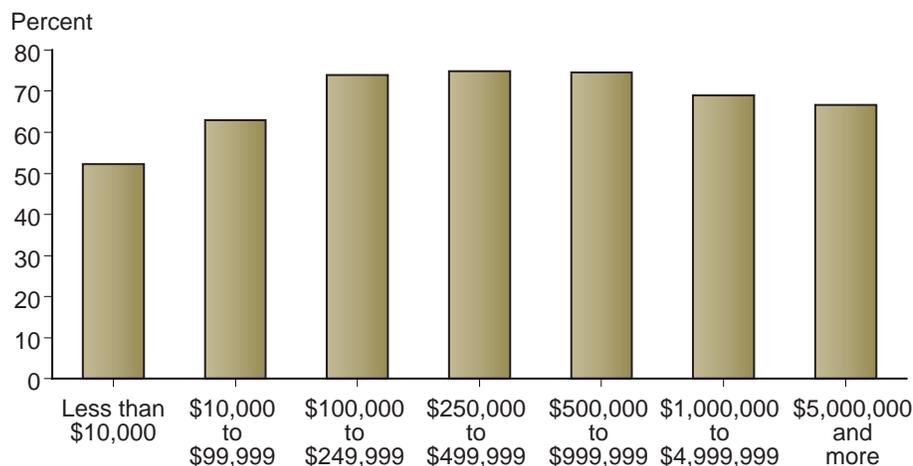
**Farm's debt coverage margin rises, 1996-2007**



Source: USDA, Agricultural Resource Management Survey.

Figure 55

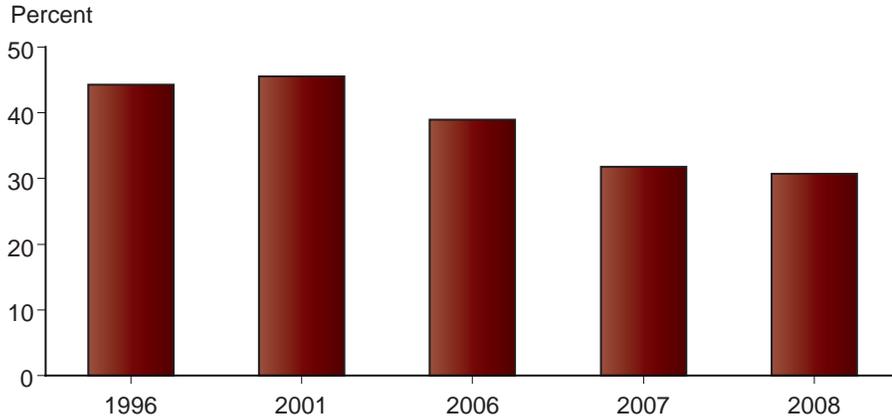
**Share of farms in a favorable financial position varies by economic size of farm, 2007**



Source: USDA, Agricultural Resource Management Survey.

Figure 56

### Farm's repayment capacity use declines, 1996-2008



Note: 2008 forecast.

Source: USDA, Agricultural Resource Management Survey.

## Economic Vulnerabilities Among Farm Households

The recent instability in national housing and credit markets, as well as rising unemployment, has increased the economic vulnerability of some farm families to income and asset loss. The primary sources of this potential loss are financial and housing equity investments, plus income loss due to the greater risk of joblessness among farm households with off-farm labor earnings.

Because farm households have greater overall net worth than the population as a whole, most are likely better able to absorb short-term decreases in earnings. Financial investments typically used for long-term income smoothing (especially for retirement) include IRA, Keogh, 401(k), and other similar accounts. Recent volatility in some of these instruments may have reduced total household wealth. But for the average farm household, 74 percent of assets are farm assets. The strong farm real estate market in recent years would appear to provide a unique cushion to farm households; however, farm assets are largely non-liquid and not generally available for income smoothing.

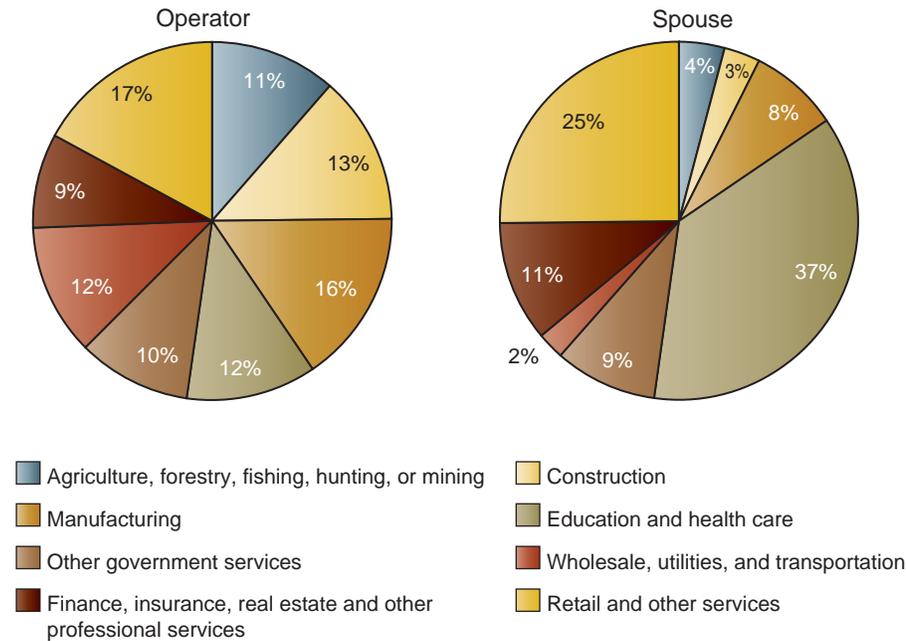
Farm households are vulnerable to downturns in local labor markets due to the large share of households who earn income off the farm. This relationship is complex, however, for a number of reasons. Households in which most of the off-farm income is derived from self-employment (about 9 percent of farm households) may be more sensitive to changes in local consumer demand, while wage and salary earners' employment is subject to the employer's production decisions. In both cases, the scope of the market (whether local or broader) plays a critical role.

When they work off the farm, farm operators and their spouses work in a variety of business types. The most common industries for operators with a wage and salary job in 2007 were manufacturing and construction, likely to be among the most significantly impacted by an economic downturn (fig. 57). The off-farm industries in which spouses were employed in 2007 were much less diverse—nearly 40 percent worked in the education and health services area. These industries are less likely to be adversely affected by the current economic downturn.

Operators and spouses that manage their own nonfarm businesses, as well as manage their farms, are also likely to face challenges in the current economy. Operators with nonfarm business are concentrated in the construction industry and retail and other services and about one-half of the spouses with a nonfarm business are in retail and other services (fig. 58).

Figure 57

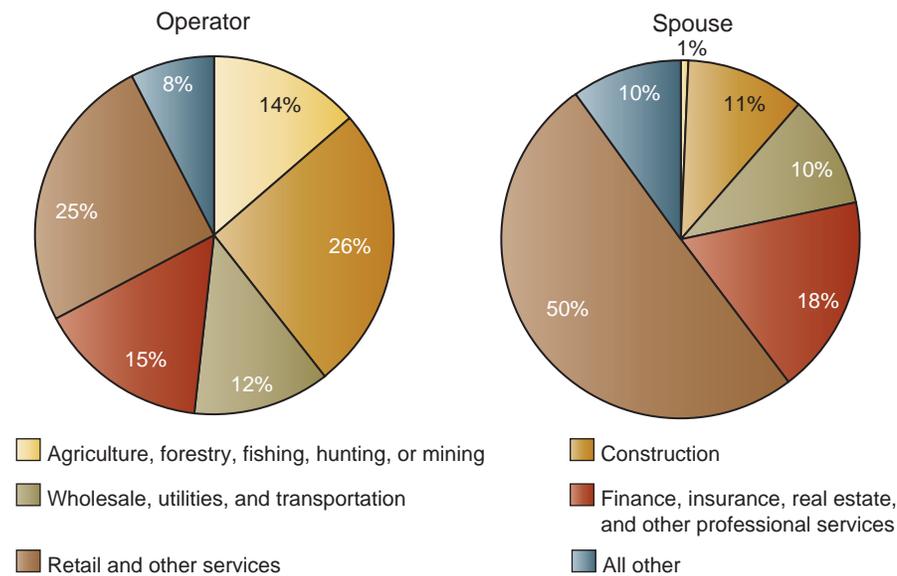
**Industry of wage and salary jobs, operator and spouse, 2007**



Source: USDA, Agricultural Resource Management Survey, version 1 only.

Figure 58

**Industry of nonfarm businesses, operator and spouse, 2007**



Source: USDA, Agricultural Resource Management Survey, version 1 only.

Because of their dependence on earned off-farm income, small, residential farms are more likely to be affected by the local labor market. Older farmers are less subject to financial shock due to less debt, although they may also feel the decline in non-tangible assets more acutely. Farmers who have less education or less wealth to cushion economic shocks are also more economically vulnerable. Finally, having a larger number of off-farm earners in the household distributes the risk from an economic downturn for those households that rely heavily on off-farm earnings to generate their total income.

The risk from off-farm employment uncertainty would seem to be greater in areas with chronically distressed local economies. However, a broad analysis of farm households does not indicate a high correlation between distressed rural areas that tend to be more sensitive to the business cycle and farm household characteristics that indicate higher economic risk (table 8). In particular, key farm household characteristics in persistent-poverty, low-education, and low-employment counties are generally similar to those for farm households in the Nation as a whole. Farm operators in these areas tend to be slightly younger and less educated, which is correlated both with higher debt-to-asset ratios, less adaptability to changing labor market conditions, and a higher likelihood of unemployment. They also are slightly more likely to be categorized as low-wealth households. Nonetheless these differences are remarkably small across county types. A similar analysis of farm household characteristics by county economic type shows broad similarity across areas. Farm households in mining areas are a notable exception, but these households represent only 2.6 percent of all family farms.

## Health Insurance Coverage

Health insurance provides individuals or groups with a contractual arrangement for personal medical expenses to be covered (usually, in part) in exchange for a fee paid to insurance companies. The terms and expense of health insurance plans vary widely. Because medical attention is relatively expensive and can significantly affect morbidity and mortality, the incidence of health insurance among populations is an important indicator of their well-being.

In 2007, 15.8 percent of the U.S. population had no form of health insurance. For members of farm operator households, the comparable figure was 12.6

Table 8

### Selected characteristics of farm operator households by county type

	Persistent poverty	Low education	Low employment	Farming	Manufacturing	Mining	Services
Percent with lower wealth	6.8	6.6	6.4	3.8	4.4	2.9	2.8
Percent with higher wealth	93.2	93.4	93.6	96.2	95.6	97.1	97.2
Percent of family members in poverty	13.8	15.8	17.1	18.3	17.1	15.5	8.3
Percent less than high school	10.0	10.8	9.4	6.5	11.1	n/a	6.0
Average age of principal operator	56	56	56	58	56	55	58
Earned income (dollars)	70,275	70,743	72,749	48,555	57,356	65,537	56,590
Unearned income (dollars)	20,128	20,519	17,288	16,611	16,328	17,446	29,913
Farm income as pct. Of total farm HH income	4.8	13.6	14.1	36.2	6.6	-3.0	1.2

Sources: USDA, Agricultural Resource Management Survey, for farm operator household income and U.S. Department of Commerce, U.S. Census Bureau, Current Population Survey, for U.S. average household income.

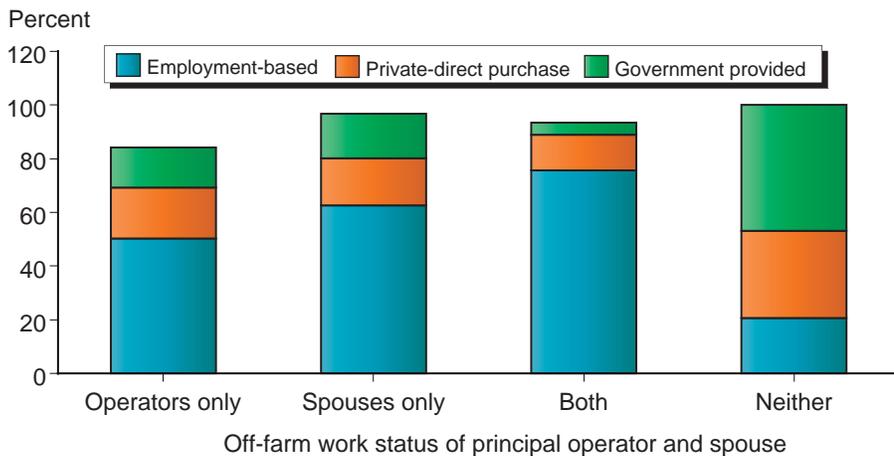
percent. The likelihood of having health insurance coverage increases with both age and income. Virtually all U.S. citizens age 65 or older have some coverage through Medicare. Farm operator households are more than three times as likely as other U.S. households to be headed by an individual over 65.

Most Americans receive health insurance through their employers. Although farm operators are largely self-employed, the majority of farm households have an operator or spouse employed off the farm. As with the general population, the most common source of health insurance for members of farm households is employment-based. In fact, farmers are almost as likely as the general U.S. population to receive their health insurance through an outside employer. Farmers are more likely than the general population to directly purchase their health insurance from an insurance company, and less likely to receive health insurance from a government-sponsored program, such as Medicare or Medicaid.

In 2007, more than half (52.7 percent) of farm household members had health insurance coverage from an employment-based plan. For households where both the principal operator and spouse worked off-farm, three-quarters of household members were covered by employment-based plans (fig. 59). In households where neither the principal operator nor spouse worked at an off-farm job or business, only 20.6 percent of household members were covered by employment-based plans. Members in these households had significantly more coverage under private-direct purchase plans and government-provided plans, such as Medicare. The reliance on government plans for those who do not work off the farm is consistent with the higher level of these operators who reported being retired.

Figure 59

**Type of health insurance coverage by off-farm work status, 2007**



Source: USDA, Agricultural Resource Management Survey, version 1 only,

## Farm and Household Interaction With Local and Regional Economies

*Farms interact with local and regional economies through labor markets, self-employment, access to operating inputs, access to credit, and through household consumption, including amenity items.*

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Interrelationships between farm-household enterprises and their local economies directly bear on the well-being of the farm and contribute to the economic diversity of rural communities. These interrelationships affect all aspects of the farm-household enterprise, including input and capital acquisition, output marketing channels, off-farm employment, and the running of off-farm businesses. The robustness of local versus out-of-region economic ties varies by type and complexity of the farm operation. Large farms typically generate their strongest relationships with their local and regional economies through linkages generated by production agriculture. Small farm-household enterprises tend to establish more direct ties to their local economies by engaging in farm-related activities, and through off-farm businesses and employment.

### Demand for Inputs

Input linkages to the nonfarm economy arise from farm expenditures on farm operating inputs, farm equipment purchases, custom work, professional fees, and acquisition of farm credit. Farm inputs include purchases of seed, feed, and fertilizer. Farm credit transactions include seasonal operating loans plus loans outstanding at year's end. Data from ARMS is used to contrast the distance the farm operator drives to purchase most of their inputs relative to the nearest major town of 10,000 or more. Purchases within the market reach of the nearest major town are defined as purchases made within the local economy; purchases made beyond the nearest town are classified as purchases made outside the local economy. These purchasing relationships are influenced by the extent to which local economies are integrated into their regional economies by modern information and transportation infrastructures. Since the distance to the nearest major town varies considerably by region—ranging from 19 miles on average in the Northeast production region to 41 miles in the Northern Plains—the market reach of the nearest major town can be quite large. Particularly for large farms, incentives to bypass the local economy may include volume price discounts, higher quality and greater availability of inputs, and superior provider services.

Most farm operators purchase farm operating inputs and equipment, and acquire credit within the market reach of their nearest major town. However, between 12 percent and 28 percent of farm operators were willing to bypass their local economy to purchase these inputs in 2007 (table 9). These shares have remained stable since the data were first collected in the 2004 ARMS. Among farm-household enterprises, rural residence farms are most likely to purchase operating inputs within the local economy. About 25 percent of rural residence farm operators make out-of-region purchases of farm equipment, 19 percent of them make out-of-region purchases of farm operating inputs, and 11 percent obtain credit from out-of-region sources.

Table 9

**Farm input demands leaking from the local economy**

	Farm-household enterprises:				
	Rural residential	Intermediate	Commercial		All
			Under \$1 million in sales	\$1 million or more in sales	
Out-of-region input purchases:					
	<i>Percent of farms</i>				
Types of purchases:					
Farm operating inputs	18.7	21.8	20.9	25.6	19.7
Farm equipment	25.7	32.9	32.4	34.0	28.2
Farm credit*	11.1	12.7	18.8	27.7	12.2
Farms using any credit	25.9	43.3	81.3	87.3	35.0
	<i>\$ billion</i>				
Value of purchases:					
Farm operating inputs	1.2	2.0	3.4	5.9	12.5
Farm equipment	1.3	1.2	1.4	0.9	4.8
Farm credit*	7.6	7.6	8.4	14.8	38.4
Total	10.1	10.8	13.2	21.6	55.7

\*Farm credit is the sum of loans outstanding at year's end and seasonal loans taken out and repaid within the year

Source: USDA, Agricultural Resource Management Survey.

As the size, complexity, and specialization of the farm operation increases, operators tend to search for price savings and quality advantages on larger or more complex purchases—decisions more likely to lead the operator to bypass the local economy. Commercial farms with sales of \$1 million or more are 32 percent more likely than rural residence farms to make out-of-region purchases of farm operating inputs, and these larger farms are 37 percent more likely than rural residence farms to purchase farm equipment out of region. These farms are 2.5 times more likely to bypass the local economy for farm credit acquisition. Almost 90 percent of the largest commercial farms relied on credit in 2007, compared to only a quarter of rural residence farms. Since farm credit is essential to large operations, commercial farms have strong incentives to search for the best terms in regional and national markets—particularly if local lending institutions cannot competitively handle the loan volume demanded by these farms.

Farm purchases made beyond the economy of the nearest major town amount to about a fourth of all farm input purchases, or \$55.7 billion. Farm loans of \$38.4 billion represent the largest type of farm expenditure leakage from the local economy, followed by expenditures for farm operating inputs and farm equipment. Commercial farms account for \$34.8 billion expenditures on out-of-region purchases, or about 60 percent of total amount of farm expenditure leakages from the local economy. In contrast, smaller farms make more numerous, but smaller local purchases than do commercial farms.

The largest commercial operations also are more likely to use the Internet or make mail order transactions to establish out-of-region relationships. According to 2004 ARMS data, although just 11 percent of all farms purchased operating inputs or farm equipment through the Internet, nearly a third of farms with gross sales of at least \$3 million made online purchases.

While 1 in 7 farms made mail order purchases of farm equipment, over 40 percent of farms with gross sales of \$3 million or more made such purchases.

Farm operations also generate other demands for input services supplied by the nonfarm economy. While average expenditures per farm describe farm-level performance, total aggregate expenditures describe the volume of demand supplied by the local and regional economies. Overall, farm operations paid \$5.2 billion for crop related custom work in 2007, but only \$2.5 billion of these services were supplied by other farm-household enterprises, with a net \$2.7 billion in crop-related custom work supplied by local nonfarm sources. Livestock operators paid almost \$3 billion for livestock custom services consisting primarily of veterinary services. And farm-household enterprises paid \$940 million for professional services, of which only \$218 million were for farm management planning and conservation consultation.

## **Household Income From Farm-related Sources**

In 2007, 1.57 million small farm-household enterprises with less than \$50,000 produced only 6 percent of all farm sales. However, these farms play a more direct role in their local economies, accounting for 60 percent to 80 percent of all farms generating household income from farm related activities and from off-farm business operations and employment. Farm-related activities include direct sales of farm output and value-added products directly to consumers, on-farm energy production, running an on-farm recreation business (agritourism), and forest product sales.

In 2007, approximately 5 percent of all farms sold \$1 billion of agricultural goods directly to consumers through roadside stands, farmers markets, and pick your own operations. Small farms with sales under \$50,000 accounted for over 80 percent of these farms and almost 70 percent of all farms selling their output through community supported marketing arrangements. Although sales of locally grown food currently account for a small share of total domestic food sales, it is one of the fastest growing segments of U.S. agriculture. Reflecting this growing demand, the number of farmers markets, an important component of local food sales, increased by nearly 150 percent nationwide between 1994 and 2006, according to data from USDA's Agricultural Marketing Service.

On-farm recreation is another significant generator of farm-related income. In 2007, about 39,500 farms ran an on-farm recreation business, accounting for \$486 million in income. Although small farms with sales under \$50,000 represented 60 percent of all farms earning recreation income, they earned just 40 percent of the recreation dollar. According to the 2006 ARMS, outdoor recreation such as hunting, fishing, and horseback riding generated 43 percent of recreation income, while hospitality services such as bed and breakfast and ranch stays accounted for 33 percent.

## **Household Off-farm Work**

Almost two-thirds of farm households have at least one household member working full- or part-time in the off-farm labor market, with farms having less than \$50,000 in sales accounting for 83 percent of the total. Small farm

households account for 1.5 million of the 1.8 million jobs held by farm household members. In half of these small farm households both spouses have jobs, while in one third only the operator works off-farm. In contrast, in 70 percent of the large farms with at least one working member, only the spouse works off-farm. Overall, almost two-thirds of all off-farm jobs are in the service sector, 23 percent are in manufacturing and construction, and 15 percent are in transportation and agriculturally related nonfarm industries. Most farm household members work fairly close to home, with only about one fourth of operators and their spouses driving beyond the nearest major town to their jobs. For these long distance commuters, their annual wage/salary income is about 50 percent higher than those who work locally. Operators who bypass their nearest town earned an average of \$81,400 in 2007 compared to \$53,600 for operators with jobs in the local economy. Spouses who bypass their nearest town earned on average \$47,300 compared to \$30,200 for those spouses working within their town economy.

Since 2001, about one in five farm-household enterprises in the U.S. has operated an off-farm business. In 2007, 83 percent of 364,000 off-farm businesses were operated by small farm households with sales less than \$50,000, in which one-third of these businesses were sole proprietorships and the other two-thirds employed an average of 6 employees per firm. In 2007, total employment in off farm businesses amounted to 811,000 jobs, with the service sector accounting for over half of all jobs, while manufacturing and construction accounted for about a quarter; about a fifth were in transportation and agriculturally-related nonfarm businesses. These employment impacts account for 3 percent to 3.5 percent of all jobs in the more rural counties with urban populations of less than 20,000. The relative employment share of off-farm businesses operated by farm households in these counties is 10 times their job share in highly urbanized non-metropolitan counties and 30 times their share in metropolitan counties.

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**Asset and debt data sources**

Farm asset data		
Variable	Source	ERS adjustments to estimate value of farm business assets and debt
Real estate assets	USDA-National Agricultural Statistics Service (NASS), August 4, 2008, <i>Land Values and Cash Rents: 2008 Summary</i> ; <i>Land in Farms</i> report, January 2008; AELOS1 and ARMS2 surveys	Estimated as land in farms x value/acre of land and buildings, less value of operator dwellings (unless part of farm business). AELOS and ARMS data are used to estimate building and dwelling ratios.
Livestock and poultry	USDA-NASS and USDA-ERS farm income statement	Estimated as value of change in livestock and poultry.
Machinery and motor vehicles	Census of Agriculture, ERS estimates and ARMS surveys	Includes only farm share for trucks and automobiles.
Crops stored	USDA-NASS and ERS farm income statement	Estimated as value of change in livestock and poultry. Non-CCC crops held on farms plus value above loan rates for crops held under CCC.
Purchased inputs	ARMS survey	Value of purchased inputs, farm operator(s).
Financial assets	ARMS survey; <i>Economic Report of the President, 2008</i>	Includes cash, currency, demand deposits, travelers' checks and other checkable deposits of the farm business.
Farm Debt data		
Variable	Source	ERS adjustments
Farm Credit System	Farm Credit System – Quarterly Information Statement online,	(See note)
Farm Service Agency	Administrative data: FSA 616 Report as of 9/30 and extrapolated to 12/31	(See note)
Commercial banks	Board of Governors of the Federal Reserve System, <i>Agricultural Finance Databook</i> , table B.1.	(See note)
Insurance companies	Data collected online from the <i>Life Insurers Fact Book</i>	(See note)
Individuals and others	Ag Resource Management Survey – expanded to sector level estimate using 1999 AELOS distribution to account for absence of landlords in ARMS data	(See note)

<sup>1</sup>AELOS is the U.S. Census Bureau's Agricultural Economics Land Ownership Survey.

<sup>2</sup>ARMS is the USDA's Agricultural Resource Management Survey.

Notes: An adjustment is applied to each of the real estate debt data elements listed above which reduces the total amount of farm debt by the amount of loans that is applied to operator dwellings that are not part of the farm business. ARMS is the source for the amount of debt owed for operator dwellings owned by farm businesses. Real estate debt is also adjusted for nonfarm uses. The aggregate percentage of nonfarm use determined from the ARMS survey is deducted from each real estate debt component prior to total real estate debt being estimated. For nonreal estate debt items, the aggregate percentage of nonfarm use determined from the ARMS survey is deducted from each nonreal estate debt component prior to total real estate debt being estimated.

<http://www.ers.usda.gov/Data/FarmBalanceSheet/FINRATIO/Sol&Prof/Sp6008US.XLS>

<http://www.ers.usda.gov/Briefing/FarmIncome/>

[http://www.ers.usda.gov/Briefing/farmincome/glossary/def\\_debt.htm](http://www.ers.usda.gov/Briefing/farmincome/glossary/def_debt.htm)

**Farm income statement data sources**

Production Expenses' Sources	
Variable	Source
Feed purchased	ARMS; Alaska and Hawaii: Census and cost-of-production estimates.
Livestock and poultry purchased	NASS data. Meat animals: inshipment numbers, average weight, and value per hundredweight (cwt). Poultry: number of broilers, turkeys, and egg-type chickens hatched and average value per 100 poults.
Seed purchased	ARMS; Alaska and Hawaii: Census and cash receipts.
Fertilizers and lime	ARMS; Alaska and Hawaii: Census and cash receipts.
Pesticides	ARMS; Alaska and Hawaii: Census and cash receipts.
Petroleum fuel and oils	ARMS; Alaska and Hawaii: Census and cash receipts.
Electricity	ARMS; Alaska and Hawaii: Census and cash receipts.
Repair and maintenance of capital items	ARMS; Operator dwellings expanded to cover all operator dwellings on farmland. Alaska and Hawaii: real estate values, Census, and number of farms.
Machine hire and customwork	ARMS; Alaska and Hawaii: Census and cash receipts.
Marketing, storage, and transportation expenses	ARMS; Alaska and Hawaii: Total cash receipts.
Contract labor	ARMS; Alaska and Hawaii: Census
Miscellaneous expenses, total	ARMS; Alaska and Hawaii: Value of production
Property taxes	ARMS; Alaska and Hawaii: Census and AELOS.
Motor vehicle registration and licensing fees	ARMS; Alaska and Hawaii: Census and number of farms.
Employee compensation (Hired labor)	ARMS; Operator wages adjusted by type of farm. Alaska: Census. Hawaii: Farm Labor Survey.
Net rent to nonoperators	Cash and share rent: ARMS; Alaska and Hawaii: Census, AELOS and cash receipts. Government payments: ratios times total sector government payments. Landlord expenses: ARMS and AELOS.
Interest expenses	Sector average outstanding debt and interest rates from ERS balance sheet.
Farm-related Income Sources	
Variable	Source
Machine hire and customwork	ARMS; Alaska and Hawaii: Census
Other farm-related income	ARMS; Alaska and Hawaii: Census