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Agricultural Income and Finance Outlook

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Abstract

Net farm income is forecast at \$100.9 billion in 2011, up 28 percent from 2010 and 50 percent higher than the 10-year average of \$67.4 billion for 2001-2010. Net cash income at \$109.8 billion would be a nominal record, 19 percent above the prior record attained in 2010. Net value added is expected to increase by almost \$24 billion in 2011 to \$153.7 billion. Production expenses are forecast to jump substantially in 2011 to a record nominal high exceeding \$300 billion. Prices paid indexes drive the forecast increase. Inflation-adjusted 2011 production expenses will exceed the previous peak reached in 1979.

The values of farm business sector assets and equity (assets minus debt) are forecast to rise in 2011, while farm debt is forecast to decline from 2010 levels. Farm sector asset values are expected to rise by 6.8 percent in 2011 as the values of land and farm buildings, crop inventories, purchased inputs, machinery and equipment and financial assets are all expected to rise in 2011. Farm sector debt is expected to fall from about \$247 billion in 2010 to about \$243 billion in 2011. The decline in real estate debt is expected to be about \$4 billion (-3.0 percent). The farm business sector's debt-to-asset ratio is expected to decline to 10.4 percent and debt-to-equity is expected to decline to 11.6 percent in 2011, indicating that the farm sector's solvency position remains strong.

Average net cash income for farm businesses is expected to increase throughout most of the country in 2011, although income growth is not as high as experienced in 2010. High commodity prices for both crops and livestock are driving these increases, despite increasing expenses in all categories other than labor. Except for poultry, high prices in 2011 have helped the livestock sector to continue the strong performance of 2010 despite an environment of increasing feed expenses. Driven by the gains in most crop and livestock farms, all regions other than the Southern Seaboard are expected to experience at least a 7-percent improvement in average net cash income over 2010.

Approved by USDA's
World Agricultural
Outlook Board

Median farm household income increased by 3.7 percent in 2010 to \$54,162 and is forecast to be higher in 2011. Bolstered by higher farm asset values, the balance sheet of farm households improved in 2010, with median net worth increasing by 6.5 percent to \$576,745.

Acknowledgments

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Contents

Introduction	1
<i>CHAPTER 1</i>	
Farm Sector Income and Costs	2
Net Farm Income Forecast Up 31 Percent in 2011	2
<i>(Timothy Park)</i>	
All-time High Prices Mean Farmers Can Expect Big Gains for Receipts in 2011	6
<i>(Ted Covey)</i>	
Crop Farms Expected to Earn 63 Percent of U.S. Net Farm Income in 2011	9
2011 Forecast Extends Substantial Increases in Production Expenses ..	11
<i>(Chris McGath)</i>	
Government Payments Forecast at \$10.6 Billion	17
<i>(Stephen Vogel)</i>	
Enrollments in ACRE and Payments to Farmers	19
<i>CHAPTER 2</i>	
Farm Household Economic Well-Being	21
<i>(Jeremy Weber)</i>	
Trends in Farm Household Finances	21
Farm Household Income by Commodity Specialization	22
Farm Household Finances by Farm Type	24
Opportunities and Challenges in Farming for Beginning Farmers and Ranchers	25
<i>(Mary Ahearn)</i>	
<i>CHAPTER 3</i>	
Earnings Are Up Among Most Farm Businesses and Enterprises	30
<i>(Jennifer Ifft and Mitch Morehart)</i>	
<i>CHAPTER 4</i>	
Farm Business Balance Sheet and Financial Performance	35
<i>(Ken Erickson, Robert Williams, and J. Michael Harris)</i>	
Overview of the Farm Business Balance Sheet.	35
<i>(Ken Erickson and Robert Williams)</i>	
Farm Sector Assets and Equity Forecast To Rise in 2011.	36
<i>(Ken Erickson)</i>	
Farm Business Debt To Decline in 2011	38
<i>(Robert Williams)</i>	
Market Share of Farm Debt	39
Net Cash Flow	39
<i>(Ken Erickson)</i>	
Debt to Net Cash Flow Lower in 2011	40

CHAPTER 4—continued

Profitability of Farm Sector Investments Rising	40
Real Net Rate of Return on Farm Sector Investments (RNROA) or “Spread”	41
Unused Debt Repayment Capacity Expected To Increase in 2011 <i>J. Michael Harris</i>)	42
Farms’ Net Income and Solvency Position	42
Debt Maturity <i>(Robert Williams)</i>	43
Information Contacts	45

Errata

This report, originally released in December 2011, was reposted in March 2012 with the following changes:

- On pages 17-20, a series of wording changes were made to clarify that:
 - 1) ACRE payments, while based on revenue shortfalls, are not revenue insurance.
 - 2) Producers enrolling in ACRE forgo Countercyclical Program payments, receive reduced Direct Program payments, and face reduced marketing assistance loan rates.
 - 3) Supplemental Revenue Assistance Payments are expected to amount to \$900 million in 2011.
- Figure 4.1 on page 37 was revised to reflect data corrections.

Introduction

This report compares the farm business and farm household outlook in December 2010 with the December 2011 outlook and outlines the key factors underlying the 2011 income and financial outlook for the farm sector, farm businesses, and farm households. Chapter 1 discusses the farm income outlook and summarizes important drivers influencing the earnings of U.S. farm operations (value of production, direct Government payments, other sources of farm income, production expenses, and payments to stakeholders).

Chapter 2 discusses farm household income, assets, and debt. Median farm operator household income increased by 3.7 percent in 2010 to \$54,162 and is forecast to be higher in 2011. Farm household income varies substantially across commodity specialization, with households associated with rice, cotton, and peanut farms having the highest median income (\$116,664 in 2010) of any commodity group. Current income, however, can be an incomplete indicator of the economic well-being of farm operator households. Equity, or net worth, better reflects the long-term economic performance of farm households. Bolstered by higher farm asset values, the balance sheet of farm households improved in 2010, with median net worth increasing by 6.5 percent to \$576,745.

Chapter 3 presents the farm business income forecasts. U.S. agriculture is a diverse sector represented by a complex mix of business enterprises. Income forecasts for farm businesses (defined in box, “Defining Farm Businesses,” p. 31) highlight the diversity of financial outcomes and are based on applying sector level forecasts and receipts and expenses to the latest Agricultural Resource Management Survey (ARMS) data.

Chapter 4 covers the market fundamentals affecting farm asset values. Farm sector debt is expected to fall to about \$242 billion in 2011 with real estate debt dropping about 3 percent and non-real estate debt down a negligible 0.24 percent. The favorable financial position of the agricultural sector is highlighted by two related indicators. A projected decrease in farm debt in 2011, combined with an increase in farm income, and low interest rates should increase the sector’s maximum feasible farm debt and unused debt repayment capacity in 2011. This decrease in debt repayment capacity utilization (DRCU) approaches the 1973 low of 37 percent and is the second lowest DRCU since 1970. The share of farms classified as vulnerable (most are residential/lifestyle farms) has dropped in this decade to the lowest levels that the Economic Research Service has ever recorded, as a result of expanding income levels and shrinking debt in relation to asset values.

Farm Sector Income and Cost

- Net farm income is forecast at \$100.9 billion in 2011, up 28 percent from 2010 and 50 percent higher than the 10-year average of \$67.4 billion for 2001-2010.
- Farm operations with over \$1 million in 2011 sales account for about 2 percent of U.S. farm operations yet are expected to receive almost 50 percent of U.S. agriculture's net farm income and account for over 60 percent of U.S. livestock value of production.
- Total production expenses will jump \$34.4 billion (12 percent) to a record high of \$320 billion, extending a trend of generally large increases that started in 2002. Inflation-adjusted production expenses will surpass the previous peak recorded in 1979.

Net Farm Income Forecast Up 31 Percent in 2011

Net farm income is forecast at \$100.9 billion for 2011, an increase of \$21.8 billion over 2010. Net farm income reflects the net value of production accruing to equity holders in the current year, whether the output is sold or not sold within the calendar year and is a measure of the increase in wealth from production. The 2011 forecast of net farm income is \$33.5 billion above the 10-year average (2001-2010) and 50 percent higher than the 10-year average. The 28-percent increases in net farm income in 2011 and 2010 exceed the rates that occurred during the 2006-2008 commodity price boom. However, the increases in net farm income are still below those recorded in 2003 and 2004 when net farm income increases 55.8 percent and 43.4 percent, respectively.

Net cash income, at \$109.8 billion, is projected to increase \$17.5 billion (19 percent) from 2010 and would be \$34.2 billion above its 10-year average. Net farm income and net cash income are both projected to exceed \$100 billion for the first time in 2011. Net cash income reflects only the cash transactions occurring within the calendar year and is a measure of solvency, or the ability to pay bills and make payments on debt. Net cash income is generally less variable than net farm income. Farmers can manage the timing of crop and livestock sales and the purchase of inputs to stabilize the variability in their net cash income.

Net farm income increased in 8 of the last 12 years, posting an average rise of 26.6 percent in those years. Net cash income also showed a significant degree of expansion during this time, although at lower rates than attained by net farm income. In the 8 years when net cash income rose, the average increase was 17 percent. On the other hand, declines in net cash income are smaller and dampened out compared to the decreases observed for net farm income.

The pattern of increasing world food commodity prices after 2002 reversed a 20-year period of generally declining prices. Nonetheless, food price analysts have identified five price spikes since 1970. Net farm income adjusted for inflation has grown more volatile in this period of rising food prices. From 2002-2011, the yearly percent change in real net farm income averaged 8.1

percent, more than double the 1970-2001 yearly percent change rate of 3.39 percent. Real net farm income increased by 109.6 percent or an 8.57-percent compound growth rate during this period.

Figure 1.1 tracks the yearly changes in the growth rate of real net farm income between 1970 and 2011. The horizontal line represents the mean growth rate of real net farm income over this period of 4.5 percent. Compared to the 1990s, the increase in the volatility of net farm income over the 2002-2011 period is apparent. The percent changes (either increases or decreases) in real net farm income have exceeded 12 percent every year since 2002. By contrast, the decade prior to 2002 shows 5 years in which changes in net farm income failed to reach double digits.

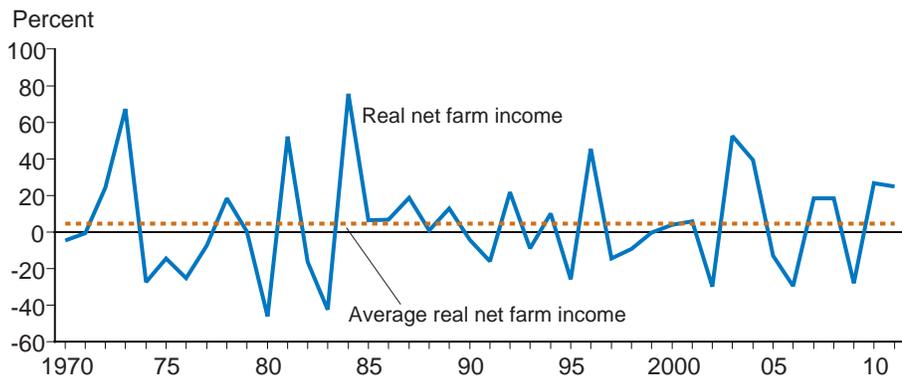
The real and nominal values of both crop and livestock production have trended steadily upward since 1970 and the time paths of nominal values are shown in figure 1.2. The trend rate of growth for the real value of crop production since 2002 is 6.2 percent per year compared to 2.8 percent per year for the value of livestock production. Volatility in the values of production, measured by the standard deviation of yearly percent changes, is very similar for both series (11.1 percent for crop production and 11.7 percent for livestock production). Along some key dimensions, livestock production shows a higher degree of upside movements. Annual changes in the values of livestock production that exceeded 10 percent occurred seven times since 2002.

The values of crop and livestock production are highly correlated but the year-to-year movements in the two measures have not always been synchronized. In 2011, the projected rise in the nominal value of crop production (20.2 percent) is expected to be higher than the rise in the value of livestock production (16.1 percent). This is a dramatic reversal of the pattern in 2010 when the increase in the value of livestock production (17.4 percent) dwarfed the slight movement upward in the value of crop production (2.4 percent).

The 2011 increase in farm income is driven by double digit increases in receipts for both the crop and livestock production categories. The declines in all three measures of U.S. farm income that occurred in 2009 were driven by reductions in both crop and livestock cash receipts.

Figure 1.1

Yearly growth rate of real net farm income vs average real growth rate, 1970-2011



Note: 2011 forecast.

Source: USDA, Economic Research Service.

Measuring Agriculture’s Value Added and Net Farm Income: Farm-Sector and Farm-Level Approaches

USDA measures U.S. agriculture’s value added and net farm income using two approaches: one based on aggregate farm-sector data and the second based on farm-level data. Both approaches generate data used in this publication’s tables and figures. Tables and figures relying on value-added measures from the farm-level accounts have as a source line “USDA, Agricultural Resource Management Survey, NASS and ERS.”

Farm-sector approach

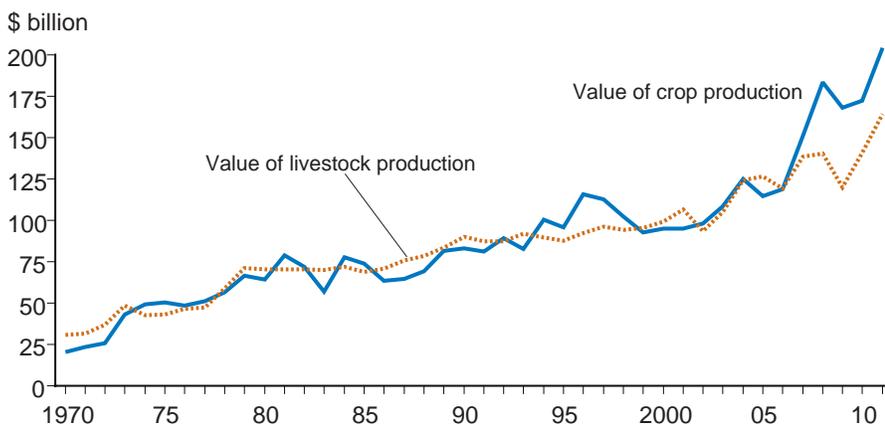
The farm-sector approach relies on farm-sector data obtained from a wide variety of sources, supplemented with farm-level data from USDA’s survey of individual farm-level operations, the Agricultural Resource Management Survey (ARMS). In general, sectorwide data neither identify nor distinguish individual farms. Therefore, the sector approach is restricted to constructing sector totals for different value-added measures for the United States.

Farm-level approach

The farm-level approach relies almost entirely on ARMS surveys of individual farm operations. The advantage of using farm-level data is that it allows ERS to look at the distribution of value added at the farm level rather than estimating a single farm-sector estimate. Farm-level data makes it possible to identify and distinguish the differing contributions of U.S. value added among stakeholders and equity holders, specialization of farm output, and sizes of farm operation. Each year, ARMS produces a farm-level estimate of value added that is as 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 1.2

Value of crop and livestock production, 1970-2011



Note: 2011 forecast.

Source: USDA, National Agricultural Statistics Service.

Table 1.1

Value-added to the U.S. economy by the agricultural sector via the production of goods and services, 2007-2011

United States Component accounts ¹	2007	2008	2009	2010	2011	2001-2010 average	Change 2010 to 2011
	<i>\$ billion</i>						
Value of crop production	151.1	183.3	168.0	172.1	204.0	133.4	31.9
Food grains	13.6	18.7	14.8	13.9	16.7	10.9	2.8
Feed crops	42.3	58.6	50.6	52.5	69.6	35.6	17.1
Cotton	6.5	5.2	4.0	6.3	8.2	5.2	1.9
Oil crops	24.6	28.6	35.5	35.1	38.0	22.5	2.9
Fruits and tree nuts	18.7	19.2	19.2	21.5	22.2	16.6	0.7
Vegetables	19.3	19.9	20.3	19.9	21.3	18.0	1.4
All other crops	25.2	24.8	23.9	23.7	24.5	22.0	0.8
Home consumption	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Value of inventory adjustment ²	0.9	8.2	-0.4	-0.9	3.2	1.0	4.2
Value of livestock production	138.4	140.4	119.8	140.7	164.1	121.4	23.3
Meat animals	65.1	65.0	59.0	69.9	84.9	60.8	15.0
Dairy products	35.5	34.8	24.3	31.4	39.4	27.0	8.1
Poultry and eggs	33.1	36.8	32.4	35.5	36.2	29.2	0.8
Miscellaneous livestock	4.9	5.0	4.5	4.7	4.8	4.5	0.1
Home consumption	0.3	0.3	0.3	0.3	0.4	0.2	0.1
Value of inventory adjustment ²	-0.4	-1.6	-0.7	-1.0	-1.7	-0.3	-0.7
Revenues from services and forestry	38.1	42.0	42.7	39.5	42.2	34.6	2.7
Machine hire and customwork	2.7	3.0	4.0	3.5	3.8	2.9	0.3
Forest products sold	0.7	0.7	0.7	0.6	0.7	0.8	0.0
Other farm income	14.2	17.7	17.3	14.1	15.1	12.9	1.0
Gross imputed rental value of farm dwellings	20.6	20.5	20.7	21.2	22.7	17.9	1.5
Value of agricultural sector production	327.7	365.7	330.6	352.3	410.2	289.4	58.0
less: Purchased inputs	184.3	202.9	190.0	192.6	223.1	158.5	30.5
Farm origin	73.4	79.8	77.3	81.3	96.2	63.8	14.9
Feed purchased	41.9	46.9	45.0	45.4	55.7	34.6	10.3
Livestock and poultry purchased	18.8	17.7	16.7	19.6	23.1	17.5	3.5
Seed purchased	12.6	15.1	15.5	16.3	17.4	11.7	1.1
Manufactured inputs	46.3	55.0	49.0	49.5	58.9	39.1	9.5
Fertilizers and lime	17.7	22.5	20.1	21.0	26.9	14.9	5.8
Pesticides	10.5	11.7	11.5	10.6	10.7	9.6	0.1
Petroleum fuel and oils	13.8	16.2	12.7	13.2	16.7	10.6	3.5
Electricity	4.3	4.5	4.6	4.6	4.6	4.0	0.0
Other intermediate expenses	64.6	68.1	63.8	61.8	67.9	55.6	6.1
Repair and maintenance of capital items	14.3	14.8	14.7	14.8	16.3	12.8	1.6
Machine hire and customwork	3.8	4.1	3.9	4.3	4.8	3.8	0.5
Marketing, storage, and transportation expenses	10.3	10.1	10.3	10.3	11.0	8.9	0.7
Contract labor	4.4	4.7	3.9	3.9	4.0	3.5	0.0
Miscellaneous expenses	31.7	34.3	31.0	28.5	31.9	26.6	3.3
plus: Net government transactions	0.9	0.9	1.1	0.9	-1.9	6.1	-2.8
+ Direct Government payments ³	11.9	12.2	12.2	12.4	10.6	15.3	-1.8
- Motor vehicle registration and licensing fees	0.6	0.6	0.6	0.6	0.7	0.6	0.1
- Property taxes	10.3	10.7	10.4	10.8	11.8	8.7	0.9
Gross value added	144.3	163.7	141.7	160.6	185.3	137.1	24.7

—continued

Table 1.1

Value-added to the U.S. economy by the agricultural sector via the production of goods and services, 2007-2011—Continued

United States Component accounts ¹	2007	2008	2009	2010	2011	2001-2010 average	Change 2010 to 2011
	<i>\$ billion</i>						
less: Capital consumption	27.0	28.7	30.1	30.7	31.5	25.4	0.8
Net value added	117.3	135.0	111.6	129.9	153.7	111.7	23.9
less Payments to stakeholders	47.3	50.3	49.9	50.8	52.9	44.3	2.1
Employee compensation (total hired labor)	24.5	25.3	25.0	23.7	23.3	21.7	-0.4
Net rent received by nonoperator landlords	7.6	9.6	9.8	12.6	14.1	9.1	1.5
Real estate and non-real estate interest	15.1	15.4	15.2	14.5	15.4	13.5	1.0
Net farm income	70.0	84.7	61.6	79.1	100.9	67.4	21.8

Note: 2011 forecast. For explanation of terms see box, "Farm Income and Costs: Glossary," p. 7.

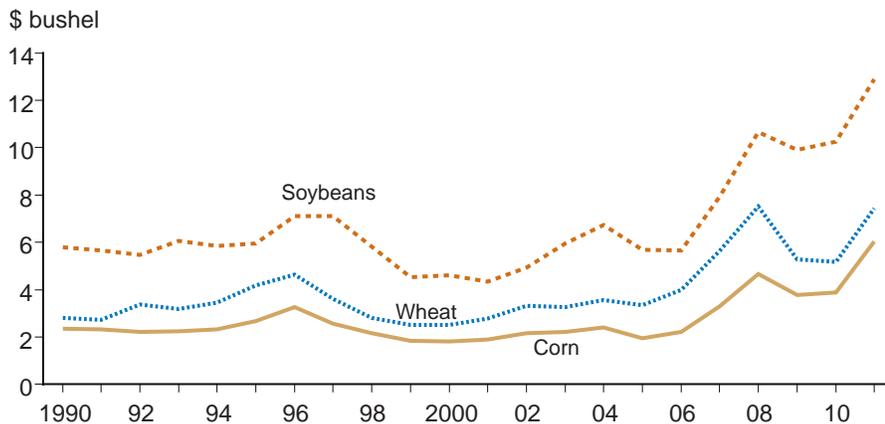
Sources: USDA, Economic Research Service.

All-time High Prices Mean Farmers Can Expect Big Gains for Receipts in 2011

Very large gains in annual receipts are expected for wheat, corn, hay, and cotton in 2011, often reflecting prices that are forecast to exceed their previous records (fig 1.3). The U.S. annual wheat price is expected to increase to \$7.43 per bushel, a 44 percent increase from 2010 and 8 cents-per-bushel below its 2008 average, reflecting a large increase in wheat exports. The U.S. annual corn price is expected to increase from \$3.89 per bushel to \$6.04, a large increase over its earlier high of \$4.66 in 2008, as corn continues to respond to the increased demand for ethanol. The U.S. annual soybean price is expected to increase from \$10.24 per bushel to \$12.89 (\$10.65 per bushel in 2008) and soybean meal to \$339.60 per ton. The U.S. annual hay price is expected to increase to \$158.15 per ton, a 47 percent increase and exceeding the previous high in 2008. The U.S. annual price for cotton lint is expected to increase from 76 to 89 cents per pound, while cottonseed increases to \$237.67 per ton, a more than 47 percent increase. Despite an expected increase of 55 cents per

Figure 1.3

Annual average prices received by farmers, 1990-2011



Note: 2011 forecast.

Source: USDA, National Agricultural Statistics Service.

Farm Income and Costs: Glossary

A full glossary is available at <http://www.ers.usda.gov/Data/FarmIncome/Finfidmu.htm/>.

Net Value Added

Net value added represents the total value of the farm sector's production of goods and services, less payments to other (nonfarm) sectors of the economy. It reflects production agriculture's addition to the nation's annual output of goods and services. It also represents the sum of the economic returns to all the providers of factors of production; farm employees, lenders, landlords, and farm operators. ERS value-added estimates are used by the U.S. Department of Commerce's Bureau of Economic Analysis in the development of the National Income Accounts and for Gross Domestic Products and by the Organization for Economic Cooperation and Development (OECD) in their international agricultural accounts.

Net Farm Income

Net farm income is that portion of the net value added by agriculture to the national economy earned by farm operators (i.e., the entrepreneurial earnings of those individuals who share in the risks of production and materially participate in the operation of the business). Farm operators typically benefit most from the increases and assimilate most of the declines arising from short-term, unanticipated weather and market conditions.

Net Cash Income

Net cash income is the difference between cash earnings realized within a calendar year and cash expenditures. It can be positive, negative, or zero. Unlike net farm income, net cash income excludes capital consumption, non-cash compensation of hired labor, and net imputed rental income from farm dwellings. Sources of cash earnings include the sale of crops, livestock, forestry products, and cash earned from services such as custom work, machine hire, recreation, and cash received in the form of direct government payments. Cash expenditures includes purchased inputs, property taxes and fees, and cash payments to stakeholders from the sales of farm production and the conversion of assets, inventories (in years in which reduced), and capital consumption into cash.

Stakeholders

Stakeholders are individuals and institutions that contribute factors of production (land, labor and capital) to farming operations for a rate of return fixed in advance of its use in production. Land is rented from landlords, laborers are paid a wage, and interest is paid on money borrowed from lenders. In each case the earnings are agreed upon in advance, so the contributor bears no risks of the uncertainties inherent in production and marketing of the output.

Farm Operators

Farm operators, contractors, partners and others investors also contribute factors of production but are distinguished from stakeholders because they do so in order to share in the profits and thereby assume the risks of production and markets. Profits are determined as the residual after payment for purchased inputs, to stakeholders and making allowances for replacing the capital consumed in the production processes. Managerial skills in production and marketing are a fourth factor contributed by this group of participants that affects the profits and thus earnings of this group.

Prominent among other investors are family members who have an ownership interest in the farm or family corporation but don't perform the management functions of the principal operator. They may manage a particular function (bookkeeping, fieldwork, tending to the livestock, etc.), work only in critical stages in production, or work off-farm fulltime and contribute only their owned capital. The remuneration for their contributions of land, labor and/or capital will be a share of the profits (if any) that are not known until production processes and marketing are completed.

Returns to Operators

Returns to operators, as with net farm income, is a measure of the earnings of farm operators (defined as those individuals who share in the risks of production and materially participate in the operation of the business) from production of commodities and farm business activities.

Value of Inventory Adjustment

The inclusion of the value of the change in farmer-owned commodity inventories makes possible the calendar-year accounting for production. A positive change connotes new production that occurred within the year, remains in inventories at the end of the year, and is destined for sale after the end of the year. The addition of the increment to inventories credits the production to the year of occurrence. In contrast, a negative change is the result of a drawdown in beginning-year stocks and represents a sale of commodities produced in prior years. The inclusion of a negative inventory value serves to offset the effects of the sales of these quantities in cash receipts within that year. The offset is necessary to achieve calendar-year accounting because the commodities were previously accounted for in an earlier year as an addition to inventories.

Farm-Related Income

Farm-related income is the value derived from those economic activities reliant on resources of the farm enterprise in addition to crop and livestock output. Examples are custom harvesting for cash, forestry product sales, and the imputed rental value of the farmhouse.

Farm Types

*Small family farms (gross farm sales less than \$250,000)*¹

Retirement farms. Small farms whose operators report they are retired, although they continue to farm on a small scale. These operations sell enough farm products (at least \$1,000 worth) to qualify as farms under the current farm definition.²

Residential/lifestyle farms. Small farms whose operators report a major occupation other than farming.³ The category also includes a small number of farms whose operators are not in the labor force.

Farming-occupation farms. Small family farms whose operators report farming as their major occupation.³

- Low-sales farms. Gross sales less than \$100,000.
- Medium-sales farms. Gross sales between \$100,000 and \$249,999.

Large-scale family farms (gross farm sales of \$250,000 or more)

Large family farms. Farms with gross sales between \$250,000 and \$499,999.

Very large family farms. Farms with gross sales of \$500,000 or more.

Nonfamily farms

Any farm where the operator and persons related to the operator do not own a majority of the business.

Note: Limited-resource farms are no longer a separate category in the classification, starting with the 2005 Agricultural Resource Management Survey.

¹USDA's National Commission on Small Farms selected \$250,000 in gross sales in a given year as the cutoff between small and large-scale farms (USDA, NCSF, 1998, p. 28).

²A farm is defined as any place that produced and sold—or normally would have produced and sold—at least \$1,000 of agricultural products during a given year (USDA, NASS, 2008).

³Major occupation is defined as the occupation at which operators spent the majority of their work time.

U.S. Department of Agriculture, National Commission on Small Farms (USDA, NCSF). *A Time to Act: A Report of the USDA National Commission on Small Farms*. Miscellaneous Publication 1545 (MP-1545). January 1998.

hundredweight (cwt) for rice, we anticipate an almost 14-percent decline in quantity sold. Prices for rye, potatoes, and dry beans are also expected to equal or exceed their previous highs which were observed in 2008.

Livestock prices are also achieving all-time high prices for cattle and calves, hogs, milk, and turkeys. Broilers and chicken eggs are expected to be just

under their all time levels. Dairy receipts are expected to increase by more than 25 percent in 2011 as the annual average price received by dairy farmers is projected to increase \$3.80 per cwt. A relatively weak U.S. dollar and increased global demand for U.S. beef mean that cattle and calf cash receipts are expected to increase over 20 percent, reflecting large anticipated price hikes for both cattle (\$20.16 per cwt) and calves (\$26.36 per cwt). Hog sales are expected to increase over 23 percent as the annual hog price rises over \$10 per cwt.

The value of crop and livestock production reflects cash receipts, value of inventory change, and home consumption (see figure 1.2). The value of crop and livestock production plus revenues from services and forestry sales combine to create the value of agricultural sector production. Since 1970, the value of production for both crops and livestock have trended upwards, alternating as to which contributed the greater dollar value to U.S. agriculture's value of agricultural sector production. Over 1970-2006, livestock averaged about 46 percent and crops 45 percent shares of U.S. value of agricultural sector production. From 2007-2011, crops are expected to contribute 49 percent whereas livestock's share is expected to fall to 39 percent of value of farm production. This alteration in the structure of contribution to U.S. value of agricultural sector production is attributed partly to the impact of "food for fuel" on the U.S. farm sector economy.

Crop Farms Expected to Earn 63 Percent of U.S. Net Farm Income in 2011

Crop farm operations account for less than 45 percent of U.S. farm operations but are expected to earn 63 percent of U.S. agriculture's 2011 net farm income while paying two-thirds of total payments to stakeholders (table 1.2 and fig. 1.4). Cash grain and soybean farms account for only 14 percent of farms but one-third of U.S. agriculture's total payments to stakeholders, equal to that paid out by livestock farms which account for 55 percent of all U.S. farm operations.

Table 1.2

Shares of value of production (VOP), stakeholder payments, and net farm income by farm production specialty, 2011

	Farms in 2010	Crop VOP	Livestock VOP	Payments to stakeholder
	<i>Percent</i>			
Crops farms:	44.9	94.5	5.4	66.8
Cash grain and soybean	14.1	51.7	4.3	33.3
Other field crops	24.1	13.8	0.9	9.2
High-value crops	6.7	29.0	0.2	24.3
Livestock farms:	55.1	5.5	94.6	33.2
Beef cattle	30.7	2.1	31.0	11.1
Hogs	1.3	1.9	14.8	3.0
Poultry	2.0	0.3	21.3	2.5
Dairy	2.2	0.8	24.2	11.7
General livestock	18.9	0.4	3.3	4.9
Total	100.0	100.0	100.0	100.0

Note: 2011 percentages are USDA forecasts; percent of farms is based on 2010 ARMS.

Source: USDA, Agricultural Resource Management Survey, NASS and ERS.

The disproportionate relationship between farm size and farm value of production and earnings continue in 2011. Farms with a million dollars or more in sales account for only 2.3 percent of U.S. farm operations while earning almost half of U.S. 2011 farm net income, producing over 42 percent of U.S. crops, over 61 percent of U.S. livestock, and making almost half of U.S. agriculture’s payments to stakeholders. (table 1.3)

Family farmers account for almost 98 percent of U.S. farm operations and are expected to earn 88 percent of U.S. net farm income in 2011 (see figure 1.5 and table 1.4). Commercial family farms account for less than 1 in every 10 U.S. farms, but earn 72 percent of U.S. net farm income. Of the nine ERS resource regions, the Heartland and Fruitful Rim, representing almost one-third of U.S. farm operations, are expected to earn 56 percent of U.S. 2011 net farm income (fig. 1.6).

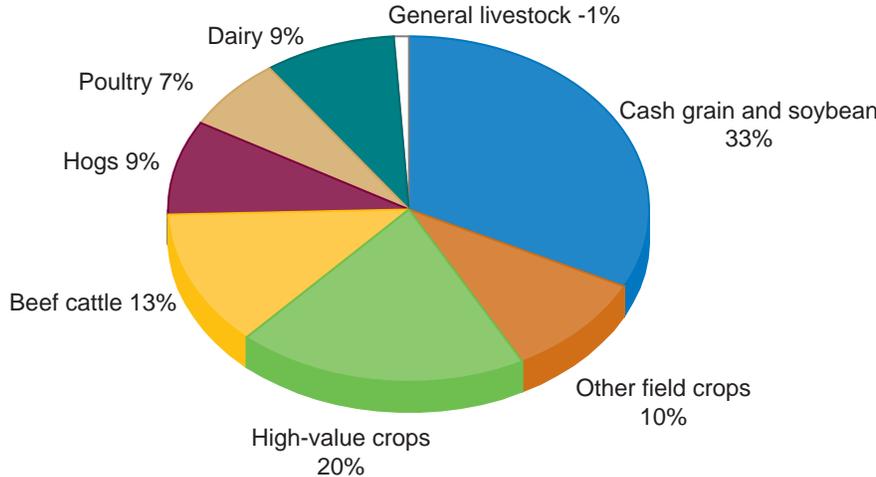
Equity holders are expected to earn almost two-thirds of U.S. net value added in 2011 (table 1.5). Family-farm operators’ share of net value added is

Table 1.3
Share of value of production (VOP) and earnings by farm size, 2011

Sales class (dollars)	Farms in 2010	Crop VOP	Livestock VOP	Payments to stakeholder	Net farm income
<i>Percent</i>					
\$1 million and above	2.3	42.6	61.7	49.2	49.2
\$500,000 - \$999,999	3.5	22.7	14.0	17.8	19.9
\$250,000 - \$499,999	4.5	16.4	8.6	12.4	13.8
\$100,000 - \$249,999	6.7	9.9	7.0	8.0	8.9
Below \$100,000	83.0	8.4	8.7	12.6	8.2
Total	100.0	100.0	100.0	100.0	100.0

Note: 2011 percentages are USDA forecasts; percent of farms is based on 2010 ARMS.
 Source: USDA, Agricultural Resource Management Survey, NASS and ERS. NASS and ERS.

Figure 1.4
Distribution of U.S. net farm income by farm production specialty, 2011



Note: 2011 forecast.
 Source: USDA, Agricultural Resource Management Survey.

Table 1.4

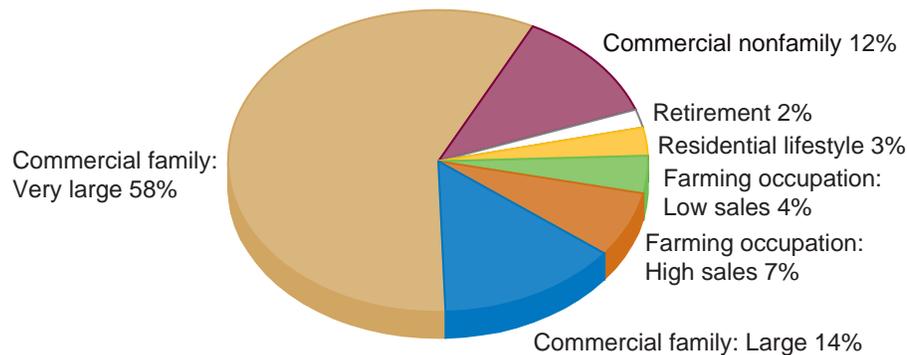
Distributing value of production (VOP) and earnings by farm typology, 2011

Farm typology	Farms	Crop	Livestock	Payments
	in 2010	VOP	VOP	to stakeholder
	<i>Percent</i>			
Rural residence family	59.8	5.7	5.6	9.4
Retirement	16.6	1.1	1.2	1.5
Residential/lifestyle	43.2	4.6	4.4	7.9
Intermediate family	28.2	11.9	9.7	10.2
Farming occupation—low sales	23.3	4.4	4.2	4.7
Farming occupation—high sales	4.9	7.5	5.5	5.5
Commercial family	9.8	69.0	72.8	62.6
Large	4.4	15.9	8.3	11.6
Very large	5.4	53.1	64.5	51.0
Family farms	97.8	86.6	88.1	82.2
Nonfamily	2.2	13.4	11.9	17.8
Total	100.0	100.0	100.0	100.0

Note: 2011 percentages are USDA forecasts; farms are based on 2010 ARMS.

Source: USDA, Agricultural Resource Management Survey, NASS and ERS.

Figure 1.5

Distribution of U.S. net value added by farm typologies, 2011

Note: 2011 forecast.

Source: USDA, Agricultural Resource Management Survey, NASS and ERS.

especially and positively dependent on changes in net value added, more so than the other two residual-earning groups, and is predicted to increase to 51 percent in 2011.

2011 Forecast Extends Substantial Increases in Production Expenses

The leap in expenses forecast for 2011 extends the string of rapid increases, with one exception, that started in 2003. The pattern of increases in expenses since 2002 resembles those in the 1970s (fig. 1.7). After their rise in 2011, the level of inflation-adjusted expenses will be slightly higher than the previous peak reached in 1979 (fig. 1.8).

Table 1.5

Distribution of net value added among resource owners, 2007-2011

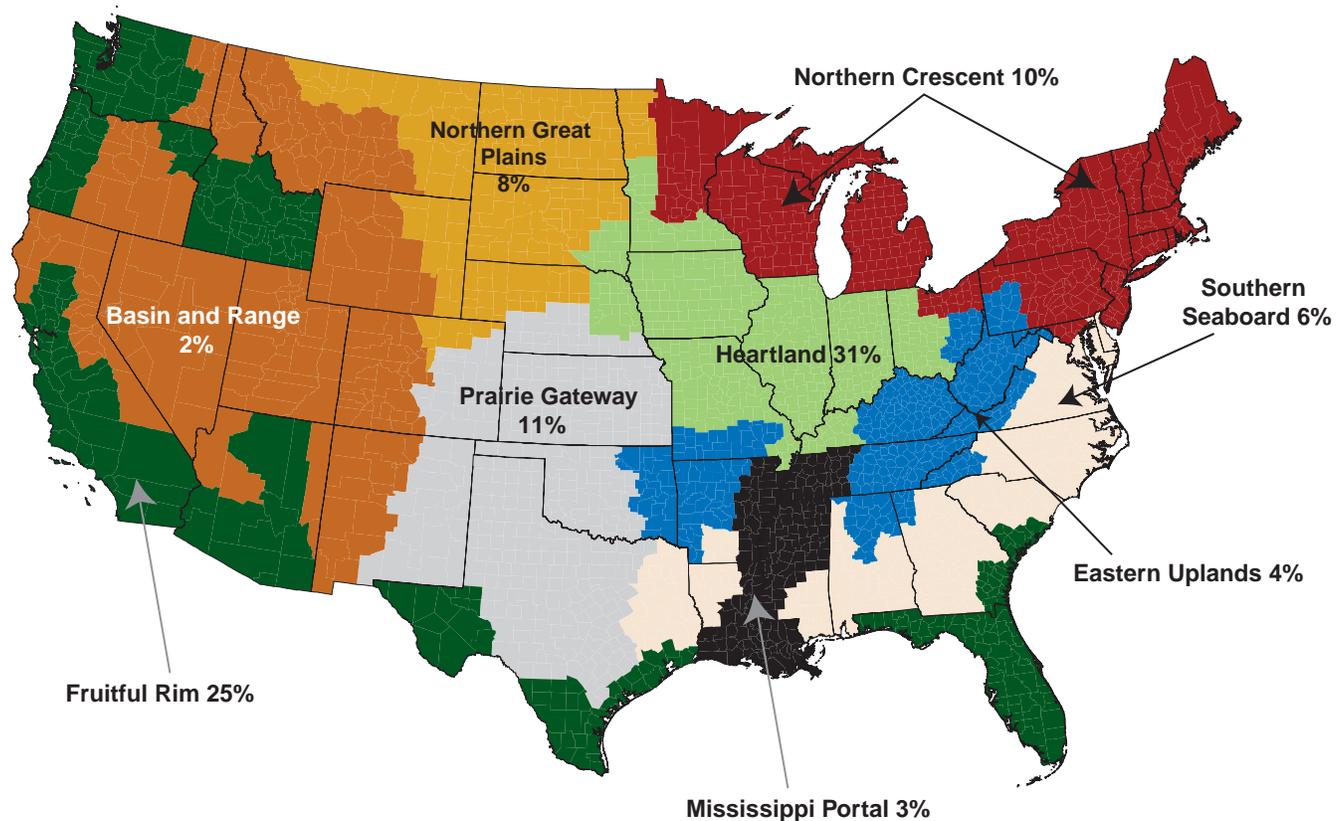
	2007	2008	2009	2010	2011
	<i>Percent</i>				
Stakeholders:	35.1	40.0	44.9	38.1	34.0
Hired labor	16.9	20.0	22.8	19.6	15.0
Lenders	9.1	9.4	10.3	8.5	9.0
Nonoperator landlords	9.1	10.6	11.8	10.0	10.0
Equityholders	64.9	60.0	55.1	61.9	66.0
Family farm operators	44.6	44.1	40.8	43.3	51.0
Nonfamily farm operators	8.4	7.0	6.7	7.2	8.0
Contractors	11.9	8.9	7.6	11.4	7.0
Total	100.0	100.0	100.0	100.0	100.0

Note: 2011 forecast.

Source: USDA, Agricultural Resource Management Survey, NASS and ERS. NASS and ERS.

Figure 1.6

Net farm income by ERS resource regions, 2011



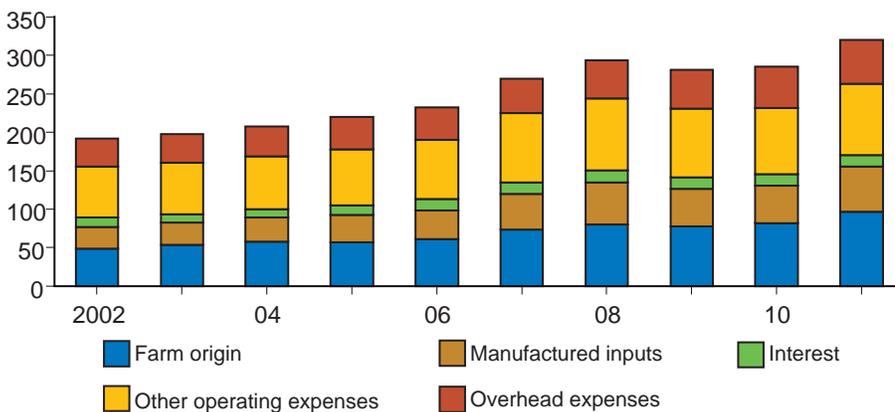
Note: 2011 forecast.

Source: USDA, Agricultural Resource Management Survey, NASS and ERS.

Figure 1.7

2011 expenses should exceed the previous peak in 2008 by \$27 billion

\$ billion



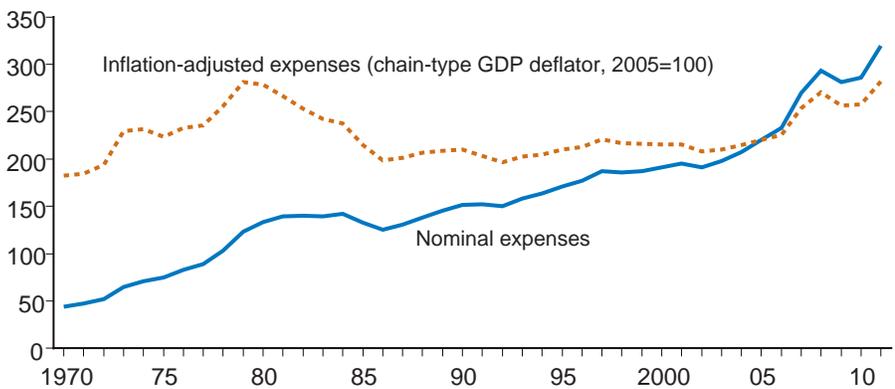
Note: 2011 forecast.

Source: USDA, Economic Research Service.

Figure 1.8

Nominal and inflation-adjusted expenses for U.S. farms, 1970-2011

\$ billion



Note: 2011 forecast.

GDP = gross domestic product.

Source: USDA, Economic Research Service.

Nominal production expenses have risen steadily since 1970 with only a few turndowns. Inflation-adjusted production expenses, however, have shown variance that falls into 4 distinct periods. In the first period from 1970-79, total production expenses rose \$99 billion (54 percent). From 1980-86, total production expenses fell \$83 billion (30 percent). Between 1987 and 2002, total production expenses leveled off, ranging only \$24 billion between the maximum and minimum levels. Beginning in 2003, they have again risen rapidly, increasing \$128 billion (67 percent) to the 2011 forecast.

Table 1.6 shows how much selected expenses have grown from 2002 to 2011. The increases in expenses during the period were caused primarily by large increases in prices producers paid for inputs. Figure 1.9 provides a picture of how steep the rises in several prices paid indexes (PPI's) from USDA's National Agricultural Statistics Service's Agricultural Prices have been during this time period. Quantity factors—such as annual output levels or

Table 1.6

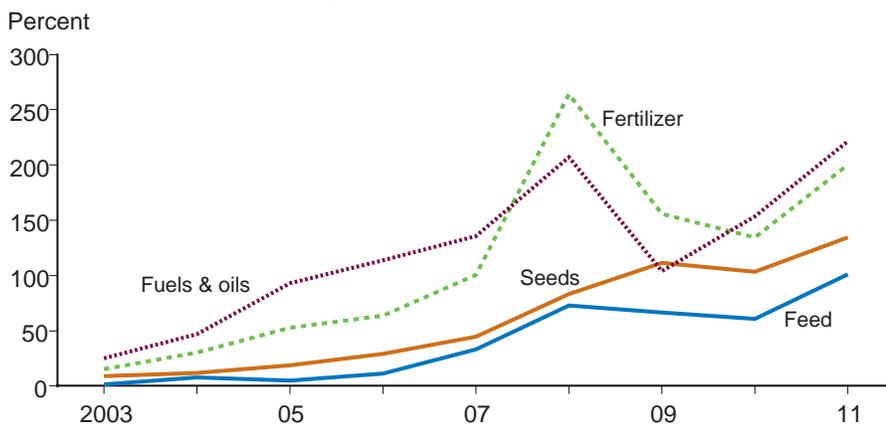
Increase in selected production expenses, 2002-11

	Increase	
	<i>Billion dollars</i>	<i>Percent</i>
Total production expenses	128.6	67.2
Cash expenses	114.0	66.1
Operating expenses	104.3	73.0
Purchased inputs	98.8	81.7
Farm origin expenses	48.0	99.4
Feed	30.8	123.4
Seed	8.5	95.0
Manufactured inputs	30.5	107.2
Fertilizer	17.3	179.4
Fuels and oils	10.1	153.6
Property taxes	5.0	72.8

Note: Nominal dollars; 2011 forecast.

Source: USDA, Economic Research Service.

Figure 1.9

Cumulative percent changes in Prices Paid Indexes, 2003-11

Note: 2011 forecast.

Source: USDA, Economic Research Service.

acres planted—usually changed by only a small amount and not consistently in the same direction as expenses. Even in the long term, quantity factors do not necessarily have a great impact on expenses. For example, the 25-percent increase in field crop and oilseed production from 2002 to a peak in production in 2009 may have been accomplished with the same or even smaller amount of seed as yields have improved.

While the Producer Price Index for finished goods has risen 37.0 percent between 2002 and year-to-date 2011, the PPI for farm sector production items, interest, taxes, and wage rates (PITW) has climbed 72.5 percent. The fertilizer PPI rose 264 percent to a peak in 2008 and, after falling off, currently lies 200 percent above its 2002 level. The fuels index is up 207 percent from its 2002 level; the feed index, 101 percent; and the seed index, 131 percent. Real estate taxes have been driven up by a 70-percent increase in land values.

Farm-sector expenditures on fuels and oils followed the rise in oil prices. From 2003 to 2008, the annual average refiner's acquisition cost (RAC) went

from \$23.63 to \$94.68 per barrel. Since fuels, especially natural gas, are the major input for many fertilizers, the rise in RAC and natural gas prices were the primary reason for the increase in fertilizer expenses. During this period, the annual average wellhead price for natural gas went from \$2.95 per 1,000 cubic feet (tcf) to \$8.08 per tcf. Expenses did not rise as much as prices for these two inputs because farmers employed steps to hold down production costs. For example, with both inputs, operators reduced quantities used. To lessen fuel use, they reduced trips over fields. To cut fertilizer use, they conducted more extensive soil tests to optimize applications.

Commercial production of red meats and poultry expanded 10 percent during this period, but the increase in feed expenses was due primarily to the increases in grain and oilseed prices. Prices received for feed grains rose 107 percent from 2003 to 2008 and prices received for oil crops rose 131 percent. Part of the upward push on corn prices came from the greater use of corn for ethanol production, resulting in historically high corn prices.

Seed expenses have risen, in part, because farmers have been making greater use of genetically-modified seeds for corn, cotton, and soybeans, which are relatively expensive. For example, since NASS began collecting information on prices for biotechnology-derived corn seeds in 2001, seed expenses have risen 67 percent.

The generalized increase in expenses came to an abrupt halt in 2009 as total expenses dropped \$12.1 billion (4.1 percent). Given the magnitude of the growth in costs experienced from 2003 to 2008, the reduction in 2009 was welcomed by producers, especially since gross farm income fell nearly 10 percent during the year. The reason for the fall off was again mostly price-related. For the first time, the PITW index fell, dropping almost 3 percent. A number of PPI's that had risen substantially over the 2003-08 period reversed in 2009. Particularly prominent among them were the 30-percent fall in the fertilizer index and the 33.5-percent drop in the fuel index. The expenses for these inputs also fell: fertilizer 10.7 percent; and fuels and oils, 21.7 percent. Fertilizer and fuels and oils expenses did not go down as much as their PPI's because producers used more or bought larger amounts as a hedge against renewed price increases. The seeds PPI rose 15.5 percent but the expense increased only 2.6 percent. Pesticide and Labor expenses also declined.

In 2010, total expenses rebounded with a moderate increase of \$4.5 billion (1.6 percent). The influence of prices was mixed in 2010. Overall, the increase was easily explained by the 2.1-percent rise in the PITW index and a 0.5-percent drop in total output. The largest increase in the three expenses (feed, fertilizer, and fuels), which had risen so much in the 2003-08 period went up less than 4.5 percent. Seed expenses continued their rise, going up 5.2 percent.

Feed expenses were up \$400 million (0.9 percent) in 2010. While its prices paid index was down 3.3 percent, livestock output went up 1.5 percent. The total supply of cattle on feed was up 2.8 percent. Feed and residual use of corn, which constitutes 90 percent of the grains used in feed, increased 9 percent. Livestock and poultry purchases reversed large declines in 2008 and 2009 and climbed \$2.9 billion (17.2 percent) due to relatively high retail prices for beef occasioned by a revival of exports and low beef production.

Although the fertilizer annual average PPI was down 8.4 percent in 2010, purchases increased \$900 million (4.5 percent). One reason for this increase was that cotton and corn planted acreage, which uses more fertilizer (and pesticides), went up 3.5 million acres. Analysts also believe that producers prepurchased more than normal because prices showed signs of significant increases, starting in August. These price increases have materialized as year-to-date 2011 prices are up 28 percent over last year.

The fuel PPI went back up 24 percent in 2010, although not to the height reached in 2008. However, the expense rose only 3.9 percent. Because of the rise in prices, producers probably reinstated economizing practices to keep fuel purchases down. Additionally, as alluded above, producers may have bought more fuel than required for operations in 2009 as prices started increasing during the latter half of the year.

The upward movement in the seed prices paid index slowed to 3.6 percent in 2010, acres planted were down 1.0 percent and crop output declined 1.3 percent, yet seed expenses rose 5.2 percent. The rise in the expense probably exceeded the rises in the prices paid index and went counter to the fall-off in the other factors because producers used more relatively expensive genetically-modified seeds than usual, especially on the 1.7-million-acre increase in corn acreage.

The expected leap of \$34.4 billion (12.0 percent) in total expenses in 2011 would lift them to \$320.0 billion. This increase rivals the \$36.8 billion jump in 2007. (However, that increase may have been inflated somewhat by new information from the *NASS 2007 Census of Agriculture*.) Because almost all of the formulas for expenses in the farm income forecast model are recursive, i.e., they generate the forecast by moving the previous year's estimate by the change in one or more factors, PPIs tend to be the most important element in the calculation. The overarching PITW index is expected to rise almost 12 percent (compared to a 6-percent increase in the Producer Price Index for finished goods). The index for production items is up more than 13 percent. The feed, fuel, and fertilizer PPIs are each set to rise more than 20 percent. On the quantity side, total output is predicted to fall 2.0 percent as a result of a 4.0-percent drop in crop output and a 1.1-percent rise in livestock output.

All expenses, except two, are set to increase in 2011, most significantly. Feed is expected to rise \$10.3 billion (23 percent); fertilizer, \$5.8 billion (28 percent); fuels and oils, \$3.5 billion (27 percent); and livestock and poultry purchases, \$3.5 billion (18 percent). Four other expenses should go up more than \$1 billion. However, even with these large increases, total production expenses will only be 75.5 percent of gross farm income, 2.3 percent lower than last year. This is an indication of how large the increase in gross income is projected to be.

The biggest factor in the jump in feed expenses is a 21-percent increase in its prices paid index. Large upward movements in grain and oilseed prices are the main reasons for the increase. The calendar-year price for corn is expected to rise 57 percent and for soybeans, 27 percent. The increase in the index is less because prices for complete feeds, which have the heaviest weight in the index, lag changes in their raw inputs. Fertilizer's surge is primarily the result of a 28-percent rise in its prices paid index. Another big factor in the increase in the expense is a 4-million-acre increase in corn acreage. Also, although the price of natural gas has fallen in 2011, the price

of oil, which is also a major ingredient in many fertilizers, rose to a very high level in the first part of the year and remains elevated. The price level for fuels and oils is almost entirely determined by the refiner acquisition cost (RAC), whose annual average is expected to be up 31.5 percent. Planted acreage, which influences the quantity of fuels used, was also up. The second straight double-digit percentage rise in livestock and poultry purchases is caused primarily by tight cattle and calf inventories and continued high prices in retail beef, which are buoyed by strong exports.

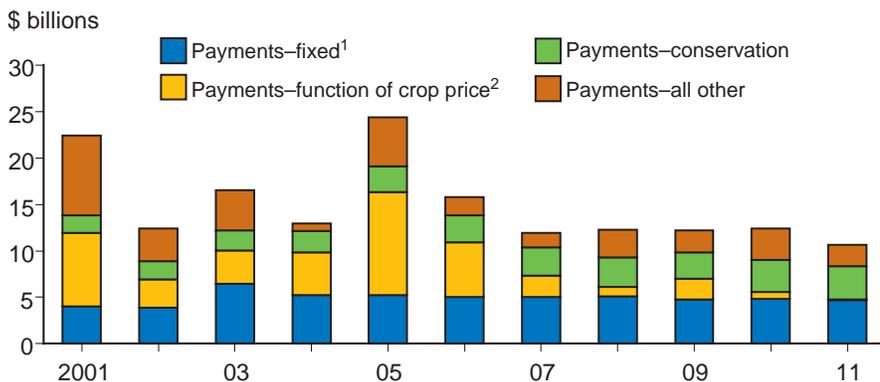
Government Payments Forecast at \$10.6 Billion

Government payments paid directly to producers are expected to total \$10.6 billion in 2011, a 14.4-percent decrease from the estimate of \$12.4 billion paid out in 2010. Direct payments under the Direct and Countercyclical Program (DCP) and the Average Crop Revenue Election program (ACRE) are forecast at \$4.71 billion for 2011 (fig. 1.10). Direct payment rates are fixed in legislation and are not affected by the level of program crop prices. However, the 4.9-percent decline in direct payments forecast in 2011 relative to the 2006-2010 average is due to producers having enrolled in ACRE program. Authorized under the 2008 Farm Act, ACRE provides revenue-based payments to producers in exchange for a 20-percent reduction in their annual direct payment allotments, beginning with the 2009 crop year.

With respect to program payments based on price levels, strong crop prices are expected to persist through 2011, reducing all expected program payments based on price to \$45 million (a decline of 92 percent from 2010 levels). ACRE revenue-based payments are expected to drop from \$422 million in 2010 to \$20 million in 2011. Countercyclical payments (CCPs) are forecast to be \$17 million made only to peanut farmers. Producers of program commodities are expected to receive \$8.3 million in marketing loan

Figure 1.10

Government payments, 2001-11



Note: 2011 forecast.

¹Production flexibility contract payments and direct payments whereby payment rates are fixed by legislation.

²Counter-cyclical payments, Average Crop Revenue Election (ACRE) payments, loan deficiency payments, marketing loan gains, and certificate exchange gains whereby commodity payment rates vary with market prices.

Source: USDA, Farm Service Agency, Natural Resources Conservation Service, and Commodity Credit Corporation.

benefits—including loan deficiency payments, marketing loan gains, and certificate exchange gains.

The Milk Income Loss Contract Program (MILC) compensates dairy producers when domestic milk prices fall below a specified level. For 2011, high milk prices are expected to nearly eliminate MILC payments for the year.

Tobacco farmers and quota holders are expected to receive \$665 million in Tobacco Transition Payment Program (TTP). Payments reported here include both CCC payments and lump-sum payments. Begun in 2005, this program provides annual payments over a 10-year period to eligible quota holders and producers of tobacco. However, since its inception, lump-sum payments to individuals have been made through agreements with third parties in return for the producers' and quota owners' rights to the 10-year TTP payment stream. As a result, TTP payments to farmers have steadily declined over the years.

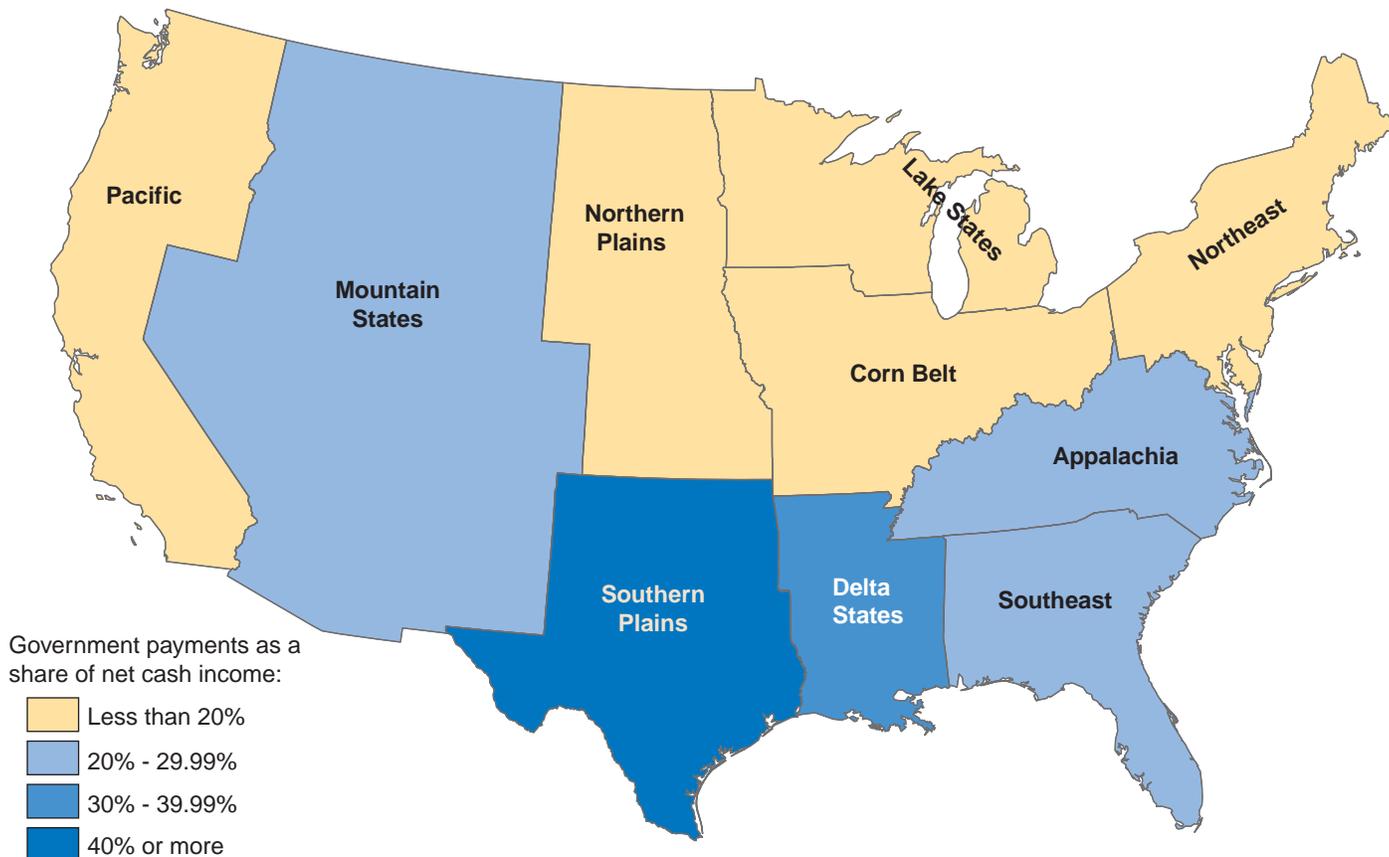
Conservation programs include those operated by the Farm Service Agency and the Natural Resources Conservation Service that provide direct payments to producers. Estimated conservation payments of \$3.6 billion in 2011 reflect programs being brought up toward funding levels authorized by current legislation. While Conservation Reserve Program payments have remained relatively constant over the last 5 years, fluctuations and increases have occurred in other conservation program payments. These fluctuations are due to the time lags associated with (1) current fiscal year payments carrying over into the next calendar year, or (2) building up participation in newly authorized or reauthorized programs and phasing out old programs. The Environmental Quality Incentives Program is an example of the former; the Conservation Security Program is an example of the latter.

Emergency disaster program payments are forecast to be \$1.6 billion in 2011, a 40-percent decrease from 2010 levels. The 2008 Farm Act created a permanent fund for disaster assistance, the Agricultural Disaster Relief Trust Fund. Supplemental Revenue Assistance Payments from this fund and from the 2009 Recovery Act are expected to amount to \$900 million in 2011. All other disaster programs—including primarily the Emergency Conservation Program, Livestock Forage Program, Livestock Indemnity Program, and Noninsured Assistance Program—are functioning at existing statutory authority and appropriation levels. Once a county is declared eligible for disaster relief, producer participation in these programs depends on the extent to which their crop or livestock losses meet a particular program's threshold.

Whether expressed in nominal dollars or constant dollars, the forecasted 2011 Government payments forecast for 2011 would represent the smallest amount paid to producers since 1997. However, the importance of Government payments as a percent of net cash farm income varies by ERS production region (fig. 1.11).

Figure 1.11

Government payments as a share of net cash income, 2010



Source: USDA, 2010 Agricultural Resource Management Survey, NASS and ERS.

Enrollments in ACRE and Payments to Farmers

The ACRE program represents a revenue guarantee program alternative to the Direct and Countercyclical Program, as noted in the previous section. Under ACRE, farmers receive revenue-based payments if yields and/or prices fall below ACRE triggers but give up 20 percent of direct payments, receive no countercyclical payments, and face reduced marketing assistance loan rates. In deciding whether or not to enroll, farmers must evaluate expected future prices and yields they would expect to face relative to ACRE’s State and farm-level revenue triggers which themselves are established from recent prices and yields.

The 2009 ARMS queried farmers as to the reasons for choosing to enroll or not in the ACRE program. About 10 percent of almost 500,000 farmers who gave explicit reasons for their enrollment decision did enroll in ACRE. The reason most frequently cited for enrolling in ACRE was the expectation that no CCPs would be received, followed by anticipation of high guaranteed prices and concerns about farm income variability. Relative to the all-farm average, large farm operators with gross farm sales of at least \$250,000 or those who paid for professional farm management services were 33 percent less likely to cite guaranteed high prices and 22 percent more likely to cite that no CCPs would be received.

Of the 442,000 farmers who chose not to enroll in the ACRE program, an equal percentage were likely to cite the complexity of the ACRE program or anticipated foregoing CCPs as their reason (fig. 1.12). Another 20 percent of those not enrolling said they were waiting for other area farmers to join. Relative to the average farmer’s decision not to enroll, large farm operators with gross farm sales of at least \$250,000 or those who paid for professional farm management services were 42 percent less likely to cite the complexity of the ACRE program itself and 39 percent more likely to cite their unwillingness to forego anticipated CCPs.

These findings suggest that failure to receive or unwillingness to give up current CCPs represented the more important benefit/cost for the larger farms or those paying for professional farm management services. Using sophisticated methods for evaluating the costs/benefits of the ACRE enrollment decision appeared to have reduced the informational value of ACRE guaranteed prices or concerns about this program’s complexity.

Using 2010 sector data, ACRE direct payments in 2010 accounted for 11 percent of all direct payments, while ACRE revenue-based payments accounted for 56 percent of all payments to producers that are related to price. Three ERS production regions—the Corn Belt and the Northern and Southern Plains States—accounted for 77 percent of ACRE direct payments and 61 percent of ACRE revenue insurance payments. According to the 2010 ARMS, ACRE State-level and farm-level revenue triggers generated ACRE revenue-based payments to one-third of ACRE enrolled farmers. With respect to farm size, large farms with gross farm sales of at least \$250,000 realized over 85 percent of ACRE direct payments and ACRE revenue-based payments.

The ERS farm production typology classifies farms according to the commodity representing 50 percent or more of total farm sales. Wheat farmers received 38 percent of ACRE revenue-based payments, other crop farms 20 percent, corn farms 13 percent, and soybeans farms 7 percent. The “other crop farms” category included the other ACRE-eligible feed grain, pulse, and oilseed crops. ARMS did not record any cotton farms receiving any ACRE direct or revenue-based payments.

Figure 1.12
Farmers’ reasons for enrolling or not enrolling in the ACRE program, 2009



MLB = marketing loan benefits.

Sources: USDA, 2009 Agricultural Resource Management Survey, NASS and ERS.

Farm Household Economic Well-Being

- Median farm household income increased by 3.7 percent in 2010 to \$54,162 and is forecast to be higher in 2011.
- Bolstered by higher farm asset values, the balance sheet of farm households improved in 2010, with median net worth increasing by 6.5 percent to \$576,745.
- Farm household income varies substantially across commodity specialization. Median household income for principal operators of rice, cotton, and peanut farms reached \$116,664 in 2010 and continues to be the highest of any commodity group.

Trends in Farm Household Finances

Median farm household income increased 3.7 percent in 2010 to \$54,162 and is forecast to be higher in 2011. The increase reflects higher income from farm and off-farm activities. Because the typical farm operator household shows a loss from farming activities, the increase comes in part from smaller losses from farming in 2010 than in 2009 (see box, “How Does USDA Define Farm-Operator Households?”). A strong increase in earned income from off-farm activities overshadowed a decrease in unearned income, causing total off-farm income to increase 4.2 percent over the 2009 level (table 2.1).

The percent increase in average farm household income is more than double the increase in median income. Because the median is the income level at

Table 2.1

Farm operator household finances, 2006-11

Item	2006	2007	2008	2009	2010	2011
	<i>Number</i>					
Number of farms	2,021,903	2,143,398	2,129,869	2,131,007	2,143,063	n.a.
	<i>Median dollars per household</i>					
Farm income	-2,000	-2,005	-3,040	-2,740	-2,020	-2,620
Off-farm income	55,000	50,632	46,524	47,500	49,490	50,949
Earned Income	37,500	35,321	28,526	30,161	31,779	n.a.
Unearned Income	6,250	6,750	8,750	9,250	8,750	n.a.
Total household income	56,274	54,428	51,431	52,235	54,162	54,817
U.S. household income	48,201	50,233	50,303	49,777	49,445	
	<i>Average dollars per household</i>					
Total household income	81,043	88,796	79,796	77,169	84,440	n.a.
	<i>Balance sheet, median dollars per household</i>					
Total assets	626,194	606,470	593,632	616,290	660,873	n.a.
Farm assets	409,880	392,625	399,750	398,852	425,500	n.a.
Non-farm assets	145,250	137,500	137,500	147,500	150,403	n.a.
Total debt	23,400	26,525	28,600	27,800	31,925	n.a.
Farm debt	900	705	803	850	771	n.a.
Non-farm debt	0	0	750	250	750	n.a.
Total net worth	558,710	534,727	525,879	541,544	576,745	n.a.

Note: 2011 forecast.

Source: USDA, 2006-2011 USDA Agricultural Resource Management Survey, NASS and ERS; ERS forecast model.

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. 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. Because the \$1,000 threshold is not adjusted for changes in prices, higher commodity prices in recent years have reduced the scale of agricultural activity required to be included in the farm population.

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 assets are owned by individuals related by blood, marriage, or adoption. In 2010, 97.7 percent of U.S. farms were classified as family farms.

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 is the farm's principal operator.

which half of all households have lower incomes and half have higher incomes, median incomes are less influenced by very high-income and very low-income households than are averages. As a result, average income tends to be more variable and therefore less reliable as a representative household measure than median income.

Because most farm households incur net losses from farming in a given year, net worth (assets minus debt) better reflects the household's financial situation than current income (see box, "How Is Farm Household Income Defined?"). In addition to higher income in 2010, the typical farm household also saw its balance sheet improve, with net worth increasing by 6.5 percent to \$576,745. The increase comes in large part from an increase in the value of farm assets, which increased by \$26,648 from 2009 to 2010 and overshadowed a much smaller increase in total debt. In nominal terms (not adjusting for inflation), median net worth in 2010 exceeded net worth in the previous four years, being more than \$18,000 higher than net worth in 2006, the best year from the previous 4 years. The improvement in net worth is unsurprising given the strong appreciation in farmland values. Although a substantial share of farmland is owned by households that do not operate farms, rising farmland values have clearly improved the financial position of many farm households.

Farm Household Income by Commodity Specialization

A farm's specialization is determined by the commodity or group of commodities that composes at least 50 percent of the farm's total value of agricultural production. Farm household income varies markedly across commodity groups. For example, median household income for dairy farms was \$52,392 in 2010, less than half the \$116,664 in income for typical households associated with farms specializing in rice, cotton, and peanuts.

How Is Farm 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) where the definition departs from a strictly cash concept by deducting depreciation, a noncash business expense, from the income of self-employed people.

Total farm operator household income is calculated by adding earnings of the operator household from farming activities to income from off-farm sources. Income from farming activities includes income from operating or owning one or more farm businesses, renting out farmland, or working on a farm for wages. Off-farm income includes income from wages and salaries, off-farm self-employment, interest, dividends, capital gains, private pensions, and public sources like Social Security.

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. Depreciation is an expense deducted from income that may not be spent during the current year. Increases in inventories are excluded from earnings, but they could be sold to raise cash. Furthermore, USDA's measure of farm household income does not account for tax benefits gained by operating a farm. Farmers benefit from both general tax provisions available to all taxpayers and from provisions specifically designed for farmers. Since 1980, Internal Revenue Service data indicate that farmers have reported negative aggregate net farm income for taxes. These farm losses reduce taxes by offsetting taxable income from nonfarm sources.

In any given year, production and market conditions will vary for farms specialized in different commodities. Differences in household income across commodity specialization, however, may also stem from differences in the types of households that engage in them. With its large and consistent time demands, managing a dairy farm rarely allows an operator to work many hours off the farm and helps to explain why median farm income is large relative to median total income for dairy farm households, in contrast to households in many other commodities. Consequently, a farm operator with a high-paying off-farm job, or the potential to obtain one, is more likely to specialize in an activity that, unlike dairy farming, readily permits working many hours off the farm.

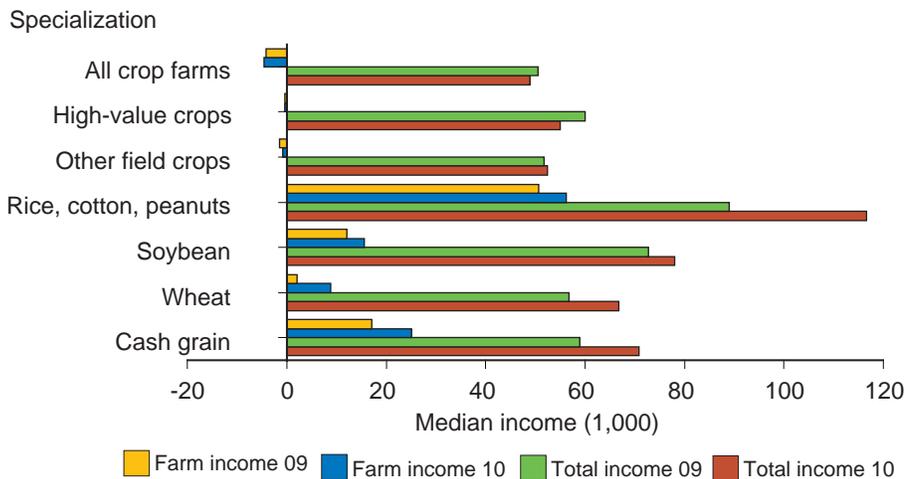
Comparing incomes across time and commodity specialization reveals that much of the differences in farm and total household income across commodity specialization are persistent. Nonetheless, some differences across commodity specializations have narrowed while others have broadened, likely reflecting how market and production conditions in 2010 favored each group. Households associated with dairy farms and rice, cotton, and peanut farms saw large gains in farm and total income as did those associated with hog farms, cash grain farms, and wheat farms. In contrast, households associated with farms categorized as beef cattle, general livestock, other field crops, or high value crops saw only small improvements or, in the case of high-value crops, a decrease in total income (figs. 2.1 and 2.2).

Farm Household Finances by Farm Type

The Economic Research Service has developed a farm typology that considers gross sales in combination with the occupational characteristics of principal farm operators (table 2.2). “Commercial” farms are those with more than \$250,000 in gross sales. If a farm grosses less than \$250,000 in sales and the principal operator reports being retired or having a major occupation other than farming, the farm is classified as a “residence” farm. If the operator reports farming as the major occupation but the farm has less than \$250,000 in gross sales it is classified as “intermediate”. Commercial farms represent 10 percent of all farms while intermediate and residence farms represent 29 and 61 percent, respectively.

Figure 2.1

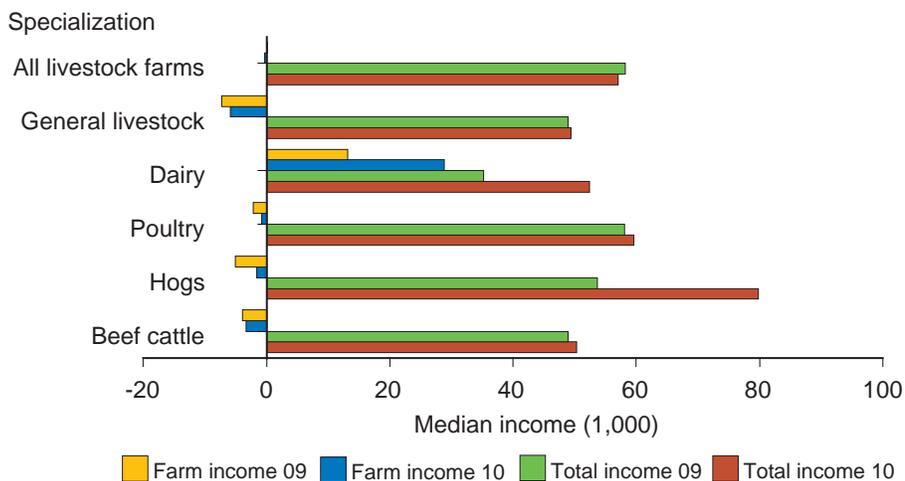
Median farm operator household total income and farm income by commodity specialization, crop farms, 2009-10



Source: USDA, Agricultural and Resource Management Survey, NASS and ERS.

Figure 2.2

Median farm operator household total income and farm income by commodity specialization, livestock farms, 2009-10



Source: USDA, Agricultural and Resource Management Survey, NASS and ERS.

Table 2.2

Farm operator household finances by ERS farm typology, 2010

Item	Residence farms	Intermediate farms	Commercial farms	All
	<i>Number</i>			
Farms	1,311,117	617,876	214,070	2,143,063
	<i>Income, median dollars per household</i>			
Farm income	-3,248	-1,341	78,466	-2,020
Off-farm income	63,750	38,895	27,500	49,490
Total income	59,939	43,134	117,758	54,162
	<i>Balance sheet, median dollars per household</i>			
Total assets	534,636	755,560	2,006,642	660,873
Farm assets	330,925	553,550	1,721,989	425,500
Non-farm assets	151,250	137,500	131,250	150,403
Total debt	18,275	29,063	220,275	31,925
Farm debt	500	1,005	166,250	771
Non-farm debt	3,500	0	0	750
Total net worth	469,375	672,727	1,650,159	576,745

Source: USDA, Agricultural Resource Management Survey, NASS and ERS.

In 2010 the typical household associated with residence and intermediate farms incurred losses from farming activities. In contrast, median household income from farming for commercial farms was \$78,466. The group also had the largest median total income (\$117,758) while intermediate farms had the lowest total income (\$43,134).

Unsurprisingly, households associated with commercial farms also had the highest net worth, with a median value exceeding \$1.6 million. Although these households have much more debt than households of other farm types, their more than two million in total assets lead to a high net worth. And while households from intermediate farms had the lowest median income, they have a median net worth of \$672,727, more than two hundred thousand dollars above than the median net worth of households that operate residential farms. The higher net worth of intermediate farm households comes from having more farm assets than households of residence farms.

Opportunities and Challenges in Farming for Beginning Farmers and Ranchers

Approximately 20 percent of U.S. farms and ranches are operated by those who began operating a farm since 2000. Farming can be a challenging, yet highly rewarding, occupation and lifestyle choice for these beginning farmers and ranchers. In recent years, while the general economy has been in a recession and painfully slow recovery, the aggregate farm sector has been booming. This potentially increases the attraction of the farming as an occupation to new entrants. However, like any capital-intensive industry, entry into farming requires significant capital, including human capital.

Beginning farmers and ranchers cannot be easily characterized because of their diversity in farm and personal characteristics. As with any young business, beginning farms are more likely to have a smaller median farm size than established farms, but both beginning and established farms have in a wide distribution of sizes. Similarly, there are beginning farms that

specialize in production of the full variety of U.S. agricultural commodities and market those goods—and in some cases services—in a variety of ways. Demographically, beginning farmers are in all age ranges, racial and ethnic groups, and both male and female (table 2.3).

One common view of beginning farmers is that they are young, well-educated individuals, operating smaller farms with a positive value of farm production, perhaps with access to farmland through relatives. However, most beginning farmers are not young (that is, under 35 years old), do not have a college education, nor did they gain access to farmland through their relatives, and more than one-quarter reported zero value of farm production in 2010. Indeed, less than 1 percent of all beginning principal operators meet the common view as described, although as a group they are more likely than established farmers to be young, college-educated, women, and to be ethnically and racially diverse. The general demographic of principal operators of U.S. farms are most commonly white, male, and over the age of 50. New entrants, as well, are likely to be white and male.

Beginning farms have a somewhat different farm production profile than established farms. They are less likely to report having any positive value of production. For example, in 2010, 30 percent of beginning farms did not report any positive value of production. It is commonly recognized that most production is concentrated on large farms—50 percent of product comes from only 1.5 percent of the largest farms—and that a large share of farms are small, about 60 percent have sales under \$10,000.

Less well-understood is that, not only are there a large number with small sales, but approximately one-quarter of all farms report no value of production in a given year. This is true for a variety of reasons, including production failures, or newly planted crops, such as fruit and nut trees that have not yet matured. However, the majority of farms without production are largely small farms whose operators earn significant off-farm income and/or who are elderly. Along with general crop and general livestock farms, the most common specialty of both established and beginning farms is beef cattle. Compared to established farms, beginning farms are more likely to have general crop or livestock farms and less likely to have beef cattle. They are also more likely to have poultry and fruit and tree nut specialties and less likely to have dairy and cash grain specialties than established farms. Consistent with their production choices, beginning farms are less likely to participate in Government direct payment programs, many of which are focused on cash grain production.

At the same time that farmland values have increased, economies of size are well-established in farming. Not only should a beginning farmer expect to have low returns in the startup phase, but even established farms must be of a significant size before they are likely to earn positive returns. For example, in recent years, with size measured by the gross value of production classes, it is not until farms were in the range of \$25,000 to \$30,000 in production did the majority of farms have positive net cash returns, after depreciation. Keep in mind that this measure of returns did not account for the opportunity cost of owned factors of production, like labor, management, land, and equity. And the average farm asset base for farms of \$25,000 to \$30,000 value of production is over \$800,000.

Table 2.3

Characteristics of family farms, by experience level, 2010

Item	Established farm	Beginning farm	All
Number of family farms	1,691,623	451,441	2,143,063
Percent of family farms	79	21	100
Number of total operators	2,513,871	684,940	3,198,811
Number of beginning operators	72,827	684,940	757,767
Percent of total value of production	90	10	100
Percent with zero value of production	23	30	24
Distribution of value of production			
Percent crop value of production	54	42	53
Percent livestock value of production	46	58	47
Farm size (average operated acres)	440	169	383
Percent of acres	91	9	100
Acres owned and operated (average)	274	109	239
Government direct payments			
Percent of payments	91	9	100
Percent of all farms receiving payments	86	14	100
Percent of farms within group receiving payments	38	23	35
Average payment (all farms)	4,798	1,673	4,140
Average payment (payment farms)	12,495	7,252	11,771
Major occupation of principal operator, %			
Farm or ranch work	48	24	43
Work other than farming/ranching	37	66	43
Currently not in the workforce	15	10	14
Age of principal operator, %			
Less than 35 years old	1	16	4
35-54 years old	29	50	34
55-64 years old	34	22	32
65 years old or more	35	12	30
Education of principal operator, %			
Less than high school	9	9	9
High school and some college	69	64	68
4-year college degree or more	23	27	24
Gender of principal operator, %			
Male	91	85	90
Female	9	15	10
Race and origin of principal operator, %			
White, not Hispanic	88	88	88
Nonwhite or Hispanic	12	12	12
Farm household finances and health insurance			
Percent with positive farm income	42	27	39
Percent who own farmland	96	92	95
Percent with farm debt	32	36	33
Farm income, average, \$	15,147	-888	11,769
Off-farm income, average, \$	67,010	93,883	72,671
Total income, average, \$	82,157	92,995	84,440
Total income, median, \$	51,748	63,145	54,162
Farm net worth, average, \$	815,405	419,050	731,912
Non-farm net worth, average, \$	225,151	231,880	226,568
Net worth, average, \$	1,040,556	650,930	958,481
Net worth, median, \$	647,501	370,444	576,745
Share of persons in household with insurance, %	87	87	87

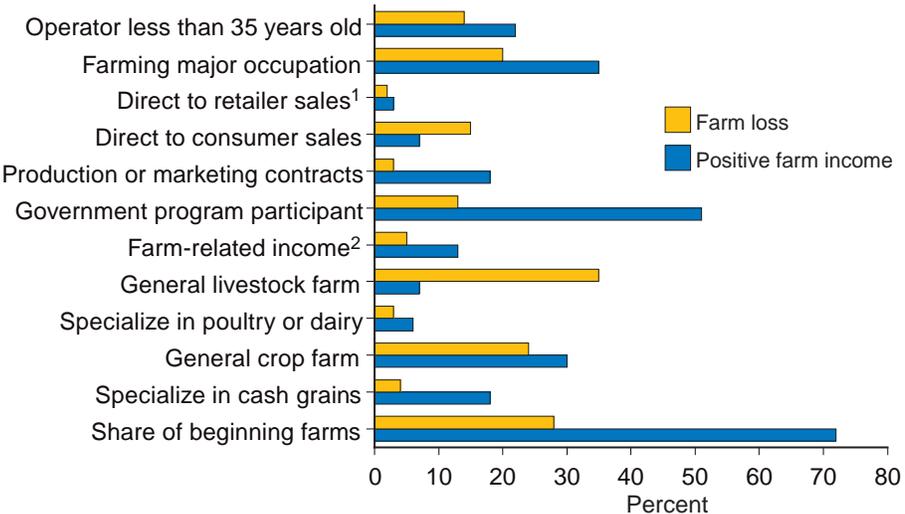
Source: USDA, 2010 Agricultural Resource Management Survey, NASS and ERS.

How do successful beginning farms—defined here as earning a positive farm income after depreciation—differ from other beginning farms? In 2010, 27 percent of beginning farms earned a positive return after depreciation (fig. 2.3). The successful beginning farmers’ subpopulation earned on average \$29,433 from farming, had a household off-farm income of \$83,194, and an average net worth of over \$800,000. The off-farm job not only provides the household with resources to cover farm and living expenses, but often times health insurance. More than one-third of beginning farmers earning positive farm income considered farming as their major occupation, compared to 20 percent of the beginning farmers with negative farm incomes. Beginning farmers with a positive farm income are more likely than other beginning farmers to operate larger farms, specialize in crop commodities, and participate in Government direct payment programs. Successful farmers also engage in production and marketing contracts more often than other beginning farmers, as well as an assortment of onfarm entrepreneurial activities to generate income, such as the sale of forest products, machine hire work for others, and agritourism.

In spite of the daunting financial requirements of entering farming, the fact is that the number of farms increased between the 2002 and the 2007 Censuses of Agriculture, with most of the increase in small farms. One of the factors explaining the increase in small farms is the increase in demand for farms largely as a place of residence. Small farms may lose money from their farming operation, but those net returns do not account for the in-kind income that comes from having a farm residence. Generally, small farms, as with all sizes of farms, report their farm residence-associated expenses along with their farm business income. Farm residence expenses reported as part of business expenses are tax deductible in the calculation of taxable farm income. Farm residences are also often afforded other tax advantages, like reduced local property taxes from preferential farm rates and farm

Figure 2.3

Distinguishing characteristics between beginning farmers with positive farm earnings and those with losses, 2010



¹Retailer that sells directly to customer, e.g., restaurant.
²Enterprises such as sales of forest products, machine hire, and agritourism.

Source: USDA, Agricultural and Resource Management Survey, NASS and ERS.

income losses that can result in lower household income taxes than what would otherwise be owed on the household's off-farm income. The dual role of the farmstead as the farm residence may help explain why approximately three-quarters of beginning farmers in 2010 did not earn a positive return from farming.

Earnings Are Up Among Most Farm Businesses and Enterprises

- U.S. agriculture is a diverse sector encompassing a complex mix of business enterprises.
 - Income forecasts highlight the diversity of financial outcomes and are based on applying sector level forecasts, receipts, and expenses to the latest Agricultural Resource Management Survey (ARMS) data.
 - Average net cash income for farm businesses is expected to increase throughout most of the country in 2011, although income growth for the average farm business is not as high as experienced in 2010. High commodity prices for both crops and livestock are driving these increases, despite increasing expenses in all categories other than labor.
-

This section focuses on the 850,000 farm businesses that are responsible for the majority of economic activity in the sector (see box, “Defining Farm Businesses” for more detail). Results reported here are designed to highlight the diversity of financial outcomes. We apply sector-level forecasts of receipts and expenses to the latest Agricultural Resource Management Study (ARMS) data to forecast net cash farm income for various types of farms. Estimates of farm-level income reported by USDA have been developed to reflect both the contributions of factor providers, such as creditors and landlords, and the use of business arrangements such as contracts.

The net cash income reported for farms is the income available to share among owners and operators who participate in the farm’s financing, production, and marketing outcomes. Cash flow projections can be summarized across various groups of farms, based on regional location, commodity specialization, or size. The forecasting model used is static and therefore does not account for changes in crop rotation, weather, and other local production impacts that occurred after the base year.

Except for poultry, high prices in 2011 have helped the livestock sector to continue its strong performance of 2010 despite an environment of increasing feed expenses. Total cash expenses are expected to increase by 12 to 15 percent for the average livestock farm business. Brisk livestock and dairy exports played a key role in maintaining high prices. Various factors are responsible for the strength in dairy product prices, but exports have been a strong contributor to price strength for each of the different types of dairy products. Exports are likely to stay slightly above year ago levels due to increased purchases of U.S. dairy product purchases in key foreign markets.

Exports are also an important outlet for U.S. pork production, and in 2011 pork exports could represent as much as 22 percent of domestic production. Pork, beef and dairy farm businesses are all benefiting from higher prices in 2011, but are also experiencing increasing expenses. With an expected second consecutive year of gains over 20 percent in wholesale milk prices, cash receipts for the average dairy farm business are forecast to be 23 percent higher in 2011. Even with feed cost—which makes up 45 percent of

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 a widely diverse 2.1 million 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 of the farm operator, and total household earnings (for more information see *Structure and Finances of U.S. Farms: Family Farm Report, 2010 Edition*, <http://www.ers.usda.gov/Publications/EIB66/>).

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. A majority of these farms have negative business income and depend on off-farm sources of income to support their household (see information in household income section). Farm businesses, for purposes of performance analysis in this chapter, include the more than 800,000 remaining family and nonfamily farms who indicated that farming was the primary activity of the operator.

total expenses—increasing by 23 percent, average net cash incomes of dairy farm businesses are forecast to be more than 58 percent higher in 2011 than in 2010.

Despite record-high cattle prices throughout 2011, cow inventories and beef production have continued to decline. Even so, average net cash income for farms that specialize in cattle production is forecast to be 21 percent higher in 2011 than 2010. However, higher feed and, energy costs, and potential drought impacts could undermine the impacts of higher cash receipts. Pork production is expected to reach or slightly exceed last year's level and with pork prices being 19 percent higher this year, average hog farm business receipts are forecast to increase 18 percent in 2011. Even with higher feed expenses, which represent 29 percent of total operating costs, average net cash income for hog farm businesses is projected to be 23 percent higher in 2011.

With wholesale prices for most broiler products that are projected to be below 2010 levels, poultry farms businesses' average net cash income is forecast to decline 18 percent in 2011, in sharp contrast with other livestock farms. In response to a 23-percent increase in feed costs, which make up 41 percent of expenses, broiler production is not expected to expand much in 2011. Overall, receipts for the average farm business producing poultry and egg producers are forecast to be 6 percent higher in 2011, with the anticipated 5-percent decline in broiler receipts being offset by significant gains in turkey and egg receipts.

As with livestock, net cash income for almost all types of crop farm businesses is forecast to continue to increase in 2011. Farm businesses specializing in program crops (table 3.1) are projected to experience strong income growth, while performance among those specializing in nonprogram crops is expected to be mixed. All program crop farm businesses are expected to have higher earnings, on average, but the impact of increases in input costs varies considerably in 2011. Projected 2011 average net cash income gains

Table 3.1

Change in net cash income by type of farm operation, 2011

Commodity specialization	Percent change in net cash income	Key determinants of change
Program crops		
Mixed grain	18	Crop receipts up 18.7% above 2010. Total cash expenses up 15.4%. Fertilizer up 27.8%, rent and lease up 10.1%, seed up 6.7% and fuel up 26.8%.
Wheat	4.3	Crop receipts up 21.3%, while cash expenses forecast up by 16.6% from 2010. Fertilizer and fuel expenses forecast to increase by over 26%, rental expenses increase by 9.5%.
Corn	18.6	Crop receipts are forecast to increase by 18.6%. Cash expenses forecast to increase by 15.2%. Seed, fertilizer, and rent, which together represent almost 65% of total expenses, increase by 6.7%, 27.8% and 10.2%, respectively.
Soybeans and peanuts	17.2	Crop receipts up 19.2%. Cash expenses forecast to increase by 15.0%. Seed, fertilizer, and rent, which together represent almost 62% of total expenses, increase by 6.7%, 27.8% and 10.1%, respectively.
Cotton and rice	5.2	Crop receipts up 15.0%. Cash expenses forecast to increase by 15.2%. Seed, fertilizer, and fuel, which together represent 57% of total expenses, increase by 6.7%, 27.8% and 26.8%, respectively.
Nonprogram crops		
Other field crops	-3.7	Crop receipts forecast up by 9.7%. Cash expenses forecast to increase by 12.5%. Fertilizer and fuel had the largest increase, labor expenses decrease by 15.6%.
Specialty crops	4.3	Crop receipts up 3.7%. Cash expenses forecast to increase by 3.9%. Labor, which represents 31.8% of cash expenses, is projected down by 15.6%.
Livestock		
Beef cattle	20.6	Livestock receipts up 17.3%. Cash expenses 15.2% higher. Feed and livestock costs are up 22.6% and 18.0%, respectively.
Hogs	22.6	Livestock receipts up 20.4%. Cash expenses projected up by 14.8%. Feed costs, which make up 29.4% of cash expenses, are up by 22.6%
Poultry	-17.8	Livestock receipts up 4.7%. Cash expenses 15.7% higher. Feed costs, which make up 41.4% of cash expenses, are up by 22.6%.
Dairy	57.6	Livestock receipts up 24.4% Cash expenses 13.9% higher. Feed which represents 45.2% of cash expenses is expected to increase by 22.6% from 2010.
Other livestock	7.7	Livestock receipts up 14.0%. Cash expenses 12.3% higher.

Note: 2011 forecast.

Source: USDA, Economic Research Service, farm-level forecast model.

for farm businesses producing major crops range from a 4-percent increase for wheat to nearly a 19-percent improvement over 2010 for corn. Cotton and rice farm businesses are expected to have a 15-percent increase in average crop receipts, while average crop receipts for farm businesses producing other program crops are expected to increase by over 18 percent.

The largest increases in expenses are expected for fuels and fertilizer, by over 27 percent each. Rental and lease (10 percent) and seed (7 percent) expenses are expected to increase as well. Together, these inputs account for about 70 percent of cash expenses for corn, and soybean, and peanut farm businesses, on average, and at least 60 percent of cash expenses on cash grain, wheat and cotton and rice farms.

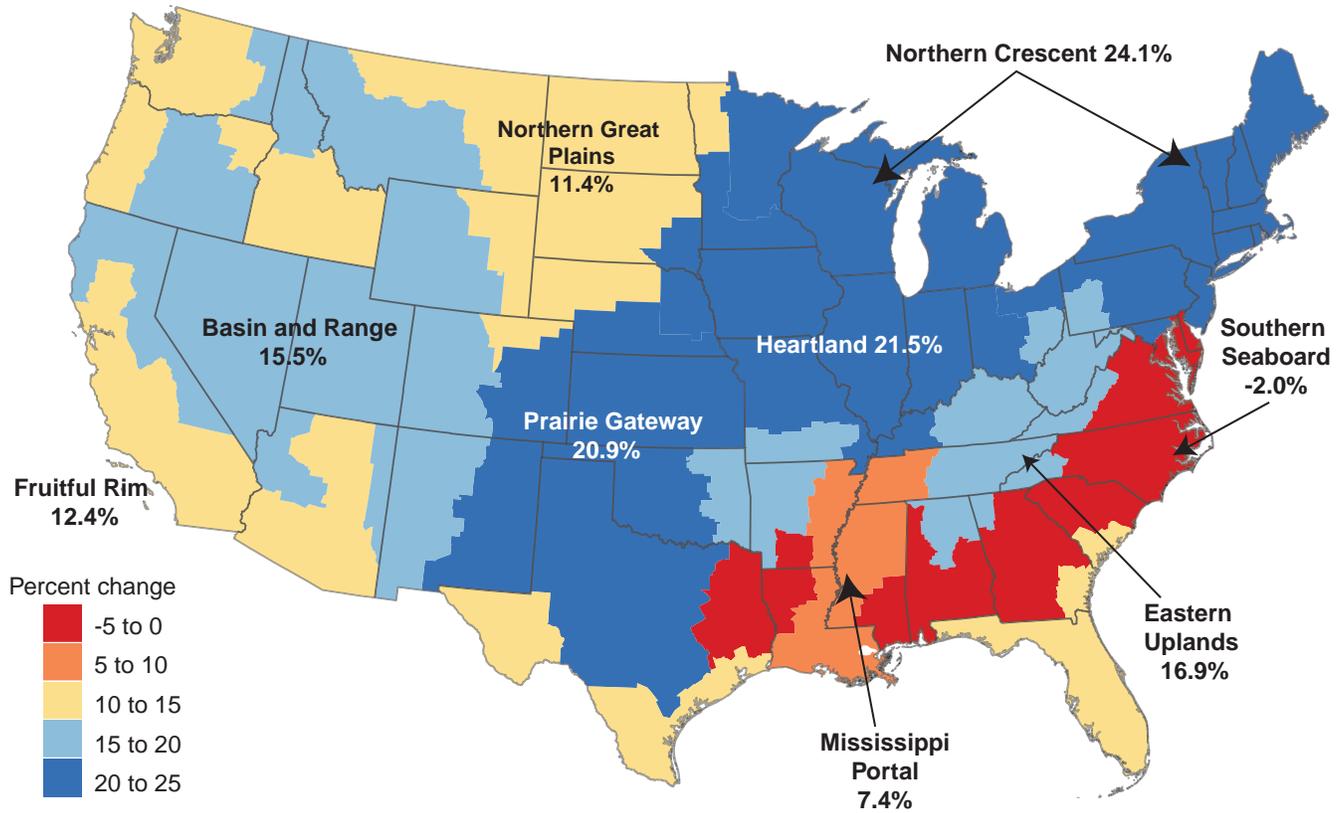
Smaller growth in crop receipts for non-program crops is contributing to weaker performance among the farm businesses that specialize in their production. Specialty crop producers (fruits, vegetables, nursery or greenhouse) farm businesses are expected to see a small increase in average net cash income of over 4 percent. Although almost all expenses are expected to increase for all producers, specialty crop producers are expected to see had a 16-percent decrease in labor expenses, which make up almost one-third of their total expenses. Although the cost of labor increased slightly increased from 2010, less labor was used in 2011. This could have been due to increased mechanization, lower output (i.e. less crop to harvest due to bad weather), and/or a reduction in the farm labor supply.

In contrast to the experience of major crop producers, average net cash income is forecast to decline in 2011 for farm businesses that specialize in other field crop production (sugar crops, hay, silage, trees, and woody crops). Receipts for other field crop producers are expected to be 9 percent higher than 2010, but expenses are forecasted to rise by 12 percent, driven by increases in fertilizer, fuel, and utilities of over 20 percent.

Driven by the gains enjoyed by most crop and livestock farm businesses, all regions other than the Southern Seaboard are expected to experiences gains in average net cash income. However, there is considerable regional disparity in the outlook for 2011 farm business income. Price strength for grains and oilseeds will result in much higher average net cash incomes for farm businesses in the Heartland (22 percent above 2010). Producers in the Northern Crescent region are expected to benefit from higher dairy and grain earnings, with average net cash income forecast to be 24 percent higher than 2010. Improved cattle incomes are contributing to the Prairie Gateway region's projected 21 percent increase in average net cash income. Only one region is expected to experience lower average income in 2011. In the Southern Seaboard, where poultry accounts for 48 percent of the value of agricultural production, average farm business income is forecast to decline by 2 percent in 2011. All other regions have forecasts of at least a 7-percent improvement in average net cash income over 2010.

Figure 3.1

2011 farm business net cash income forecast compared with 2010



Note: 2011 forecast.

Source: ERS partial budget model based on the 2010 Agricultural Resource Management Survey (ARMS) using parameters from the sector forecasts. The model is static and therefore does not account for changes in crop rotation, weather, and other location production impacts the occurred after the base year.

Farm Business Balance Sheet and Financial Performance

- Increases in farm asset and lower debt values continue to increase farm business wealth.
 - Higher expected future net returns, rising cash flow, and generally favorable credit conditions for credit-worthy borrowers have contributed to the rise in farm asset values.
 - Farm business debt is expected to fall from about \$245 billion to \$235 billion in 2011 due to both declining real estate and non-real estate debt.
 - Low interest rates, increasing income, and decreasing debt have pushed expected debt repayment capacity utilization down to 38 percent compared to 59 percent in 2009.
-

Overview of the Farm Business Balance Sheet

The farm business balance sheet is essential for estimating profitability and efficiency of the farm sector, and for tracking the growth of farm business wealth. The balance sheet lists the farm's assets, debt, and owner's equity (wealth), showing the U.S. farm sector at a specific point in time. It shows the amount of "owned" assets the farm used in producing its crop and livestock commodities. USDA's accounting procedures set December 31 as the reference date for the farm's balance sheet and the income statement covers the year from January 1 through December 31.

The balance sheet excludes assets and debt of agribusiness firms that supply farm inputs or market/ or process farm outputs. It also excludes and the value of machinery leased to farmers by agri-business firms. Leased machinery is considered an asset of the service input sector (payments for the flow of services from leased machinery are an expense in the farm income account). However, farm machinery owned by a farm operator and leased or contracted to another operator is part of the farm sector's balance sheet.

USDA uses balance sheet and income statement data to develop key indicators of financial health and performance for farm businesses. These indicators include:

- Solvency—debts in relation to assets.
- Liquidity—money available to pay bills as they come due.
- Profitability—the return to management and risk of the farmer in relation to farm assets and equity used in production.
- Financial efficiency—how effectively the farm uses inputs to produce crops and livestock.

Farm Sector Assets and Equity Forecast To Rise in 2011

There is considerable uncertainty surrounding the forecasts of farm sector assets and equity in 2011. This is due to persistent volatility in agricultural commodity, energy/input, and financial markets—both in the United States and internationally. Asset values and farm debt outstanding are fundamentally driven by expected returns on investments in farmland and other farm capital, and by interest rates. These factors vary across the country, reflecting differences in expected net returns on crop and livestock portfolios, in credit market conditions, and in opportunities for nonfarm employment and investments. Forecasts of rising net returns on farm investments are primarily due to rising cash receipts for crops and livestock, and to low interest rates. As a result, the value of farm sector business assets is expected to rise again in 2011 (table 4.1).

Table 4.1

Balance sheet of the U.S. farming sector, 2005-2011

Financial measures	2005	2006	2007	2008	2009	2010	11/16/2011 2011
	<i>\$ million</i>						
Farm assets	1,779,376	1,923,596	2,055,275	2,023,302	2,054,378	2,190,857	2,339,783
Real estate	1,486,960	1,625,835	1,751,386	1,702,961	1,724,412	1,853,743	1,987,231
Livestock and poultry	81,097	80,747	80,649	80,607	79,785	81,372	80,194
+/- change in value of inv. adjust.							
Machinery and motor vehicles ¹	113,071	114,200	114,706	123,380	125,971	127,940	133,487
Crops stored ²	24,291	22,699	22,703	27,610	32,887	35,595	39,551
+/- change in value of inv. adjust.							
Purchased inputs	6,491	6,460	7,019	7,167	7,217	7,345	7,567
Financial assets	67,465	73,656	78,812	81,577	84,106	84,862	91,753
Total farm debt ³	196,377	203,581	214,063	241,611	241,882	246,859	242,459
Real estate	104,768	108,048	112,682	134,667	131,314	136,262	132,131
Farm Credit System	41,173	43,448	46,793	57,701	57,181	61,688	
Farm Service Agency	2,453	2,374	2,281	2,313	2,343	2,793	
Commercial banks	37,904	40,149	41,884	50,564	50,084	51,867	
Life insurance companies	11,307	12,001	12,750	14,991	13,478	12,762	
Individuals and others	11,682	9,790	8,657	8,948	7,759	6,931	
Storage facility loans	250	285	316	151	469	222	
Non-real estate	91,609	95,533	101,382	106,944	110,569	110,596	110,328
Farm Credit System	24,279	27,811	31,622	37,290	39,883	40,533	
Farm Service Agency	3,008	2,736	2,808	2,652	2,823	3,322	
Commercial banks	48,405	51,253	54,129	57,313	57,027	56,609	
Individuals and others	15,917	13,733	12,823	9,690	10,835	10,133	
Farm equity	1,582,999	1,720,015	1,841,212	1,781,691	1,812,496	1,943,998	2,097,324
Selected ratios:							
Debt-to-equity	12.4	11.8	11.6	13.6	13.3	12.7	11.6
Debt-to-asset	11.0	10.6	10.4	11.9	11.8	11.3	10.4

Note: 2011 forecast and 2010 preliminary. Numbers may not add due to rounding. Balance sheet is as of December 31.

¹Includes only farm share of value for trucks and automobiles.

²Non-Commodity Credit Corporation (CCC) crops held on farms plus value above loan rates for crops held under CCC.

³Includes CCC storage and drying facilities loans but excludes debt on operator dwellings and for nonfarm purposes.

The current forecast and historic information can always be found at <http://www.ers.usda.gov/data/farmincome/finfidmu.htm>

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Components of Sectorwide DRCU Calculations

Income for debt coverage = Net farm income + interest on capital debt

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 payment

Minimum debt coverage ratio = lender requirement; based on a coverage ratio of 1.25 which requires that no more than 80 percent of the loan applicant's income be used for repayment of principal and interest on loans.

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

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

Debt repayment capacity utilization = Debt / debt repayment capacity

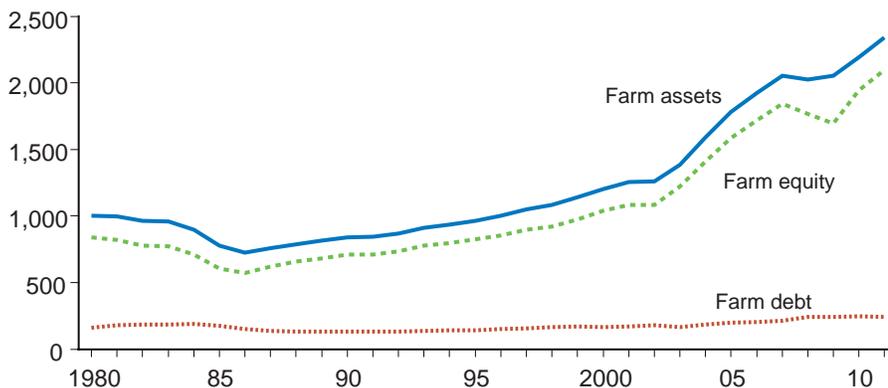
The values of farm business sector assets and equity (assets minus debt) values are forecast to rise modestly in 2011, while farm debt is forecast to decline from 2010 levels, as seen in table 4.1. Farm sector asset values are expected to rise from \$2.191 trillion in 2010 to \$2.340 trillion in 2011 (a 6.8-percent increase). The values of land and farm buildings, crop inventories, purchased inputs, machinery and equipment and financial assets are all expected to rise modestly in 2011, while the value of livestock and poultry inventories is expected to decline slightly (see table 4.1).

Figure 4.1 uses the 2005 gross domestic product (GDP) chain-type price deflator to convert the nominal values of farm assets and farm debt in table 4.1 to their real (inflation-adjusted) values. The real value of farm business assets

Figure 4.1

Farm business balance sheet, 1980-2011

\$ billions



Note: 2011 forecast.

Source: USDA, Economic Research Service farm-sector accounts.

Components of Sectorwide DRCU Calculations

Income for debt coverage = Net farm income + interest on capital debt

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has increased steadily since 1992, with a sharp run up from 2000 to 2007, followed by a dip in 2008 and 2009, and then a recovery in 2010 and 2011.

Expected returns on farm sector investments in 2011 are higher to rise in 2011 due to increases in net cash income and net cash flow. Interest rates in 2011 have remained low and stable, and credit has generally remained available. These market fundamentals support continued growth in farm real estate values.

Farm Business Debt To Decline in 2011

Farm sector debt is estimated to decrease from \$246.9 billion in 2010 to \$242.5 billion in 2011. In 2011, credit-worthy borrowers in most major agricultural producing areas of the U.S. should have ready access to credit. In addition, major lenders have reported that loan repayments have continued near historic high levels following multiple years of especially high levels of net farm incomes. While debt capital is likely to be available to highly qualified borrowers at relatively low cost, less qualified borrowers could face constraints accessing credit or higher interest rates relative to those paid by fully qualified borrowers. Yet there are regions of the country and types of production specialization in which farm operators encounter financial stress.

Non-real estate markets in the agricultural sector will be affected by the following issues into the first quarter of 2012. Higher crop prices, while having a positive effect on cash receipts from crops, will increase input costs for poultry, dairy, and livestock producers and will ultimately increase loan demand across the board since higher prices for inputs (fertilizer and fuel) normally increase farm loan demand. For livestock producers, higher feed costs are expected to increase average loan size, on average, since their net cash income has not been as high in recent years as it has been for

crop producers. Overall, non-real estate debt for 2011 remains essentially unchanged from the 2010 level at \$110.3 billion.

Three main factors will affect agricultural-sector real estate debt markets: farmland values, sector net cash income, and farm real estate interest rates. The value of agricultural sector real estate debt for 2011 is forecast at \$132.1 billion, a decline of 3.0 percent from the 2010 real estate debt estimate.

Market Share of Farm Debt

The most current market share information from USDA shows that commercial banks held 43.9 percent of this debt, while the Farm Credit System (FCS) held 41.4 percent. As a result, the two groups now represent more than 85 percent of the total farm business debt market, 8 percentage points above their 2005 market share.

The FCS has typically been the dominant lender for farm real estate mortgages, enjoying the largest market share. Commercial banks have always dominated non-real estate lending accounting for more than half the market; in addition they have made slight gains in real estate market share over the past 5 years (table 4.2).

Net Cash Flow

The net cash flow measure helps farm financial analysts to better understand the process of farm capital formation. It expands on the net cash income concept to account for internal and external sources of funds, and thus net cash flow provides a broader indication of the resources available to farm businesses to invest in the sector, and to meet current debt obligations (see box, “Net Cash Flow (After Interest Expenses)”).

This financial indicator measures cash available to farm operators and landlords in a given year. It indicates the ability to meet current obligations and provide for family living expenses, and to undertake investments. Net cash flow after interest expenses rose by just over \$12 billion in 2010 and is expected to rise by about \$30 billion in 2011.

Debt to Net Cash Flow Lower in 2011

The debt-to-net cash flow ratio is inversely related to the farm business sector’s ability to finance farm investments in land and other farm capital.

Table 4.2

Lender shares of total farm sector debt, 2005-10

Lender	2005	2006	2007	2008	2009	2010
	<i>Percent</i>					
Farm Credit System	33.3	35.0	36.6	39.3	40.1	41.4
Farm Service Agency	2.8	2.5	2.4	2.1	2.1	2.5
Commercial banks	44.0	44.9	44.9	44.6	44.3	43.9
Life insurance companies	5.8	5.9	6.0	6.2	5.6	5.2
Individuals and others*	14.2	11.7	10.2	7.8	7.9	7.0

* Includes small amounts of farm storage loans.

Source: USDA, Economic Research Service.

Net Cash Flow (After Interest Expenses)

Net cash flow (after interest expenses) is defined as:

- = net cash income
- + change in loans outstanding
- + net rent to nonoperator landlords (excluding capital consumption)
- + net change in farmers' currency and demand deposits
- capital expenditures (excluding operator and other dwellings)
- interest expenses (excluding operator and other dwellings)

A lower ratio shows a higher ability to finance. This ratio is expected to fall from 3.6 in 2010 to 2.5 in 2011 (fig. 4.2).

Profitability of Farm Sector Investments Rising

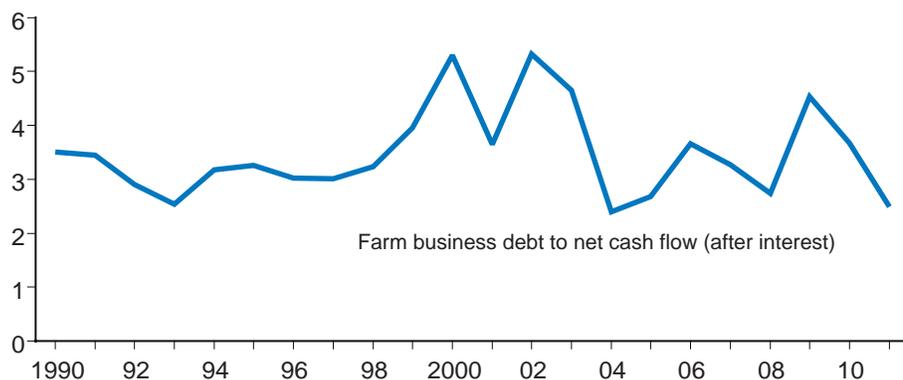
Rates of return on farm assets and equity are indicators of the profitability of farm sector investments. Total returns on farm business assets (from current income plus capital gains) are estimated at 8.6 percent in 2010 (with 2.1-percent growth in returns from current income and 6.5-percent growth in returns from capital gains). In 2011, continued growth in returns to farm assets from current income and from capital gains are expected to yield total returns on farm assets of 9.6 percent (with 3.0 percent from current income and 6.6 percent from capital gains).

Figure 4.3 shows how important the capital gains component of total returns has been in providing funds to support investments in farmland, machinery and equipment, and in other farm sector assets. Capital gains arise in two ways. First, changes in current returns, growth rate of returns, and the discount rate cause changes in farm asset prices and corresponding capital

Figure 4.2

Farm business debt to net cash flow (after interest), 1990-2011

Ratio



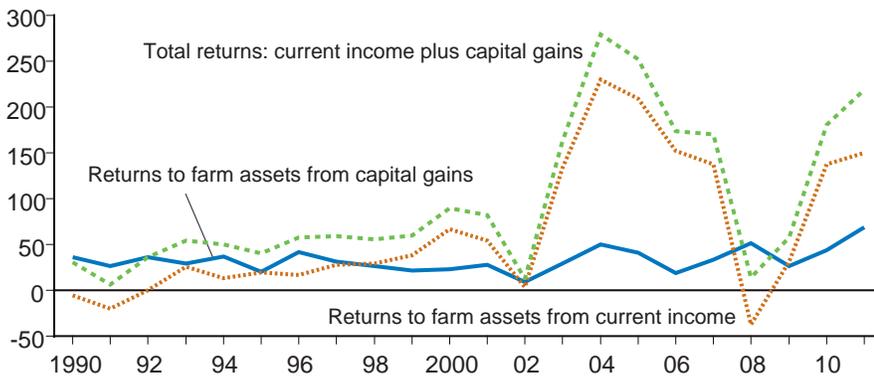
Note: 2011 forecast.

Source: USDA, Economic Research Service.

Figure 4.3

Total returns to U.S. farm business assets, 1990-2011

\$ billion



Note: 2011 forecast.

Total returns are in nominal dollars. Returns to farm assets from capital gains are adjusted for inflation.

Source: USDA, Economic Research Service.

gains and losses. Second, if the growth rate of current income is positive, asset prices will rise even if the growth rate of returns and the discount rate are unchanged. Also, changes in returns to farm assets from current income, and especially from capital gains (2005-2011) and losses (1981-1986) on these investments, generate the big swings in farm asset values and the resulting capital gains (2005-2011) and losses (1981-1986) in the farm sector (boom-bust cycles).

Real Net Rate of Return on Farm Sector Investments (RNROA) or “Spread”

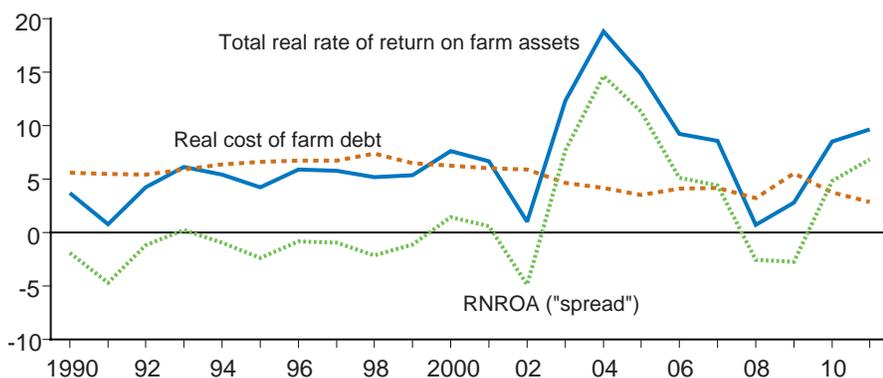
The real net return on farm assets (RNROA) or “spread” is a measure of the average cost of debt-financed farm investments (fig. 4.4). The RNROA equals the total return on farm assets less the inflation-adjusted cost of borrowing. Thus, if the RNROA is positive/negative, debt financing is, (on average, profitable/unprofitable for the sector. At the U.S. level, the real net rate of return averaged about 7 percent in the 1970s, reaching 19.9 percent in 1973. This is largely due to the large capital gains accrued on farm business assets. The (average) real cost of farm debt (or the 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.

However, in 1980 the situation changed dramatically. The capital gains on farm business assets became capital losses as farm asset and equity values adjusted to the 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 once again been profitable, with the RNROA ranging from 3.0 percent in 2003, 19.2 percent in 2004, and 4.7 percent in 2008.

Figure 4.4

Total real rate of return on farm assets by components, 1990-2011

Percent



Note: 2011 forecast.

Source: USDA, Economic Research Service.

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 debt usage, the increased total real return on owning farm assets such as farmland and farm machinery and equipment is the main impetus.

The RNROA was 4.8 percent in 2010, and is forecast to be 6.8 percent in 2011. This indicates that for the farm sector as a whole, the net return on debt-financed investments is rising. This is primarily due to the (forecasted) 9.6 percent total return on farm investments forecast for 2011, almost 3.5 times the 2.8 percent inflation-adjusted cost of farm debt.

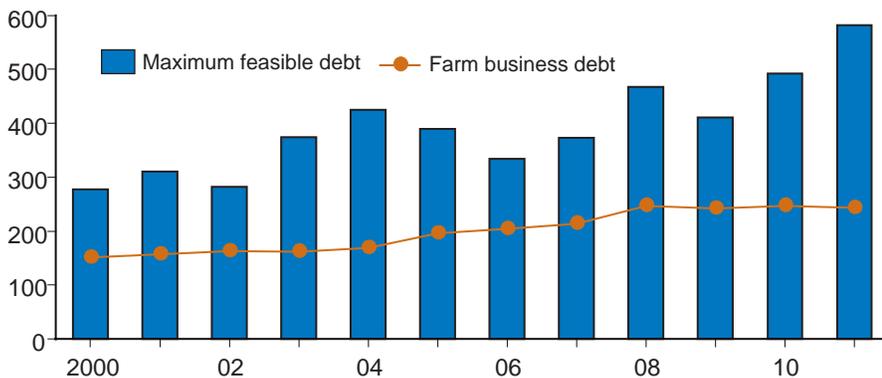
Unused Debt Repayment Capacity Expected To Increase in 2011

A projected decrease in farm debt in 2011, combined with an increase in farm income, and low interest rates will increase the sector's maximum feasible farm debt and unused debt repayment capacity in 2011 (fig. 4.5). The debt repayment capacity utilization (DRCU) is expected to approach the 1973 low of 37 percent and is the second-lowest DRCU since 1970. Debt repayment capacity utilization (DRCU) is the ratio of actual farm debt outstanding relative to the maximum feasible farm debt in any given year. As farmers do not necessarily use all their debt repayment capacity, the DRCU is a measure of the extra cushion the farm sector has to repay farm debt over time solely through the production and sale of farm products and services (see box, "Definition of Solvency Measures," p. 44). A DRCU estimate exceeding 100 percent indicates that debt payments must be made by drawing on additional cash sources, such as taking on additional debt, earning off-farm income, drawing down household assets, or selling farm business assets. By the end of 2011, farm sector DRCU is expected to fall to about 38 percent, down from 59 percent in 2009.

Figure 4.5

Farm-sector debt and maximum repayment capacity, 2000-11

\$ billion



Note: 2011 forecast.

Source: USDA, Economic Research Service.

Farms' Net Income and Solvency Position

Two percent of farms were classified as being in a vulnerable position on December 31, 2010, having both negative net cash income and a debt-to-asset ratio over 0.4 (fig. 4.6). More farms (29 percent) were classified as being in a marginal-income position as a result of having negative net cash incomes, but a debt-to-asset ratio of 0.4 or less.

The share of all U.S. farms classified as vulnerable has dropped since 1986 (the year when combined net farm income and balance sheet statements were first available for farm businesses), when nearly 12 percent of farms were in a vulnerable financial position. The share of farms classified as being in a vulnerable position had a fairly sizable drop between 1986, when the 1980s farm crisis was ongoing, and the late 1980s and early 1990s, as debt was pared relative to asset values and as incomes improved. More recently, the share of farms classified as vulnerable has dropped in this decade to the lowest levels that ERS has recorded, as a result of expanding income levels and shrinking debt in relation to asset values.

At the other extreme, about 65 percent of farms were in a favorable financial position entering 2011. These farms had both positive income and relatively low farm debt. For comparative purposes, 48 percent of farms were classified as favorable in 1986. In addition to a smaller share of farms being classified as vulnerable, another striking change has occurred in the share of farms with a high debt burden (over 40 percent of asset values) and positive net income (i.e., farms classified as marginally solvent). This measure dropped down from 10 percent of farms in the mid-1980s to around 4 percent in 2010. This change in classification reflects both the larger share of farms that report no year-end debt (about two-thirds of farm businesses report no term debt greater than 12 months) and the farms that do report debt use being in a less leveraged position. The substantial rise in asset values, particularly land, over the past two decades has contributed to the reduction in financial leverage borne by farms.

Definition of Solvency Measures

Favorable: Net farm income > 0, debt to asset ratio ≤ 40 percent

Marginal income: Net farm income < 0, debt to asset ratio ≤ 40 percent

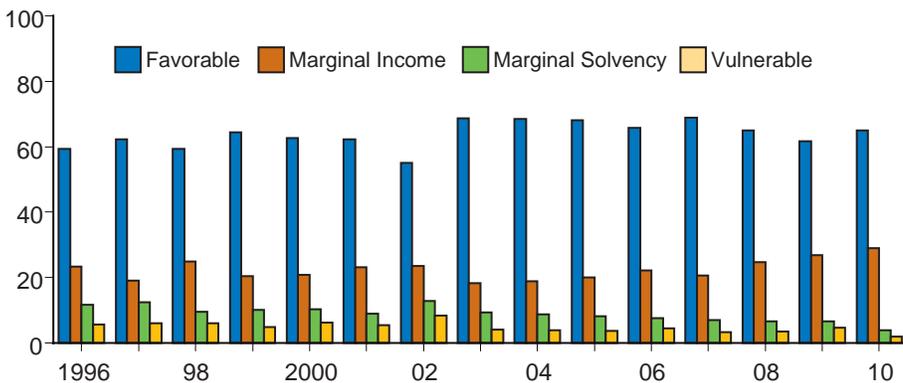
Marginal solvency: Net farm income > 0, debt to asset ratio > 40 percent

Vulnerable: Net farm income < 0, debt to asset ratio > 40 percent

Figure 4.6

Share of farm businesses by overall financial performance position, 1996-2010

Percent



Source: USDA, Agricultural Resource Management Survey, NASS and ERS.

Debt Maturity

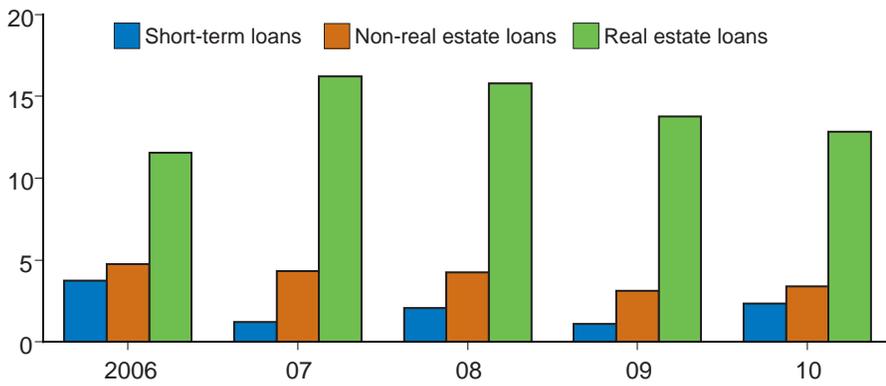
From the viewpoint of the farm business operator, average debt maturities are an indication of how quickly debts are being repaid. From the perspective of agricultural lenders, debt maturity indicates, to some extent, the amount of risk they incur when making loans of different amounts over varying periods of time when future uncertain interest rates are uncertain. For lenders, the terms of loans vary according to risk measures assigned to individual farm operators. Many lenders have their own specific credit scoring measures while some use more generalized credit scores available from commercial credit scoring companies.

Over the past 4 years debt maturities have trended downward, especially maturities for real estate loans (fig. 4.7). In 2010, the average real estate loan was repaid in slightly less than 12.5 years as compared to about 16 years in 2007. Non-real estate loans trended in a similar direction with a slight variation in 2009. Non-real estate loan maturities declined from 4.8 years to 3.4 years between 2006 and 2010. Short term loan maturities tend to vary significantly from year to year depending on the timing of when farm operators perceive is best to obtain short term loans. In some years it may be advantageous for operators to obtain loans after the beginning of the calendar year, while in other years it may be advantageous to obtain early financing if they perceive financial market conditions to be favorable.

Figure 4.7

Average debt maturities of new farm loans, by loan type, 2006-10

Number of years



Source: 2006-2010 USDA Agricultural Resource Management Survey.

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