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August 2018

# Economic Returns to Farming for U.S. Farm Households

Daniel L. Prager, Sarah Tulman, and Ron Durst





United States Department of Agriculture

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## Abstract

A farm's financial performance is commonly measured by net farm income, net cash farm income, and the farm household's income or loss from the farm business. Slightly more than half of all U.S. farm households face a loss from their farm business in any given year. But other factors may also affect households' economic returns from farming. For example, many households contribute unpaid labor to their farm, which is not included in the commonly used net income measures. This study examines returns to farming using the net income measures and an alternative measure that adjusts for the "opportunity" costs of capital and unpaid household labor—the costs of using these resources in farming rather than in some other pursuit. In addition, the study estimates two often-overlooked economic returns to farming: tax-loss benefits from farming and farmland appreciation.

**Keywords:** returns to farming, farm income, income tax, depreciation, returns to labor and management, family farms, farmland values, farm households, Agricultural Resource Management Survey, ARMS

## About the Authors

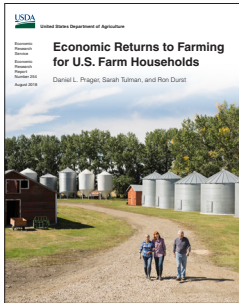
Daniel L. Prager is an economist at USDA's Economic Research Service (ERS). Sarah Tulman and Ron Durst were economists at ERS at the time this report was written.

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# Contents

<b>Summary</b> .....	<b>iii</b>
<b>Introduction</b> .....	<b>1</b>
<b>Trends in Farm Household Income and Assets</b> .....	<b>2</b>
Farm and Off-Farm Household Income .....	4
Distribution of Household Finances .....	6
Government Payments to Farm Households .....	8
Farm Household Labor by Typology and Commodity Produced .....	9
Depreciable Assets .....	10
Farm Household Wealth .....	12
<b>Economic Measures of Returns to Farming</b> .....	<b>14</b>
Measuring the Opportunity Cost of Capital and Labor .....	14
<b>Other Contributions to the Financial Well-Being of Farm Households</b> .....	<b>20</b>
Measures of Annual Farm Income Only Partially Reflect the Economic Returns to Farming .....	21
Tax Benefits From Farm Losses .....	22
Farmland Values and Returns to Farmland .....	23
Farming Contributes to the Financial Well-Being of Most Farm Households When Total Economic Returns Are Considered .....	24
<b>Conclusion</b> .....	<b>27</b>
<b>References</b> .....	<b>28</b>



# Economic Returns to Farming for U.S. Farm Households

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## What Is the Issue?

Of the roughly 2 million U.S. farm households, slightly more than half report negative income from their farming operations each year. The proportion incurring farm losses is higher for households operating smaller farms, where most or all of their income is typically derived from off-farm activities. However, many of these farm households do earn positive farm income in certain years; also, measures of farm income alone may understate the full economic value of owning the farm.

While farm income reflects returns from production, it does not reflect other aspects of owning and operating a farm that can have an effect on a farm household's finances. For example, farm households have seen significant growth in farm asset values over the past several decades, and farm losses can lower a household's tax liability. This means typical farm income measures, such as net profits from the farm, may not capture the full economic value of owning and operating a farm.

This report provides a broader perspective on financial well-being of farm households, including the returns that farmers—as small business owners and landholders—receive from tax law and land ownership.

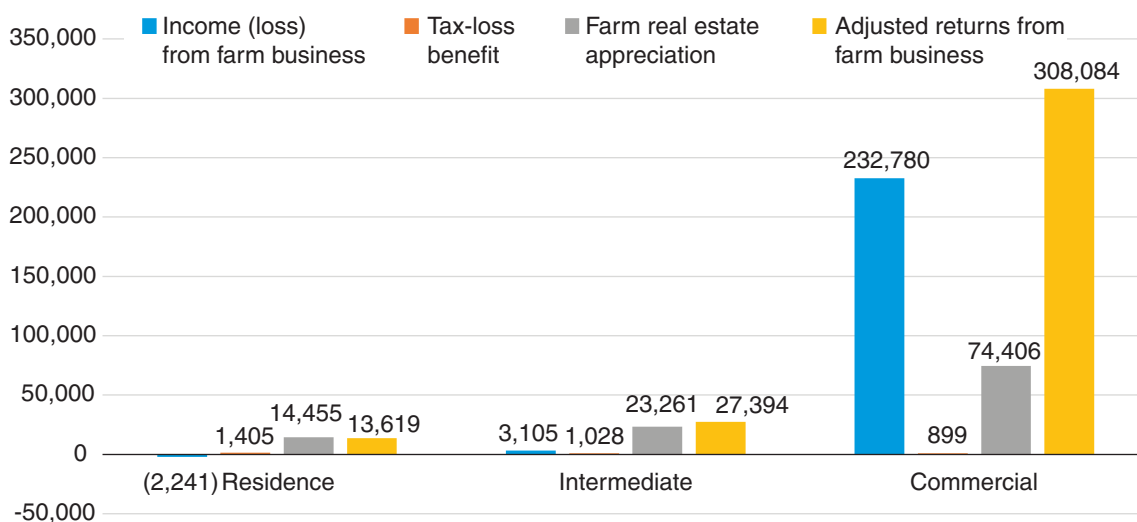
## What Did The Study Find?

- In 2015, the year analyzed in this study, farm households earned an average of \$119,880. Average income for households operating residence farms (farms with less than \$350,000 in gross cash farm income and where the principal operator has a nonfarm primary occupation) was \$114,703. The average income for households operating intermediate farms (less than \$350,000 in gross cash farm income and where the principal operator's primary occupation is farming) was \$70,338. And the average income for households with commercial farms (\$350,000 or more gross cash farm income, regardless of the principal operator's occupation) was \$332,731.
- While 82 percent of households operating commercial farms had positive income from their farming business, only one-third of residence farm households and slightly less than half of intermediate farm households earned money from their farming operation in 2015.
- While the composition of farm household income varies by the size and type of farm, on average, farm households earned between \$64,120 (intermediate farm households) and \$115,337 (residential farm households) from off-farm sources in 2015.
- Between 2003 and 2015, the value of total farm and nonfarm assets held by farm households increased by 40 to 57 percent. In 2015, the average farm household owned approximately \$1 million in farm assets in addition to nearly \$600,000 in nonfarm assets.

- Many farms are labor-intensive, with considerable unpaid household labor put toward the farm operation. “Operator labor and management income,” or OLM I, is an alternative net income measure that accounts for the “opportunity costs” of unpaid labor and capital spent in farming, rather than in other pursuits. Once net farm income is adjusted for opportunity costs, it falls by an average of 52 percent across all family farms. Commercial farms had the highest average OLM I, while intermediate and residence farms had negative average OLM I. Returns were higher for experienced operators (more than 10 years of experience) than for beginning operators (10 or fewer years), even after controlling for assets.
- Between 1990 and 2015, average farm real estate values increased every year except one at an average nominal rate of approximately 6 percent. Households owning commercial farms experienced average asset appreciation of an estimated \$74,406 in 2015.
- Farm households are able to offset their off-farm income with farm losses, thus reducing their taxable income. When tax-loss benefits and appreciation in farm real estate values are considered, average annual farm economic returns increased from an estimated \$232,780 to \$308,084 for commercial farm households in 2015, largely driven by asset appreciation. In addition, the share of farm households with positive returns from their farm operation increased from 43 percent to about 70 percent of all farms.

#### Including asset appreciation and tax-loss benefits raises average farm household returns for all types of farms, 2015

\$ (average per farm household)



Note: Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation. Adjusted return from farm business equals the sum of the income/loss, asset appreciation, and the tax loss benefit.

Source: USDA, Economic Research Service (ERS) estimates based on ERS's Federal income tax estimation model and USDA's Agricultural Resource Management Survey (2015).

### How Was the Study Conducted?

This study is based primarily on data from the 2015 Agricultural Resource Management Survey (ARMS), a cross-sectional sample of U.S. farm operations. Conducted annually by USDA's National Agricultural Statistics Service (NASS) and Economic Research Service (ERS), the survey is representative of the 2 million farms and farm households in the 48 contiguous States. The tax analysis comes from a model developed by ERS that uses applicable 2015 Federal tax provisions and 2015 ARMS data to estimate Federal income, Social Security, and self-employment taxes.

# Economic Returns to Farming for U.S. Farm Households

## Introduction

Each year, slightly more than half of the roughly 2 million U.S. farm households incur losses from their farming operations. A cost-benefit calculation based on the yearly net cash income of the farm operation implies that some of the households might be better off closing or selling their farm. While many of these farms do earn positive income in certain years, measures of farm income alone may understate the full economic value of owning the farm. For example, while these households could use their labor and capital to pursue off-farm jobs and other investments, many have experienced increases in wealth from increases in farmland value; also, negative farm income can lower the tax liability for these households.

This study is based primarily on survey data from 2015. Despite modest declines in the number of farm operations in the decade leading up to 2015, the vast majority of farm households continue farming each year. They may have other reasons for operating a farm beyond the income received in the current year or even over a string of years. Some families may derive nonmonetary benefits from operating a farm. They may prefer farm work and accept lower wages to maintain a farming lifestyle (Key and Roberts, 2009). Or they may appreciate the social aspects of living in a farm community or value farming over other vocations (Howley, 2015). Especially in agriculture, families have a long-standing desire to maintain the farmstead to pass down to future generations (Laband and Lentz, 1983). To obtain the right mix of salary, benefits, and leisure, individuals living in farm households may work both on and off the farm.

Evaluating the decision to farm requires a broad view. Standard estimates of farm household income include the annual profits from the farm (net of depreciation) plus income from off-farm sources. However, measures of the returns to farming that do not include farmers' response to tax policy do not fully capture the economic benefits to the farm household from operating a farm. These measures fall short because of noncash charges, such as the expensing of capital equipment, which may not involve current cash outlays but are nevertheless counted as expenses. For farmers who own their land, farmland appreciation also has added to total returns from farming over the past several decades. Including tax provisions and asset appreciation in a broader measure is useful for understanding a fuller economic picture of farm households.

## Trends in Farm Household Income and Assets

American farms are diverse, varying in size, management, and ownership structure. In 2015, 98.7 percent of U.S. farms were considered “family farms,” where the majority of the business is owned and operated by a single nuclear or extended family. Finances of these family farms are comingled with the finances of the households that operate them.<sup>1</sup> Three-fifths of family farms are operated by those with a primary occupation other than farming or who consider themselves retired from farming. These farms are, on average, more reliant on nonfarm sources of income, such as a salaried off-farm job. As the size of the farm operation grows, the reliance on off-farm income declines. Households operating large farms typically derive most of their income from farming.

Farm household income has increased appreciably over the past 25 years. From 1991 to 2015, median farm household income grew by an average of 2.1 percent per year, adjusted for inflation, compared with 0.1 percent for all U.S. households (fig. 1). As a whole, farm household income growth exceeded that of all U.S. households. In 2015, farm households earned a median household income of \$76,735, and an average of \$119,880.

It is useful to compare the incomes of “farm business” households (households in which the principal owners report farming as their primary occupation, plus larger commercial farms) with self-employed households.<sup>2</sup> Median farm business household income has remained below the income of self-employed households over the past two decades. However, the gap has varied and has narrowed considerably in recent years. Over the past 20 years, farm business households have seen a 3.1-percent-per-year increase in their median incomes, after adjusting for inflation.

In addition to higher annual income and a faster rate of income growth than households as a whole, farm households hold considerably more wealth than their nonfarm counterparts (USDA, ERS, 2018). Farming requires fixed assets, and the vast majority (99.8 percent) of farm operator households own at least some of these assets. Many farm households, especially those relatively new to farming, also carry farm debt. However, only 1 percent of farm households had negative farm equity in 2015.

As small business owners, farmers face production, price, and marketing challenges that affect annual earnings. Notwithstanding large income gains as a group, not all farm households earn high income each year. Income volatility is higher among farmers than the overall population. In fact, the typical household operating a commercial farm between 1997 and 2013 saw a median annual change in income of roughly \$86,000, eight times that of a typical nonfarm household (Key et al., 2017).

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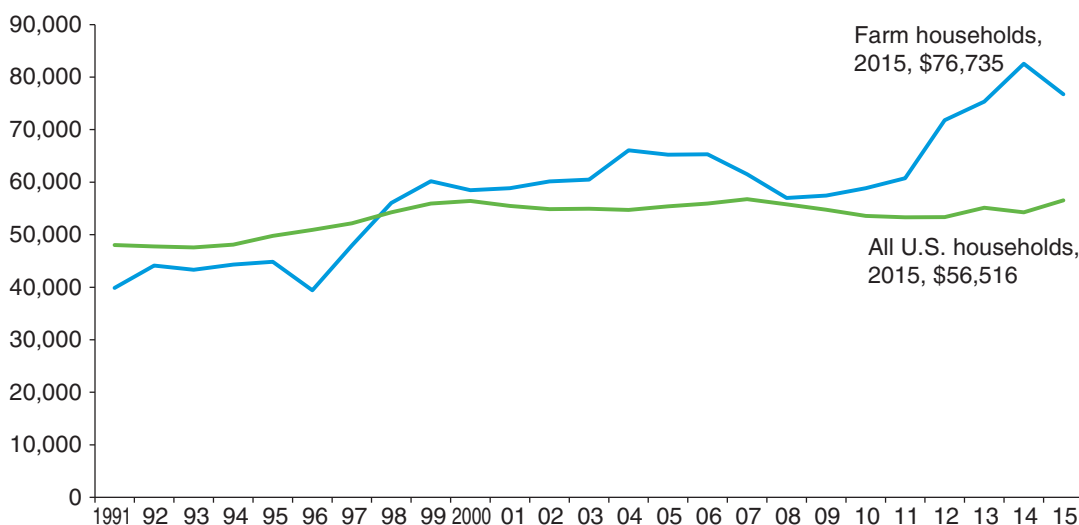
<sup>1</sup> The members of a farm household are defined as those sharing the dwelling unit with the farm’s principal operator, the person most responsible for day-to-day decisions about the farm’s operation.

<sup>2</sup> Self-employed household income is measured by the U.S. Census Bureau, Current Population Survey.

Figure 1

# **Annual growth in median farm household income outpaced that of all U.S. households, 1991-2015**

Dollars



Note: Nominal dollars have been deflated to 2015 dollars using the Gross Domestic Product Implicit Price Deflator Series (GDPDEF).

Sources: USDA Agricultural Resource Management Survey (1996–2015); USDA Farm Costs and Returns Survey (1991–95); U.S. Census Bureau (1991–2015).

USDA defines a farm as any enterprise that can be expected to receive \$1,000 or more in agriculture-related income over the course of a year. This includes producers and households receiving agricultural program payments through Federal or State governments. It also includes a number of farms that did not have the required minimum \$1,000 in sales for the year to qualify as a farm, but had sufficient crops and livestock to normally have sales of \$1,000 or more (USDA, NASS, 2018). The USDA, Economic Research Service (ERS) “collapsed” typology breaks farms into three groups: residence, intermediate, and commercial farms (see box “ERS Farm Typology”). The groups broadly correspond to the extent to which household income is dependent on the farm operation.

## **ERS Farm Typology**

In 2015, over 2 million farms operated in the United States. To compare different types of farms, it is useful to categorize them based on observable characteristics. The Economic Research Service (ERS) uses two measures to classify farms: the primary occupation of the principal operator and the gross cash farm income before expenses (GCFI) received by the farm during the calendar year. Gross cash farm income includes the farm’s sales of crops and livestock, Government payments, and other farm-related income but excludes revenues that do not accrue to the farm operation, such as the value of production received by share landlords and contractors. USDA defines a farm operation 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. This definition encompasses farms with relatively low sales where the principal operator works off-farm or is retired, as well as large, complex operations that employ many people.

—continued

The ERS farm typology, which is used in this report, categorizes three types of farms: residence, intermediate, and commercial (see table, below). Residence farms are those with less than \$350,000 in GCFI and a principal operator who has an occupation other than farming or is retired from farming. Intermediate farms are those with GCFI less than \$350,000 and where the principal operator's primary occupation is farming. Commercial farms are any farms where the GCFI is \$350,000 or higher (Hoppe and MacDonald, 2013).

#### Farm typology

	Residence farms	Intermediate farms	Commercial farms
Gross cash farm income (GCFI)	Less than \$350,000	Less than \$350,000	\$350,000 or more
Occupation of principal operator	Retired or off-farm occupation	Farming	Any occupation
Number of family farms (2015)	1.215 million	632,000	185,000

Source: USDA Agricultural Resource Management Survey (2015).

In 2015, approximately 65 percent of total U.S. agricultural production (by value) took place on commercial farms, although commercial farms constituted just 9 percent of all family farms. With substantially more annual gross cash income and farm assets, commercial farms have different characteristics from residence and intermediate farms.

In this analysis, we discuss only “family farms,” those farms where one nuclear or extended family owns more than half of the farming enterprise. In USDA's Agricultural Resource Management Survey (ARMS), a main source of data for this report, household income and asset data are collected only for family farms. Therefore, while the 27,000 nonfamily farms provide important income for many U.S. households, this study does not discuss them.

## Farm and Off-Farm Household Income

Along with the farms they operate, farm households are complex and varied enterprises that derive income from a variety of sources, including off-farm wage or salary income, net income from off-farm businesses, returns from rented farmland or houses, and unearned income such as interest, dividends, or pension payments. Household income varies based on factors including commodity specialization, the type of off-farm job held, and the demographics and location of the household.

Residence farm households constitute the majority of family farms. In 2015, ERS estimates 1.22 million (60 percent) of the Nation's 2.03 million family farms were residence farms. Of the remaining 817,000 farms, 77 percent (31 percent of the total) were intermediate farms, and 23 percent (9 percent of the total) were commercial farms. These households vary by category in their reliance on farm income and in the commodities most often produced.

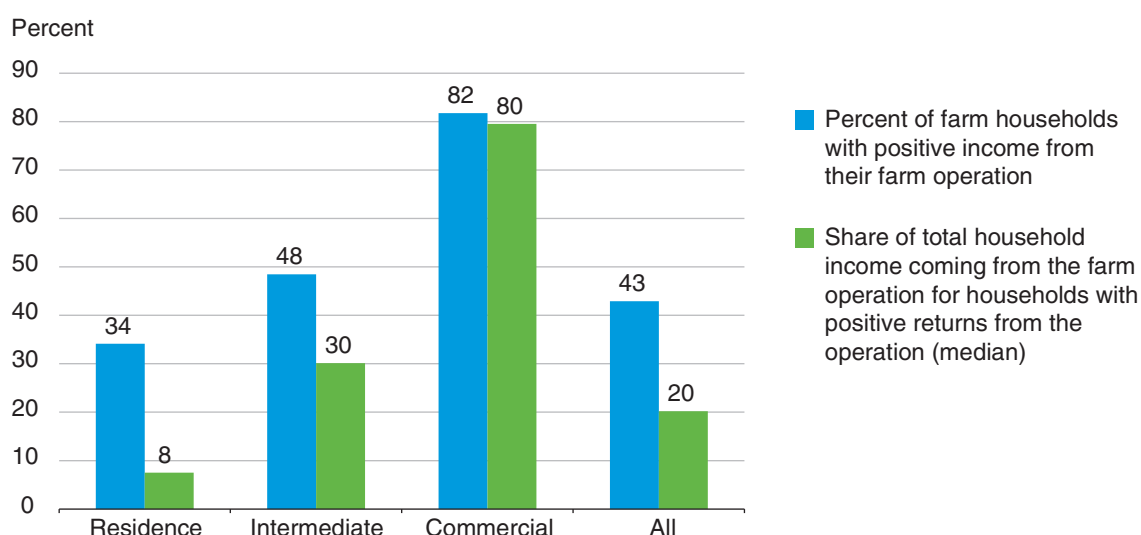
### *Onfarm Income*

Residence farm households most often experience onfarm losses (fig. 2). Median income for households operating residence farms in 2015 was \$82,925, predominantly from off-farm sources; at the median, residence farms lost \$2,540 on their farm operation. Only 34 percent of residence farms had positive income from their operation accruing to the household; for those households, this represented 8 percent of their household income. In other words, for the majority of residence farm

households, more than 100 percent of their total income came from off-farm sources, and residence farms received the largest share of off-farm income.<sup>3</sup> The median household income for households operating intermediate farms was \$59,102, with a median loss of \$400 on their farming operation. A larger share of intermediate farm households (48 percent) had positive income from their farm operation, although most of their total household income (70 percent) still came from off-farm sources. Finally, the median household income for commercial farm households was \$197,980, with median income of \$131,149 from their farm business. Commercial farm households relied most heavily on income from farming. Some 82 percent of commercial farms generated income, which represented 80 percent of household income for those principal operators. Overall, however, because a majority of farms are residence farms, the typical farm household loses money on its farming operation. Across all typologies, average incomes were higher, with residence farms earning \$114,703, intermediate farms \$70,338, and commercial farms \$332,731.

Figure 2

### Most residence farms lost money on their farming operation in 2015



Note: Positive income is defined as positive net cash farm income (net of depreciation) from a farm household's farming operation. Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation.

Source: USDA Agricultural Resource Management Survey (2015).

### Off-Farm Income

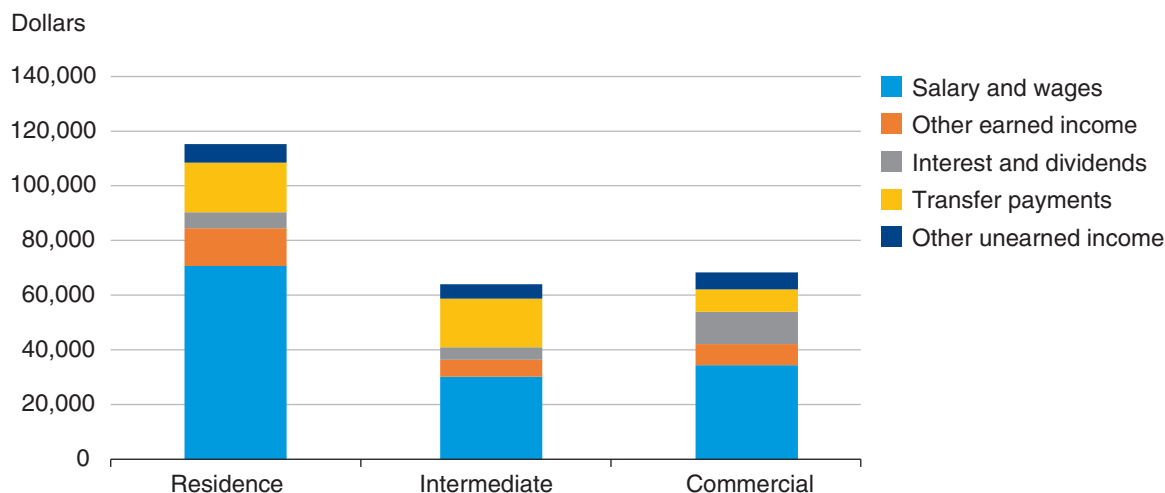
In 2015, all types of farm households received significant income from earned and unearned off-farm sources. Residence farms received the most, an average of \$115,337; intermediate farms received an average of \$64,120, and commercial farms also obtained considerable off-farm income, an average of \$68,511. (While median income is a useful measure for understanding the financial situation of a typical household, average income better conveys the importance of particular income streams. Income from the streams can be added together—the sum of average off-farm income and average farm income equals average total income; this is not necessarily true for medians.) Wages

<sup>3</sup> Because many residence farms lost money on their farming operation, their off-farm income exceeded the total income of the household.

and salaries constituted at least 40 percent of off-farm income in each of the farm types. For households operating residence and intermediate farms, transfer payments (e.g., Social Security or private pensions) were the next largest category (fig. 3).

Figure 3

**Salary and wages constituted the largest part of off-farm income for all three farm household types in 2015**



Note: Includes all farms, not just those with positive off-farm income in these categories. Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation.

Source: USDA Agricultural Resource Management Survey (2015).

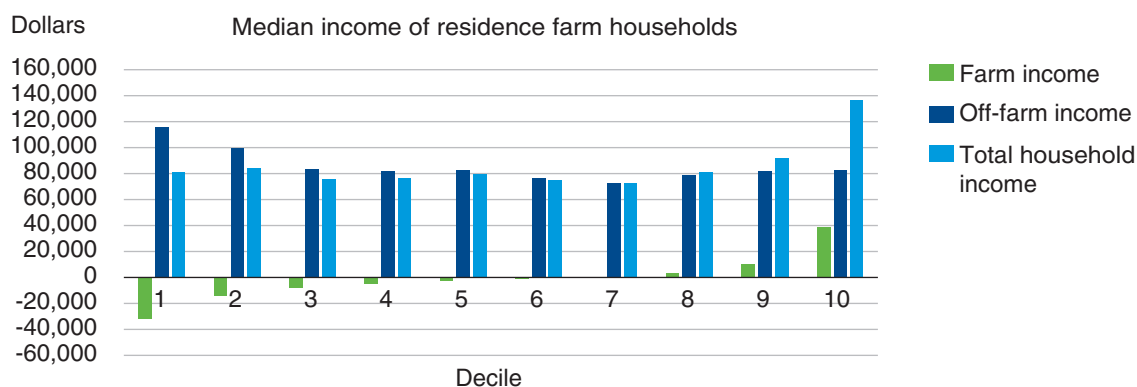
## Distribution of Household Finances

As with the distribution of income for households across the United States, farm household income tends to be clustered toward the top. Because many farm households lose money on their farming operations, the top decile of households by farm income in 2015 received 124 percent of all farm income on an aggregate basis. They also earned 33 percent of total household income and owned 25.5 percent of household assets. In 2015, 4.5 percent of farm households reported negative total household income, even after accounting for off-farm income. Although most residence farm households lost money on their farming operation, median total household income was positive in all deciles, even the lowest (fig. 4).

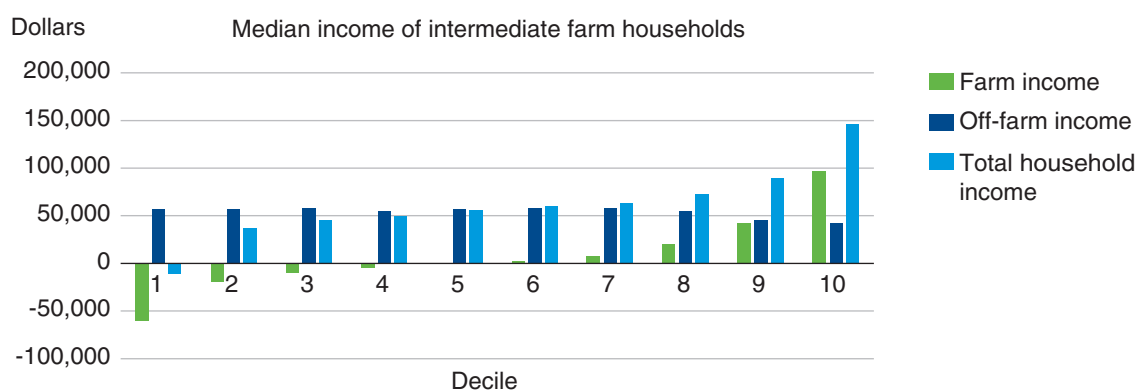
The distributions of farm and off-farm income vary considerably depending on the farm type. In 2015, over half of residence farms reported losses from their farm operation, but those losses were relatively small. In the lowest decile, residence farms lost \$32,000 at the median, compared with \$60,000 for intermediate farm households and over \$200,000 for commercial farms. The median off-farm income of farm households within a typology group remained relatively stable across deciles. The median off-farm income for residence farm households was roughly \$82,000, compared with \$55,000 for intermediate farms. All commercial farm household deciles reported approximately \$40,000 in off-farm income. Overall, commercial farm households earned the most income, with the highest decile having a median household income of over \$900,000.

Figure 4

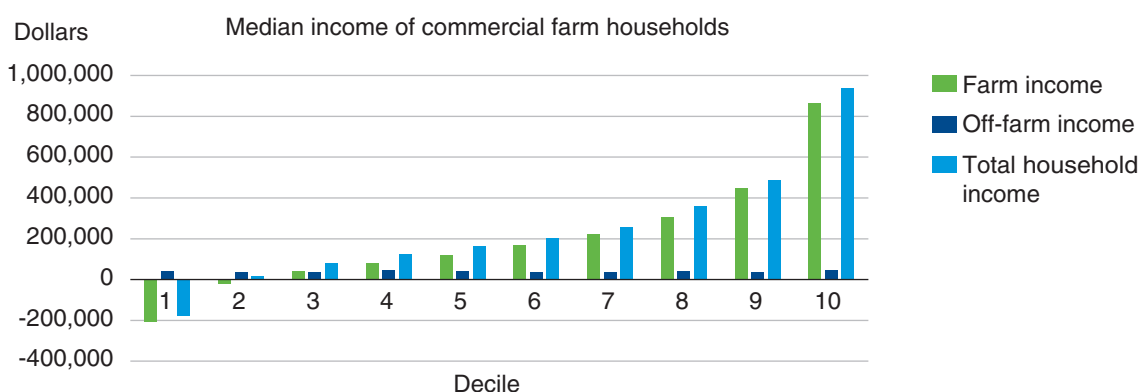
# Residence farm households were most reliant on off-farm income, 2015



Note: There were 1.22 million residence farm households in 2015. Deciles divide the ordered farm income data into 10 classes containing equal numbers of households. Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming.



Note: There were 632,000 intermediate farm households in 2015. Deciles divide the ordered farm income data into 10 classes containing equal numbers of households. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming.



Note: There were 185,000 commercial farm households in 2015. Deciles divide the ordered farm income data into 10 classes containing equal numbers of households. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation.

Source: USDA Agricultural Resource Management Survey (2015).

## Government Payments to Farm Households

Federal Government programs distribute payments each year to farms, farm operators, and their households. A number of programs provide payments to operators for conservation purposes. The Conservation Reserve Program (CRP) provides annual rental payments to farmers in exchange for removing (retiring) environmentally sensitive land from production. The Agricultural Conservation Easement Program (ACEP) provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. “Working lands” conservation programs include the Conservation Stewardship Program (CSP) and Environmental Quality Incentive Program (EQIP), both of which provide payments to farmers to voluntarily adopt approved conservation practices for land that remains in agricultural production.

Other Government payments fall into two groups: commodity payments, which historically have been tied to production, prices, or both, and “other” payments, including disaster assistance programs. Commodity programs include Price Loss Coverage (PLC) and Agriculture Risk Coverage (ARC), marketing loan gains, and loan deficiency payments.<sup>4</sup> PLC and ARC were introduced in the 2014 Farm Act and make payments to producers when prices or revenues fall below a certain benchmark. Marketing loan gains and loan deficiency payments are Farm Service Agency programs that provide payments when market prices fall below target levels. Other payments include statutory ad hoc agricultural disaster payments and other Federal, State, or local payments. Together, these program payments constituted an average of 10.3 percent of net cash farm income between 2010 and 2015 (USDA, ERS, 2017). Research shows that these transfers affect not only the financial status of the farm business, but also may affect households’ incentives to work on and off-farm. For example, decoupled payments, which were designed not to have a direct effect on production, may produce an “income effect,” whereby the increased income creates an incentive for the recipient to spend less time working (Dewbre and Mishra, 2007).

Conservation payments are of much greater relative importance for residence farms and the households that operate them than for intermediate or commercial farms (although these farms receive more conservation payments than residence farms in absolute terms). In particular, conservation payments account for 61 percent of total Government payments to residence farms, but only 36 percent and 19 percent for intermediate and commercial farms, respectively (fig. 5). Most of the conservation payments for residence farms are for CRP, rather than for working lands programs. Residence farms are also less likely to receive payments from any program, with only 21.4 percent receiving payments, compared to 29.9 percent of intermediate farms and 58 percent of commercial farms. In addition to these payments, the Government also subsidizes crop insurance, which is available to farms growing certain commodity crops. These subsidies are paid to private companies, which offer reduced-price premiums to farmers for insurance contracts developed by the USDA Risk Management Agency.<sup>5</sup> In 2017, these subsidies totaled \$6.1 billion (McFadden and Hoppe, 2017).

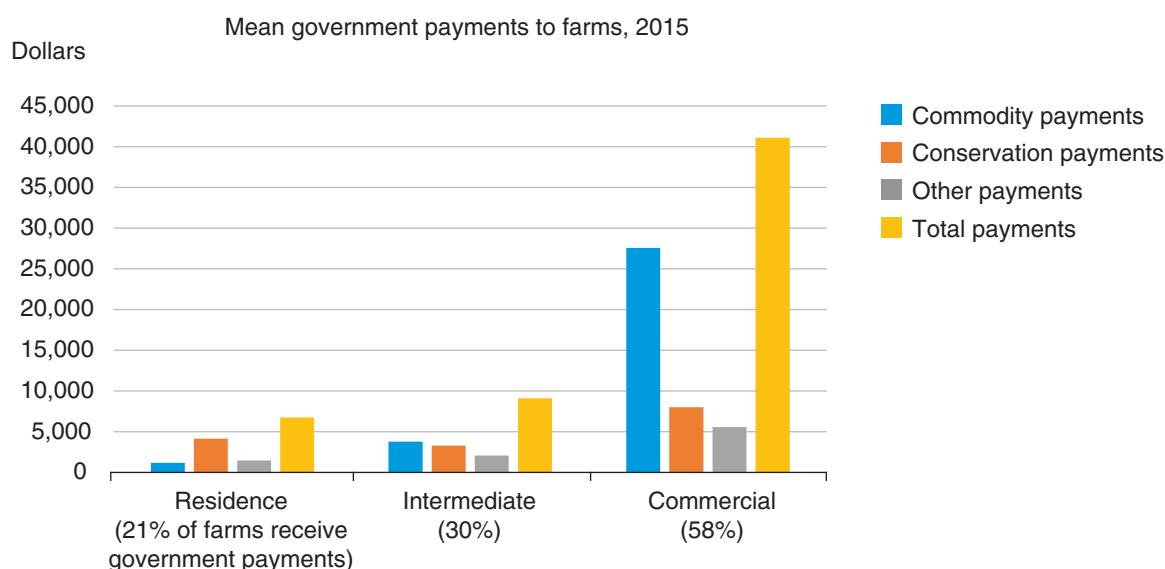
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<sup>4</sup> More information on CRP, ARC and PLC, and other USDA Farm Service Agency (FSA) programs is available through the Programs and Services page on the FSA website. Information on CSP, EQIP, and other USDA Natural Resource Conservation Service (NRCS) programs is available through the Programs page on the NRCS website. (Information current as of April 2018.)

<sup>5</sup> Because crop insurance subsidies are not paid directly to producers, they are not included in the graph showing Government payments. Detailed information on crop insurance subsidies can be found at the Summary of Business Reports and Data website maintained by the U.S. Department of Agriculture’s Risk Management Agency.

Figure 5

## Government payments were highest to commercial farms in 2015



Note: Only includes farms that received Government payments. Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation.

Source: USDA Agricultural Resource Management Survey (2015)

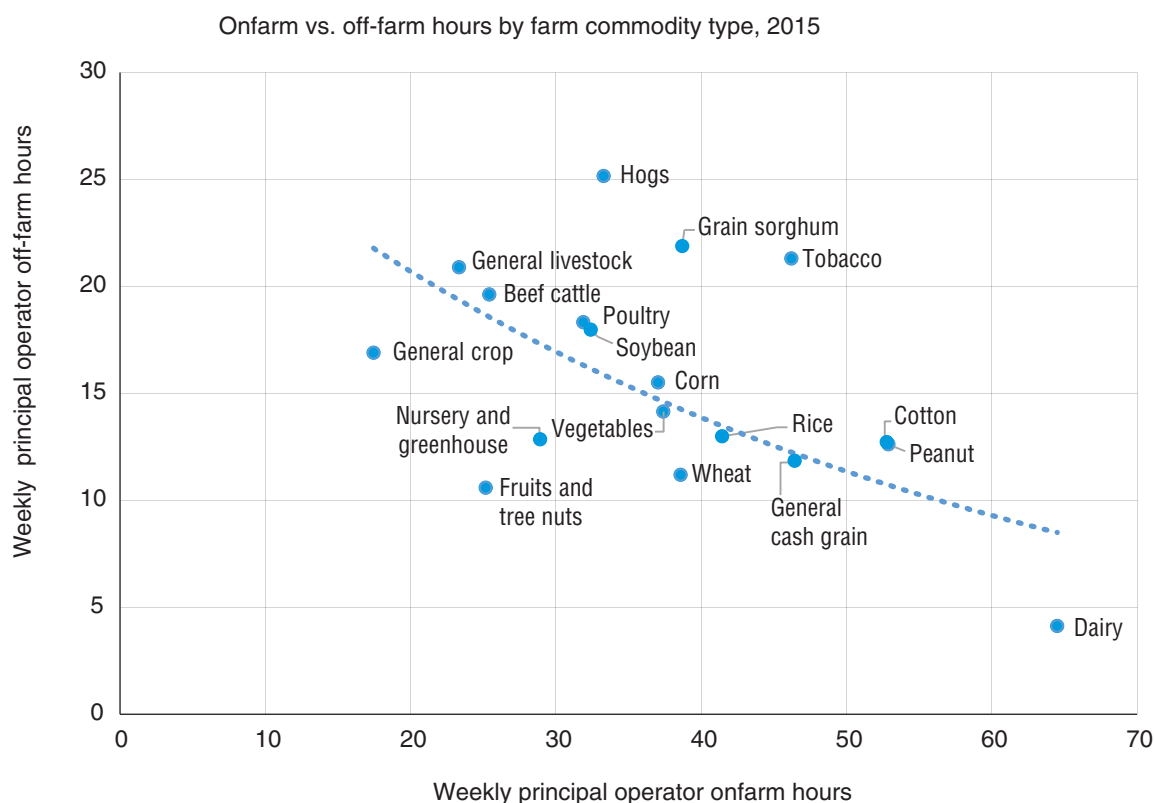
## Farm Household Labor by Typology and Commodity Produced

The commodity produced can also have important implications for the structure and income of a farm. Many farm operations require primarily part-time or seasonal work, which can allow members of the operator's household to work off-farm with little interruption to the farming operation. ARMS data for 2015 reveal the broad range of combinations between on- and off-farm hours. Across all types of farms, average onfarm hours worked by the principal operator ranged from 18 hours per week for general crops to 64 hours per week for dairy farms. Principal operators of cotton and peanut farms worked over 50 hours a week onfarm (on average), while general livestock, beef cattle, fruit and nut, and nursery and greenhouse farm operators all worked less than 30 hours per week onfarm. Off-farm work by farm principal operators varied both by commodity type and by farm typology. Across farm typologies, nonretired farm operators of residence farms worked an average of 31 hours per week off-farm, while intermediate and commercial farm operators worked an average of 7 and 5 hours per week off-farm, respectively.

Spending time working onfarm limits the time available for off-farm employment, housework, families, or leisure activities (including sleep). Accordingly, the amount of time spent working on- and off-farm are negatively correlated ( $r = -0.34$ ) across all commodity categories, although there is substantial variation across different commodities (fig. 6). For example, dairy farmers who have the most rigid farm schedules work only 4 hours per week off-farm, while general crop farmers who have highly seasonal schedules spend 17 hours per week, on average, in off-farm employment. The size of the typical farm contributes to the hours spent working: There are very few small dairy farms but many small general livestock farms.

Figure 6

## More time spent working on the farm leads to less off-farm labor



Dotted line shows the best quadratic fit across commodities.

Source: USDA Agricultural Resource Management Survey (2015).

## Depreciable Assets

The tax benefits from farm assets also are an important element in determining a household's farm income. Among the challenges of operating a farm are the significant investments farm owners must make to maintain their operation. In addition to the substantial investment in farmland, most farm operations require purchases of costly machinery and equipment. Because these assets can be productive for several years, their cost is generally recovered through depreciation, an expense meant to capture the value of the asset as it deteriorates over time. In production agriculture, a wide range of capital assets can be depreciated, but farm machinery and equipment are the largest and most common. (Land is not a depreciable asset and, therefore, not included.) In 2015, the average market value across all farms of farm machinery and equipment was \$107,000, although only a portion of that was purchased in the most recent year.

Although economic depreciation attempts to account for the value of the asset used up in the production process and could extend over a relatively long period of time, tax depreciation allows for a faster recovery of capital investments through accelerated rates and capital cost recovery periods that are often much shorter than the economic life of most assets.

Furthermore, to further speed up cost recovery, farmers (like other business owners) can consider part or all of their investment in farm machinery and equipment as a tax deductible expense in the year in which it is purchased. In 2000, the amount that could be considered an expense in the current year was temporarily increased from \$20,000 to \$500,000 (table 1). The Protecting Americans from Tax Hikes (PATH) Act of 2015 made the \$500,000 expensing limit permanent.

As a result of this increase, total annual depreciation (including capital expensing) reported by farms increased from over \$10 billion in 2000 to \$27.1 billion in 2015, according to ARMS. This, in turn, has lowered *taxable* farm household income from farming. In 2015, the average farm had \$39,493 in net cash income, which does not include depreciation. At the same time, farmers claimed an average depreciation expense of \$12,857, reducing farm income reported for tax purposes by about 30 percent.

As evidence of the relative significance of this expense for residence farms, which constitute roughly 60 percent of all farms, depreciation expenses accounted for an amount equivalent to 39 percent of the total value of their reported crop and livestock farm receipts in 2015 (excluding Government payments), compared with only about 15 percent of farm receipts for commercial farms.

Nevertheless, the increased expensing limit has had a much larger impact on commercial farms' income because they regularly invest amounts well above the prior \$20,000 limit. Since 2000, depreciation expenses for commercial farms more than doubled, while the amount for residence farms increased only by about one-third and actually declined slightly for intermediate farms.

Table 1  
**Capital expensing amounts have increased substantially since 2000**

Year	Capital expensing limits for tax purposes (\$)	Average market value of farm equipment (\$)
2000	20,000	57,000
2001	24,000	61,000
2002	24,000	61,000
2003	100,000	62,000
2004	102,000	67,000
2005	105,000	69,000
2006	108,000	65,000
2007	125,000	78,000
2008	250,000	76,000
2009	250,000	77,000
2010	500,000	83,000
2011	500,000	90,000
2012	500,000	106,000
2013	500,000	108,000
2014	500,000	108,000
2015	500,000	107,000

Source: Internal Revenue Service (IRS), section 179.

The significance of the accelerated expensing for commercial farms can be further illustrated by data from farms in the Illinois Farm Business Farm Management Association that show depreciation expenses increased from \$21 per acre in 2004 to \$70 per acre by 2014 (Widmar, 2014), an annualized increase rate of more than 22 percent. While a small portion of this increase can be attributed to the change in machinery prices, a large share is likely attributable to the increase in the amount of investment that can be expensed in the current year rather than depreciated over the productive life of the asset.

The increased depreciation expense allowed in earlier years of depreciable assets reduces net farm income. It also reduces farm income variability as these investments and expenses are often larger in high-income years and lower in low-income years when investment may be deferred. And it increases both the number of farms reporting a loss and the size of their loss. However, the losses often contribute to farm household income by reducing the taxes that would otherwise be due on nonfarm income.

## Farm Household Wealth

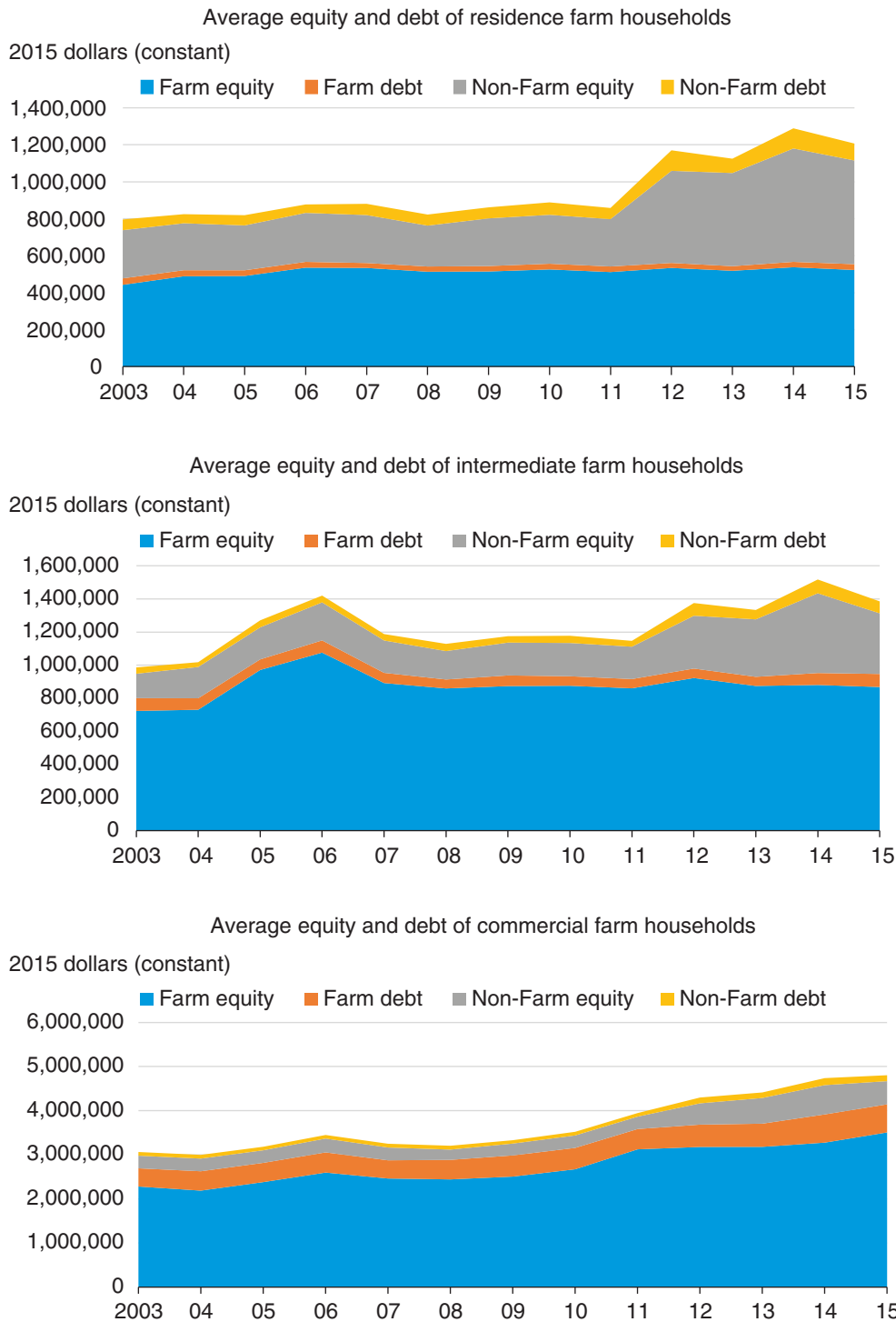
Operating any type of farm requires a significant investment in land, farm equipment, and storage facilities. Although some farm operators may rent land or hire equipment and custom labor for certain farm operations, most farm operators require collateral for farm loans and working capital to purchase or lease land, equipment, and other inputs. Those running livestock operations may own or lease pastureland, while dairies require investments in a milking system. Those operating crop farms tend to need significant amounts of land and machinery—tractors, harvesters, combines—which can be either owned or leased. And certain farm operators—with hogs or poultry, for example—may only own the facility and provide the labor while receiving all inputs from (and selling all outputs to) integrators with which they contract.

Across all farm households in 2015, the average holdings were approximately \$1 million in farm assets, as well as nearly \$600,000 in nonfarm assets.

An assessment of the financial holdings of farm households must consider debt in addition to assets. While a majority of farms own their assets outright, over 30 percent of intermediate farms and nearly 70 percent of commercial farms held at least some long-term farm debt in 2015. The money owed on these holdings—in large part debt on real estate—affects the wealth of farm households. During the farm crisis of the 1980s, high interest rates and levels of debt pushed interest payments beyond what many farms could afford. Overall in the early 21st century, however, farm households were characterized by high asset holdings and low levels of debt. Across the farm typology, the total farm and nonfarm assets held by farm households increased by 40 to 57 percent (fig. 7). Equity (assets minus debt) remained high by historical standards. Although above a historic low in 2012, 15 percent of intermediate and commercial farm operators held substantial amounts of farm-related debt (debt-to-asset ratio above 40 percent), and this had remained relatively low for a number of years leading up to 2015.

Figure 7

# Household assets have increased for all farm typologies, 2003-15



Note: Assets equal equity plus debt. Farm typology and all values adjusted to 2015 dollars using the Gross Domestic Product Implicit Price Deflator. Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation.

Source: Agricultural Resource Management Survey (2015).

## Economic Measures of Returns to Farming

Most farm households have cash income above the U.S. median and also own considerable farm and nonfarm assets. These traditional income and wealth measures are useful in understanding the distribution of farm household income, assets, and debt, but they do not fully capture the economic costs and benefits of running a farm. The assets and labor employed in the production of agricultural goods have alternate uses. Capital can be invested; farmers and household members can (and do) work for other farm and nonfarm businesses. Net farm income, measured at the farm level, includes noncash values such as inventory flow and economic depreciation, but does not account for the “opportunity costs” of the farm household’s assets and unpaid labor invested in the farm operation. This report considers the returns and opportunity costs for households operating a farm. While these households could pursue a range of economic activities, including selling the farm and investing the proceeds or renting out the land and becoming non-operator landlords, these decisions are outside the scope of this report. In this section, we consider a measure that accounts for opportunity costs. In the next section, we explore how current tax provisions may affect a farm’s profitability.

### Measuring the Opportunity Cost of Capital and Labor

“Operator labor and management income,” or OLM I, is an alternative measure of economic returns to farming that takes into account not only cash and noncash components but also the opportunity costs of capital and labor—that is, the “cost” of devoting capital and labor to farming instead of to the next-best use. OLM I adjusts the operation’s net farm income for the implicit costs of capital and unpaid labor and management contributed by anyone other than the principal operator.<sup>6</sup> It accounts for the opportunity costs of other possible use of that capital (or funds used to pay for the capital) or time because operators and their households have labor and capital that could be allocated toward either off-farm or onfarm uses.<sup>7</sup> It reflects how well the operator manages the farm’s resources through decisions regarding farm management, inputs, finances, and risk management (Mishra and Morehart, 2001).

The value of unpaid labor devoted to the farm operation—the calculation of which is detailed below—reflects the opportunity cost of labor in OLM I. In 2015, the average farm used roughly 500 hours of unpaid labor, though this varied considerably by the individual farm. We use a return-on-equity (ROE)-based measure to capture the opportunity cost of capital. Examining the returns on assets or equity is useful in assessing how well a firm uses its capital stock. Farms tend to be capital intensive—as reported earlier, the average farm owned roughly \$1 million in farm assets in 2015. The equity that farms hold in these assets can be sold or invested in other enterprises or financial markets that yield an alternate return.

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<sup>6</sup> Net cash farm income is calculated as gross cash farm income (as defined in box “ERS Farm Typology”) minus cash expenses. Net farm income is net cash farm income plus the value of home consumption, changes in inventories, capital replacement (economic depreciation), and implicit rent and expenses related to the farm operator’s dwelling that are not reflected in cash transactions during the current year.

<sup>7</sup> This study’s calculation of OLM I focuses on operation-level measures rather than household measures due to data limitations that do not allow labor hours from other members of the principal operator’s household (excluding the operator’s spouse) to be clearly identified. However, treating the principal operator and spouse as a single entity led to qualitatively similar results.

Following Hoppe et al. (2005), OLM I is defined for the individual farm operation as<sup>8</sup>:

Net farm income

**Minus:** Charge to unpaid labor

**Minus:** Charge to capital

**Equals:** OLM I

Where:

**Charge to unpaid labor** = [hours of unpaid farm labor by nonprincipal operators and family members] × [wage rate]

**Charge to capital**<sup>9</sup> = [net worth] × [return on equity].

This calculation uses unpaid hours and net worth from USDA's Agricultural Resource Management Survey (ARMS) and the mean wage earned by farm labor as reported annually by USDA's National Agricultural Statistics Service (NASS).<sup>10</sup> The return on equity used is 0.98 percent, which was the average return on equity from ARMS for the 5 years ending in 2015. Because the opportunity costs of capital and labor are subtracted from net farm income, OLM I will always be lower than net farm income. The closer the two numbers are, the lower the opportunity costs are. Across all farms, average OLM I was \$15,905, about 52 percent lower than average net farm income (table 2).

In addition to OLM I, we also measure OLM I per hour (using the average number of hours worked by principal operators during 2015<sup>11</sup>) for a given group of farms, which serves as a measure of the principal operator's hourly return from the operation.

Table 2

**Across all farm typologies, total OLM I is approximately half of net farm income**

	Average net farm income	Average OLM I
Overall	\$33,118	\$15,904
Residence	5,075	-5,362
Intermediate	11,650	-5,900
Commercial	294,306	234,434

Note: OLM I = operator labor and management income. Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation.

Source: USDA, Economic Research Service calculations based on the USDA Agricultural Resource Management Survey (2015).

<sup>8</sup> OLM I is broadly similar in calculation to the operating profit margin (OPM) in Hoppe (2017) in that both adjust net farm income using the opportunity costs of capital and labor. However, they differ both in structure and in purpose. OPM, which divides everything by the farm's gross farm income, is designed to measure the funds available to finance the farm business's capital after accounting for the labor and management contributed by operators and their families. As such, interest paid is added back to the numerator (the operating profit), and the principal operator's unpaid labor is included in the charge to unpaid labor. This is in contrast to OLM I, which measures the residual returns from farming for the principal operator and, as such, does not include the principal operator's unpaid labor in the charge to unpaid labor.

<sup>9</sup> This is a measure of equity capital. It excludes the cost of farm debt (a negative charge) because the cost of debt—interest that the borrower (farmer) paid on the debt—is already incorporated in net farm income.

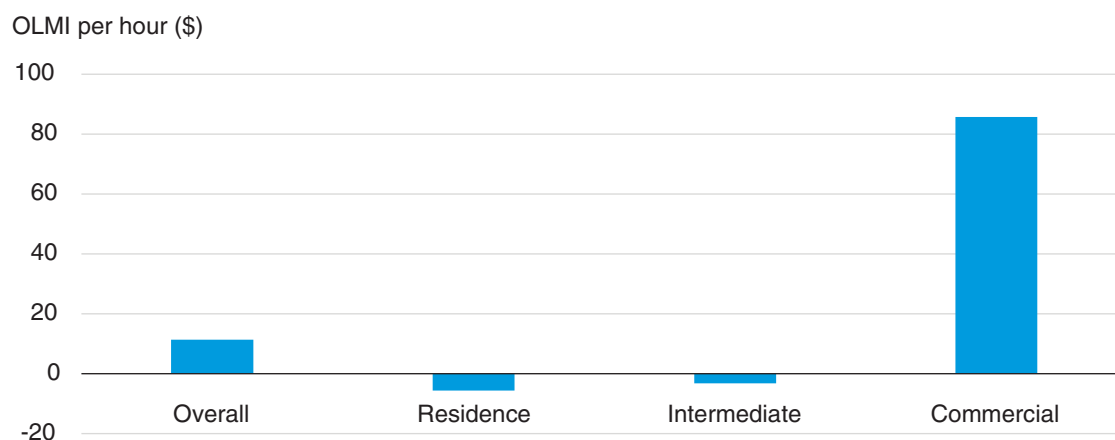
<sup>10</sup> In 2015, NASS published wage rates for 15 regions plus California and Florida.

<sup>11</sup> Both paid and unpaid.

OLMI per hour is negative for residence and intermediate farms, but positive for commercial farms (fig. 8). This indicates that, on average, the principal operator of a residence or intermediate farm had opportunity costs of capital and labor that were large relative to farm size and were higher than net farm income. This may reflect that principal operators on smaller farms often farm part time and are more likely to have a principal occupation other than farming, both of which limit the time operators have available for farm management (Mishra et al., 1999). In contrast, a principal operator of a commercial farm had opportunity costs of capital and labor that, on average, were smaller relative to farm size. For commercial farms, OLMI and net farm income are relatively close (the ratio is 80 percent).

Figure 8

**Hourly OLMI was high for operators of commercial farms, negative for smaller farms in 2015**



Note: OLMI = operator labor and management income. Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation.

Source: USDA, Economic Research Service calculations based on the USDA Agricultural Resource Management Survey (2015).

The variation in opportunity costs of capital and labor across these groups in part reflects differences in farm households' off-farm income and wealth. In 2015, the average off-farm wage and salary income for the principal operators of residence farms was \$47,726, compared to \$10,600 for intermediate farms and \$15,082 for commercial farms. However, while operators of smaller farms had higher total off-farm earnings than those operating a commercial farm, they typically commanded a lower off-farm hourly wage. For example, Brown and Weber (2013) show that operators and the spouses of operators of large farms are more likely to hold management and professional off-farm jobs than operators and spouses of smaller farms.<sup>12</sup> Additionally, farm-related wealth represents a smaller percentage of total household wealth for residence and intermediate farm households than for commercial farm households (fig. 7). These smaller farms may rely on this financial cushion when facing negative returns to farming. Some farming operations, such as beef cattle producers, have relatively low income, but also relatively low capital and labor inputs.

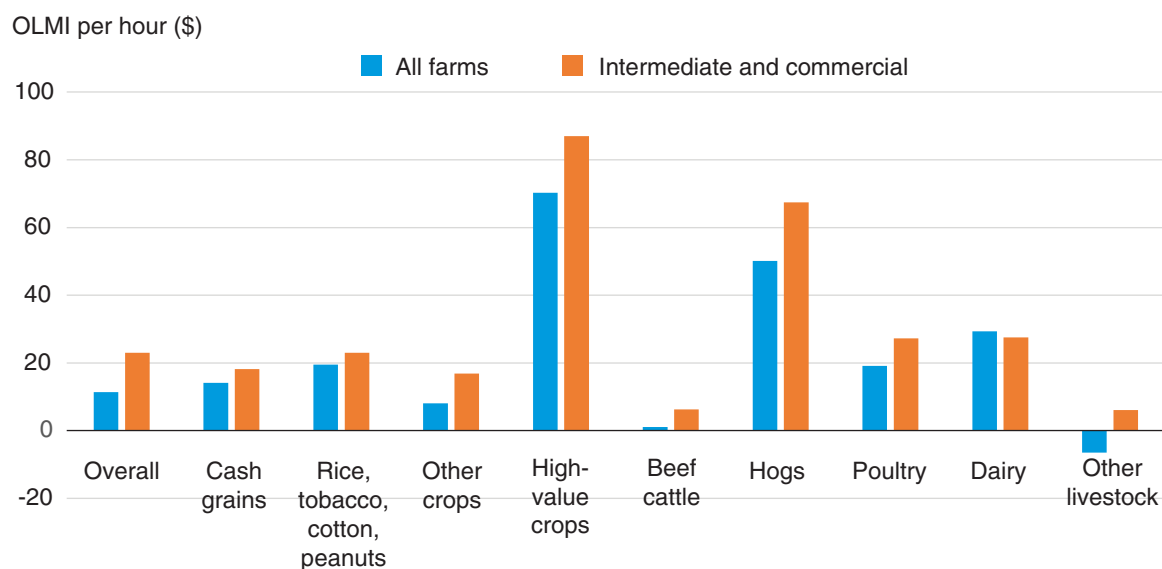
<sup>12</sup> In Brown and Weber (2013), large farms consisted of those with greater than \$250,000 in sales.

Another notable aspect, as introduced in the discussion of farm household labor, is the difference in labor intensity across commodities and its impact on returns to on-farm labor and management as measured by OLM. This variation can be seen in figure 6, particularly when looking at the horizontal axis (operator onfarm hours).

Across all commodity specialization categories, OLM per hour is higher for intermediate and commercial farms than for all farms (fig. 9). (In this analysis, intermediate and commercial farms are combined to focus on farms where a substantial share of the principal operators report farming as their primary occupation.<sup>13</sup>) Relationships across commodity categories are consistent across all farms, compared with farm businesses (intermediate and commercial farms)—high-value crops and hogs have the highest OLM per hour, while beef cattle and other livestock have the lowest. This is partially related to farm size and the pattern observed in figure 8—commercial farms account for approximately 14 percent of high-value crop farms and 24 percent of hog operations, but only 3 percent each of cattle operations and “other livestock” operations. However, it is not entirely a function of farm size. Commercial farms account for approximately 46 percent of rice, tobacco, cotton, and peanut farms and 38 percent of poultry operations. There are also other factors beyond farm size that affect a farm’s OLM. For instance, while paid labor affects both net farm income and OLM similarly, unpaid labor may increase a farm’s net farm income but decrease the economic returns once the opportunity cost of labor is included.

Figure 9

### Highest hourly OLM in high-value crops and hogs, 2015



Note: OLM = Operator labor and management income. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator’s occupation.

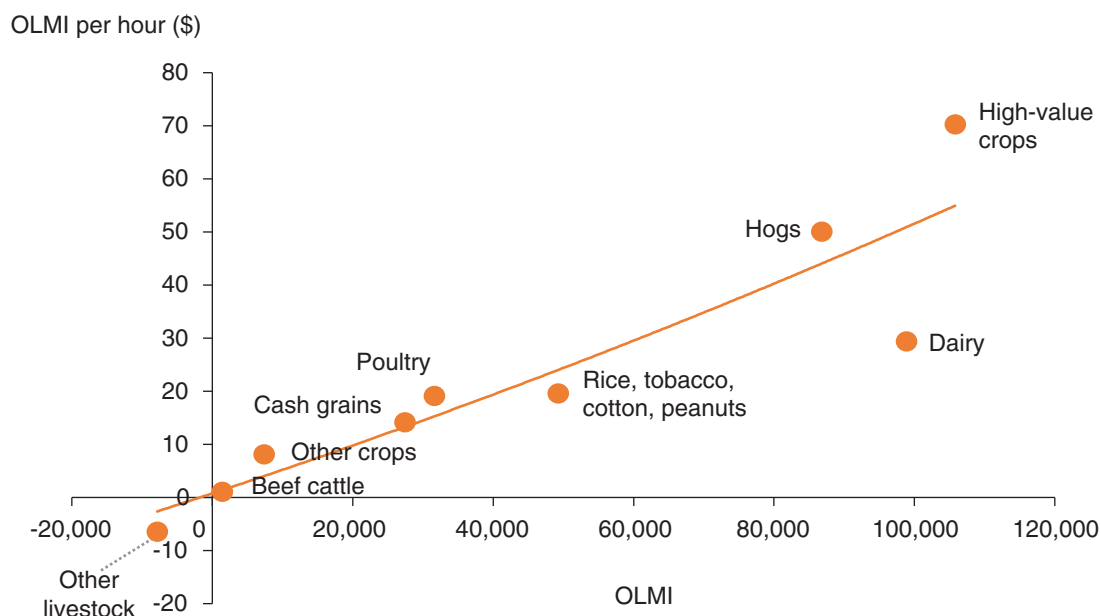
Source: USDA, Economic Research Service calculations based on the USDA Agricultural Resource Management Survey (2015).

<sup>13</sup> This category also includes commercial farms with principal operators who are retired from farming or report a primary occupation other than farming. In 2015, these farmers constituted roughly 10 percent of commercial farm principal operators.

The overall ranking for OLM per hour for more labor-intensive commodities is lower than the OLM per hour for other commodities (fig. 10).<sup>14</sup> This is especially marked for dairy. Average OLM per hour for dairy (\$98,906) was the second highest of all commodities for all farms and the third highest for intermediate and commercial farms. This is because dairy is very labor intensive, as was shown in figure 6. Principal operators on dairy operations worked an average of 3,369 hours annually, compared to an overall average across all other commodity groups of 1,348 hours.

Figure 10

**The labor intensity of production affects the magnitude of OLM per hour relative to OLM overall**



OLM = operator labor and management income.

Source: USDA, Economic Research Service calculations based on the USDA Agricultural Resource Management Survey (2015).

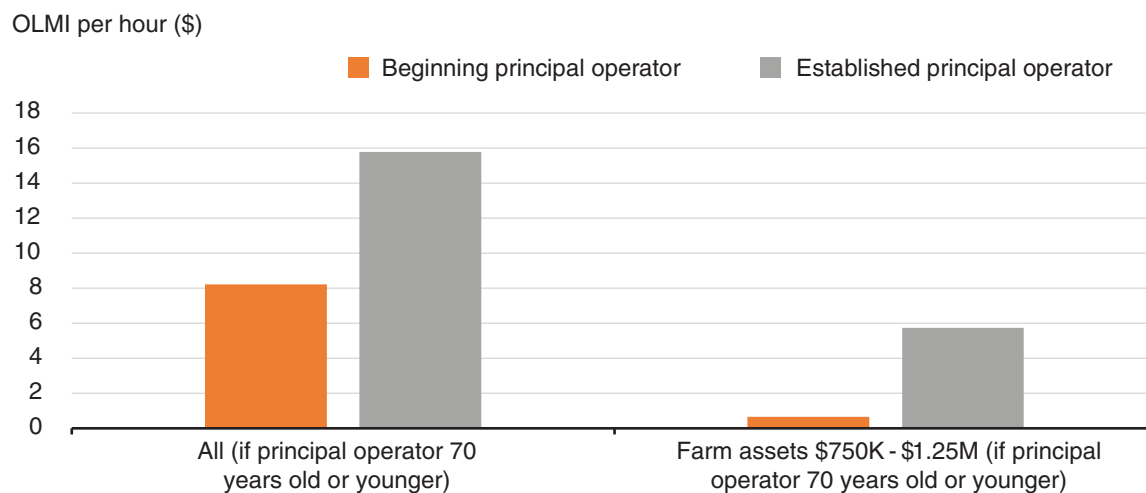
Experience in farming also is correlated with farm performance. In the management literature, Gill and Biger (2012) and McEnrue (1988) show a positive relationship between the length of a manager's experience and the firm's financial success. Does that hold for farm operators? The data suggest it does (fig. 11). Across all farms, the OLM per hour for farms with established principal operators (those with more than a decade of farming experience) is nearly double that of beginning farmers (those with a decade or less of experience).<sup>15</sup> To control for the fact that farms owned by beginning farmers are smaller, on average, than those owned by established farmers, figure 11 also shows the OLM per hour for farms falling within a given range of farm asset value. For example, for the 13.1 percent of farms with assets in the range of \$750,000 to \$1.25 million (which is centered on the \$1 million average level of farm assets across all farms), established operators' returns were, on average, six times higher than those of beginning operators.

<sup>14</sup> Labor intensity in this context is limited to the principal operator's labor, because hourly OLM measures the principal operator's return to labor and management for each hour that he or she works.

<sup>15</sup> This analysis was restricted to principal operators who were 70 years old or younger. Older farmers, while more likely to fall into the established category, were also more likely to be retired.

Figure 11

**Positive relationship observed between length of principal operator's farming experience and OLM per hour, 2015**



Note: OLM = operator labor and management income.

Source: USDA, Economic Research Service calculations based on the USDA Agricultural Resource Management Survey (2015).

## Other Contributions to the Financial Well-Being of Farm Households

Some small farms, particularly residence farms, experience losses and negative returns to labor and management and still continue to farm. Both USDA's annual net farm income measure and the alternate measure of farm operator labor and management income (OLMI) suggest that for many small farms, agricultural activities contribute very little to the financial well-being of the farm household. However, these measures do not fully capture the total economic returns from farming to the farm operator household and, thus, can understate the role of farming in farm household well-being. If these economic returns are large enough, households operating these farms may be willing to absorb these annual losses (see box "Maintaining Cash Flow").

In this section, we explore the unrealized gains most farm households have experienced from the appreciation in farm assets (especially farmland). We also delve into the tax benefits households can claim by writing off their farm losses against off-farm income. Despite long-standing tax rules limiting hobby and passive activity losses, most write-offs are generally allowed if the farm has the potential to be profitable and the farmer is materially involved in operating the farm business. Although it is out of scope for this report, some States or local jurisdictions also offer reduced property tax rates on property used for farming. In addition, because a farm incurs a net loss each year does not necessarily mean that the farm does not contribute to the well-being of the farm household. A farmer may enjoy living or working on a farm with any economic return a secondary consideration.

There may be fewer farms for which farming for profit is secondary to other motivations than the annual net farm income measure would suggest. A farmer may experience a net farm loss in most years, but still be economically rational in continuing to farm when total economic returns are considered. For example, a farmer may have negative net farm income but anticipate substantial capital gains in the long run and use farm losses in the short run as a tax writeoff to increase the return from other sources of income. Both contribute to the economic well-being of the farm household but are not captured by the annual net farm income measure and are not considered in determining returns to farm operator labor and management. Although considering the opportunity cost of capital and labor in a measure such as OLMI further increases the short-term losses, the long-term gain may still justify the investment.

### Maintaining Cash Flow

Even though a farm will realize an economic return in the long run, cash flow can be a problem in some years. In the years in which a farm experiences a net loss and negative cash flow from farming operations, the farmer must have enough off-farm income or other resources to absorb any negative cash flow from the farm operation. For many residence farms, losses are relatively small, and farmers have sufficient income from nonfarm sources to cover any negative cash flow. Losses when incurred by intermediate and commercial farms tend to be larger, while the off-farm income available to cover such losses is lower. Thus, unlike residence farms, intermediate and commercial farms could find such losses difficult to sustain if incurred over an extended period of years. However, a net farm loss is not necessarily equivalent to a negative cash flow. For example, the recovery of investments in long-lasting farm machinery and equipment, a major expense for many farmers, can produce negative net farm income without corresponding cash outlays. Thus, a net farm loss does not necessarily suggest that the farmer will be forced to shift funds from other sources to the farm business to continue operating or that there would be no cash to sustain family living expenses.

## Measures of Annual Farm Income Only Partially Reflect the Economic Returns to Farming

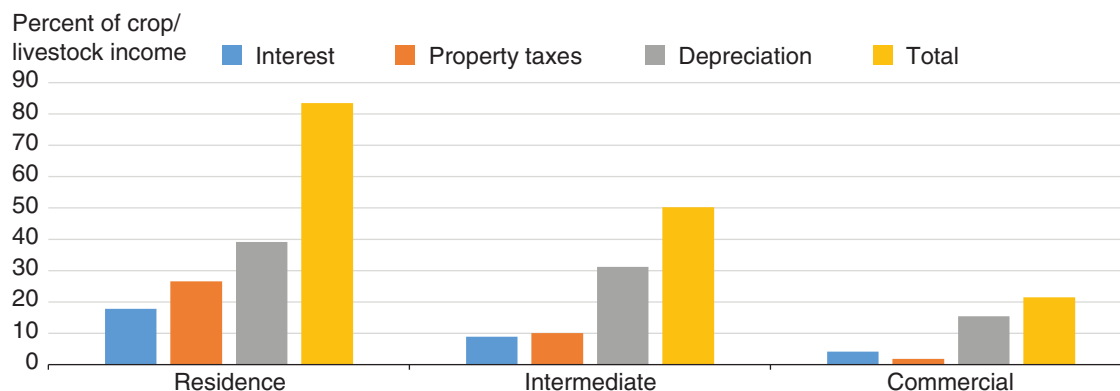
Farming is a capital-intensive business. Land acquisition and farm machinery and equipment costs can represent two of the largest cash outlays for farm operations. As discussed in the “Depreciable Assets” section (p. 10), this capital intensity and the accounting and tax principles used to calculate business income for tax purposes often overstate actual farm expenses in the short run because the cost of machinery and equipment and other depreciable assets can be expensed for tax purposes in the year of purchase.

In addition, a net cash farm income measure does not fully capture economic returns to owning farmland. Farmland, which is not a depreciable asset, represents about 84 percent of total farm assets. Total annual economic returns to farmland include both annual net cash returns (net of land ownership costs such as interest and property taxes) and the change in the market value of farmland. Over the years, farmland investments have yielded a very competitive rate of return, with about half of the total return due to appreciation in land market value. However, annual net farm income measures only include the net cash return. The owned farmland also provides equity that the operation can use as collateral for an equipment or operating loan.

While commercial and intermediate farms own more farmland, residence farms hold significant amounts of farmland especially relative to their farm receipts. On average, residence farms reported farm real estate valued at just over \$500,000 in 2015. The ownership costs associated with this land and building investment represented, on average, an amount equivalent to about 50 percent of farm business receipts (excluding Government payments) for residence farms reporting a loss in 2015 (fig. 12). Two of the primary expenses associated with land ownership are interest expenses and property taxes. Because many residence farms earn limited farm receipts, these land ownership costs represent a larger share of their farm income, pushing net income into negative territory more frequently than for intermediate and commercial farms.

Figure 12

### Residence farms report higher interest, property taxes, and depreciation expenses relative to their cash receipts (excluding Government payments)



Note: Interest, property taxes, and depreciation are shown as a share of total of crop and livestock income for residence farms reporting negative income from their farm operation. Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation.

Source: USDA Agricultural Resource Management Survey (2015).

## Tax Benefits From Farm Losses

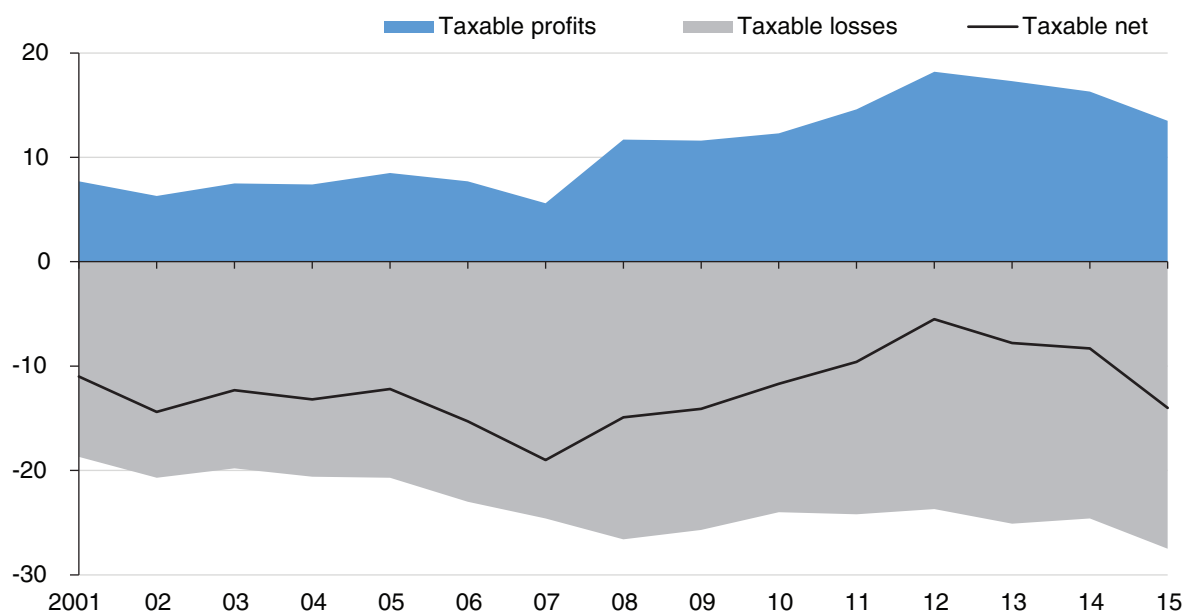
USDA's net farm income measure and the net cash farm income (profit or loss) for Federal income tax purposes are both designed to measure profitability, but they differ in a number of important aspects. Farm profit or loss for Federal income tax purposes does not include all types of farm income and also may be reduced by several exclusions and deductions that are not considered in USDA's net farm income measure.

The tax treatment of farm income is reflected in the size of farm profits and losses reported for income tax purposes. Nearly all farms and a majority of commercial farms are organized as sole proprietorships or partnerships and, as such, are considered passthrough entities by the Internal Revenue Service (IRS). This means they are not subject to income taxes as corporations; rather, taxes on farm business income are paid by the farm household. Between 2001 and 2015, IRS tax data indicate that farm sole proprietorships reported negative aggregate net farm income for tax purposes (fig. 13). In 2015, about 70 percent of all farm sole proprietors reported a net farm loss. The average loss was \$21,502, for an aggregate loss of \$27.5 billion. These farm losses have generally been used to reduce Federal taxes by offsetting taxable income from nonfarm sources.

Figure 13

### Taxable losses exceeded taxable profits for farm sole proprietorships each year, 2001–15

\$ billion (current dollars)



Source: USDA Economic Research Service compilation from Internal Revenue Service (IRS) Federal income tax data, Schedule F, 2001–15.

We estimate the value of these losses using a farm income tax simulation model and ARMS data on farm income and total household income (see box “Federal Income Tax Estimation Model”). Farms reporting losses in 2015 received an average estimated benefit from these losses of \$2,178. The average benefit for residence farms, \$2,126, was slightly higher than the benefit for intermediate farms, \$1,971, even though their estimated average losses were only about half that of intermediate

farms. This can be attributed to lower marginal tax rates because of intermediate farms' significantly lower levels of income from nonfarm sources. While fewer commercial farms reported losses, the farm losses tended to be larger, while their income from other sources was also lower than that for other farm types. Nevertheless, the tax benefit for these farms was nearly double (\$4,342) the average for all farms reporting a loss.

### **Federal Income Tax Estimation Model**

To calculate the tax benefits that accrue to farm operators as a result of farm losses, this study uses a Federal income tax simulation model developed by USDA's Economic Research Service. The model is uniquely designed to use farm survey data from the Agricultural Resource Management Survey (ARMS). It also uses the most significant features of Federal income tax law applicable to farm operator households in 2015 to estimate Federal income, Social Security, and self-employment taxes. Among these features are tax rates, including special rates on capital gains; the inclusion or exclusion of various types of income from the tax base; exemption and standard deduction amounts; and selected credits, including the Child Tax Credit and the earned income tax credit.

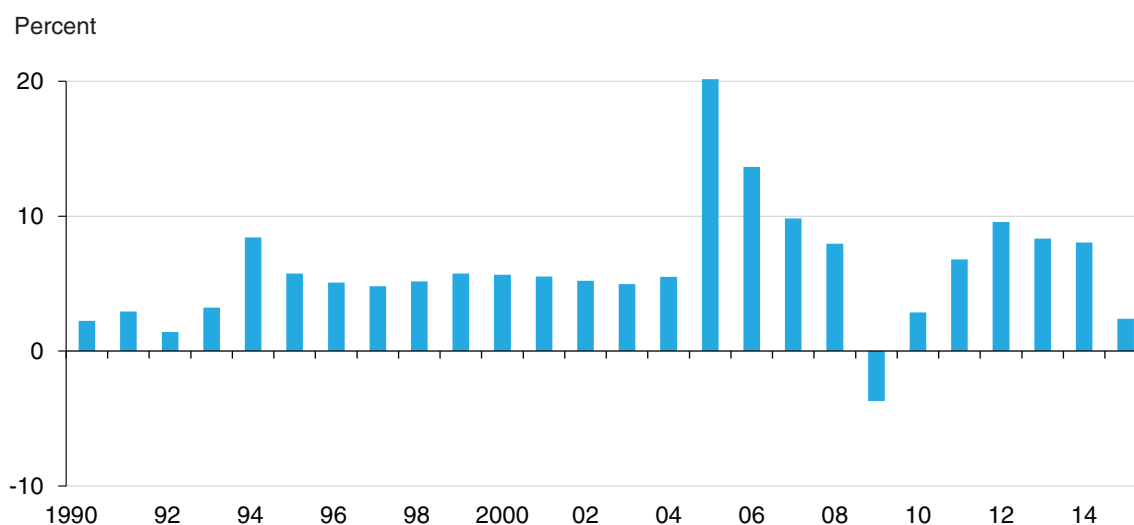
To create a lower bound of the estimated tax-loss benefit, the model assumes that all households claimed the 2015 standard deduction (\$6,300 and \$12,600 for single and married filers, respectively). Although the model does not account for the alternative minimum tax (AMT), households operating residence and intermediate farms—the most likely to lose money on their farming operation—have low incidence of the AMT (1.6 percent).

## **Farmland Values and Returns to Farmland**

Over the past several decades, farmland values have increased substantially, but the return from that appreciation can be highly variable and does not provide any cash for ownership costs such as mortgage payments. Nevertheless, it provides a significant economic benefit to the farmer that is not captured in annual net farm income measures. While these returns could be reduced by deferred taxes, the relatively long holding periods for land, the low tax rates on capital gains, and the amount of land that is transferred by gift or at death imply that these taxes are expected to be low relative to the increase in land values. This study considers the annual "return" to farmland to be the increase in underlying value of the asset. From 1990 to 2015, average U.S. farm real estate values increased every year with the exception of 2009, when values declined by 3.7 percent (fig. 14). Over the period, average per-acre values increased from \$683 to \$3,020 in nominal terms (not adjusted for inflation), an average annual rate of 6 percent. The increase in average per-acre values in 2015 was 2.4 percent.

Figure 14

### Farm real estate values increased almost every year from 1990 to 2015



Note: Data reflect the change in farm real estate values in nominal dollars (not adjusted for inflation).

Source: USDA, Economic Research Service analysis of data from USDA, National Agricultural Statistics Service (NASS).

In 2015, the overall average value of farm real estate for all farms was \$872,312. While the value of farm real estate owned by commercial farms was nearly six times that of residence farms, the value of farm real estate held by residence farms was significant, especially relative to their farm receipts. Residence farms reported farm real estate valued at an average of \$503,531 in 2015. While gains were unrealized unless the operation sold land, this farm real estate provided an estimated average economic benefit to the residence farm household of \$14,455. Unrealized gains in farm real estate value to intermediate and commercial farm households were significantly higher, with commercial farm households experiencing an average economic benefit of \$74,406. Across all farms, real estate appreciation provided an average economic benefit to the farm household of \$22,661.<sup>16</sup>

## Farming Contributes to the Financial Well-Being of Most Farm Households When Total Economic Returns Are Considered

According to the annual farm income measure, farming contributes little to the annual income of farm households operating residence farms, is a secondary source of income for households with intermediate farms, and is the primary source of income only for those operating commercial farms. Using the OLM measure, residence farms have a negative return for each hour worked on the farm. This suggests that a large share of these farmers continue to be involved in farming for nonfinancial reasons such as a rural lifestyle. However, these measures of income do not fully capture the economic returns from farming. When tax-loss benefits and asset appreciation are factored in, a much larger share of these farms receive a positive benefit from farming.

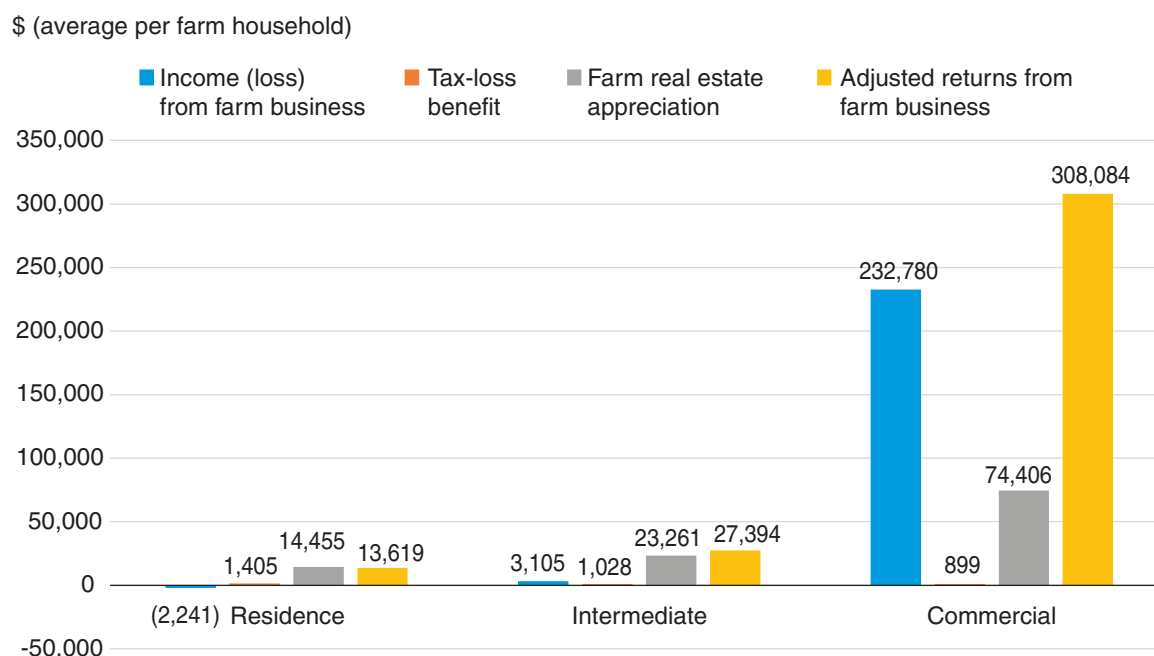
In 2015, if the tax savings from farm losses and the appreciation in farm real estate values are considered, about half of residence farms reporting a loss would, instead, experience a gain. After

<sup>16</sup> While farmland values nationwide rose 2.4 percent in 2015, they decreased modestly in nine States. Households operating farms in these States experienced negative returns from owning farmland.

adjusting for tax-loss benefits and asset appreciation, farm returns would average \$13,619 for residence farms, compared to an estimated average off-farm income for residence farms of \$115,337 (fig. 15). Thus, farming returns continue to be a secondary source of income for residence farms, but they do make a positive contribution to the economic well-being of the household.

Figure 15

**Average adjusted farm household returns are markedly higher for all types of farms**



Note: Residence farms have annual gross cash farm income of less than \$350,000 and a principal operator with a primary occupation off-farm or who is retired from farming. Intermediate farms have gross cash farm income of less than \$350,000 and a principal operator whose primary occupation is farming. Commercial farms have gross cash farm income of \$350,000 or more, regardless of the principal operator's occupation. Adjusted return equals the sum of the other three categories.

Source: USDA Economic Research Service (ERS) estimates based on ERS's Federal income tax estimation model and USDA Agricultural Resource Management Survey (2015) data.

Residence and intermediate farms' tax-loss benefits and asset appreciation are smaller in absolute terms than those received by commercial farms, but are larger relative to the income/loss from the farm business. The tax-loss savings and asset appreciation help explain why farms that received low economic returns to operator's labor and management time might continue to farm.

For residence farms, the opportunity cost from unpaid family and operator labor and capital equaled \$10,437 on average (the difference between net farm income and OLMF in table 2). Intermediate farms had an opportunity cost of \$17,551. These amounts are both lower than the average benefit from tax provisions and asset appreciation shown in fig. 15. Taken together, these benefits, on average, more than offset these farms' low average net farm income and negative average OLMF shown in table 2.

For commercial farms, however, including asset appreciation and tax-loss benefits moves fewer farms with negative profits to positive returns, even though commercial farms earn the highest average farm profits. Only 26 percent of commercial farms with a net farm loss would have a positive return from farming after tax-loss benefits and land appreciation are considered, compared to

50 percent of residence farms and 47 percent of intermediate farms that experienced a net farm loss. This is primarily due to the size of the losses reported by these farms. For commercial farms reporting losses in 2015, the average loss was \$193,412, compared to \$11,197 for residence farms and \$23,246 for intermediate farms. Though residence and intermediate farms deploy more capital and unpaid labor (and thus incur higher opportunity costs), they also gain more from larger tax benefits and asset appreciation. For commercial farms, the average opportunity cost from capital and unpaid labor (approximately \$60,000) is roughly equivalent to the average gain from tax benefits and asset appreciation (\$66,000). These farms experience the highest return on their invested capital and labor.

Across all farms, the share with positive farm returns increases from 43 percent to about 70 percent after adjusting returns for tax-loss benefits and asset appreciation. Thus, farming clearly provides a positive return to more farm households and makes a larger contribution to their economic well-being than the annual farm income measures suggest.

## Conclusion

The vast majority of U.S. farms are family farms whose household members allocate their time, money, and efforts to a variety of on- and off-farm activities. As a consequence, the operating decisions that these households make are shaped by conditions within both the farm and nonfarm economies. Farm households are entrepreneurial, engaging in a combination of farm-related and other business operations. They may also rent out their farmland or farming services to supplement household income. Using 2015 USDA data, this report examined the returns to farm operators and households from several perspectives.

Farm households experienced higher income growth over the past two decades than all U.S. households, although the median income of households operating farm businesses has remained below the income of self-employed households. Notable differences emerge in the income composition of farm households. Households operating smaller farms—including those with principal operators who are retired or whose primary occupation is off-farm—tend to derive the majority of their income from off-farm sources. Less dependent on the farm economy, many of these households tolerate repeated losses in their farming operation. On the other hand, households operating larger farms generate the bulk of their income from the farming operation and spend more of their time working on the farm.

Farm operators incur significant opportunity costs from the time and money they spend on their farm operations. Once net farm income is adjusted for the opportunity costs of capital and unpaid labor, it falls by an average of 52 percent across all family farms, with relatively larger impacts on smaller farms. The ability of farm managers to control these costs differs by the size of the operation as well as the experience of the manager. More experienced farmers tend to earn higher net incomes, even after adjusting for opportunity costs.

Commonly used measures of farm income and returns to labor and management do not fully capture the benefits that households obtain from income tax provisions and asset appreciation in their farming business. On average, households with farms experiencing losses received \$2,178 in tax benefits in 2015. In addition, farmland values, which have increased nearly every year between 1990 and 2015, further boosted the returns for these farm operators by an average of \$22,661 across all farms in 2015.

As this study shows, returns from farming extend beyond the net cash income the over 2 million U.S. farm households receive from their farm operation in any given year. Relative to their net income, residence and intermediate farms incur the largest opportunity costs, driving their measured return below zero. However, households operating these farms enjoy the largest average tax benefits and asset appreciation from farming, relative to their farm income. Thus, a much larger share of these households receive a positive contribution to their economic well-being from farming than the traditional measures suggest.

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