



United States Department of Agriculture

Government Program and Crop Insurance Payments: Evidence from U.S. Cross-Sectional Data

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The U.S. Government Provides Diverse Support to Farmers

- The U.S. Federal Government supports U.S. agriculture both directly and indirectly:
 - Perform or support agricultural **research** and **extension**
 - Provide timely **market info** and **statistics** to improve market functioning/assist farmer decision making
 - Acts to control agricultural **pests** and **diseases**
 - Provides **credit** to farmers (e.g., real estate and operating loans)
- Direct financial assistance to farmers include payments from
 - Commodity programs
 - Conservation programs
 - Federal crop insurance



But the structure of direct financial support changed between 1991 and 2015

- We examine the level and distribution of payments to farmers – through commodity, conservation, and crop insurance programs – as well as their trends by farm household income.
- Ongoing structural change has shifted production to larger farms. Since operators of larger farms generally have higher household incomes, there has been a shift in the distribution of commodity program payments and indemnity payments to higher income farm households.
- Our research updates and extends previous ERS research. This presentation mainly focuses on data collection (and database preparation), with a preview of certain distributional trends.



How Do We Know? (The Data)

- Our findings derive from **four primary data sources**:
 1. Agricultural Resource Management Survey (ARMS)
 2. The U.S. Census of Agriculture
 3. USDA-ERS Farm Sector Accounts
 4. USDA Risk Management Agency's (RMA) Federal Crop Insurance Business Summary Reports
- We inflation-adjust all financial data using one of three price indices so that statistics reflect 2015 dollars.
 - Farm household income is inflation-adjusted using the Consumer Price Index for all urban consumers (CPI-U).



What is the Agricultural Resource Management Survey (ARMS)?

- ARMS is an annual survey of US farms.
- It is USDA's primary source of information on the financial condition, production practices, and economic well-being of US farm households.
- Importantly, the surveys collect information on farm finances, chemical use, and farm household income.
- ARMS-based statistics & research inform public and private decision making about policies and programs affecting many aspects of the farm sector.



How are the ARMS Data Structured?

- ARMS is implemented in three phases:
 - Phase I: **Initial screening** for eligible farms
 - Phase II: **Field-level** data collection on production practices, natural resource use, and inputs and chemical applications
 - *History of planting and crop rotations*
 - *Nutrient and fertilizer applications*
 - *Pesticide applications and pest management*
 - *Equipment use and irrigation*
 - Phase III: **Farm-level** data collection on finances, operator and household characteristics, and demographics
 - *Acreage, cash sales, and contracts*
 - *Government payments*
 - *Operating & capital expenditures, assets, and debts*
 - *Farm operator and household characteristics*



ARMS Provides the Only Nationally-Representative Data Linking Production Practices with Farm Financials

- Farm household income, including production practices and Government payments, varies by GCFI – which we can know by linking Phase II and Phase III ARMS data
- ARMS at a glance:
 - Cross-sectional
 - Sample all types of farms from 48 states
 - Representative of US production
- Measure of farm size: **Gross Cash Farm Income (GCFI)**. This is revenue from crop and livestock sales, plus fees from contract production, Government program payments and crop insurance indemnities, and other farm income.

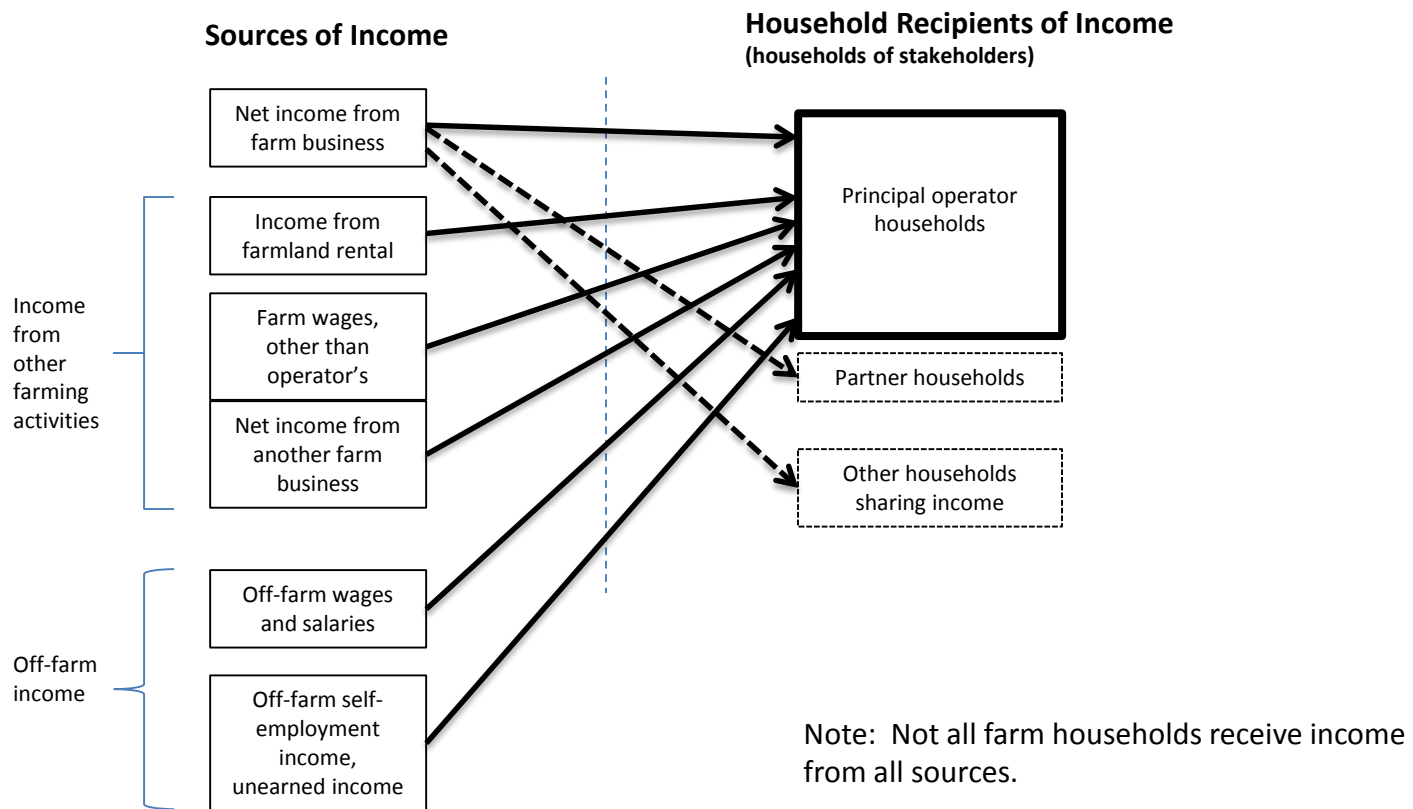


How do We Measure Farm Household Income?

- Operator household income is available to the principal operator's household for consumption or saving. It includes:
 1. **Farm business income.** GCFI, less cash expenses, depreciation, and net income from land rentals
 2. **Income from other farming activities.** Net income from any other farm business in which the household has an interest, wages paid to non-operator members of the household, and net income from farmland rentals
 3. **Off-farm income.** Income from non-farm sources, including wages, salaries, self-employment income, and unearned income (e.g., interest, dividends, and transfer payments like Social Security benefits)



How Does Income Flow to Family Farm Households?

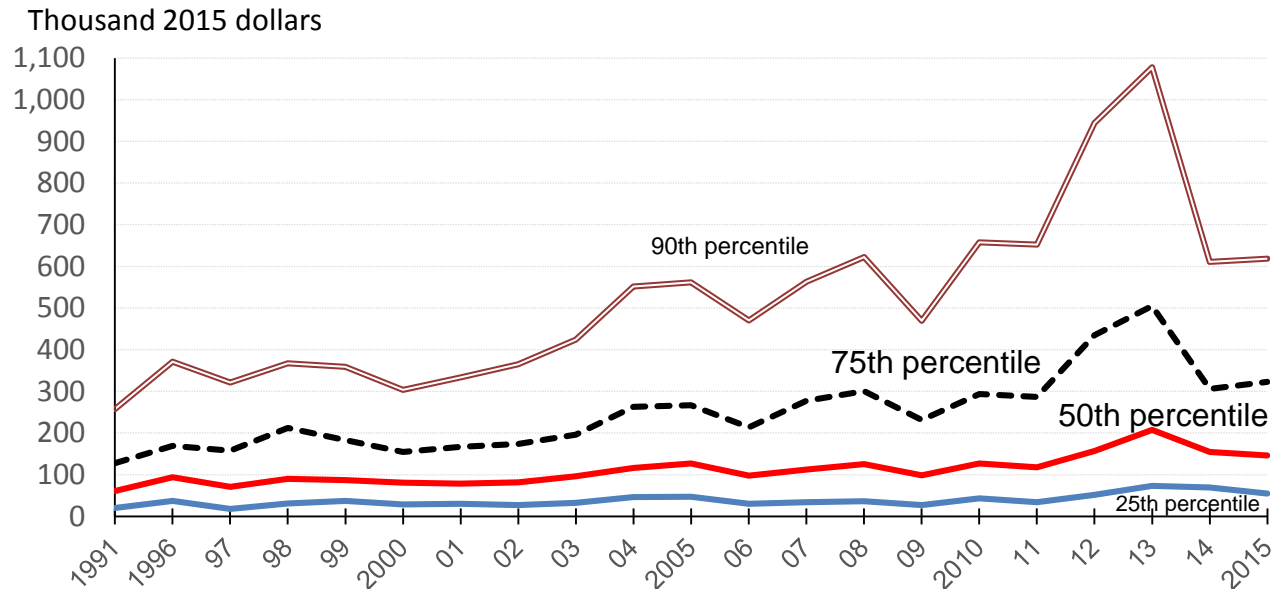


Source: USDA, Economic Research Service.



Farm household income at selected percentiles of the distribution of commodity-related payments, 1991 and 1996 to 2015

The percentile lines dipped from 2013 to 2014



Notes: Household income is expressed in 2015 dollars using the Consumer Price Index, All Urban Consumers (CPI-U) to adjust for price changes. Detailed data on Government payments are not available for 1992 to 1995.

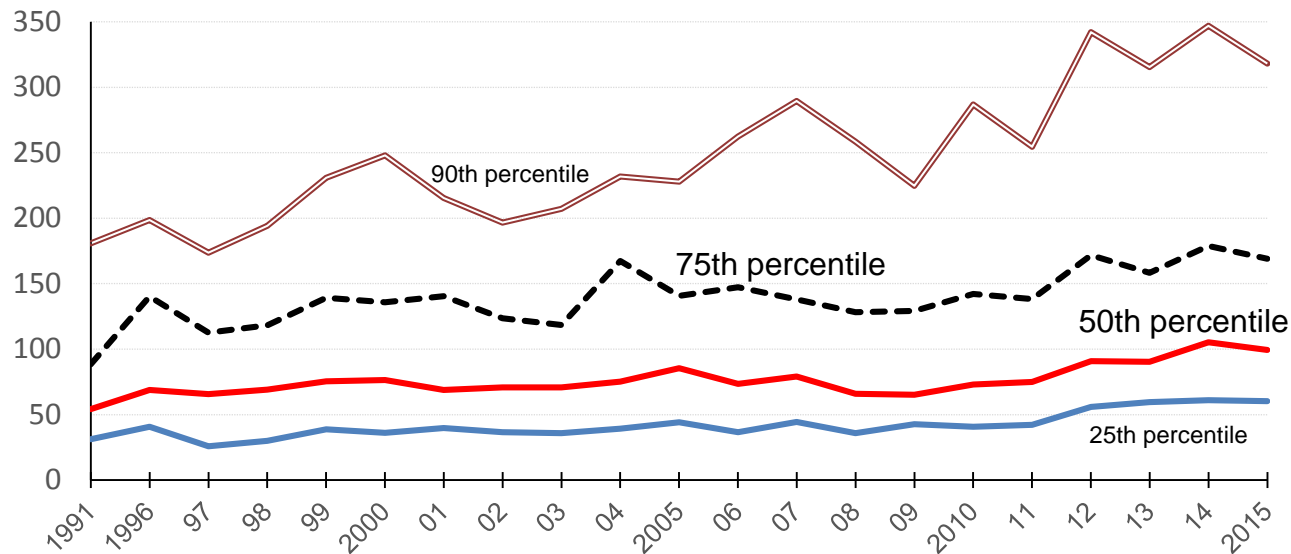
Source: USDA, Economic Research Service and National Agricultural Statistics Service, 1991 Farm Costs and Returns Survey and 1996-2015 Agricultural Resource Management Survey.



Farm household income at selected percentiles of the distribution of land-retirement payments, 1991 and 1996 to 2015

The percentile lines for land-retirement payments have increased relatively gradually over time

Thousand 2015 dollars



Notes: Household income is expressed in 2015 dollars using the Consumer Price Index, All Urban Consumers (CPI-U) to adjust for price changes. Detailed data on Government payments are not available for 1992 to 1995.

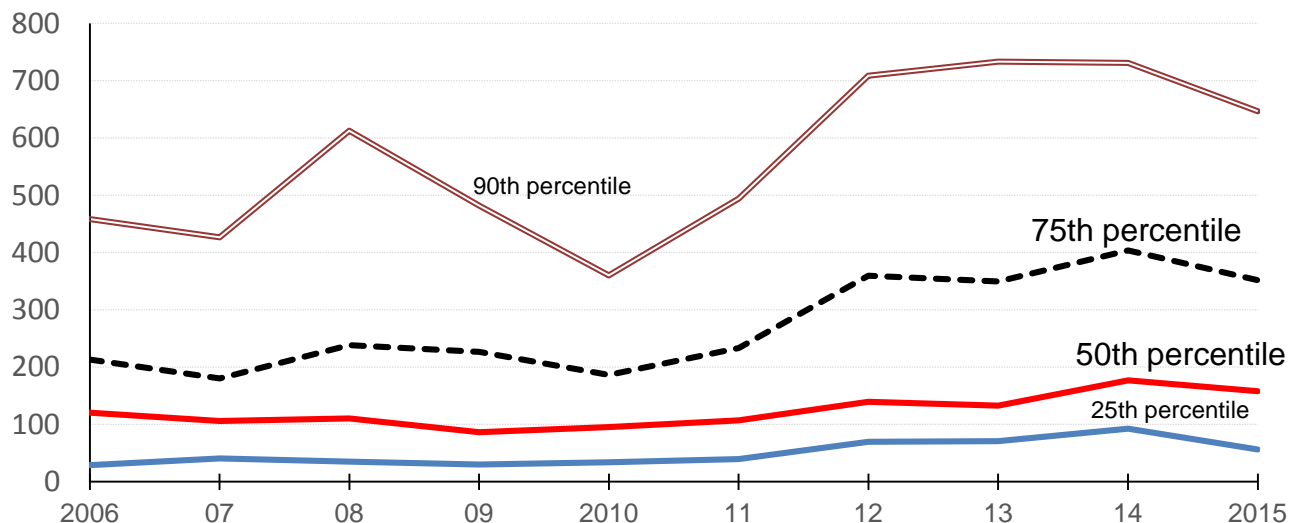
Source: USDA, Economic Research Service and National Agricultural Statistics Service, 1991 Farm Costs and Returns Survey and 1996-2015 Agricultural Resource Management Survey.



Farm household income at selected percentiles of the distribution of working-land conservation payments, 2006 to 2015

The percentile lines have shifted upward, similar to trends in commodity payments

Thousand 2015 dollars



Notes: Household income is expressed in 2015 dollars using the Consumer Price Index, All Urban Consumers (CPI-U) to adjust for price changes. Prior to 2006, working-land payments were small relative to other Government payments, making it difficult to examine their distribution.

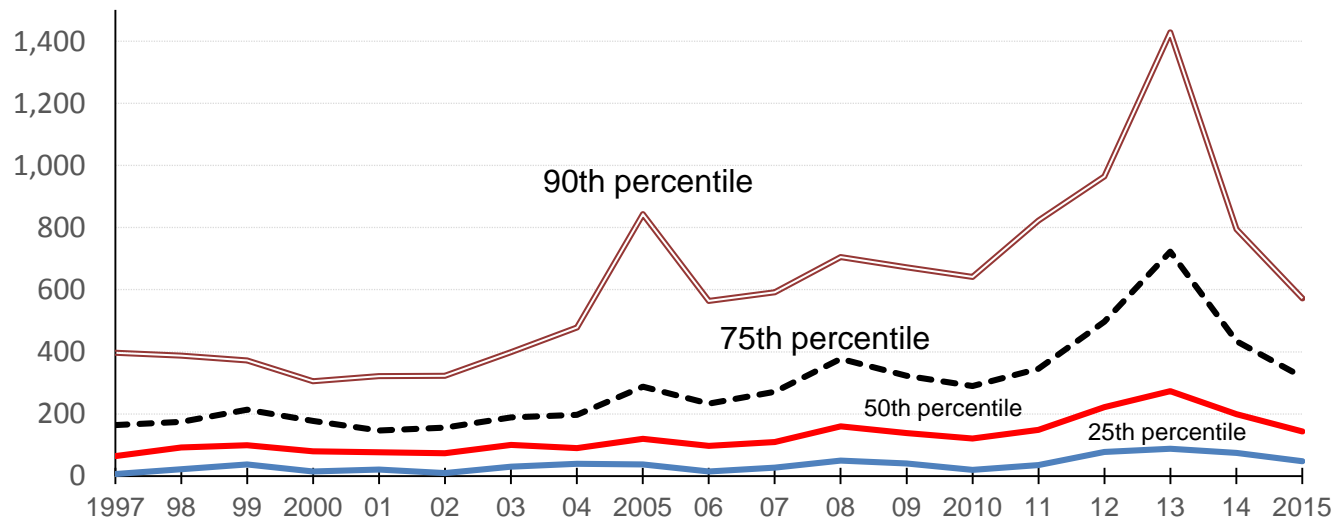
Source: USDA, Economic Research Service and National Agricultural Statistics Service, 2006-2015 Agricultural Resource Management Survey.



Farm household income at selected percentiles of the distribution of Federal crop insurance indemnities, 1997 to 2015

The percentile lines peaked in 2013, following adverse weather from 2011 to 2013

\$1,000 (2015)



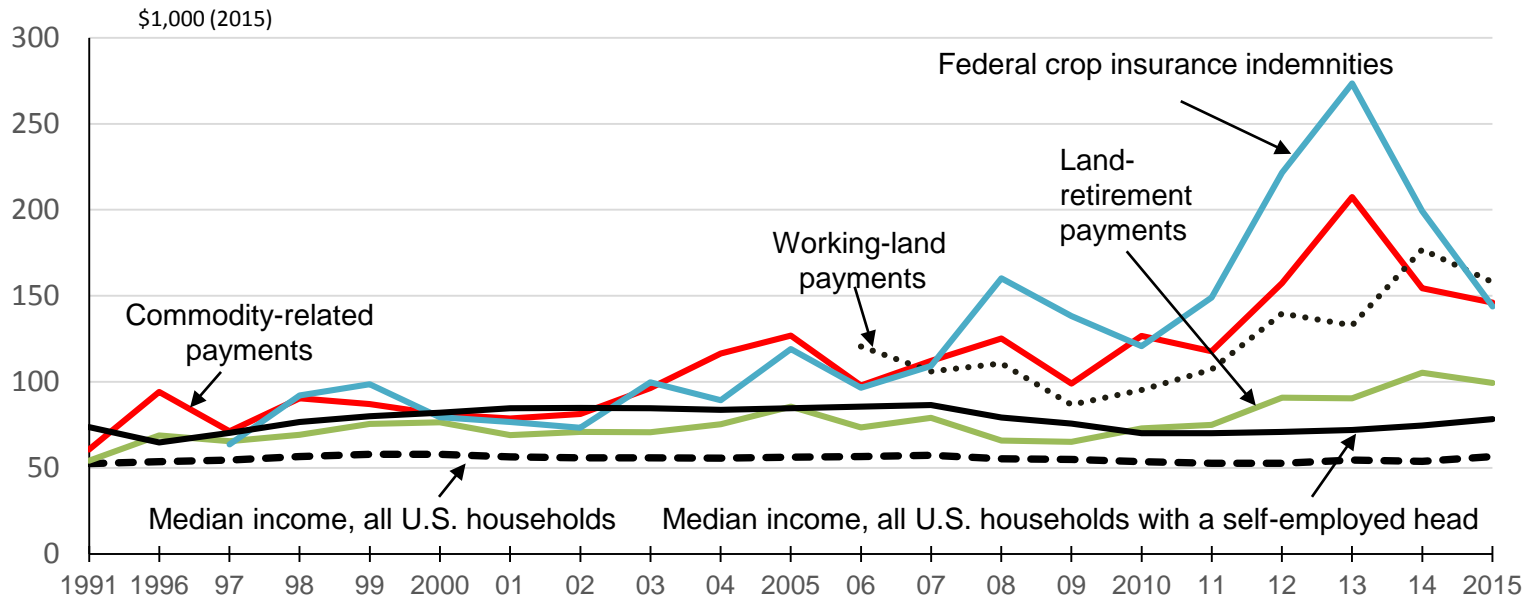
Note: Household income is expressed in 2015 dollars using the Consumer Price Index, All Urban Consumers (CPI-U) to adjust for price changes.

Source: USDA, Economic Research Service and National Agricultural Statistics Service, 1995 Farm Costs and Returns Survey and 1996-2015 Agricultural Resource Management Survey.



Farm household income at the 50th percentile for Government payments—by type of program—and Federal crop insurance, 1991 and 1996-2015

The gap between all U.S. households and farm households is smallest for land-retirement programs



Notes: Household income is expressed in 2015 dollars using the Consumer Price Index, All Urban Consumers (CPI-U) to adjust for price changes. Detailed data on Government payments are not available for 1992 to 1995. Government payments and crop insurance indemnity values reflect the income level at which half of the respective payments went to households with incomes above that value, and half of payments went to households below that value. Also, the crop insurance indemnities represent gross indemnities and do not subtract farmer-paid portions of the premium. Median incomes for all U.S. households reported for context.

Source: USDA, Economic Research Service and National Agricultural Statistics Service, 1991 Farm Costs and Returns Survey and 1996-2015 Agricultural Resource Management Survey for farm households. U.S. Bureau of the Census, Current Population Survey, various years, for all U.S. households. Federal Reserve Board, Survey of Consumer Finances (SCF), various years for all U.S. household with a self-employed head. The SCF is conducted every 3 years. Data points between SCF survey years were interpolated.



A Few Caveats

1. ARMS only collects household income data for households of principal operators. Those households do not necessarily receive all of farm business income; instead, some of the benefits from payments could be shared with stockholders or more junior partners in the farm business.
2. One dollar of Government payments to a farm business will not necessarily increase household income or spending by one dollar, even if no other household shares in the farm's business income. This is because payments can increase the farm business' cash expenses (mainly through cash rents), and so farm business income may not rise dollar-for-dollar.
3. ARMS only tracks gross indemnities, i.e., indemnities that do not subtract farmer-paid portions of premiums. A better measure of Government support through Federal crop insurance programs would be crop insurance premium subsidies, but this information is not contained in ARMS.

