The Economic Well-Being of Farm and Nonfarm Households:

Evidence from Two National Surveys

Ani L. Katchova

University of Illinois

Contact Information:
Ani L. Katchova
University of Illinois at Urbana-Champaign
326 Mumford Hall, MC-710
1301 West Gregory Drive
Urbana, IL 61801
Tel: (217) 333-7760
Fax: (217) 333-5538
E-mail: katchova@uiuc.edu

The Economic Well-Being of Farm and Nonfarm Households: Evidence from Two National Surveys

This study compares the economic well-being of farm and nonfarm households using data from the 2004 Agricultural Resource Management Survey and the 2004 Survey of Consumer Finances. Comparisons are made in terms of income and wealth using Tukey-Kramer mean separation tests, regression analysis, and inequality distributions. The results show that the economic well-being of households differs based on their degree of involvement in business activities and their life-cycle stages. The most interesting conclusion is that the well-being of rural residence and intermediate farms is comparable to that of wage-earning nonfarm households, while commercial farms are similar in well-being to nonfarm households with businesses.

Key words: farm households, income, life cycle, nonfarm households, wealth, well-being.

The Economic Well-Being of Farm and Nonfarm Households: Evidence from Two

National Surveys

The economic well-being of farm households and the parity of well-being between farm and

nonfarm households have been of enormous interest to agricultural policymakers since the

1930s. Common goals of agricultural policy have been to provide financial support for

agricultural production, increase farm income and well-being, and provide safety net for farmers.

For example, one of the provisions of the Farm Security and Rural Investment Act of 2002 (also

referred as the 2002 Farm Bill) gives income support to farmers who grow any of the eight

program crops. Another provision of the 2002 Farm Bill offers further help to young and

beginning farmers and ranchers to establish their farm businesses by increasing access to credit

and conservation opportunities. The presumption has been that providing support to farm

households would increase their economic well-being so that it becomes comparable to that of

their nonfarm peers.

Comparing the economic well-being of farm and nonfarm households is complicated

because of their diversity. Many farm households today have complex organization and

structure and engage in both farm and off-farm activities. While farming is a major source of

business income for some households, it is a lifestyle choice for others who derive most of their

income off the farm. Nonfarm households also differ along several important dimensions, one of

which is whether they engage in entrepreneurial/business activities. Because households are

heterogeneous with respect to their degree of involvement in business activities, these

differences need to be accounted for when farm and nonfarm households are compared.

Economic well-being may also depend on the life-cycle stage of the households. It is

expected that both farm and nonfarm households will have a hump-shaped distribution, with

1

lower income and wealth for younger and older households than that for middle aged

households. However, it is not clear whether young farm households have significantly lower

well-being and/or more unequally distributed income and wealth compared to their older farm

peers and their young nonfarm peers. Examining these trends has important implications for

farm policy that currently provides special assistance for young farmers.

The objective of this study is to undertake a comprehensive comparison of the economic

well-being of farm and nonfarm households using two national, representative surveys. The

major contribution of this study is the consideration of two important dimensions of

heterogeneity: the degree of involvement in business activities and differences across life-cycle

stages for the households. Households' economic well-being will be examined and compared in

terms of average levels and distribution among households using three methods: Tukey-Kramer

mean separation tests, regression analysis, and inequality distributions. The results from this

analysis will reveal important insights into the parity of well-being between farm and nonfarm

families.

Conceptual Issues and Previous Studies

Economists and policymakers have long been interested in measuring the economic well-being

of the population both within the U.S. and across countries. Several measures have been

proposed to quantify the economic well-being of families such as income, earnings, wealth, and

consumption expenditures (Rodriguez et al. 2002). In the agricultural sector, income and wealth

have been frequently used to measure economic well-being (Carlin and Reinsel 1973; El-Osta

and Morehart 2004; Mishra et al. 2002). An analysis of economic well-being includes

considerations of both the average levels and the distribution of income and wealth across

families. Previous studies have examined either the well-being of all households in the U.S. or the well-being of farm families. Only a few studies have compared farm and nonfarm households using national, representative data sets, and their analyses were limited in scope (Hopkins and Morehart 2004; Mishra et al. 2002). This study provides a more comprehensive analysis of the comparative economic well-being between farm and nonfarm households, based on both the degree of involvement in business activities and the life-cycle stages of the households, in addition to testing for significant differences in well-being among different groups of households.

An important dimension of heterogeneity among households is their involvement in entrepreneurial/business activities. Entrepreneurs are usually defined as people who are self-employed or who own a business (Gentry and Hubbard 2004). The difference between the two groups is that households that own businesses have made capital investments similar to farm households, whereas self-employed individuals may have only invested their human capital in their entrepreneurial activities. Because the goal is to compare farm and nonfarm households, nonfarm entrepreneurs are considered as those households that own a business rather than those who are self-employed. Previous research has shown that the income and wealth of nonfarm households differ significantly based on their involvement with business activities. Several reasons have been offered for these differences, such as liquidity constraints associated with investing in a business and/or different savings behavior for business owners and wage earners (Gentry and Hubbard 2004; Hurst and Lusardi 2004; Quadrini 2000).

Farm households also differ based on their degree of involvement with farming. The U.S. Department of Agriculture has developed three farm typology groups: rural residence farms (limited-resource, retirement, and residential/lifestyle), intermediate farms (those with sales less

than $250,000 and whose operators report farming as their major business) and commercial farms (those with sales greater than $250,000). Although rural residence farms by definition own a farm business, the average rural residence farm household reports a negative farm income, where the farm business detracts from the total household income. Because rural residence farm households derive their income from off-farm sources, the hypothesis tested in this study is that their well-being (and in particular income) will not be significantly different from that of wage-earning nonfarm households who do not own a business. On the other hand, since commercial farms derive the majority of their income from their farm businesses, it is hypothesized that their well-being will be comparable to that of nonfarm households operating businesses in different sectors of the economy.

Another important dimension of heterogeneity among households is based on their life-cycle stages. The life-cycle hypothesis predicts that both income and wealth exhibit a hump-shaped form, where income and wealth increase until retirement and then decline after retirement. The life-cycle hypothesis cannot be tested with cross-sectional data, as is the case in this study, because age and cohort effects cannot be disentangled from a single cross section of data (Alessie, Lusardi, and Aldershof 1997; Jappelli 1999). However, while cross-sectional data cannot measure changes in households' well-being as they age over time, these data can be used to document differences in well-being across households at various stages in the life cycle in a given year. Several studies have found that even in a cross-sectional context, households at various stages of the life cycle differ with respect to their well-being, consumer debt choices, and portfolio allocation of wealth (Baek and Hong 2004; Milligan 2005; Poterba and Samwick 1997). Thus, another hypothesis tested in this study is whether economic well-being differs across young, middle-aged, and old households in a cross-sectional context. Such cross-

sectional differences in well-being have important implications for farm policy because some government support is particularly targeted for young and beginning farmers.

Methodology

Comparisons of the economic well-being of farm and nonfarm households are conducted in terms of income and net worth. Because of household heterogeneity, analyses are also conducted for subgroups of households based on their involvement in business activities and their life-cycle stages. Three methods are used to compare the economic well-being of farm and nonfarm households: Tukey-Kramer mean separation tests, regression analysis, and inequality distributions.

Mean Separation Tests

Tukey-Kramer tests are used to test for the equality of mean income and net worth for farm and nonfarm household groups based on their business activities and life-cycle stages. A *t*-test is normally used to compare means when two groups are present. However, comparing the means of more than two groups requires the use of multiple comparison tests. When the groups are equal in sample size, the Tukey test is the appropriate test to conduct. With unequal group sample sizes, as is the case here, the Tukey-Kramer test should be used to compare multiple means. The difference between the *t*-test and the Tukey-Kramer test is primarily based on the confidence interval of the test. If a pairwise *t*-test is applied to compare multiple means, then the confidence level is not $(1-\alpha)$ but rather $(1-k\alpha)$, where α is the significance level and *k* is the number of groups. With the Tukey-Kramer test, two means are significantly different from each other when

$$(1) \qquad \frac{\left|\overline{y}_i - \overline{y}_j\right|}{\sqrt{\dfrac{\left(s_i^2 / n_i + s_j^2 / n_j\right)}{2}}} \geq q(\alpha; k, v)$$

where $\overline{y}_i$ and $\overline{y}_j$ are the means, s_i *and* s_j are the standard errors, and n_i and n_j are the number of observations for group i and j, respectively, and $q(\alpha; k, v)$ is the critical value for k normally distributed variables with v degrees of freedom at the α significance level. In this study, Tukey-Kramer tests are used to test for significant differences in well-being among households with different involvement in business activities and at different stages of the life cycle.

Regression Analysis

Regression analysis is often used to test for differences across life-cycles stages where these life-cycle stages are represented with indicator variables. In this study, regression analysis is used to test whether the youngest households have a significantly lower well-being than their older peers. In comparison to the Tukey-Kramer tests, the advantage of regression analysis is that other control variables that are assumed to influence economic well-being may also be included. Education and family size are assumed to affect income and wealth, and are therefore included as control variables. The regression models are estimated for all farm and nonfarm households and also for subgroups of households based on their business activities.

Inequality Distributions

Farm and nonfarm households may have similar average well-being but the distribution of income and wealth among households may be different. The degrees of inequality in the income and wealth distributions are measured using Gini coefficients. A Gini coefficient of 0 shows a perfectly equal distribution of income and wealth among households. On the other hand, a Gini

coefficient of 1 shows extreme inequality where one household holds all income or net worth. A difference of 0.01 in Gini coefficients is generally considered statistically significant (Rodriquez et al. 2002). The Gini coefficient is calculated using the following formula:

$$(2) \qquad G = 1 + \frac{1}{n_i} - \frac{2}{\overline{y}_i n_i^2} \sum_{i=1}^{n_i} (n_i - i + 1) y_i$$

where the households are ranked in ascending order of y_i, and $\overline{y}_i$ and n_i are the mean and the number of observations of group i, respectively. Gini coefficients are calculated for groups of households based on their involvement with business activities and their life-cycle stages, and the results are compared for farm and nonfarm households.

Data and Results

This study uses data from two national surveys: the Agricultural Resource Management Survey (ARMS), which is conducted annually by the U.S. Department of Agriculture, and the Survey of Consumer Finances (SCF), which is conducted triennially by the Federal Reserve Board. The 19,468 households included in the 2004 ARMS data represent 2,060,822 farm households in the U.S. The 2004 SCF data include information for 4,519 households, with 45 of these households reporting that they operate a farm business.[1] The farm households in the SCF are excluded from the analysis, leaving 4,474 nonfarm households representing 111,380,760 nonfarm households in the U.S.

Farm and nonfarm households are further divided according to their involvement with business activities. Based on the USDA's farm typologies, the farm households are grouped into

---

[1] In principle, farm and nonfarm households can be compared using only the SCF data. However, a comparison between the mean income and wealth for the 45 farm households included in the SCF data and the 19,468 farm households included in the ARMS data reveals large discrepancies. Estimation results based on 45 observations are not reliable.

6,557 rural residence farms, 5,578 intermediate farms, and 7,333 commercial farms. The

nonfarm households include 3,134 nonentrepreneurial households that do not own businesses

and 1,340 entrepreneurial households with businesses.

Farm and nonfarm households are also divided into groups based on their stage in the life

cycle. For this study, five groups are chosen based on the age of the household head: < 34 years,

35-44, 45-54, 55-64, and >65 years old. Reports summarizing the ARMS data primarily use

these age categories (Mishra et al. 2002). Reports summarizing the SCF data usually use an

additional group with household heads older than 75 years, but for consistency the last two SCF

age categories are combined to match the definitions of the farm households' age groups

(Aizcorbe, Kennickell, and Moore 2003; Bucks, Kennickell, and Moore 2006). The

classification of households by their life-cycle stages produces reasonable sample sizes in each

group.

Economic well-being is represented by the total household income and net worth (wealth)

of the farm and nonfarm households. In the 2004 Survey of Consumer Finances, total household

income was recorded for 2003, whereas net worth was recorded as of the time of the interview

(June to December 2004). In order to match the time periods between the two surveys as well as

possible, the 2004 ARMS data are used, which include total household income for 2003 (as well

as 2004) and net worth estimated as of December 31, 2004.[2,3] Net worth is estimated differently

in the two data sets. In the SCF, the net worth of the business is reported as the value at which

the respondent estimated that he/she could sell his/her business. In the ARMS data, the farm

---

[2] Analyses using either 2004 or 2003 income data from the 2004 ARMS produce similar results.
[3] The average 2003 total household income of $62,109 estimated from the 2004 ARMS data is similar to the average 2003 income of $68,597 estimated from the 2003 ARMS data. Although it is possible to use the 2003 ARMS data and the 2004 SCF data to compare incomes and the 2004 ARMS data and the 2004 SCF data to compare wealth, this study uses the 2004 ARMS data (with the 2003 income and 2004 wealth) and the 2004 SCF data in an attempt to reduce the sampling error associated with data from multiple surveys.

business's net worth is estimated as the difference between total farm assets and total farm liabilities. Therefore, the results from the wealth comparisons must be interpreted with caution because of the different valuation methods used.

Tables 1 and 2 show the mean income and wealth for farm and nonfarm households. The average income of $62,109 for farm households is slightly lower than the average income for nonfarm households ($70,645). On the other hand, farm households have accumulated higher net worth ($755,386) than nonfarm households ($443,101). Economic well-being differs depending on the households' business activities. The average income for rural residence farms ($54,836) is similar to the average income of intermediate farms ($58,438), but is much lower than the average income of commercial farms ($137,718). The average wealth is $608,286 for rural residence farms, $826,922 for intermediate farms, and $1,794,791 for commercial farms, with a higher net worth associated with more involvement in farm business activities. Economic well-being is also higher for nonfarm households that own businesses, with an average income of $164,705 and net worth of $1,651,380. In comparison, nonfarm households without businesses have an average income of $56,878 and wealth of $266,257.

Mean Separation Tests

Tukey-Kramer mean separation tests are conducted for the three typologies of farm households and the two types of nonfarm households to test whether there are significant differences between farm and nonfarm households based on their involvement with business activities. Table 3 shows the differences in mean income and wealth among the five groups of households and denotes whether or not these differences are significant. The results show that business-owning nonfarm households have a significantly higher well-being than nonfarm households

9

without businesses and rural residence and intermediate farm households, in terms of both income and net worth. In addition, commercial farms have accumulated higher net worth than nonfarm households without businesses. Other means are not significantly different from each other even though some differences may seem large in dollar terms.[4] These findings provide strong evidence that in terms of economic well-being, rural residence and intermediate farms are comparable to nonentrepreneurial nonfarm households while commercial farms are comparable to entrepreneurial nonfarm households. Generally, the results show that a higher involvement in business activities is associated with higher economic well-being.

Another source of heterogeneity among households is their stage in the life cycle. The results from the Tukey-Kramer mean separation tests for income and wealth based on the age group of the household head are shown in tables 4, 5, and 6. The average income for farm households is highest for the 35-44 age group, while for nonfarm households income peaks at the 55-64 age group. Income is generally lower for the youngest and oldest age group for both farm and nonfarm households. The average incomes for the middle age groups 35-44, 45-54, and 55-64 are generally not significantly different from each other for both farm and nonfarm households. However, some of these income trends, particularly for the youngest and the oldest households, differ based on the households' involvement with business activities.

Rural residence farm households and nonentrepreneurial nonfarm households exhibit the strongest life-cycle patterns for the oldest households, with the mean income of these households being significantly lower than the mean income of their younger peers. This pattern of significantly lower income for the oldest households is less pronounced for intermediate farms and is not present for commercial farms and business-owning nonfarm households. In fact,

---

[4] Although individual differences between groups may be significant when using a pairwise *t*-test, insignificance in the Tukey-Kramer multiple-group comparisons may be due to larger variation among the groups.

commercial farms headed by the oldest individuals have significantly higher incomes than their middle age peers. Therefore, while the oldest rural residence farmers and nonfarm nonentrepreneurs show similar patterns of lower income than their peers, older commercial farmers and nonfarm entrepreneurs are similar because they do not earn lower incomes than their peers.

The life-cycle pattern of the youngest households having significantly lower incomes than their peers is mostly present for wage-earning nonfarm households, with the rest of the young households generally not earning lower incomes than their peers. The only exception is that the youngest households among intermediate farmers and nonfarm entrepreneurs have significantly lower incomes than the highest-earning 55-64 year-old households. Therefore, this study provides evidence that young farm households are not disadvantaged in comparison to their peers in terms of their average income. On the other hand, young nonfarm households without businesses do have significantly lower incomes than their peers.

Tables 4 and 5 show the results of net worth comparisons between farm and nonfarm households, taking into consideration the business activities and life-cycle stages of the households. The wealth of rural residence farms and nonfarm households without businesses show the well-known hump-shaped life-cycle distribution where net worth is highest for households who are in their pre-retirement years. However, the wealth of intermediate and commercial farms and entrepreneurial nonfarm households is incrementally higher across the life-cycle stages, without showing a decline for the oldest households. The Tukey-Kramer tests generally show that the net worth of the youngest households is significantly lower than the rest of the households. Likewise, the wealth of the oldest households is significantly higher than that of their younger peers. Farm households show more significant differences across age groups

11

than do nonfarm households. Therefore, similar life-cycle trends in wealth accumulation are found for farm and nonfarm households, although there are fewer significant differences across groups for nonfarm households.

Overall, the descriptive statistics and the mean separation tests show that farm and nonfarm households' well-being differ based on their business activities and life-cycle stages. The major result is that the income and wealth of entrepreneurial nonfarm households and commercial farms do not differ significantly from one another, and the well-being of nonfarm households without businesses does not differ significantly from those of rural residence and intermediate farms. Farm and nonfarm households also exhibit similar life-cycle patterns, except that young farm households do not seem disadvantaged in terms of income when compared to their older peers.

Regression Analysis

In addition to the Tukey-Kramer tests, regression analysis is used to test for differences in well-being across life-cycle stages. The different stages of the life cycle (ages 35-44, 45-54, 55-64, and >65) are represented with dummy variables. Because policymakers are particularly concerned about the well-being of young farmers, the youngest age group is excluded from the regression model so that these households can be compared with the rest of the households. Regression analysis has the advantage of including other control variables that are likely to influence economic well-being, such as the household head's education level and the number of people in the household.

The results shown in tables 7 and 8 confirm the findings of the mean separation tests. In comparison to the youngest age group, older nonfarm households generally exhibit higher

incomes and net worth. On the other hand, older farm households have a higher wealth but not significantly higher income in comparison to their younger peers. These findings are generally similar for the various degrees of business involvement. Education and household size are associated with higher income and wealth for nonfarm households. However, household size does not affect the wealth of farm households, and education does not affect the income of intermediate and commercial farms. Similar to nonfarm households, rural residence farms with more educated household heads have higher incomes, possibly due to the fact that their income mainly comes from off-farm employment.

In summary, the regression results confirm the findings from the Tukey-Kramer mean separation tests that both farm and nonfarm households exhibit life-cycle trends for wealth, while significant life-cycle variations in income are only seen among nonfarm households. Once again, the results show that young farm households do not have lower incomes than their older counterparts.

Inequality Distributions

Comparisons of the average income and wealth of farm and nonfarm households have limitations. While some groups of households may have the same average well-being as others, the distribution of well-being among the households in the group may be quite different. Such considerations are important because policymakers are particularly concerned about income and wealth equity among families and the redistribution of resources in the economy.

Gini coefficients are calculated to measure the degree of income and wealth inequality among households (tables 9 and 10). A Gini coefficient of zero represents complete equality among families, while a coefficient of 1 represents complete inequality where one household

holds all of the income or wealth in the economy. The results show that income and net worth have a similar degree of inequality among farm households, with a Gini coefficient for income of 0.5067 and a Gini coefficient for wealth of 0.5129. On the other hand, nonfarm households have incomes that are more equally distributed than net worth, with Gini coefficients for income and wealth of 0.5388 and 0.8080, respectively. Generally, income inequality is similar for farm and nonfarm households, while nonfarm households exhibit greater inequality of wealth.

Income inequalities differ based on the households' involvement in business activities. The Gini coefficients for income inequality are similar for rural residence farms, intermediate farms, and nonentrepreneurial nonfarm households (0.4731, 0.4730, and 0.4777, respectively), and these are lower than the Gini coefficients of 0.5891 for commercial farms and 0.6111 for entrepreneurial nonfarm households. In other words, the groups of households that are more involved in entrepreneurial activities tend to have a higher level of income inequality. On the other hand, households that rely heavily on wage earning jobs for their income tend to have more equally distributed incomes than their entrepreneurial peers. Therefore, rural residence households and intermediate households are similar to nonfarm households without businesses, in terms of both average levels of income and the distribution of income among households. Likewise, commercial farms are similar to entrepreneurial nonfarm households based on these two criteria.

While income inequalities differ based on the level of involvement with business activities, wealth inequality is relatively similar for the three types of farms. The Gini coefficients for the distribution of net worth across farm households are 0.4863 for rural residence farms, 0.4687 for intermediate farms, and 0.5156 for commercial farms. The two types of nonfarm households have Gini coefficients for wealth of 0.7648 for nonentrepreneurial

households and 0.7553 for entrepreneurial households. Therefore, although nonfarm households tend to have more unequally distributed wealth than farm households, wealth inequality among the two types of nonfarm households does not depend on the level of entrepreneurial activities.

The life-cycle stages of the households also affect the inequality in income and wealth, but both farm and nonfarm households exhibit similar trends. Except for the nonentrepreneurial households, the oldest groups of households typically have the highest income inequality. Wealth inequalities are generally highest for the youngest groups of households, with the exception of entrepreneurial nonfarm households.

Overall, these findings indicate that income inequality is similar for farm and nonfarm households, while wealth is less equally distributed among nonfarm households. Income inequality differs based on the level of entrepreneurship, with higher income inequalities for both farm and nonfarm households who are more involved with business activities. However, wealth inequality is not affected by the level of entrepreneurship. The life-cycle patterns of inequalities are similar across households, with income inequality being highest for the oldest households while wealth inequality is highest for the youngest households.

Summary and Conclusions

This paper compares the economic well-being of farm and nonfarm households using national, representative data from the USDA's 2004 Agricultural Resource Management Survey and the Federal Reserve Board's 2004 Survey of Consumer Finances. Because of the heterogeneity of households, the analyses are performed for all households as well as for subgroups of households based on their involvement in business activities and their life-cycle stages. This study uses

three methods to compare households: Tukey-Kramer mean separation tests, regression analysis, and inequality distributions.

Income and wealth comparisons between farm and nonfarm households reveal several interesting results. While on average farm and nonfarm households have similar economic well-being, they also differ in their level of involvement in business activities. The Tukey-Kramer mean separation tests show that the well-being of rural residence and intermediate farms is generally similar to that of wage-earning nonfarm households, while commercial farms have similar economic well-being to that of business-owning nonfarm households.

The economic well-being of households also differs based on their life-cycle stages. The Tukey-Kramer tests and regression analysis show that young farm households have significantly lower wealth but not significantly lower incomes compared to their older peers. On the other hand, young nonfarm households have both lower income and lower wealth than their peers. Income for the oldest rural residence and nonentrepreneurial households is significantly lower than that of their younger counterparts. Overall, farm households do not exhibit strong life-cycle trends in income while nonfarm households do. Farm and nonfarm households have similar life-cycle patterns for wealth.

Income and wealth inequalities among households are examined using Gini coefficients. Results show that income and wealth exhibit similar degrees of inequality for farm households whereas income is more equally distributed than wealth for nonfarm households. Income inequality among households is larger for both farm and nonfarm households that are more involved with business activities. However, wealth inequality does not seem to differ based on the business activities of the households. Generally, income inequality is higher for older households while wealth inequality is higher among households headed by younger individuals.

The insights from this study have important implications for the new Farm Bill discussions that focus on the economic well-being of farm households and the parity of well-being between farm and nonfarm households. As of 2004, farm households do not seem disadvantaged compared to nonfarm households in terms of both the average income and wealth levels and the distribution of income and wealth among households. These findings suggest that previous and current assistance to agriculture has been successful in raising the well-being of farm households to levels comparable to those of nonfarm households.

The well-being of young and beginning farmers is of particular interest to policymakers. The 2002 Farm Bill provides special assistance for young and beginning farmers in terms of credit assistance and conservation opportunities. The evidence from this study suggests that young farm households have lower wealth but not significantly lower incomes than their older peers. Therefore, young farm households do not seem income disadvantaged in comparison to their peers.

This study also shows that rural residence and intermediate farm households are similar to wage-earning nonfarm households, while commercial farm households are similar to nonfarm households with businesses. Current farm policy does not stipulate different provisions of subsidies based on the degree of involvement in the farm business, despite the fact that the sources of income (from farm or off-farm activities) differ considerably among farms based on their farm typology. The primary source of income for rural residence households is off-farm employment, while on average their farm businesses produce a negative farm income. On the other hand, commercial farms derive most of their income from the farm business, similar to other entrepreneurial nonfarm households. Because farm households' well-being differs based

on their involvement with business activities, future farm policy may need to consider this heterogeneity when determining eligibility for different government programs.

Further studies may explore the effectiveness of government assistance in increasing the economic well-being of farm households. The contribution of government payments to total household income is relatively easy to separate from other sources of income. However, the accumulation of previous government subsidies into farm wealth through savings would be more difficult to determine. In addition, other studies have shown that previous government payments have lead to increased farm land values and thus an increase in farm wealth.

The findings of this study are based on cross-sectional data from two national surveys for 2004.[5] Conclusions based on cross-sectional data have to be interpreted with caution. One of the goals of the Farm Bill is to provide a safety net for farmers when they experience loss of income. While the results in this study show that farm and nonfarm households had similar economic well-being in 2004, income for farm households may be more volatile over time, which may necessitate government support to establish a safety net for farm households.

---

[5] The analyses were also conducted using 2001 data and the conclusions were qualitatively similar.

References

Aizcorbe, A.M., A.B. Kennickell, and K.B. Moore. "Recent Changes in U.S. Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances." *Federal Reserve Bulletin* 89(2003):1-32.

Alessie, R., A. Lusardi, and T. Aldershof. "Income and Wealth over the Life Cycle: Evidence from Panel Data." *Review of Income and Wealth* 43(1997):1-32.

Bucks, B.K., A.B. Kennickell, and K.B. Moore. "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances." *Federal Reserve Bulletin* 92(2006), in press.

Baek, E., and G.-S. Hong. "Effects of Family Life-Cycle Stages on Consumer Debts." *Journal of Family and Economic Issues* 25(2004):359-385.

Carlin, T.A., and E.I. Reinsel. "Combining Income and Wealth: An Analysis of Farm Family Well-Being." *American Journal of Agricultural Economics* 55(1973):38-44.

El-Osta, H.S., and M.J. Morehart. "The Dynamics of Wealth Concentration Among Farm Operator Households." *Agricultural and Resource Economics Review* 31(2002):84-96.

Gentry, W.M., and R.G. Hubbard. "Entrepreneurship and Household Saving." *Advances in Economic Analysis and Policy* 4(2004):1-55.

Hopkins, J., and M. Morehart. "Assessing Farm Household Well-Being – Beyond Farmers and Farm Income." *Amber Waves* 2(2004):8-8.

Hurst, E., and A. Lusardi. "Liquidity Constraints, Household Wealth, and Entrepreneurship." *Journal of Political Economy* 112(2004):319-347.

Jappelli, T. "The Age-Wealth Profile and the Life-Cycle Hypothesis: A Cohort Analysis with a Time Series of Cross-Sections of Italian Households." *Review of Income and Wealth* 45(1999):57-75.

Milligan, K. "Life-Cycle Asset Accumulation and Allocation in Canada." *Canadian Journal of Economics* 38(2005):1057-1106.

Mishra, A.K., H.S. El-Osta, M.J. Morehart, J.D. Johnson, and J.W. Hopkins. *Income, Wealth, and the Economic Well-Being of Farm Households*. Washington, DC: USDA Economic Research Service Agricultural Economic Report Number 812, 2002.

Poterba, J.M., and A.A. Samwick. "Household Portfolio Allocation Over the Life Cycle." NBER working paper 6185, 1997.

Quadrini, V. "Entrepreneurship, Saving, and Social Mobility." *Review of Economic Dynamics* 3(2000):1-40.

Rodriguez, S.B., J. Diaz-Gimenez, V. Quadrini, and J.-S. Rios-Rull. "Updated Facts on the U.S. Distributions of Earnings, Income, and Wealth." *Federal Reserve Bank of Minneapolis Quarterly Review* 26(2002):2-35.

Table 1. Descriptive Statistics for Farm Households

	All Farm Households	Rural Residence Farm Households	Intermediate Farm Households	Commercial Farm Households
Mean income [a]				
All	62,109	54,836	58,438	137,718
Age <34	66,101	62,307	49,550	136,903
Age 35-44	73,452	69,059	56,589	136,795
Age 45-54	71,993	66,473	60,196	132,619
Age 55-64	68,251	61,616	66,653	135,199
Age >65	39,231	31,111	46,400	159,075
Mean net worth [b]				
All	755,386	608,286	826,922	1,794,791
Age <34	423,677	307,148	457,511	1,041,728
Age 35-44	609,059	439,956	638,015	1,559,533
Age 45-54	755,726	585,662	786,483	1,751,972
Age 55-64	843,054	693,533	891,187	1,966,480
Age >65	783,055	662,191	945,677	2,232,869
Number of sample households				
All	19,468	6,557	5,578	7,333
Age <34	871	239	281	351
Age 35-44	2,860	787	729	1,344
Age 45-54	5,658	1,626	1,527	2,505
Age 55-64	5,891	1,909	1,867	2,115
Age >65	4,188	1,996	1,174	1,018
Number of represented households				
All	2,060,822	1,372,814	530,213	157,795
Age <34	90,797	55,680	26,045	9,072
Age 35-44	266,224	173,700	63,557	28,967
Age 45-54	543,450	359,178	126,876	57,397
Age 55-64	613,078	378,298	192,686	42,094
Age >65	547,273	405,959	121,050	20,265

[a] Income is reported for 2003 in the 2004 ARMS data.
[b] Net worth is reported for 2004.

Table 2. Descriptive Statistics for Nonfarm Households

	All Nonfarm Households	Nonfarm Households without Businesses	Nonfarm Households with Businesses
Mean income [a]			
All	70,645	56,878	164,705
Age <34	45,118	42,629	72,967
Age 35-44	74,168	62,237	143,948
Age 45-54	94,150	73,318	192,391
Age 55-64	99,794	73,926	223,608
Age >65	50,037	41,532	149,148
Mean net worth [b]			
All	443,101	266,257	1,651,380
Age <34	73,747	50,424	334,748
Age 35-44	298,083	165,115	1,075,792
Age 45-54	533,004	288,510	1,686,038
Age 55-64	827,746	473,311	2,524,236
Age >65	606,624	429,627	2,669,090
Number of sample households			
All	4,474	3,134	1,340
Age <34	751	679	72
Age 35-44	877	656	221
Age 45-54	1,071	657	414
Age 55-64	905	521	384
Age >65	870	621	249
Number of represented households			
All	111,380,760	97,160,385	14,220,375
Age <34	24,770,657	22,738,728	2,031,929
Age 35-44	22,850,963	19,514,504	3,336,459
Age 45-54	23,194,870	19,136,974	4,057,896
Age 55-64	16,933,748	14,007,305	2,926,443
Age >65	23,630,522	21,762,874	1,867,648

[a] Income is reported for 2003 in the 2004 SCF data.
[b] Net worth is reported for 2004.

Table 3. Tukey-Kramer Tests for Farm and Nonfarm Households by Household Type Group

Household type group (a)	Household Type Group (b)				
	Rural Residence Farm Households	Intermediate Farm Households	Commercial Farm Households	Nonfarm Households without Businesses	Nonfarm Households with Businesses
Income					
Rural residence farm households	X	3,602	82,882	2,042	109,870*
Intermediate farm households		X	79,280	-1,559	106,268*
Commercial farm households			X	-80,840	26,988
Nonfarm households without businesses				X	107,827*
Nonfarm households with businesses					X
Net worth					
Rural residence farm households	X	218,636	1,186,506	-342,029	1,043,094*
Intermediate farm households		X	967,869	-560,665	824,458*
Commercial farm households			X	-1,528,534*	-143,412
Nonfarm households without businesses				X	1,385,123*
Nonfarm households with businesses					X

Notes: The numbers in the table are differences in means between group (b) and group (a). * denotes significance at the 5% level.

Table 4. Tukey-Kramer Tests for Farm Households' Income by Age Group

		Age Group (b)			
Age group (a)	Age <34	Age 35-44	Age 45-54	Age 55-64	Age >65
Income for all farm households					
Age <34	X	7,351	5,892	2,150	-26,870*
Age 35-44		X	-1,459	-5,201	-34,221*
Age 45-54			X	-3,742	-32,762*
Age 55-64				X	-29,020*
Age >65					X
Income for rural residence farm households					
Age <34	X	6,753	4,166	-691	-31,195*
Age 35-44		X	-2,587	-7,443*	-37,948*
Age 45-54			X	-4,857	-35,361*
Age 55-64				X	-30,505*
Age >65					X
Income for intermediate farm households					
Age <34	X	7,038	10,646	17,103*	-3,150
Age 35-44		X	3,607	10,065	-10,188
Age 45-54			X	6,457	-13,796*
Age 55-64				X	-20,253*
Age >65					X
Income for commercial farm households					
Age <34	X	-108	-4,284	-1,704	22,172
Age 35-44		X	-4,176	-1,596	22,280
Age 45-54			X	2,580	26,456*
Age 55-64				X	23,876*
Age >65					X

Notes: The numbers in the table are differences in means between group (b) and group (a). * denotes significance at the 5% level.

Table 5. Tukey-Kramer Tests for Farm Households' Net Worth by Age Group

Age group (a)	Age Group (b)				
	Age <34	Age 35-44	Age 45-54	Age 55-64	Age >65
Net worth for all farm households					
Age <34	X	185,382*	332,049*	419,377*	359,377*
Age 35-44		X	146,667*	233,995*	173,995*
Age 45-54			X	87,328*	27,328
Age 55-64				X	-60,000
Age >65					X
Net worth for rural residence farm households					
Age <34	X	132,809	278,514*	386,386*	355,043*
Age 35-44		X	145,705*	253,577*	222,235*
Age 45-54			X	107,872*	76,530*
Age 55-64				X	-31,342
Age >65					X
Net worth for intermediate farm households					
Age <34	X	180,504	328,972*	433,676*	488,165*
Age 35-44		X	148,468*	253,172*	307,661*
Age 45-54			X	104,704*	159,194*
Age 55-64				X	54,490
Age >65					X
Net worth for commercial farm households					
Age <34	X	517,805*	710,244*	924,751*	1,191,141*
Age 35-44		X	192,439	406,946*	673,336*
Age 45-54			X	214,507	480,897*
Age 55-64				X	266,390
Age >65					X

Notes: The numbers in the table are differences in means between group (b) and group (a). * denotes significance at the 5% level.

Table 6. Tukey-Kramer Tests for Nonfarm Households' Income and Net Worth by Age Group

Age group (a)	Age<34	Age 35-44	Age 45-54	Age 55-64	Age >65
			Age Group (b)		
Income for all nonfarm households					
Age <34	X	29,050*	49,032*	54,676*	4,920
Age 35-44		X	19,982	25,626	-24,130
Age 45-54			X	5,644	-44,112*
Age 55-64				X	-49,756*
Age >65					X
Income for nonfarm households without businesses					
Age <34	X	19,608*	30,689*	31,297*	-1,097
Age 35-44		X	11,081	11,689	-20,705*
Age 45-54			X	608	-31,786*
Age 55-64				X	-32,394*
Age >65					X
Income for nonfarm households with businesses					
Age <34	X	70,981	119,424	150,641*	76,182
Age 35-44		X	48,443	79,660	5,201
Age 45-54			X	31,217	-43,243
Age 55-64				X	-74,460
Age >65					X
Net worth for all nonfarm households					
Age <34	X	224,336	459,257*	753,999*	532,877*
Age 35-44		X	234,922	529,663*	308,541
Age 45-54			X	294,742	73,620
Age 55-64				X	-221,122
Age >65					X
Net worth for nonfarm households without businesses					
Age <34	X	114,691	238,086*	422,887*	379,203*
Age 35-44		X	123,394	308,196*	264,512*
Age 45-54			X	184,801	141,118
Age 55-64				X	-43,684
Age >65					X
Net worth for nonfarm households with businesses					
Age <34	X	741,043	1,351,289	2,189,488*	2,334,342*
Age 35-44		X	610,246	1,448,444*	1,593,299*
Age 45-54			X	838,198	983,053
Age 55-64				X	144,854
Age >65					X

Notes: The numbers in the table are differences in means between group (b) and group (a). * denotes significance at the 5% level.

Table 7. Regression Results for Farm Households

	All Farms	Rural Residence Farms	Intermediate Farms	Commercial Farms
Income				
Intercept	20,145**	18,460*	26,694	64,661**
	(10,157)	(9,647)	(16,439)	(31,446)
Age class 35-44	5,764	5,001	7,756	-595
	(6,436)	(5,934)	(12,270)	(15,711)
Age class 45-54	6,165	4,367	9,192	-469
	(5,993)	(6,304)	(7,768)	(14,672)
Age class 55-64	6,536	2,387	18,483*	8,664
	(5,739)	(6,142)	(10,304)	(16,422)
Age class >65	-17,024**	-21,836**	-771	37,146
	(6,577)	(6,983)	(7,198)	(23,353)
Education	12,552**	12,120**	8,990	17,061**
	(2,480)	(1,741)	(5,612)	(8,310)
Household size	3,595**	3,409**	-175	6,154
	(1,317)	(1,139)	(1,882)	(4,155)
Observations	19,468	6,557	5,578	7,333
Adj. R-squared	0.039	0.094	0.016	0.007
Net worth				
Intercept	-190,724	-179,194	-79,324	-57,311
	(263,510)	(199,744)	(201,787)	(366,733)
Age class 35-44	166,285**	113,616	188,865	600,321*
	(66,829)	(69,702)	(116,640)	(366,011)
Age class 45-54	333,142**	280,264**	301,711**	758,297**
	(128,055)	(99,419)	(139,502)	(245,036)
Age class 55-64	473,178**	419,524**	474,516**	998,389**
	(85,797)	(86,366)	(111,932)	(248,730)
Age class >65	486,763**	458,149**	556,254**	1,343,255**
	(116,291)	(106,090)	(136,786)	(186,222)
Education	173,552**	135,413**	195,969**	377,227**
	(40,528)	(30,083)	(67,025)	(165,138)
Household size	43,589	37,051	7,239	-4,020
	(43,993)	(36,535)	(35,543)	(36,695)
Observations	19,468	6,557	5,578	7,333
Adj. R-squared	0.027	0.047	0.044	0.023

Table 8. Regression Results for Nonfarm Households

	All Nonfarm Households	Nonfarm Households without Businesses	Nonfarm Households with Businesses
Income			
Intercept	-79,608**	-45,642**	-209,860**
	(4,639)	(3,718)	(25,170)
Age class 35-44	18,814**	13,680**	43,332**
	(2,989)	(2,674)	(16,108)
Age class 45-54	42,157**	26,640**	108,146**
	(3,526)	(3,081)	(17,674)
Age class 55-64	58,968**	35,646**	149,387**
	(4,763)	(3,520)	(24,925)
Age class >65	30,200**	17,583**	94,808**
	(2,840)	(2,436)	(20,400)
Education	30,835**	22,137**	70,931**
	(1,123)	(943)	(5,936)
Household size	15,385**	10,878**	23,640**
	(1,045)	(854)	(4,805)
Observations	4,474	3,134	1,340
Adj. R-squared	0.04	0.08	0.02
Net worth			
Intercept	-952,811**	-475,959**	-2,616,555**
	(49,611)	(32,624)	(317,052)
Age class 35-44	153,998**	93,750**	463,493**
	(26,018)	(17,657)	(171,189)
Age class 45-54	403,414**	214,876**	1,227,087**
	(30,713)	(20,335)	(181,974)
Age class 55-64	773,715**	433,694**	2,143,411**
	(44,387)	(31,726)	(243,848)
Age class >65	727,256**	478,184**	2,484,706**
	(38,771)	(27,343)	(369,615)
Education	276,375**	154,526**	775,928**
	(12,560)	(8,975)	(77,239)
Household size	101,360**	39,410**	210,498**
	(10,219)	(6,081)	(63,018)
Observations	4,474	3,134	1,340
Adj. R-squared	0.03	0.03	0.03

Table 9. Inequality Measures for Farm Households

	All Farm Households	Rural Residence Farm Households	Intermediate Farm Households	Commercial Farm Households
Gini coefficients for income				
All	0.5067	0.4731	0.4730	0.5891
Age <34	0.4722	0.3841	0.4808	0.6067
Age 35-44	0.4145	0.3245	0.4396	0.5896
Age 45-54	0.4507	0.3974	0.4195	0.5868
Age 55-64	0.4660	0.4322	0.4515	0.5606
Age >65	0.6351	0.6186	0.5571	0.6255
Gini coefficients for net worth				
All	0.5129	0.4863	0.4687	0.5156
Age <34	0.6026	0.5317	0.6151	0.5688
Age 35-44	0.5302	0.4837	0.4146	0.5581
Age 45-54	0.5172	0.4871	0.4555	0.4869
Age 55-64	0.4983	0.4840	0.4487	0.5000
Age >65	0.4881	0.4559	0.4796	0.5001

Table 10. Inequality Measures for Nonfarm Households

	All Nonfarm Households	Nonfarm Households without Businesses	Nonfarm Households with Businesses
Gini coefficients for income			
All	0.5388	0.4777	0.6111
Age <34	0.4438	0.4388	0.4213
Age 35-44	0.4707	0.4162	0.5392
Age 45-54	0.5316	0.4618	0.5890
Age 55-64	0.5793	0.4991	0.6481
Age >65	0.5468	0.4838	0.6611
Gini coefficients for net worth			
All	0.8080	0.7648	0.7553
Age <34	0.8564	0.8597	0.7075
Age 35-44	0.8030	0.7527	0.7401
Age 45-54	0.7756	0.7071	0.7275
Age 55-64	0.7520	0.6980	0.6719
Age >65	0.7553	0.6978	0.7617