

Farm Household Heterogeneity

Economic growth and technological efficiency have changed the way farm families approach employment choices (Binswanger, 1974, 1978; Thirtle, 1985a, 1985b). A byproduct of the labor-saving technologies adopted by farmers was greater potential for increased household income from multiple job holdings by household members. Economic growth—which has upgraded communication services, reduced transportation costs, and improved education levels of farm operators—has also facilitated interactions between farm and nonfarm labor markets.

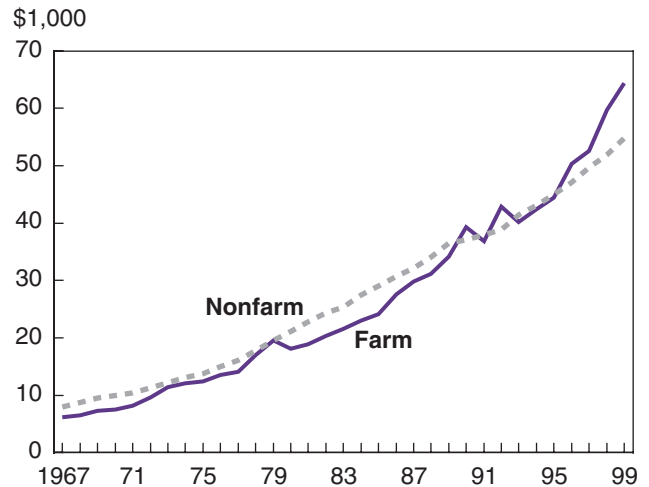
At the same time, U.S. farms have grown increasingly different in the size, specialization, location (relative to urban influence in the surrounding area), and level of commitment to farming by the operator. Recent publications by the Economic Research Service, USDA (Gundersen et al.; Offutt, 2000; Kuhn and Offutt, 1999) have cited heterogeneity as a key consideration in providing a farm safety net. How farm families differ has been examined by many researchers. However, analyses of the diversity in U.S. farming today as it relates to nonfarm households are generally inadequate.

Farm Households Working More Off the Farm and Accumulating Wealth

The average money income of U.S. farm households first exceeded that of all U.S. households in the early 1990s and has been higher ever since (table 2, fig. 10). Average farm household income in 1999 was \$64,347, compared with \$54,842 for the average nonfarm household. Median income for farm households has

Figure 10
Average income of farm and nonfarm households, 1967-99

In recent years farm household income has exceeded nonfarm household income.



Source: Ahearn (1986) and Agricultural Resource Management Survey (ARMS) 1988-1999.

also been roughly on par with the median income of all U.S. households in recent years.⁴

What accounts for the closing of the income gap for farm households? Since 1964, earnings from off-farm sources have grown from \$10.1 billion to \$114 billion (in nominal terms). Meanwhile, sectorwide net cash farm income has increased three-fold (fig. 11). Thus,

⁴Average levels of income can be overly influenced by unusually large or small values. Estimates of median income help guard against these influences.

Table 2—Income of farm operator households, by source

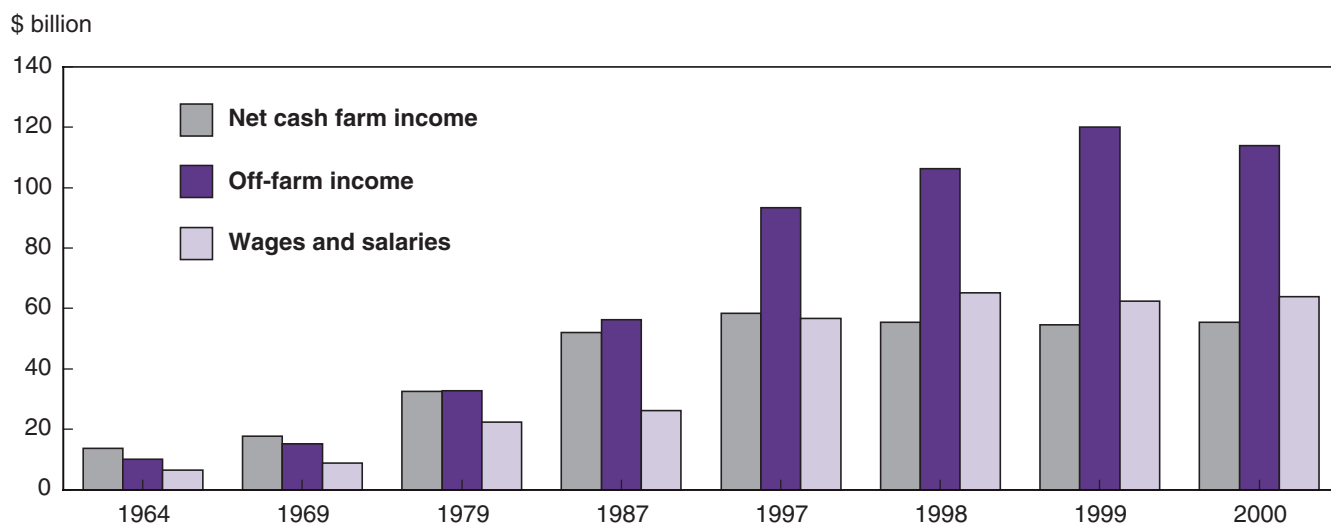
Year	Farm	Off-farm	Total	Off-farm share	Farm household income as a share of U.S. average household income
					Dollars
1960	1,913	2,141	4,054	52.8	65.0
1964	2,323	3,367	5,689	59.2	77.5
1969	3,472	5,537	9,009	61.5	94.4
1979	4,857	13,884	18,742	74.1	95.8
1987	15,659	25,449	41,108	61.9	127.0
1997	6,205	46,358	52,562	88.2	105.8
1998	7,106	52,628	59,734	88.1	115.2
1999	6,359	57,988	64,347	90.1	117.3
2000	3,329	58,709	61,947	94.8	109.0

Source: 1964, 1969, 1979, 1987 Census of Agriculture, U.S. Department of Commerce. USDA, Economic Research Service, Agricultural Resource Management Study (ARMS) for 1998-2000. 1997, Census of Agriculture, U.S. Department of Agriculture.

Figure 11

Farm sector net cash income and income of farm households from off-farm sources

The increase in farm household earnings has been driven by the increase in off-farm earnings.



Source: Census of Agriculture, 1964-1997, and Agricultural Resource Management Survey (ARMS), 1998-2000.

the increase in farm household earnings has been driven by the increase in off-farm earnings. Wages and salaries still make up a significant proportion of off-farm earnings, even though they declined from 65 percent in 1964 to 56 percent in 2000. Nonetheless, nominal wage earnings (off the farm) of farm households was nearly nine times larger in 2000 than in 1964.

There are several reasons for this growth, primarily an increase in off-farm labor. Off-farm labor force participation rates for rural residents rose from approximately 51.5 percent in 1960 to 65 percent in 1990 (table 3). Participation of rural farm women more than doubled during the same period. More farm operators also worked off the farm, and increasingly full time (200 days or more off the farm) (fig. 12). Finally, the eco-

nomie boom of the 1990s helped to create more jobs and higher wages in the local commuting areas of farm households.

Farm households appear to be relatively wealthy compared to society in general. Wealth represents potential spending power, and two individuals with the same income but differing assets will have different consumption possibilities. For example, the average net worth of farm families in 1999 was \$563,563, compared with \$88,000 for all U.S. households. However, a majority of the wealth (net worth) is in farm assets, which cannot be liquidated in the short run. Average farm household net worth (which constitutes about two-thirds of total wealth) increased 26 percent from 1993 to 1999.

Table 3—Labor force status of rural and urban persons age 16 and over, 1960-90

	All persons			Women		
	Urban	Rural	Rural farm	Urban	Rural	Rural farm
	<i>Percent in labor force</i>					
1960 ¹	57.0	51.3	51.5	37.3	28.8	22.9
1970	59.4	54.7	54.4	43.1	36.0	31.6
1980	63.6	59.4	60.0	52.1	45.4	40.3
1990	65.9	63.3	65.2	57.6	54.2	52.3

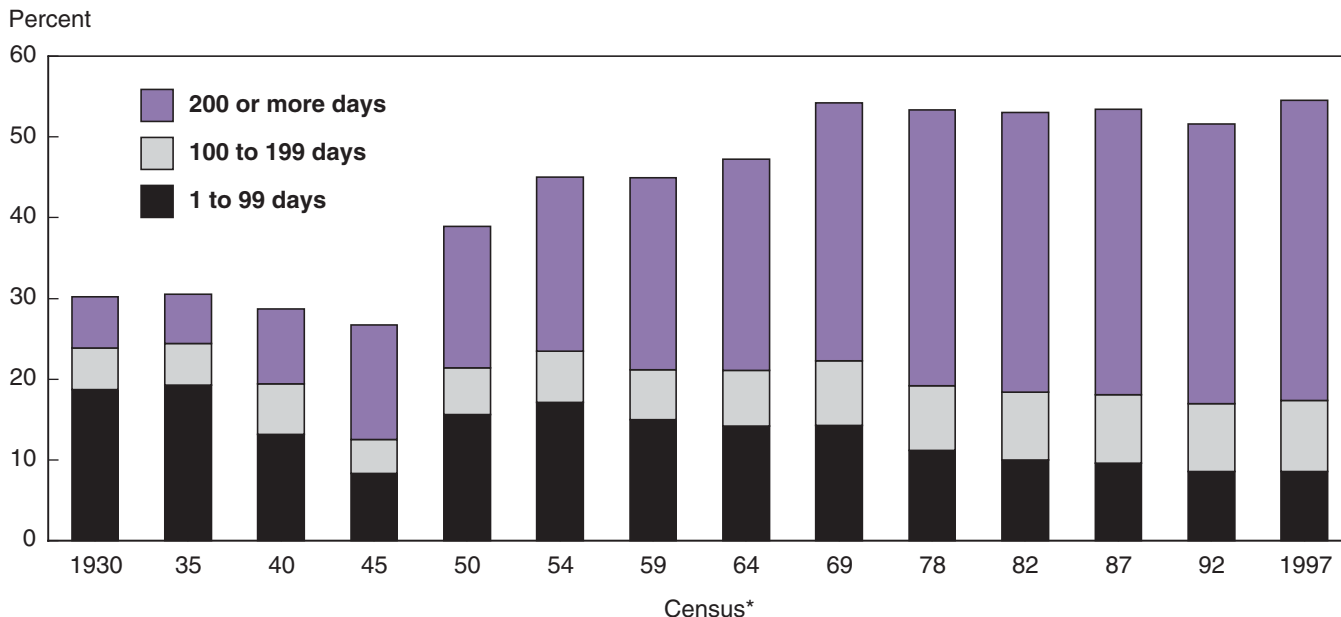
¹Employment status is reported for persons 14 and over for this year.

Source: Census of Population, U.S. Department of Commerce.

Figure 12

Farm operators reporting off-farm work, 1930-97

One-third of farm operators work off-farm essentially full-time.



*Data for 1974 are unavailable.

Source: Census of Agriculture, various years.

All Operators Have Diverse Income Streams, Older Ones Enjoy More Wealth

Farm household income, grouped by operator age, follows the traditional life cycle, cresting at age 45-54 (fig. 13). The farm’s contribution to household income diminishes with the operator’s age. For example, average income from farming decreases from \$10,000 for operators under 35 to approximately \$2,800 for those 65 and older. Conversely, the share of off-farm income (regardless of source) increases with age. This is consistent with the findings of Mishra and Morehart, 2001; Ahearn et al., 1993; Gasson et al., 1988; and Hill, 2000. Younger farm operators (up to age 44) earn more than 85 percent of their income from off-farm sources (fig. 13). There could be several reasons for this. First, with the strong nonfarm economy of recent years, younger farm operators have been able to establish the farm business while pursuing other work opportunities. Second, younger farm operators are in the wealth accumulation phase and are doing so by diversifying their portfolio, both on and off the farm. Third, modern technology enables farmers to increase their productivity and efficiency, which allows more time to work off-farm. Finally, younger farm operators,

motivated by expansion plans or raising a family, are more aggressive in exploring earning alternatives.

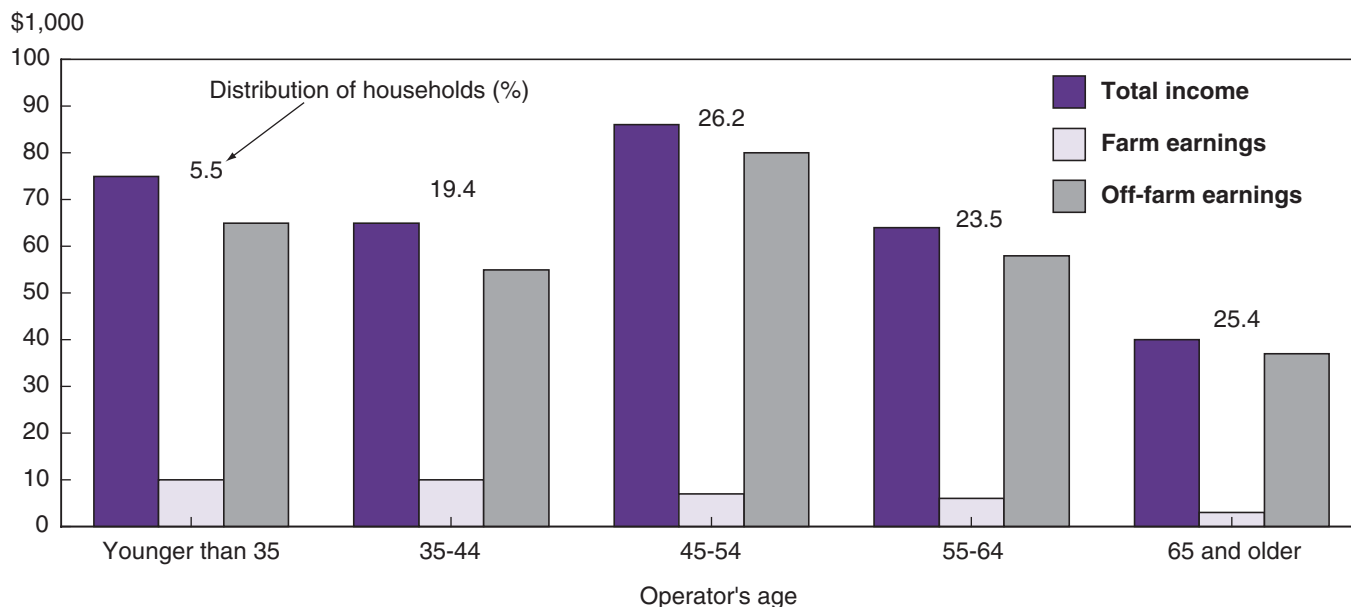
Meanwhile, farm operators 65 or older, while earning much less than younger operators and the average U.S. household, still have incomes 14 percent higher than nonfarm households headed by a person in the same age group (\$39,625 farm versus \$34,671 nonfarm in 1999). For these households, the majority of income is from unearned (passive) sources (such as interest and dividends, off-farm business income, annuities, military and other retirement).

Farm household wealth also follows a distinct pattern, though it peaks later in the life cycle than income. The households of operators age 55-64 tend to have almost 50 percent of their total net worth in nonfarm assets (highest among all groups). Farm net worth’s share of household net worth increases with age. For example, the average net worth from farming increases from \$216,121 for operators under 35 to \$447,029 for those 65 and older. Beginning farmers/farm households have the highest debt, both farm and nonfarm. This erodes their net worth and demonstrates that unless a farm is inherited, beginning farmers borrow capital to finance farming operations.

Figure 13

Total, farm-related, and off-farm income per household, by operator's age, 1999

Farm operators depend less on farm earnings as they age.



Source: USDA, Economic Research Service, Agricultural Resource Management Study (ARMS) survey, 1999

Education Promotes Income and Wealth

The most valuable of all capital is that invested in human beings (Marshall, 1949). Theory predicts a direct correlation between educational level, earnings, and wealth (Becker, 1975). Studies by Nelson and Phelps (1966) and Welch (1970) point out that education enhances one’s ability to receive, interpret, and understand new information. Huffman (1977), Lin (1991), and El-Osta and Morehart (1999) show that higher levels of farm operator education are likely to induce adoption of new technology and, ultimately, boost productivity.

Farm household income increases with the level of education. For example, households headed by operators who have attended or completed graduate school (\$97,633) earned 2.6 times more than operators who had less than a high school education (\$37,375). Households headed by operators with a high school education, on average, had income (\$56,270) 1.32 times higher than all U.S. households in the same cohort (\$44,246) in 1999.

Farmers with more education tend to work more off-farm. As the level of education of farm operators increases, income from farming decreases and income from off-

farm sources increases (fig. 14). These results suggest that farm operators allocate time and seek jobs that improve their earning capabilities (Huffman, 1977).

As with income, education and wealth (net worth) are positively related. More educated farm operators tend to have higher levels of wealth. For example, operators with college degrees or higher levels of education run households with nearly twice as much wealth as those led by operators who have not completed high school. Further, higher education is associated with a more diversified portfolio of assets. In 1999, operators with graduate degrees (6.4 percent) had a total net worth of \$768,546, of which half was in nonfarm net worth (\$351,715). However, this group also had almost all of its income from off-farm sources, which is consistent with Mishra and Morehart (2001).

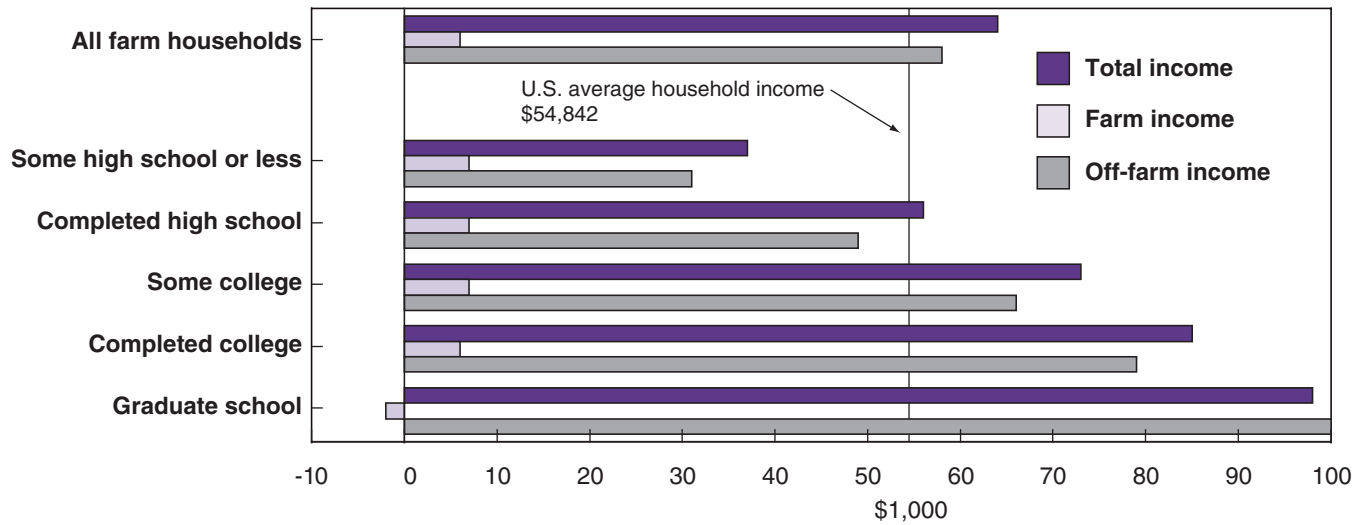
Larger Households Bring in More Income, Smaller Ones Enjoy Greatest Wealth

Heavily influencing household income is household size. Families with members who are eligible to work, it is reasoned, could both work on or off the farm and bring in added income. Therefore, the number of family members would be positively related with household income. Farm households with three to five mem-

Figure 14

Total, farm-related, and off-farm income per household, by educational level, 1999

More educated farm operators earn most of their household income from off-farm sources



Source: USDA, Economic Research Service, Agricultural Resource Management Study (ARMS) survey, 1999

bers had the highest income (\$70,023) among farm households in 1999. These households had income 27 percent higher than the average U.S. household (but comparable to U.S. households with five or more members). Farm operator households with one or two members (\$60,491) were the most dependent on income from off-farm sources. Farm households with five or more members (\$67,857) earned 27 percent of their income from farming and 73 percent from off the farm.

Household size also factors into accumulation of wealth. The two should be inversely related since a large household demands more expenditures and leaves less money for savings and wealth accumulation (Leon and Rainelli, 1976; Noda, 1970; Mishra and Morehart, 1998). As it turns out, level of wealth and size of farm household are negatively related. Farm households with one or two members (59 percent of households) have the most wealth (net worth of \$595,920) including farm and nonfarm assets. These households have one-third of their assets invested off the farm. Farm households with five or more members had the lowest total wealth (\$453,054) and nonfarm net worth. Across all farm sizes, farm debt was the major source of debt, and this increased with family size. Large households may be more involved in farming (and less likely to be retired), thus incurring more farm debt.

Sources of Income and Wealth Vary With Specialization

Dairy, grain, and soybean farms produce commodities covered by traditional commodity programs. These farm types are relatively prominent among full-time operators (those working 2,000 hours or more on the farm, see app. table 4). Beef, cattle, and other livestock farms not covered by traditional commodity programs are prominent among part-time operators who work 200 days or more off the farm.

Dairy farm households received less than a third of their income from off-farm sources, followed by hog and cash grain, cotton, and oilseed farm households. Farm households with specialized enterprises such as dairy tend to have higher average farm income, and farm income makes up a larger share of total household income (Mishra and Sandretto, 2002). Dairy is a labor-intensive operation, limiting the hours that operators can devote to off-farm work. Despite this high dependence on farm income, dairy households had income above that of the average U.S. household.

Even though cash grain households have benefited most from farm programs through capitalization of government payments into land values (Schmitz, 1995; Phipps, 1984; Featherstone and Baker, 1988; Just and Miranowski, 1993), producers of high-value crops (fruit, tree nuts, vegetables, nursery and greenhouse)

had the largest net worth (\$742,208) among farm households. Their nonfarm net worth accounted for a third of their total net worth. On the other hand, “other” livestock (includes poultry and general livestock) farm households had the least wealth (\$479,332) in 1999. This is consistent with the fact that much of poultry production occurs on relatively small farms excluding the poultry operation itself, which is on a contract basis. In addition to lowering the capital requirements, these arrangements enable farm households to work more off the farm. This is reflected in the total off-farm earnings of livestock households. In fact, off-farm earnings represent 102 percent of household income for farm households specializing in beef and other livestock production. As a result, one-third of their total net worth (wealth) is comprised of nonfarm assets (Mishra and Morehart, 2001).

Largest Farms Have Most Income, Wealth, Debt

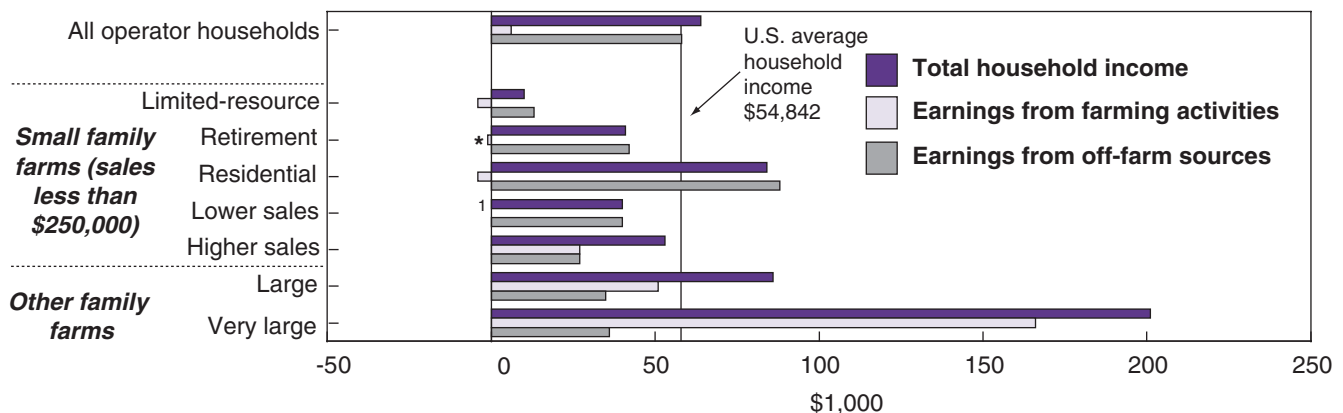
Although 90 percent of U.S. farms are classified as small farms, agricultural production is highly concentrated among large and very large family farms (see “Farm Typology,” p. 9). These two groups together made up only 8 percent of all farms, but accounted for 57 percent of production in 1999 (fig. 15). Households operating very large farms had the highest average household income, \$210,206, about four times the

average for all U.S. households. These farms received only 18 percent of their income from off-farm sources (app. table 4).

Households operating residential/lifestyle farms or large family farms also had average income above the U.S. average, but the sources of income differed between the two groups. Residential/lifestyle households received virtually all of their income from off-farm sources, while large farms received just 40 percent from off the farm. Households operating higher sales small farms had an average income very near the U.S. average, and half came from off-farm sources.

Limited-resource, retirement, and lower sales farm households had average household incomes below the U.S. average and relied heavily on off-farm income. Households operating lower sales small farms averaged \$39,764 in 1999, or 73 percent of the average for all U.S. farm households. Practically all of their income came from off-farm sources. Nearly all the income of households with retirement farms came from off the farm, and 62 percent of off-farm income was from unearned sources such as Social Security and investment income. For 21 percent of retirement farms, the Conservation Reserve Program (CRP) was the primary source of farm income. Off-farm income averaged \$13,114 for households with limited-resource

Figure 15
Total, farm-related, and off-farm income per household, by farm typology group, 1999
Small farm households depend heavily on off-farm income.



Note: Household income data are not collected for nonfamily farms. Earnings from off-farm sources can be larger than total household income if earnings from farming are negative.

* The relative standard error exceeds 25 percent but is no more than 50 percent.

¹Earnings from farming activities suppressed because the standard error exceeds 75 percent.

Source: USDA, Economic Research Service, 1999 Agricultural Resource Management Study, version 1, for farm operator household data. U.S. Bureau of the Census, Current Population Survey, for all U.S. households.

farms, but they lost an average of \$3,500 from farming. As a result, these small farms averaged only \$9,534 in total household income, about one-sixth the U.S. average.

Farm size and wealth are positively related. The value of farm assets increases from \$76,995 for limited resource farms to \$1,431,288 for very large farms. Only limited-resource, retirement, and residential/lifestyle farms have farm assets below the level of the average farm household (\$389,498). Farm debt follows a similar pattern. It increased from \$6,557 for limited-resource farms to \$368,129 for very large farms. Households operating very large farms had the highest wealth, both farm and nonfarm. Interestingly, the wealth of residential/lifestyle farm households is equally divided into farm and nonfarm sources, reflecting the importance of nonfarm assets to these households.

Renters Depend Most on Farm Income, Own Least Wealth

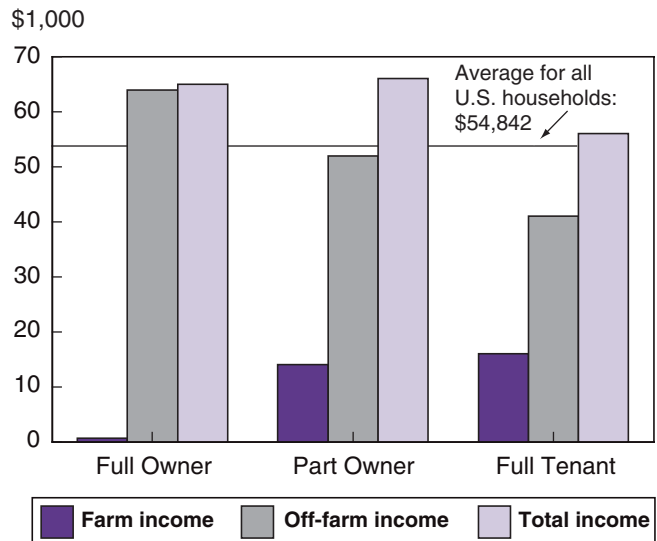
Farm tenure describes the farm operator's ownership interest in the land he or she farms. They can be (1) full-owners, who own all the land they operate; (2) part-owners, who own some and rent the remainder of their land; and (3) tenants, who rent all of their land or work on shares for others (see "Landlords in U.S. Agriculture," p. 23). The majority of farms (58 percent) reported full ownership in 1999, while 34 percent owned part and rented part of the farmland they operated. Only 8 percent of operations rented all of their land.

The composition of farm household income differs significantly among tenure groups. In 1999, average full-owner households earned \$64,556 with nearly all of their income coming from off-farm sources (fig. 16). This is consistent with full-owners comprising a large share of the limited-resource (64 percent), residential/lifestyle (62 percent), and lower sales (50 percent) groups, whose households depend primarily on off-farm income. The average part-owner household earned the highest total income (\$65,815) among tenure types. Part ownership was the most common form of tenure among higher sales small farms, large family farms, and very large family farms, accounting for about two-thirds of each group. Full tenants earned \$56,382, slightly higher than the average for all U.S. households.

Figure 16

Total, farm-related, and off-farm income per household, by farm tenure, 1999

Full owners earn almost all their income off the farm; part-owners have both farm and off-farm income.



Source: USDA, Economic Research Service, 1999 Agricultural Resource Management Study, version 1, for farm operator household data.

Leasing land has been traditionally viewed as the bottom rung of the tenancy ladder. Young farmers would begin their careers by leasing land, often from relatives. As they grew older, they would buy some land, but continue to rent. The oldest farmers would cut back on farming by no longer leasing and concentrate on the land they owned (Hoppe et al., 1995; Wunderlich, 1991). However, recent studies by Mishra et al. (1999a, 1999b) concluded that farmers who rent/lease land had higher net farm income per dollar of asset (in farming) than other farmers, partly from lesser need for capital financing. About 30 percent of the total income of full tenants is from farming (fig. 16), but even they depend on off-farm income.

Since land is the principal farm business asset, the composition of farm household wealth differs significantly among farm tenure groups. In 1999, only part-owner households had above-average (for farm households) farm net worth. They also had the highest level of net worth (\$658,860), with 76 percent in farm and 24 percent in nonfarm net worth. However, these farm households have the largest farm debt. Full-tenant households have the least amount of wealth (\$241,772), and it is equally split between farm and

Landlords in U.S. Agriculture

According to the 1999 Agricultural Economics and Land Ownership Survey (AELOS), a follow-on survey to the 1997 Census of Agriculture, there are 2.26 million owners of agricultural land in the United States (excluding public owners, Federal and State Governments, Indian reservations, railroads, and institutions). Landlords are owners who rent land to others for farm use. They include the 1.99 million owners who do not farm themselves, and nearly 264,000 owner-operators who farm part of their land and rent part to other farmers. Private landlords have approximately 393 million acres rented.

Most (84 percent) farmland owners who lease land to others are individuals or families. These landowners lease out 70 percent of all leased acres and earn 73 percent of the total value of farmland rent received. Eleven percent of all landlords are partnerships. Corporations, both family and nonfamily, make up 3 percent of all owners who lease land to others. These corporations, however, lease out 9 percent of all acres leased to others and they earn 8 percent of the total value of rent received. Landlords also receive part of the income from the sale of agricultural products. They receive government subsidies, which are capitalized into the farmland (Barnard et al., Ryan et al.). Contrary to popular belief, a majority of landlords are people who have retired from nonfarm-related activities (27 percent), followed by retired farm operators (21 percent) and private business employees (21 percent).

Share of landlord owners, acres rented, and rent



Source: Economic Research Service, USDA.

nonfarm sources. Tenant households have lower farm assets (one-third lower than the average farm household) in general as they are starting farmers and mostly renting/leasing land for farming.

Location Influences Household Income and Wealth

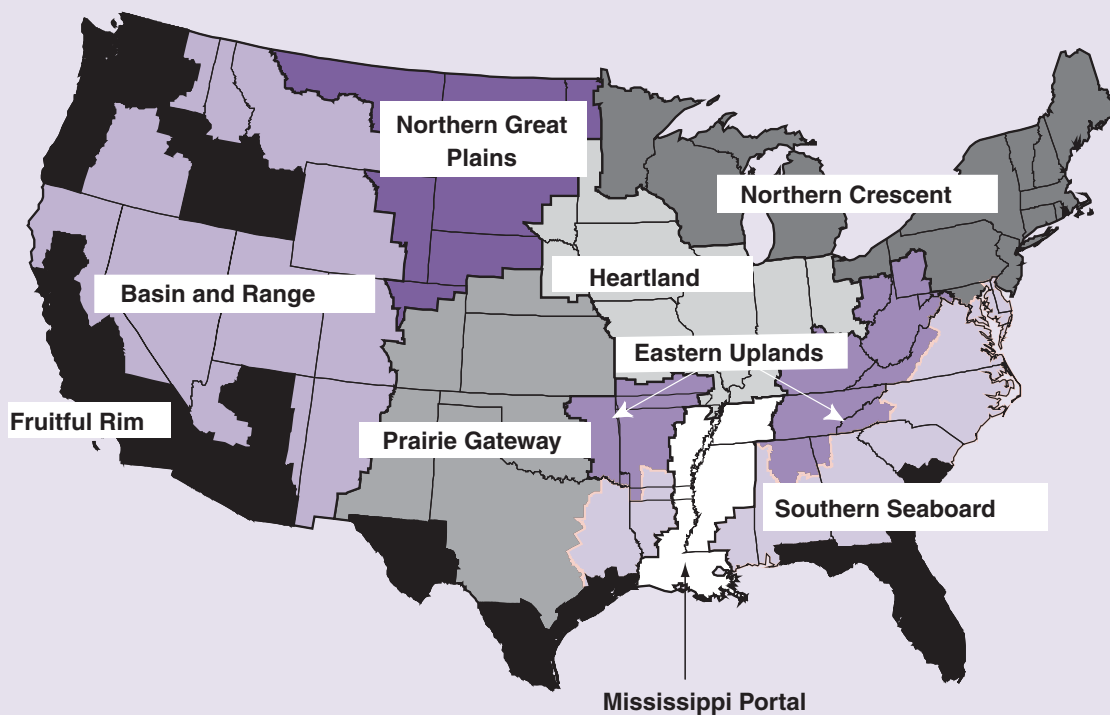
Since off-farm income is a major source of income to farm households, location of the farm relative to off-farm employment opportunities is vital. Many studies

have investigated the potential effects of the availability and accessibility of off-farm jobs (Cogan, 1981; Buttel et al., 1982; Sumner, 1982; Sander, 1983; Streeter and Saupe, 1986; Findeis et al., 1987; Mishra and Goodwin, 1997). Farmers near urban areas likely have access to more active labor markets, and would be expected to supply more labor hours off the farm.

Two-thirds of all U.S. farms are located in nonmetro counties (see box, "Geographic Units," p. 24). About

Geographic Units

Resource Regions. The Economic Research Service (ERS) has developed new resource regions based on characteristics of the land and the commodities produced (Lipton, 1999). These regions cross State boundaries, but are more homogeneous with respect to resources or production than regions based on combinations of States.



Metro-Nonmetro Status. *Metro* areas are defined by the U.S. Office of Management and Budget (OMB) as geographic areas with a large population nucleus (generally at least 50,000 inhabitants), plus adjacent communities that are socially and economically integrated with that nucleus (U.S. Dept. Comm., Cen. Bur., 1993, pp. A8-A9). Metro designations as of 1993, which identified 813 metro counties, are used in this report.

Nonmetro counties are a residual, that part of the Nation lying outside metro areas. Nonmetro counties are diverse, however, and the 2,276 nonmetro counties can be categorized into smaller groups with common characteristics. Nonmetro counties are sorted into two groups: those *adjacent* to metro areas (991 counties) and those that are *not adjacent* (1,285 counties) (Butler and Beale, 1994). Adjacent counties are physically adjacent to one or more Metropolitan Statistical Areas (MSA) and have at least 2 percent of the employed labor force in the nonmetro county commuting to central metro counties. Nonmetro counties that do not meet these criteria fall into the "not adjacent" category. One would expect urban influences to be stronger in adjacent counties than in nonadjacent counties.

Economic Specialization. Nonmetro counties can also be categorized according to their economic specialization. There are 556 *farming-dependent* counties where farming accounted for at least 20 percent of earned income over the 3 years from 1987 to 1989 (Cook and Mizer, 1994, pp. 6-7).

three-fourths of small farms (farming-occupation) and large family farms are in nonmetro counties. In addition, about two-fifths of higher sales (small) farms and large family farms are in rural counties not adjacent to a metro area, compared with one-third of all farms.

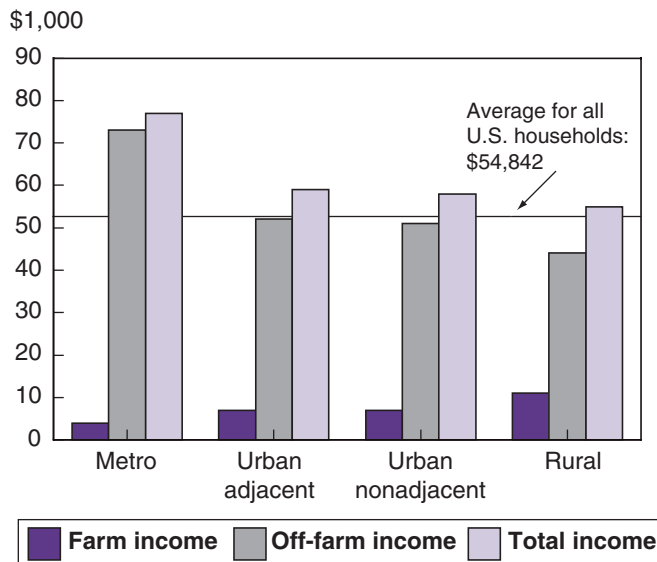
On average, one-fifth of the total income of farm households located in rural areas (both adjacent and nonadjacent) came from farming in 1999, indicating a high level of dependence (80 percent) on off-farm work even here. The total household incomes of these farms are on par with all U.S. households (fig. 17). Farm households in metro areas (central city, fringe, medium metro, and small metro) have the highest level of income (\$76,982) among farms by location, and 95 percent of this income is derived through off-farm sources (mostly wages and salaries). In these households, both the farm operator and the spouse tend to work off-farm.

Farm households located in urban (adjacent and nonadjacent) areas tend to be similar—they have some income (almost \$7,000) from farming, and off-farm income again is the major contributor to total household income (fig. 17). These results reaffirm that location and composition of income in a farm household are related. Still, farm households in remote rural areas depend heavily on off-farm employment.

Wealth for farm households in different locations follows the same pattern as income. Farm households in or near a metro area had the highest level of wealth (a net worth of \$650,120), one-third from nonfarm

Figure 17
Total, farm-related, and off-farm income per household, by farm location, 1999

Even farm households in rural areas draw substantial income from off-farm employment.



Source: USDA, Economic Research Service, 1999 Agricultural Resource Management Survey, version 1, for farm operator household data.

sources. These farm households also had the highest farm assets and lowest farm debt. This suggests they may be full-owners renting land and machinery to part-owners and tenants. At the other extreme, farm households in rural areas have one-fourth of their net worth in off-farm assets. Rural farm households had the highest farm debt and considerable farm assets (\$378,665) in 1999.