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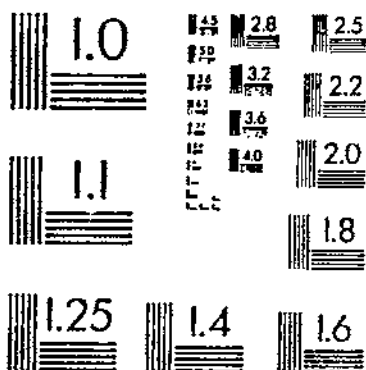
THE NATIONAL INCOME AND PRODUCT ACCOUNTS

ESTIMATING FARM INCOME BY TYPE

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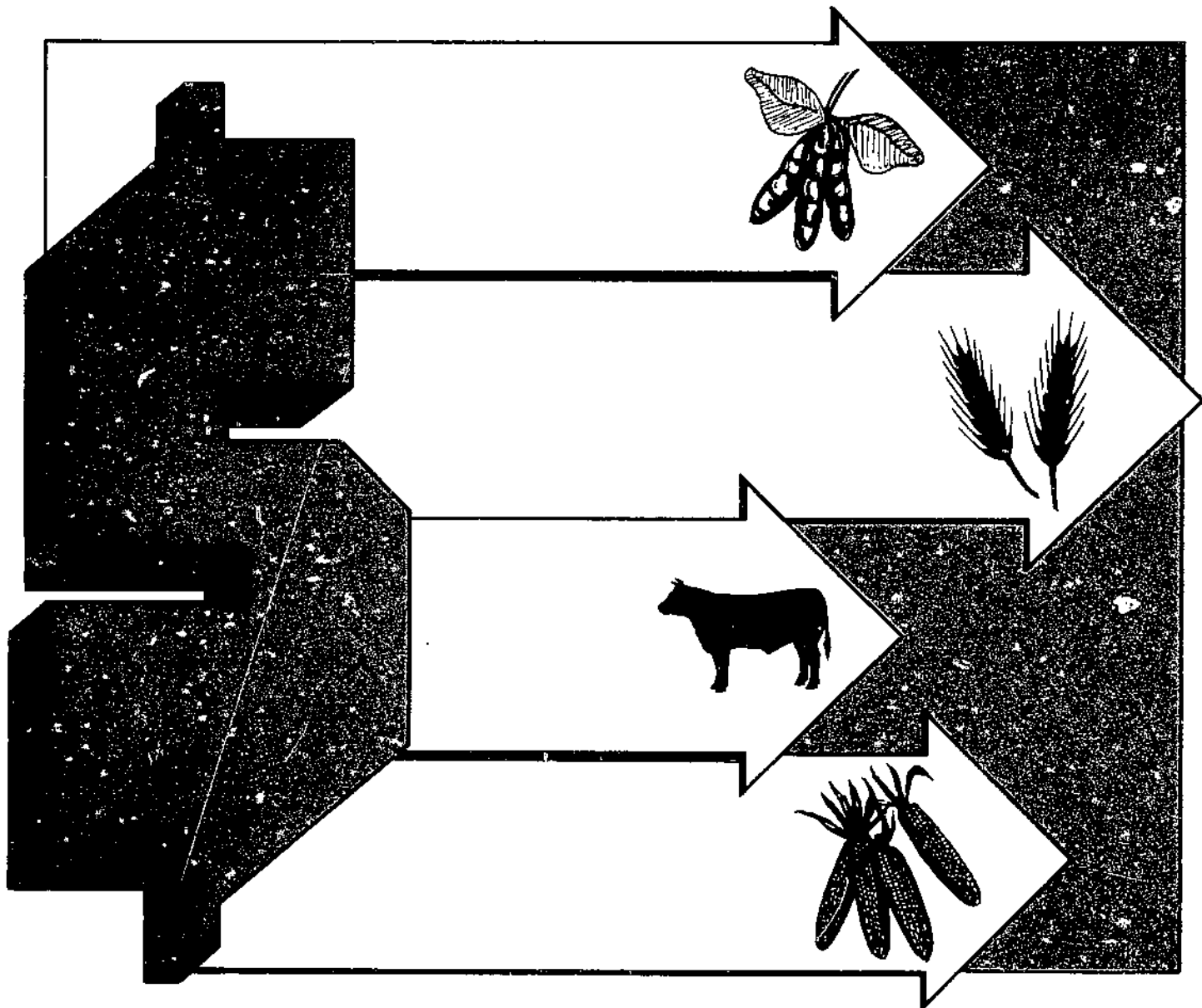
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The National Income and Product Accounts

Estimating Farm Income by Type of Farm

Richard Simunek, Agapi Somwaru,
Sandra Suddendorf, Gary Lucier



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Abstract

U.S. farms are becoming increasingly specialized, limiting the usefulness of traditional aggregate analysis. This report identifies data limitations, advantages in estimating farm income by type of farm, and the implications of SIC-based measures. The potential relationships between the SIC type of farm income estimates and the other farm sector accounts, including productivity, costs of production, and input-output accounts, are analyzed.

Keywords: Farm income, farm policy, Standard Industrial Classification, economic accounting.

Note

The 1982 and 1983 estimates of farm income by type of farm are based on distribution data from the 1978 Census of Agriculture. Relative annual changes of farm income are therefore stressed because the estimates of the absolute level of farm income are subject to greater error. Forthcoming data from the 1982 Census of Agriculture will be used to update the type-of-farm income estimates.

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Summary

U.S. farms are becoming increasingly specialized, limiting the accuracy of some traditional, aggregate economic analyses of their performance. This trend has increased the importance of the use of the Standard Industrial Classification (SIC), which is based on the degree of agricultural production specialization. Estimating type-of-farm income based on the Bureau of the Census's SIC is the key to establishing a close relationship between commodity production and farm income.

Most farmers' incomes come from the production of a single agricultural commodity. Prior analyses could not completely measure the effects on individual commodities of such factors as production expenses, Government payments, and price changes. Because analysts could not take these factors into account, they could misinterpret farm earnings or inaccurately assess a crop's worth. In contrast, type-of-farm analyses link the impact of such factors to the performance of a given commodity. The U.S. Department of Agriculture (USDA) classifies a farm by the type of product or group of products which account for 50 percent or more of the total value of all agricultural products sold by that farm during the year.

Type-of-farm analyses will allow Government officials to examine individual commodities more closely than before. For example, wheat, corn, rice, and soybeans were grouped under a single cash grains account, which prevented analysts from examining how prices acted on a single commodity's output and how the result influenced farm income. These crops will now be separated and evaluated individually. Beef cattle, hogs, and sheep, once lumped under the livestock class, will be examined separately to determine, say, the impact of feed grain prices on each.

Type-of-farm analyses will help avoid deceptive data. For example, a less structured analysis showed that dairy cash receipts were 13 percent of total U.S. farm cash receipts in 1983. Using updated methodologies, analysts find that dairy farm income actually reached 22 percent of total 1983 U.S. farm income. The lack of disaggregated measures of farm income by type of farm prevented monitoring the direct relationship of commodity production to farm income. This result was not traced before.

SIC data from the Census of Agriculture has three advantages: availability, so that time series estimates can be developed immediately; low cost, because the base data are already being gathered by the Census Bureau; and specialization, because commodities may now be examined by State, by primary occupation of the farmer, and according to debt and income situations. No other data sources or procedures offered the statistical and minimal-cost advantages of the type-of-farm methodology.

The National Income and Product Accounts: Estimating Farm Income by Type of Farm

Richard Simunek, Agapi Somwaru,
Sandra Suddendorf, Gary Lucier*

Introduction

As farms have become more specialized, the need for estimating type-of-farm income based on the Standard Industrial Classification (SIC) has become crucial. The objectives of this report are to:

1. Identify the statistical problems involved in estimating farm income by type of farm.
2. Analyze the economic implications of the SIC-based measures of income on farmer well-being.
3. Compare the economic accounting relationships of the type-of-farm estimates to the other farm sector accounts based on the SIC distributions, including costs of production, input-output, and productivity.
4. Identify data limitations affecting the reliability of current and future SIC estimates.
5. Outline areas of future type-of-farm research.

The SIC is based on the degree of production specialization. The Standard Industrial Classification was developed to promote the comparability of statistics by defining major industries based on their primary economic activity. The industrial classification permits collection, compilation, and analysis of sector industry based on a two-digit, three-digit, or a four-digit level. The four-digit level is the most detailed while the two-digit level is the most aggregated. For example, SIC 01 is the crop

production sector; SIC 02 is the livestock production sector. Sector 011 is the cash grain sector. Sector 0111 is the wheat sector and sector 0115, the corn sector.

For a farm to be classified as a particular type, it must have sales of a particular product or group of products equal to 50 percent or more of the total value of all agricultural products sold by that farm during the year. The 1978 Census of Agriculture summary included data for 14 types of farms.¹ The SIC classified the following types of farms as crop farms: cash grain, cotton, tobacco, other field crop, fruit and tree nut, vegetable and melon, horticultural specialty, and general crop (table 1). The SIC classified the following types of farms as livestock farms: beef cattle, hog, and sheep, including ranches and feedlots; dairy; poultry and egg; animal specialty; and general livestock.

Cash grain farms grew wheat, rice, corn, soybeans, grain sorghum, barley, oats, buckwheat, flaxseed, rye, dry field beans, dry field peas, and other cash grains not elsewhere classified. Other field crop farms grew sugar beets, sugarcane, Irish potatoes, sweetpotatoes, peanuts, hops, mint, broomcorn, field seeds, hay, and flax (except for flaxseed). Horticultural specialty establishments primarily produced ornamental plants and nursery products, such as fruit stocks, vegetable seeds and plants, sod, flowers, and shrubbery. General crop farms derived 50 percent or more of their total value of sales from agricultural crops but less than 50 percent from any particular crop group.

*The authors are agricultural economists in the National Economics Division, Economic Research Service, U.S. Department of Agriculture.

¹The 1978 Census collected data on 36 SIC categories. Only 14 groups were in summary cross tabulations. Two categories, feedlots and all other beef cattle, hog, and sheep farms, have been combined in this report.

Table 1—An enumeration of published Census SIC data

Farm type	1959	1964	1969 ¹	1974 ¹	1978
Livestock:					
Beef cattle, hogs, and sheep	X	X	X	X	X
Beef cattle	na	na	na	na	na
Farms	na	na	na	na ²	na ²
Ranches	X	X	X	na ²	na ²
Feedlots	na	na	na	na	na
Hogs	na	na	na	na	na
Sheep and goats	na	na	na	na	na
Dairy	X	X	X	X	X
Poultry and eggs	X	X	X	X	X
Poultry	na	na	na	na	na
Eggs	na	na	na	na	na
Animal specialties ³	na	na	na	X	X
General livestock ³	na	na	na	X	X
Subtotal, all livestock farms	na	na	na	na	na
Crop:					
Cash grain	X	X	X	X	X
Wheat	na	na	na	na	na
Corn	na	na	na	na	na
Soybeans	na	na	na	na	na
Rice	na	na	na	na	na
Other cash grain	na	na	na	na	na
Other field crops	na	na	na	na	na
Cotton	X	X	X	X	X
Tobacco	X	X	X	X	X
Sugar	na	na	na	na	na
Irish potatoes	na	na	na	na	na
Other	X	X	X	X	X
Vegetables and melons	X	X	X	X	X
Fruit and tree nuts	X	X	X	X	X
Horticultural specialties ³	na	na	na	X	X
General crops ³	na	na	na	X	X
Subtotal, all crop farms	na	na	na	na	na
General and miscellaneous farms	X	X	X	na	na
Total, all farms	X	X	X	X	X

X = Census data published.

na = Census data not published.

¹For farms with sales of \$2,500 or more. Farms with sales of less than \$2,500 are excluded.

²Cattle farms and ranches are combined.

³Replaced general and miscellaneous farms.

Poultry and egg establishments included the production of chickens (broilers, fryers, and roasters) and turkeys for slaughter, chicken eggs (including table eggs and hatching eggs and the sale of cull hens), turkey hatching eggs, and poultry hatcheries. Animal specialties included farms that primarily produced fur and fur-bearing animals and rabbits. General livestock farms earned 50 percent or more

of sales from livestock products but less than 50 percent from any particular livestock group.

Staff from the Census of Agriculture and the U.S. Department of Agriculture's (USDA) Economic Research Service (ERS) developed more detailed 1978 and 1982 Census of Agriculture data to increase the usefulness of the type-of-farm income

distributions. The staff is tabulating Census of Agriculture data to estimate farm income for wheat farms, corn farms, soybean farms, rice farms, other cash grain farms, cattle farms, cattle ranches, cattle feedlots, hog farms, and sheep farms. The more detailed SIC farm income estimates will more closely link product and income on these farms (table 2).

Analysts used two measures to describe 1978 product specialization (table 3). SIC sector specialization in primary production, referred to here as the SIC sector specialization ratio, measured the percentage of total SIC commodity receipts accounted for by the corresponding SIC sector. Specialization in primary production was particularly high, so structural characteristics differed greatly. Crop farms accounted for about 89 percent of crop sales, and livestock farms accounted for 94 percent of livestock and livestock product sales. Dairy farms produced about 92 percent of dairy cash receipts. Cash grain farms generated 78 percent of total grain sales, and poultry farms accounted for 98 percent of poultry sales.

Primary cash receipts, as a share of total cash receipts for the farms in each SIC sector, was the second measure of production specialization. In this report, this ratio is the SIC farm specialization ratio. For example, dairy farm income was not limited solely to cash sales of dairy products. About 18 percent of the total farm sales by dairy farms in 1978 were nondairy product sales. Thus, the dairy farm specialization was 82 percent.

Number of Farms

Table 4 compares farms with sales of over \$2,500 for each of the 1969, 1974, and 1978 Censuses of Agriculture. The \$2,500 cutoff existed because the 1969 and 1974 censuses did not summarize SIC data for farms with sales of less than \$2,500. More important, the definition of a farm for the 1974 Census was changed to exclude farms with sales of less than \$1,000. The reporting and definitional differences increased the difficulty of estimating sector income, especially on a per farm basis.

Changes in the type-of-farm classification occurred between the 1969 and 1974 censuses. The number

Table 2—Census SIC data, by major commodities, 1978

Farm type	Commodity cash receipts	Percentage of total cash receipts		Commodity rank	Published Census SIC data
		Mil. dols.	Percent		
Cash grain	36,497	25.4	—	—	X
Corn	13,602	9.5	2	—	na
Soybeans	12,421	8.6	3	—	na
Wheat	10,474	7.3	6	—	na
Rice	1,887	1.3	15	—	na
Other field crop:					
Cotton	4,552	3.2	10	—	X
Tobacco	3,253	2.3	13	—	X
Other					
Vegetables and melons	8,406	5.9	— ¹	—	X
Fruit and tree nuts	6,542	4.6	— ²	—	X
Horticultural specialties	3,493	2.4	12	—	X
General crops	—	—	—	—	X
Beef cattle	28,936	20.2	—	—	na
Farms	10,508 ⁴	7.3 ⁴	5	—	na
Ranches	7,103 ³	5.0 ³	8	—	na
Feedlots	11,325 ⁴	7.9 ⁴	4	—	na
Hogs	9,779	6.8	7	—	na
Sheep	410	.3	—	—	na
Total livestock, red meats	39,125	27.3	—	—	X
Dairy	18,105	12.6	1	—	X
Poultry and eggs	8,268	5.7	—	—	X
Poultry	4,628	3.2	9	—	na
Eggs	3,640	2.5	11	—	na
Animal specialties	1,161	.8	22	—	X
General livestock	—	—	—	—	X
Total	143,466	100.0	—	—	X

X = Census data published.

na = Census data not published.

— = not applicable.

¹Potato cash receipts, the largest vegetable and melon commodity, was \$1.8 billion and ranked 14th in importance.

²Orange cash receipts, the largest fruit and tree nut commodity, was \$1.3 billion and ranked 18th in importance.

³Estimated from 1969 Census of Agriculture.

⁴Estimated from 1969 and 1978 Census of Agriculture.

Table 3—Product specialization, by type of farm, 1974 and 1978

Farm type	SIC sector specialization in primary production ¹		SIC farm specialization in primary production ²	
	1974	1978	1974	1978
	<i>Percent</i>			
Crop farms:				
Grain	80.3	77.6	83.5	85.0
Cotton	60.1	76.3	73.5	78.0
Tobacco	76.5	79.9	77.4	80.6
Other field crops	79.2	77.3	56.7	55.7
Vegetables and melons	76.8	82.2	84.9	85.6
Fruits, nuts, and berries	92.6	94.0	95.1	95.5
Livestock farms:				
Cattle and calves	81.4	86.1	NA	NA
Hogs and pigs	74.7	82.1	NA	NA
Sheep and lambs	83.4	89.2	NA	NA
Total, cattle, hog, and sheep farms	87.3	85.3	87.3	88.5
Dairy	93.7	91.8	80.0	82.4
Poultry	97.0	97.7	94.5	95.0

NA = not available.

¹SIC sector specialization in primary production means, for example, that grain farms sold 77.6 percent of 1978 U.S. grain. Nongrain farms sold the remaining 22.4 percent of U.S. grain.

²SIC farm specialization in primary production means, for example, that 85 percent of the total cash receipts of grain farms in 1978 was grain cash receipts. The remaining 15 percent of the cash receipts of grain farms was from nongrain agricultural commodities.

Sources: 1974 and 1978 Censuses of Agriculture.

of farms in the other field crop category jumped from 31,000 farms in 1969 to 81,000 in 1974. This change primarily followed the classification shift of alfalfa, field seed, hay, and timothy farms from general farms in 1969 to other field crop farms in 1974. SIC added four new farm categories in 1974: horticultural specialty farms, animal specialty farms, general crop farms, and general livestock farms. These farms were previously classified as general or miscellaneous farms.

Census years 1969, 1974, and 1978 showed the following changes: the number of cotton, dairy, and poultry and egg farms decreased, and tobacco, vegetable and melon, and other field crop farms increased (table 5). The latter change showed a shift

of farms from cash grain to beef cattle, hog, and sheep farms. The shift and classification of these two types of farms seemed to follow the percentage distribution of total cash receipts between crop cash receipts and livestock cash receipts (table 6). Cash grain farmers may have shifted to increased livestock production when it had become profitable. Changes in prices received by farmers also may have shifted the SIC classification of a farm even though physical production practices remained the same. The significant changes in the number of farms in these two major types of farms complicated the estimation of income per farm by SIC because cash grain farms and beef cattle, hog, and sheep farms numbered about 66 percent of total farms in 1978 and accounted for 57 percent of total cash receipts.

Farm Sector NIPA Estimation Procedures

Two important objectives of economic accounting are the measurement of the creation of production and income and the measurement of the division of production between final consumption and investment. Within this framework, tracing the production of economic output from its originating sector to its final disappearance as domestic consumption or export is a primary goal. If this goal is achieved, then the relationship between changes in exports or consumption patterns can be better related to changes in income of the producing sector.

However, objectives of economic accounting, as conceived, are not always achievable because of data limitations. The intertwining of production and business relationships may diminish the economic data system's capacity to identify and measure economic production flows in the national economy. For example, corn can be purchased from corn farmers, ground into feed with nutrients added, and resold to livestock farmers. The difficulty in measurement involves assessing transportation, labor, storage, and marketing charges; the farm value of processed feed purchased by farmers is not directly measurable.

The commodity flows account is the chief account in estimating the entire set of National Income and Product Accounts (NIPA). All sources of commo-

Table 4—Comparison of number of Census farms with sales of more than \$2,500

Farm type	Number of farms			Percent of total		
	1969	1974	1978	1969	1974	1978
	----- Thousands -----			----- Percent -----		
Crop farms:						
Cash grain	369	580	525	21.3	34.2	28.2
Cotton	41	31	30	2.3	1.8	1.6
Tobacco	90	95	108	5.2	5.6	5.8
Other field crops	31	81	86	1.8	4.8	4.6
Vegetables and melons	20	20	25	1.1	1.2	1.4
Fruit and tree nuts	53	51	58	3.1	3.0	3.1
Horticultural specialties	NA	20	27	NA	1.2	1.4
General crops	90	51	45	5.2	3.0	2.4
Subtotal, crop farms	694	929	904	40.0	54.8	48.5
Livestock farms:						
Beef cattle, hogs, and sheep	648	494	705	37.4	29.1	37.8
Dairy	261	196	166	15.1	11.6	8.9
Poultry and eggs	58	43	42	3.3	2.5	2.2
Animal specialties	NA	11	26	NA	.7	1.4
General livestock	73	22	22	4.2	1.3	1.2
Subtotal, livestock farms	1,040	766	961	60.0	45.2	51.5
Total crop and livestock farms	1,734	1,695	1,865	100.0	100.0	100.0

NA = not available.

Sources: 1969, 1974, and 1978 Censuses of Agriculture.

ty appearance, including beginning stocks, production, and imports are debited and all commodity uses, including ending stocks, exports, domestic consumption for food and clothing, and intermediate consumption on farms are credited within the commodity flows account. Intermediate consumption is use of farm commodities on farms such as grain for feed or animals for breeding or milking purposes. Debits should equal credits within the commodity flows account so that the statistical discrepancy equals zero.

Cash receipts from agricultural sales for exports, final domestic consumption, and to other farmers developed in the commodity flows account by the Statistical Reporting Service (SRS) are used directly in the USDA gross farm income account. The value of home consumption in the commodity flows account is also used directly in the gross farm income account. The imputed value of net inventory change, the third major component of gross farm income, is estimated as the quantity change in inventory stocks recorded in the commodity flows ac-

Table 5—Trends in number of Census SIC farms with sales of more than \$2,500

Farm type	1969	1974	1978
	----- Thousands -----		
Number of declining farms:			
Cotton	41	31	30
Dairy	261	196	166
Poultry and eggs	58	43	42
Subtotal, declining farms	360	270	238
Number of increasing farms:			
Tobacco	90	95	108
Other field crops	31	81	86
Vegetables and melons	20	20	25
Subtotal, increasing farms	141	196	219
Number of shifting farms:			
Cash grain farms	369	580	525
Cattle, hog, and sheep farms	648	494	705
Subtotal, shifting farms	1,017	1,074	1,230
Unclassifiable for entire period	216	155	178
Total farms	1,734	1,695	1,865

Sources: 1969, 1974, and 1978 Censuses of Agriculture.

Table 6—Comparison between Census cash grain farms and cattle, hog, and sheep farms with sales of more than \$2,500, selected years, 1969-78

Item	1969	1974	1978
	<i>Thousands</i>		
Number of farms:			
Cash grain	369	580	525
Cattle, hogs, and sheep	648	494	705
Total farms	1,017	1,074	1,230
	<i>Percent</i>		
Percentage of farms:			
Cash grain	36.3	54.0	42.7
Cattle, hogs, and sheep	63.7	46.0	57.3
Total farms	100.0	100.0	100.0
	<i>Million dollars</i>		
Percentage of receipts:			
Crops	19,606	51,065	53,708
Livestock	28,573	41,326	59,162
Total receipts	48,179	92,391	112,870
	<i>Percent</i>		
Percentage of total cash receipts:			
Crops	40.7	55.3	47.6
Livestock	59.3	44.7	52.4
Total receipts	100.0	100.0	100.0

count multiplied by the calendar season average price. In summary, all three sources of income from commodity production are measured in the commodity flows account—cash receipts, home consumption, and inventory change.

Given this accounting procedure and the data sources available, the commodity flows account should provide the best estimate of cash receipts, home consumption, and inventory change. SRS refers to the commodity flows account and its economic accounting methodology of debits equaling credits as the "balance sheet" account. Examples of data sources available to estimate the commodity flows account include farm production and inventory stock surveys conducted by SRS and administrative data sources such as elevator reports, federally inspected slaughter, birds hatched, Commodity Credit Corporation (CCC) stocks, and exports. As with the farm income accounts, all potential data sources are cross-checked and reconciled.

Census of Agriculture data were used to distribute gross farm income and production expenses by type of farm. The NIPA estimation procedure based on the commodity flows account and the Census of Agriculture are likely to provide a more accurate estimate of farm income by type of farm than any other alternative procedure. The NIPA accounting procedure used to estimate type of farm income is identical to the procedure used by the U.S. Department of Agriculture (USDA) to estimate farm income by State and value of sales class.

Overview of 1978 Estimation Procedures

In this report, the estimates of farm income by type of farm are based on net farm income before inventory adjustment, including CCC loans. Future efforts will be devoted to expanding the SIC income distributions to include other USDA income and cash flow measures. As part of these efforts, net farm income will be estimated separately in this paper by using returns to operators from crops and livestock, net farmland rent received by operator landlords, and the imputed rental value of operator's dwellings. Cash farm income also will be estimated.

Gross farm income before inventory adjustment and total production expenses for 1978 were directly allocated to the various types of farms using 1978 Census of Agriculture data supplemented by 1979 Census Survey of Farm Finance data and 1978 IRS farm data. No other source of SIC data existed for 1978. The general procedure used to estimate net farm income by SIC focused on distributing each published USDA income and expense series by the percentage distribution of published 1978 Census of Agriculture, 1979 Census Survey of Farm Finance, and 1978 IRS farm data. Estimated net farm income before inventory change covered each SIC category by subtracting total production expenses from gross farm income. The USDA number of farms were distributed, according to SIC, based on 1978 Census of Agriculture data.

Gross Farm Income

Gross farm income before inventory adjustment consisted of cash receipts, including CCC loans, direct Government payments, net farmland rent received by operator landlords, home consumption,

recreational income, machine hire and customwork income, and the imputed net rental value of operators' dwellings. Cash receipts, machine hire, and customwork income were directly allocated to SIC farms according to the percentage distributions derived from 1978 Census of Agriculture data (tables 7 and 8). These three items accounted for 93 percent of gross farm income for all farms in 1978, 92 percent for all crop farms, and 94 percent for all livestock farms.

The remaining income items, except home consumption and direct Government payments, were prorated, indirectly using 1979 Census Survey of Farm Finance data. Per farm 1979 averages, multiplied by the number of farms in each type-of-farm category in 1978, produced a first approximation of 1978 income. A subsequent percentage breakdown helped to distribute 1978 USDA-published income estimates (tables 7 and 8). The market value of the operators' dwellings determined distributions of the net imputed rental value of those dwellings. Farmland rental income and recreational income received by operators appeared in the 1979 Census of Farm Finance. Home consumption, prorated to each SIC farm category on the basis of the number of operators living on their farms, appeared in the 1978 Census of Agriculture.

Direct Government payments included deficiency payments, diversion payments, and conservation payments. This analysis indirectly distributes direct Government payments for cotton by using cotton cash receipts; wool direct Government payments by using sheep, lamb, and wool cash receipts; and all other direct Government payments by using cash grain receipts. This procedure was the best methodology available, given the absence of reliable annual Government payments data by type of farm.

Farm Production Expenses

The authors directly prorated the following expenses based on 1978 Census of Agriculture data: livestock and poultry purchased, feed, seeds, fertilizer, agricultural chemicals, lime, fuel, electricity, petroleum products, hired farm labor, contract labor, and customwork (tables 9 and 10). Directly prorated expenses amounted to 55 percent of total

farm production expenses for all farms in 1978, 63 percent for all livestock farms, and 46 percent for all crop farms.

Indirectly prorated items included property taxes, real estate interest, nonreal estate interest, rent depreciation, and repair and maintenance because data were not collected in the 1978 Census of Agriculture.

The authors indirectly prorated property taxes based on the market value of land owned by operators reported in the 1978 Survey of Agriculture. The authors prorated real estate interest paid, nonreal estate interest paid, and rent based on real estate and nonreal estate debt outstanding and rent-paid data reported in the 1979 Census of Farm Finance. IRS depreciation and repair data formed the basis for prorating USDA depreciation and repair expenses. Indirectly prorated expenses amounted to 40 percent of total farm production expenses for all farms in 1978, 32 percent for all livestock farms, and 49 percent for all crop farms.

Indirectly prorated expenses exhibited a close relationship to different but parallel distribution of alternate data sources and economic accounts. The distribution of depreciation and repair expenses based on IRS data was similar to the distribution of the market value of machinery on farms based on 1978 Census of Agriculture data. For example, livestock farms accounted for about 43 percent of the value of machinery on all farms. This percentage corresponded closely to the 43 percent of depreciation and 44 percent of repair expenses on livestock farms. The distribution of real estate interest paid based on the 1979 Census of Farm Finance about equaled the distribution of the value of farmland owned based on 1978 Census of Agriculture data. For example, based on 1978 Census of Agriculture data, livestock farms accounted for 46 percent of total land value, which closely paralleled the 47 percent of real estate interest paid by livestock farmers. The distribution of nonreal estate interest paid about matched the distribution of total expenses. For example, livestock farms accounted for 51 percent of nonreal estate interest paid and 54 percent of total farm production expenses. Thus, apparently, indirectly prorated estimates were reasonably accurate, given the close

Table 7—Distribution of farm sector SIC farm income, crop farms, 1978

Item	Total, all farms	Total, crop farms ¹	Cash grain	Cotton	Tobacco	Other field crops	Vegetables and melons	Fruit and tree nuts	Horti- cultural specialties	General crop farms
<i>Percent</i>										
Farms	100.0	45.8508	23.9596	1.2955	5.7581	5.5582	1.4273	3.6315	1.328	2.8977
Crop cash receipts: ¹										
Grain	100.0	85.3344	77.6492	1.5860	.8448	1.8463	.5426	.1259	.0458	2.6937
Cotton and cottonseed	100.0	97.6077	9.5053	76.2633	.0702	.9222	2.0670	.6734	.0589	8.0473
Tobacco	100.0	89.7900	2.9981	.0518	79.9465	.4384	.0991	.0505	.0453	6.1603
Field seeds, hay, forage, and silage	100.0	73.3407	14.5326	3.2427	.6521	40.7988	1.4525	.6049	.2647	11.7924
Vegetables, sweet corn, and melons	100.0	97.8995	2.9808	.9812	.2682	1.7252	82.2453	1.6955	.4411	7.5621
Fruits, nuts, and berries	100.0	98.6763	.4033	.3644	.0238	.3488	1.3606	93.9762	.1785	2.0207
Nursery and greenhouse products	100.0	99.7240	.2084	.0190	.0101	.1209	.5217	.2807	97.8527	.7105
Other crops	100.0	95.6942	6.6999	.9033	1.0711	72.2422	2.8053	.4124	.1032	11.4568
Subtotal, crop receipts	100.0	89.3888	45.1563	6.0640	4.5388	7.8049	6.3610	9.2482	5.8720	4.3435
Livestock cash receipts: ¹										
Poultry and products	100.0	.6356	.3000	.0037	.0223	.0208	.0156	.0635	.0087	.2010
Dairy products	100.0	1.5335	.9350	.0159	.0797	.0641	.0290	.0236	.0033	.3828
Cattle and calves	100.0	8.1562	5.3692	.2529	.3836	.5454	.0896	.1431	.0197	1.3526
Hogs and pigs	100.0	13.5892	10.6688	.0781	.5824	.4569	.0678	.0424	.0089	1.6840
Sheep, lambs, and wool	100.0	9.1136	5.3388	.3659	.0808	1.4637	.1044	.1675	.0451	1.5474
Other livestock	100.0	3.3503	1.3489	.1744	.1674	.6928	.0616	.2769	.0514	.5769
Subtotal, livestock	100.0	6.4956	4.4612	.1480	.2945	.3781	.0642	.0973	.0142	1.0380
Total cash receipts	100.0	43.8058	22.7781	2.8107	2.2048	3.7209	2.8984	4.2162	2.6508	2.25258
Machine hire and customwork ¹	100.0	67.4535	35.9642	11.7840	4.1659	1.7971	2.3746	5.4899	1.2543	4.6236
Indirect allocators of nonmoney and other farm income:										
Rental of farmland ²	100.0	53.2340	31.0642	2.2836	2.5124	6.5550	1.2064	5.5142	.5145	3.5836
Recreational services ²	100.0	26.4811	10.2056	.0253	1.2882	6.5132	.3344	.7790	4.1534	3.1819
Market value of operator dwellings ²	100.0	44.3162	21.6277	1.0797	3.7349	6.0989	1.8337	5.6647	1.4559	2.8207
Resident operators ¹	100.0	43.1843	22.4215	1.0136	5.4553	5.4074	1.3844	3.2479	1.1963	3.0578

¹ From the 1978 Census of Agriculture.² From the 1979 Farm Finance Survey.

Table 8—Distribution of farm sector SIC farm income, livestock farms, 1978

Item	Total, all farms	Total, livestock farms	Cattle, hog, and sheep farms	Dairy	Poultry and eggs	Animal specialty farms	General livestock farms
	<i>Percent</i>						
Farms	100.0	54.1492	41.8605	6.8033	2.0681	2.006	1.4167
Crop cash receipts: ¹							
Grain	100.0	14.6656	11.4585	1.6672	.4604	.0254	1.0541
Cotton and cottonseed	100.0	2.3923	1.7199	.4614	.1133	.0209	.0768
Tobacco	100.0	10.2100	5.7683	2.4440	.8496	.1562	.9919
Field seeds, hay, forage, and silage	100.0	26.6593	17.6651	6.2577	.5729	.2030	1.9606
Vegetables, sweet corn, and melons	100.0	2.1005	.9986	.5933	.2743	.0103	.2239
Fruits, nuts, and berries	100.0	1.3237	.6600	.3098	.2621	.0193	.0725
Nursery and greenhouse products	100.0	.2760	.1297	.0311	.0799	.0115	.0238
Other crops	100.0	4.3058	3.3659	.3955	.2661	.0068	.2714
Subtotal, crop receipts	100.0	10.6112	7.9378	1.4684	.3966	.0364	.7720
Livestock cash receipts: ¹							
Poultry and products	100.0	99.3644	.7844	.2249	97.7103	.0069	.6379
Dairy products	100.0	98.4665	2.5705	91.8045	.3315	.0115	3.7485
Cattle and calves	100.0	91.8438	86.0627	4.4023	.4580	.0645	.8562
Hogs and pigs	100.0	86.4108	82.0749	1.8891	.8982	.0149	1.5337
Sheep, lambs, and wool	100.0	90.8864	89.2446	.7225	.3443	.0814	.4936
Other livestock	100.0	96.6497	9.1290	.5716	.2590	85.4739	1.2162
Subtotal, livestock receipts	100.0	93.5044	56.2176	19.9556	14.5454	1.3175	1.4684
Total cash receipts	100.0	56.1942	34.4869	11.6345	8.1770	.7409	1.1550
Machine hire and customwork ¹	100.0	32.5465	24.2044	4.5381	1.2138	1.4440	1.1460
Indirect allocators of nonmoney and other farm income:							
Rental of farmland ²	100.0	46.7660	37.5737	1.7133	1.5727	5.2176	.6888
Recreational services ²	100.0	73.5189	36.0039	26.7344	1.5922	8.5589	.6295
Market value of operator dwellings ²	100.0	55.6838	40.9045	7.7768	2.4884	2.9780	1.5362
Resident operators ¹	100.0	56.8157	42.6560	8.0801	2.3326	2.1701	1.5770

¹From the 1978 Census of Agriculture.

²From the 1979 Census of Farm Finance.

relationship of the alternate distributors based on different data sources and economic accounts.

Miscellaneous expenses were allocated according to the percentage distribution of the sum of directly and indirectly prorated expenses. Miscellaneous expenses in 1978 were 5 percent for total production expenses of all farms, 5 percent for livestock farms, and 5 percent for crop farms.

Off-farm Income

Off-farm income distribution used 1979 Farm Finance Survey data. Per farm 1979 averages, multiplied by the number of farms in each type of farm category in 1978, produced a first approximation of 1979 off-farm income. A percentage distribution then determined 1978 USDA-published off-farm income estimates.

Table 9—Distribution of farm sector SIC expenses, crop farms, 1978

Item	Total, all farms	Total, crop farms	Cash grain	Cotton	Tobacco	Other field crops	Vegetables and melons	Fruit and tree nuts	Horti- cultural specialties	General crop farms
	<i>Percent</i>									
Directly prorated expenses: ¹										
Livestock and poultry purchased	100.0	6.3202	4.3336	0.1583	0.2048	0.4814	0.0670	0.0786	0.0142	0.9822
Feed	100.0	4.6239	3.0256	.1144	.2658	.3435	.0705	.1101	.0253	.6687
Seeds	100.0	74.3331	42.4272	3.8381	1.6429	6.6651	3.6931	1.7885	10.4204	3.8579
Fertilizer	100.0	68.5998	44.2203	3.7051	3.0867	6.4495	3.2554	2.8680	.7890	4.2258
Agricultural chemicals, including lime	100.0	76.5934	41.3993	8.6603	2.2236	6.0834	5.1279	7.4066	1.1073	4.5850
Energy and petroleum products	100.0	57.6787	31.4836	5.0169	3.3268	5.3715	2.2472	3.3487	3.3200	3.5640
Hired farm labor	100.0	65.4988	14.8474	4.8524	3.3442	6.5264	8.5261	12.6526	10.8962	3.8536
Contract labor	100.0	84.5721	7.1533	5.7965	2.1245	6.7802	17.2991	37.5464	2.8901	4.9820
Customwork	100.0	67.6766	34.8303	6.9795	2.0250	6.7530	3.0503	8.1711	1.8569	5.0106
Indirect allocators of expenses:										
Market value of machin- ery and equipment ¹	100.0	57.0760	37.3500	3.0553	2.8367	5.2784	1.6116	2.7123	1.0638	3.1680
Market value of land and buildings ¹	100.0	54.3779	36.1491	2.6101	2.1186	4.5922	1.4916	3.6682	.7971	2.9511
Depreciation ²	100.0	56.6452	36.4945	3.2000	2.6998	5.7347	1.9964	3.6823	1.0482	1.7893
Debt outstanding:										
Real estate debt ³	100.0	52.3900	33.0795	2.5972	1.9183	5.1524	.1555	4.9307	1.2247	3.3317
Nonreal estate debt ³	100.0	49.2759	31.4245	3.2766	1.4853	4.5920	1.4840	2.8023	1.1015	3.1098
Repairs ²	100.0	56.2988	36.5136	3.0835	2.5910	5.4785	2.6156	3.7477	.8196	1.4492
Rent ³	100.0	71.3479	51.8148	4.4696	3.1244	4.2081	2.3596	1.6233	.4668	3.2813

¹ From the 1978 Census of Agriculture.

² From the 1978 Statistics of Income, Internal Revenue Service, U.S. Dept. of Treasury.

³ From the 1979 Farm Finance Survey.

Table 10—Distribution of farm sector SIC farm expenses, livestock farms, 1978

Item	Total, all farms	Total, livestock farms	Cattle, hog, and sheep farms	Dairy	Poultry and eggs	Animal specialty farms	General livestock farms
Directly prorated expenses: ¹				<i>Percent</i>			
Livestock and poultry purchased	100.0	93.6798	79.7107	4.1730	8.1062	0.9418	0.7482
Feed	100.0	95.3761	44.1621	19.8017	29.3302	1.0052	1.0768
Seeds	100.0	25.6669	16.6471	7.2600	.4812	.1014	1.1772
Fertilizer	100.0	31.4002	21.3456	8.0584	.6232	.1279	1.2450
Agricultural chemicals, including lime	100.0	23.4066	16.6479	4.9505	.6631	.1505	.9947
Energy and petroleum products	100.0	42.3213	26.2706	10.4726	3.5156	.7596	1.3029
Hired farm labor	100.0	34.5012	16.7632	10.6215	4.8301	1.5392	.7471
Contract labor	100.0	15.4279	9.6556	2.8299	2.0230	.6081	.3114
Customwork	100.0	32.3234	23.2170	6.7649	.9392	.4371	.9652
Indirect allocators of expenses:							
Market value of machin- ery and equipment ¹	100.0	42.9240	27.6092	11.2034	1.9154	.7249	1.4711
Market value of land and buildings ¹	100.0	45.6221	35.2758	6.8442	1.1329	1.0026	1.3666
Depreciation ²	100.0	43.3548	25.8841	11.3799	2.5000	1.4535	2.1373
Debt outstanding:							
Real estate debt ³	100.0	47.6100	33.0375	9.8155	2.5672	1.1488	1.0410
Nonreal estate debt ³	100.0	50.7241	36.4805	10.4126	1.8573	.8115	1.1622
Repairs ²	100.0	43.7012	26.7056	12.2716	1.6481	1.0729	2.0031
Rent ³	100.0	28.6521	22.7145	4.5276	.3446	.0736	.9919

¹ From the 1978 Census of Agriculture.

² From the 1978 Statistics of Income, Internal Revenue Service, U.S. Dept. of Treasury.

³ From the 1979 Farm Finance Survey.

Overview of 1982 and 1983 Estimation Procedures

Estimates of the number of farms, gross farm income, total production expenses, and off-farm income for 1982 and 1983 were based on the 1978 allocation procedures and benchmark distributions with three exceptions: the payment-in-kind (PIK) payments for corn, rice, wheat, and grain sorghum which were distributed according to cash grain receipts; PIK payments for cotton which were distributed according to cotton cash receipts; and dairy deductions which were distributed as an expense using dairy cash receipts. The authors thus based the 1982 and 1983 estimates on the assumption that no significant structural shifts in the

number of farms and farm income by SIC existed between 1978 and 1982 and between 1982 and 1983. This assumption was, of course, incorrect to the extent that SIC farm shifts occurred. USDA cash receipt data in table 11 indicate that a slight shift of some livestock farms to the crop farm category occurred from 1978 to 1982. Shifts between 1982 and 1983 were negligible. However, the reader should note the potential statistical problems and assumptions involved in estimating 1982 and 1983 farm income by SIC.

Even without a structural shift in farm types, the change in production levels within a sector greatly affected the accuracy of the 1982 and 1983 SIC estimates. For example, planted cotton acres declin-

Table 11—Comparison between USDA cash grain farms and cattle, hog, and sheep farms, selected years, 1978-83

Item	1978	1982	1983
	<i>Thousands</i>		
Number of farms:			
Cash grain	574	575	568
Cattle, hogs, and sheep	1,030	1,005	992
Total farms	1,604	1,580	1,560
	<i>Percent</i>		
Percentage of farms:			
Cash grain	35.8	36.4	36.4
Cattle, hogs, and sheep	64.2	63.6	63.6
	<i>Million dollars</i>		
Cash receipts:			
Crops	53,708	74,353	72,402
Livestock	59,162	70,199	70,159
Total receipts	112,870	144,551	142,561
	<i>Percent</i>		
Percentage of total cash receipts:			
Crops	47.6	51.4	50.8
Livestock	52.4	48.6	49.2

ed 16 percent, and harvested cotton acres dropped 22 percent from 1978 to 1982, causing an overstatement of production expenses of cotton farms (table 12).

Besides a shift in farm types and changes in sector production levels, the PIK program and drought affected the statistical reliability of the 1983 estimates. The PIK program in 1983 probably reduced the expenses of cash grain and cotton farms more than all other types of farms. By using 1978 benchmark data to distribute 1982 and 1983 expenses for all farm types, the authors distributed the PIK-related cost reduction to all farm types. Thus, the reduction in production expenses of cash grain and cotton farms was probably slightly understated, and the reduction in production expenses of all other farm types was overstated. Although the reliability of the 1982 and 1983 estimates may not have been as high as the 1978 benchmark estimates, the estimates helped improve understanding of economic factors which affected

Table 12—Cotton production¹

Crop year	Planted	Harvested	Yield
	<i>—Million acres—</i>		<i>lb/acre</i>
1978/79	13.4	12.4	420
1979/80	14.0	12.8	547
1980/81	14.5	13.2	404
1981/82	14.3	13.8	543
1982/83	11.3	9.7	590
1983/84	8.3	7.4	487

¹ Acres planted declined 16 percent and acres harvested dropped 22 percent from 1978 to 1982. The estimate of 1982 farm expenses of cotton farms is thus probably overstated.

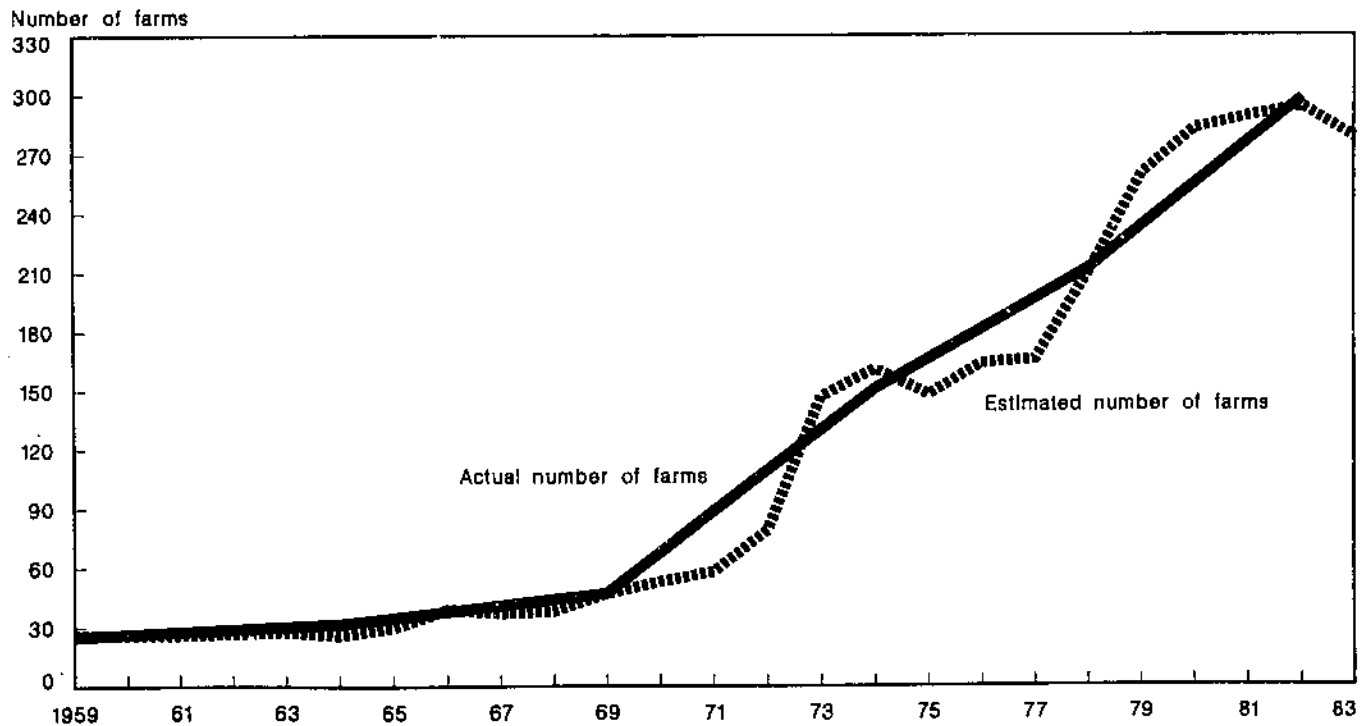
income and financial conditions of crop and livestock farmers.

USDA will estimate type-of-farm income for Census years 1959, 1964, 1969, 1974, 1978, and 1982. SIC income will then be forecasted annually based on the historical Census benchmark data combined with current annual production and price information. This methodology is similar to the methodology for estimating farms, gross farm income, production expenses, and net farm income by value of sales class for large and small farms (figs 1, 2) (2, 20).²

An estimated \$3.8-billion decline in 1983 total farm production expenses of crop farmers offset a \$200-million decrease in gross farm income and caused 1983 net crop farm income per farm to jump 27 percent (tables 13 through 17). Direct Government payments increased about \$400 million. Net farm income per farm of livestock producers decreased an estimated 5 percent in 1983 (table 18). Total production expenses of livestock farmers declined about \$164 million, but gross farm income decreased \$752 million (tables 19 through 22). Farm income differed by type of farm, varying substantially according to the income average per farm, the percentage change in farm income from 1982 to 1983, the percentage composition of farm income to total income, and the cost structure.

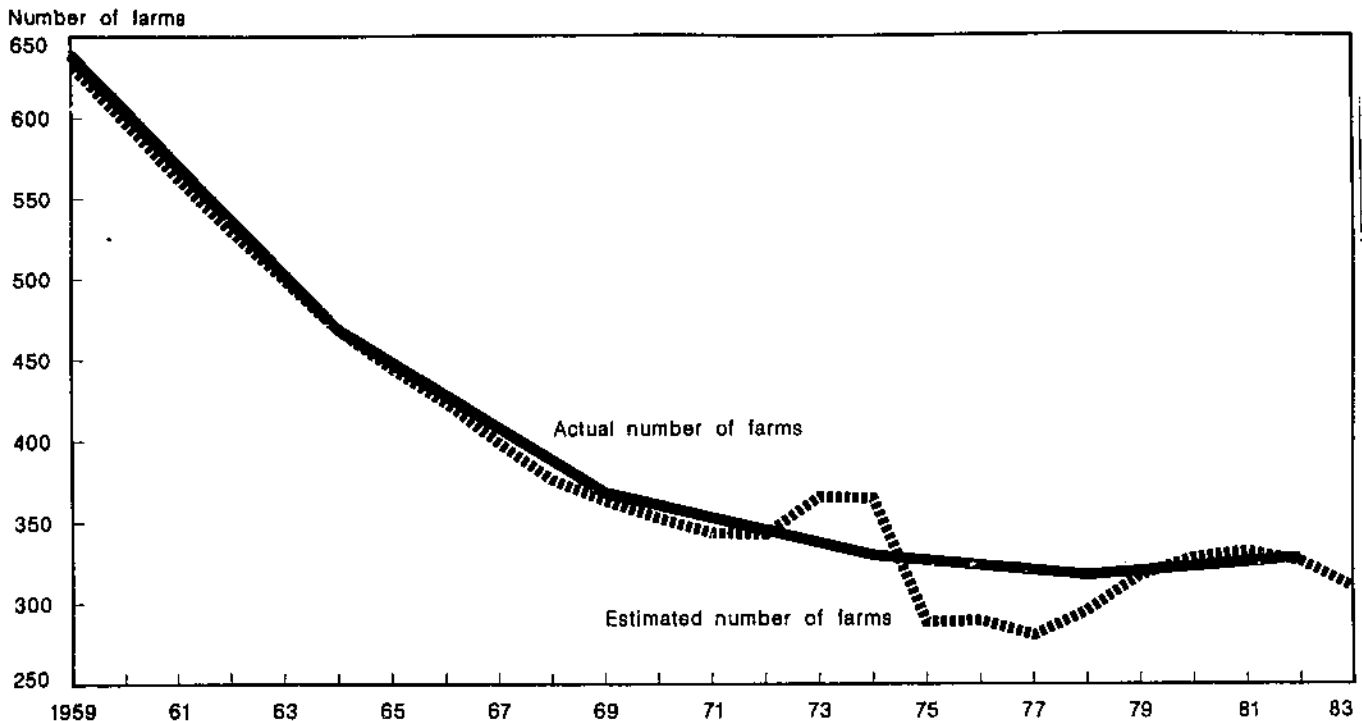
²Italicized numbers in parentheses cite sources in the References section.

Figure 1
Estimated Number of Farms With Sales of at Least \$100,000¹



^{1/} Based on USDA total farms and cash receipts for census years 1959, 1964, 1969, 1974, 1978, and 1982.

Figure 2
Estimated Number of Farms With Sales of \$2,500 to \$4,000¹



^{1/} Based on USDA total farms and cash receipts for census years 1959, 1964, 1974, 1978, and 1982.

Table 13—Net cash income, net farm income before inventory adjustment, and off-farm income, by type of crop farm, per farm, selected years, 1978-83

Farm type	1978	1982	1983	Percentage change	
				1978-82	1982-83
	-----Dollars-----			-----Percent-----	
Cash grain farms:					
Net cash farm income	14,934	16,608	22,276	11.2	34.1
Net farm income	8,117	7,476	12,897	-7.9	72.5
Off-farm income	10,381	13,750	14,484	32.5	5.3
Total operators income	18,498	21,226	27,381	14.7	29.0
Cotton farms:					
Net cash farm income	38,097	60,774	63,000	59.5	3.7
Net farm income	25,194	43,161	45,258	71.3	4.9
Off-farm income	9,483	12,983	13,676	36.9	5.3
Total operators income	34,677	56,144	58,934	61.9	5.0
Tobacco farms:					
Net cash farm income	8,043	8,434	6,595	4.9	-21.8
Net farm income	6,750	6,782	4,816	.5	-29.0
Off-farm income	9,145	12,520	13,188	36.9	5.3
Total operators income	15,895	19,302	18,004	21.4	(6.7)
Other field crop farms:					
Net cash farm income	12,562	12,052	15,378	-4.1	27.6
Net farm income	8,620	6,894	10,083	-20.0	46.3
Off-farm income	14,125	19,339	20,371	36.9	5.3
Total operators income	22,745	26,233	30,454	15.3	16.1
Vegetable and melon farms:					
Net cash farm income	61,800	82,176	91,088	33.0	10.8
Net farm income	55,343	73,470	82,235	32.8	11.9
Off-farm income	15,409	21,096	22,222	36.9	5.3
Total operators income	70,752	94,566	104,457	33.7	10.5
Fruit and tree nut farms:					
Net cash farm income	30,300	25,045	21,418	-17.3	-14.5
Net farm income	26,633	20,540	16,755	-22.9	-18.4
Off-farm income	20,095	27,512	28,979	36.9	5.3
Total operators income	46,728	48,052	45,734	2.8	-4.8
Horticultural specialty farms:					
Net cash farm income	41,500	56,375	67,451	35.8	19.6
Net farm income	37,500	51,218	62,032	36.6	21.1
Off-farm income	14,520	19,880	20,940	36.9	5.3
Total operators income	52,020	71,098	82,972	36.7	16.7
General crop farms:					
Net cash farm income	14,500	14,614	17,536	.8	20.0
Net farm income	12,903	12,671	15,405	-1.8	21.6
Off-farm income	14,406	19,723	20,775	36.9	5.3
Total operators income	27,309	32,394	36,180	18.6	11.7

Continued

Table 13—Net cash income, net farm income before inventory adjustment, and off-farm income, by type of crop farm, per farm, selected years, 1978-83 — Continued

Farm type	1978	1982	1983	Percentage change	
				1978-82	1982-83
-----Dollars-----			-----Percent-----		
Subtotal, all crop farms:					
Net cash farm income	17,878	20,000	23,710	11.9	18.6
Net farm income	12,627	13,000	16,502	3.0	26.9
Off-farm income	12,036	16,124	16,986	34.0	5.3
Total operators income	24,663	29,124	33,488	18.1	15.0
Total, all crop and livestock farms:					
Net cash farm income	14,825	15,351	16,907	3.5	10.1
Net farm income	11,016	10,374	11,757	-5.8	13.2
Off-farm income	12,194	16,423	17,297	34.7	5.3
Total operators income	23,210	26,797	29,045	15.5	8.4

Concepts Influencing SIC Farm Income Measurement and Analysis

Certain economic accounting concepts and measurement problems may distort type of farm income. Otherwise, type of farm income per farm could be misinterpreted. Measures, and therefore analysis, of SIC farm income were greatly skewed by small farms (sales of less than \$20,000), the primary occupation of the operator, farm business-related income, and tax-loss farming. These characteristics, possibly interrelated, may have affected each type of farm sector differently.

SIC Farm Income by Value of Sales Class and Primary Occupation

Small farms with sales of less than \$20,000 made up 78 percent of all U.S. farms but accounted for only 8 percent of total U.S. cash receipts in 1978 (table 23). Most small farms were rural residences for retirees and persons not primarily employed in farming. Based on the 1978 Census of Agriculture, 78 percent of small farmers reported a nonfarm job as their primary occupation, or reported an age of 65 years or older (16). Their 1983 average off-farm income of \$19,370 per farm contrasted sharply with

their returns to operators income average of minus \$2,816. Thus, with small farms excluded from total U.S. aggregate data, returns to operators per crop farm increased 261 percent in 1983 and returns to operators per livestock farm increased 375 percent (table 24).

To gain a feel for the impact of small farms on U.S. per farm averages, the reader should look to returns to operators per farm as estimated in table 24 for all farms, farms with sales of less than \$20,000, and farm with sales of \$20,000 or more. The authors estimated returns to operators on sales of \$20,000 or more in 1983 by assuming that the per farm returns of all U.S. farms of this type were the same for all farms. By multiplying the per farm average by the number of farms with sales of less than \$20,000 in each type of farm category, total returns of small farms can be estimated. Returns to operators on sales of more than \$20,000 was residually estimated by subtracting the total returns of farms with less than \$20,000 in sales from the returns of all farms.³

³The SIC value of sales class estimates will be improved. SIC farm income by value of sales class is being estimated based on unpublished 1978 Census of Agriculture data. Completing the 7 value-of-sales categories for the 13 types of farms requires 91 separate estimates.

Table 14—Distribution of USDA farm sector SIC farm income before inventory adjustment and cash farm income, crop farms, 1983

Item	Total, all farms	Total, crop farms	Cash grain	Cotton	Tobacco	Other field crops	Vegetables and melons	Fruit and tree nuts	Horti- cultural specialties	General crop farms
<i>Thousands</i>										
Farms	2,370	1,087	568	31	136	132	34	86	31	69
<i>Million dollars</i>										
Crop cash receipts:										
Grain	37,446	31,954	29,077	594	316	691	203	47	17	1,009
Cotton and cottonseed	4,283	4,181	407	3,266	3	39	89	29	3	345
Tobacco	2,831	2,543	88	1	2,263	12	3	1	1	174
Field seeds, hay, forage, and silage	2,207	1,619	322	72	14	900	32	13	6	260
Vegetables, sweet corn, and melons	6,183	6,052	182	61	17	107	5,085	105	27	468
Fruits, nuts, and berries	6,153	6,072	27	22	1	21	84	5,782	11	124
Nursery and green- house products	4,479	4,466	9	1	0	5	23	13	4,383	32
Other crops	5,934	5,679	398	54	64	4,287	166	24	6	680
Subtotal, crop receipts	69,516	62,566	30,510	4,071	2,678	6,062	5,685	6,014	4,454	3,092
Livestock cash receipts:										
Poultry and products	9,960	63	30	0	2	2	2	6	1	20
Dairy products	18,808	288	176	3	15	12	5	4	1	20
Cattle and calves	28,694	2,340	1,539	73	110	157	26	41	6	388
Hogs and pigs	9,714	1,320	1,035	8	57	44	7	4	1	164
Sheep, lambs, and wool	418	39	24	2	0	6	0	1	0	6
Other livestock	1,609	54	22	2	3	10	11	4	1	9
Subtotal, livestock receipts	69,203	4,104	2,826	88	187	231	51	60	10	659
Direct Government payments	4,053	3,476	2,638	557	28	68	32	8	2	143
Cash grain and other	3,307	2,822	2,568	52	28	61	18	4	2	89
Cotton	662	646	64	505	0	6	14	4	0	53
Wool	84	8	6	0	0	1	0	0	0	1
Value of PIK commodities:	5,242	4,537	3,708	478	40	92	37	10	2	170
Value of PIK grain crops	4,713	4,020	3,657	75	40	87	26	6	2	127
Value of PIK cotton	529	517	51	403	0	5	11	4	0	43
Total cash receipts	148,014	74,683	39,682	5,194	2,933	6,453	5,805	6,092	4,468	4,064

Continued

Table 14—Distribution of USDA farm sector SIC farm income before inventory adjustment and cash farm income, crop farms, 1983 —
Continued

Item	Total, all farms	Total, crop farms	Cash grain	Cotton	Tobacco	Other field crops	Vegetables and melons	Fruit and tree nuts	Horti- cultural specialties	General crop farms
<i>Million dollars</i>										
Nonmoney and other farm income:										
Machine hire and customwork	1,376	900	527	61	26	85	35	80	18	68
Recreational services	164	43	16	0	2	11	1	1	7	5
Imputed net rental value of operator dwellings	6,343	2,778	1,356	68	234	382	115	355	91	177
Home consumption	958	414	216	10	52	52	13	31	11	29
Subtotal, nonmoney and other income	8,841	4,135	2,115	139	314	530	164	467	127	219
Other cash income	1,540	943	543	61	28	96	36	81	25	73
Total cash income	149,554	75,634	40,225	5,255	2,961	6,549	5,841	6,173	4,493	4,137
Gross farm income	156,855	78,826	41,797	5,333	3,247	6,983	5,969	6,589	4,595	4,343
Total cash expenses	109,484	49,853	27,572	3,303	2,064	4,520	2,734	4,331	2,402	2,927
Total expenses	129,990	60,880	34,471	3,931	2,592	5,653	3,163	5,118	2,672	3,280
Net cash income ¹	40,070	25,781	12,653	1,952	897	2,029	3,107	1,842	2,091	1,210
Total net farm income before inventory adjustment: ²	27,865	17,946	7,326	1,402	655	1,330	2,806	1,441	1,923	1,063
Returns to operators	20,920	14,848	5,783	1,320	406	909	2,684	1,053	1,829	864
Net rent to operator landlords	602	320	187	14	15	39	7	33	3	22
Imputed net rental value of operator dwellings	6,343	2,778	1,356	68	234	382	115	355	91	177
<i>Dollars</i>										
Income per farm:										
Net cash income	18,907	23,710	22,276	63,000	6,595	15,378	91,088	21,418	67,451	17,536
Net farm income before inventory adjustment	11,757	16,502	12,897	45,258	4,816	10,083	82,235	16,755	62,032	15,405

¹ Total cash income less total cash expenses.

² Gross farm income plus net rent to operator landlords less total expenses. Includes cash and noncash income and expenses.

Table 15—Farm sector SIC farm expenses excluding households, crop farms, 1983

Item	Total, all farms	Total, crop farms	Cash grain	Cotton	Tobacco	Other field crops	Vegetables and melons	Fruit and tree nuts	Horti- cultural specialties	General crop farms
<i>Million dollars</i>										
Directly prorated expenses:										
Livestock and poultry purchased	8,792	555	381	14	18	42	6	7	1	86
Feed	18,963	877	574	22	50	65	13	21	5	127
Seeds	3,468	2,577	1,471	133	57	231	128	62	361	134
Fertilizer	7,115	4,881	3,145	264	220	459	232	204	56	301
Agricultural chemicals, including lime	3,827	2,929	1,584	331	85	233	196	283	42	175
Energy and petroleum products ¹	9,919	5,722	3,123	498	330	533	223	332	329	354
Hired farm labor	10,528	6,719	1,523	498	343	669	875	1,298	1,118	395
Contract labor	1,189	1,005	85	69	25	81	206	446	34	59
Customwork	2,146	1,451	747	150	43	145	65	175	18	108
Subtotal, directly prorated expenses	65,677	26,716	12,633	1,979	1,171	2,458	1,944	2,828	1,964	1,739
Indirectly prorated expenses:										
Property taxes ²	4,260	2,317	1,540	111	90	196	64	156	34	126
Depreciation ²	19,501	11,046	7,118	624	526	1,118	389	718	204	349
Interest paid on—										
Real estate debt ²	10,001	5,299	3,266	256	189	509	142	487	121	329
Nonreal estate debt	10,367	5,109	3,258	340	154	476	154	291	114	322
Repairs ²	7,877	4,433	2,874	243	204	432	206	295	65	114
Rent	3,684	2,629	1,909	165	115	155	87	60	17	121
Subtotal, indirectly prorated expenses	55,690	30,833	19,965	1,739	1,278	2,886	1,042	2,007	555	1,361
Other expenses	7,643	3,331	1,873	213	143	309	177	283	153	180
Dairy deductions	640	10	7	0	1	0	0	0	0	2
Other	7,003	3,321	1,866	213	142	309	177	283	153	178
Total expenses	129,010	60,880	34,471	3,931	2,592	5,653	3,163	5,118	2,672	3,280

¹ Excludes rental value of laborers' dwellings.

² Excludes households.

Table 16—Distribution of USDA farm sector SIC farm income before inventory adjustment and cash farm income, crop farms, 1982

Item	Total, all farms	Total, crop farms	Cash grain	Cotton	Tobacco	Other field crops	Vegetables and melons	Fruit and tree nuts	Horti- cultural specialties	General crop farms
<i>Thousands</i>										
Farms	2,400	1,100	575	31	138	133	34	87	32	70
<i>Million dollars</i>										
Crop cash receipts:										
Grain	41,375	35,307	32,127	656	350	764	224	52	19	1,115
Cotton and cottonseed	4,948	4,829	470	3,774	3	46	102	33	3	398
Tobacco	3,342	3,002	100	2	2,672	15	3	2	2	206
Field seeds, hay, forage, and silage	2,010	1,474	293	65	13	820	29	12	5	237
Vegetables, sweet corn, and melons	6,020	5,893	179	59	16	104	4,951	102	27	455
Fruits, nuts, and berries	6,726	6,637	26	25	2	23	92	6,321	12	136
Nursery and green- house products	4,321	4,311	11	1	0	5	23	12	4,228	31
Other crops	5,882	5,629	395	53	63	4,249	165	24	6	674
Subtotal, crop receipts	74,624	67,082	33,601	4,635	3,119	6,026	5,589	6,558	4,302	3,252
Livestock cash receipts:										
Poultry and products	9,534	60	29	0	2	2	1	6	1	19
Dairy products	18,273	280	170	3	15	12	5	4	1	70
Cattle and calves	29,906	2,439	1,604	76	115	163	27	43	6	405
Hogs and pigs	10,586	1,438	1,130	8	62	48	7	4	1	178
Sheep, lambs, and wool	447	41	24	2	0	7	0	1	0	7
Other livestock	1,392	46	18	2	2	10	1	4	1	8
Subtotal, livestock receipts	70,138	4,304	2,975	91	196	242	41	62	10	687
Direct Government payments	3,492	3,043	2,135	652	23	57	31	8	1	136
Cash grain and other	2,646	2,258	2,056	42	22	49	14	3	1	71
Cotton	800	780	76	610	1	7	17	5	0	64
Wool	46	5	3	0	0	1	0	0	0	1
Total cash receipts	148,254	74,429	38,711	5,378	3,338	6,325	5,661	6,628	4,313	4,075

NIPA: Estimating Farm
Income by Type of Farm

Continued

Table 16—Distribution of USDA farm sector SIC farm income before inventory adjustment and cash farm income, crop farms, 1982 —
Continued

Item	Total, all farms	Total, crop farms	Cash grain	Cotton	Tobacco	Other field crops	Vegetables and melons	Fruit and tree nuts	Horti- cultural specialties	General crop farms
<i>Million dollars</i>										
Nonmoney and other farm income:										
Machine hire and customwork	1,817	1,188	696	80	35	112	46	106	24	89
Recreational services	156	41	16	0	2	10	1	1	6	5
Imputed net rental value of operator dwellings	6,627	2,902	1,416	71	245	399	120	371	95	185
Home consumption	1,050	453	234	11	57	57	15	34	13	32
Subtotal, nonmoney and other income	9,650	4,584	2,362	162	339	578	182	512	138	311
Other cash income	1,973	1,229	712	80	37	122	47	107	30	94
Total cash income	150,227	75,658	39,423	5,458	3,375	6,447	5,708	6,735	4,343	4,169
Gross farm income	157,904	79,013	41,073	5,540	3,677	6,903	5,843	7,140	4,451	4,386
Total cash expenses	113,384	58,657	29,873	3,574	2,211	4,844	2,914	4,556	2,539	3,146
Total expenses	133,006	64,712	36,774	4,202	2,741	5,986	3,345	5,353	2,812	3,499
Net cash income ¹	36,843	22,001	9,550	1,884	1,164	1,603	2,794	2,179	1,804	1,023
Total, net farm income before inventory adjustment: ²	24,898	14,301	4,299	1,338	936	917	2,498	1,787	1,639	887
Returns to operators	17,480	10,977	2,637	1,249	671	466	2,368	1,372	1,540	674
Net rent to operator landlords	791	422	246	18	20	52	10	44	4	28
Imputed net rental value of operator dwellings	6,627	2,902	1,416	71	245	399	120	371	95	185
<i>Dollars</i>										
Income per farm:										
Net cash income	15,351	20,000	16,608	60,774	8,434	12,052	82,176	25,045	56,375	14,614
Net farm income before inventory adjustment	10,374	13,000	7,476	43,161	6,782	6,894	73,470	20,540	51,218	12,671

¹ Total cash income less total cash expenses.

² Gross farm income plus net rent to operator landlords less total expenses. Includes cash and noncash income and expenses.

Table 17—Farm sector SIC farm expenses excluding households, crop farms, 1982

Item	Total, all farms	Total, crop farms	Cash grain	Cotton	Tobacco	Other field crops	Vegetables and melons	Fruit and tree nuts	Horti- cultural specialties	General crop farms
<i>Million dollars</i>										
Directly prorated expenses:										
Livestock and poultry purchased	9,684	613	421	15	20	47	6	8	1	95
Feed	16,855	779	509	19	45	58	12	19	4	113
Seeds	3,985	2,962	1,691	153	65	266	147	71	415	154
Fertilizer	8,461	5,804	3,741	313	261	546	275	243	67	358
Agricultural chemicals, including lime	3,973	3,043	1,645	344	88	242	204	294	44	182
Energy and petroleum products ¹	10,422	6,012	3,282	523	347	560	234	349	346	371
Hired farm labor	10,593	6,937	1,573	514	354	691	903	1,340	1,154	408
Contract labor	1,234	1,042	87	72	26	84	213	463	36	61
Customwork	2,835	1,917	987	198	57	191	86	232	24	142
Subtotal, directly prorated expenses	68,042	29,109	13,936	2,151	1,263	2,685	2,080	3,019	2,091	1,884
Indirectly prorated expenses:										
Property taxes ²	4,084	2,220	1,473	107	87	188	61	150	33	121
Depreciation ²	19,765	11,197	7,214	632	534	1,133	395	728	207	354
Interest paid on—										
Real estate debt ²	9,634	5,105	3,147	247	182	490	137	469	116	317
Nonreal estate debt	11,702	5,767	3,678	383	174	537	174	328	129	364
Repairs ²	7,861	4,426	2,870	242	204	431	206	295	64	114
Rent	4,803	3,427	2,489	215	150	202	113	78	22	158
Subtotal, indirectly prorated expenses	57,849	32,142	20,871	1,826	1,331	2,981	1,086	2,048	571	1,428
Other expenses	7,115	3,461	1,967	225	147	320	179	286	150	187
Total expenses	133,006	64,712	36,774	4,202	2,741	5,986	3,345	5,353	2,812	3,499

¹ Excludes rental value of laborers' dwellings.

² Excludes households.

Table 18—Net cash income, net farm income before inventory adjustment, and off-farm income, by type of crop farm, per farm, selected years, 1978-83

Farm type	1978	1982	1983	Percentage change	
				1978-82	1982-83
	-----Dollars-----			-----Percent-----	
Cattle, hog, and sheep farms:					
Net cash farm income	7,898	4,034	3,561	-48.9	-11.7
Net farm income	6,324	2,174	1,569	-65.6	-27.8
Off-farm income	13,101	17,936	18,893	36.9	5.3
Total operator income	19,425	20,110	20,462	3.5	1.8
Dairy farms:					
Net cash farm income	34,901	47,993	47,838	37.5	-.3
Net farm income	27,050	37,742	37,409	39.5	-.9
Off-farm income	5,284	7,235	7,621	36.9	5.3
Total operator income	32,334	44,977	45,030	39.1	.1
Poultry and egg farms:					
Net cash farm income	39,420	42,300	40,775	7.3	-3.6
Net farm income	34,180	35,460	33,795	3.7	-4.7
Off-farm income	9,716	13,302	14,012	36.9	5.3
Total operator income	43,896	48,762	47,807	11.1	-2.0
Animal specialty farms:					
Net cash farm income	1,640	7,229	11,276	340.8	56.0
Net farm income	140	5,833	9,702	4,066.4	66.3
Off-farm income	21,438	29,351	30,917	36.9	5.3
Total operator income	21,578	35,184	40,619	63.1	15.4
General livestock farms:					
Net cash farm income	13,088	14,764	15,705	12.8	6.4
Net farm income	6,471	6,088	6,941	-5.9	14.0
Off-farm income	8,583	11,751	12,378	36.9	5.2
Total operator income	15,054	17,839	19,319	18.5	8.3
Subtotal, all livestock farms:					
Net cash farm income	12,266	11,416	11,143	-6.9	-2.4
Net farm income	9,664	8,151	7,721	-15.7	-5.3
Off-farm income	12,222	16,676	17,560	36.4	5.3
Total operator income	21,886	24,827	25,281	13.4	1.8
Total, all crop and livestock farms:					
Net cash farm income	14,825	15,351	16,907	3.5	10.1
Net farm income	11,016	10,374	11,757	-5.8	13.2
Off-farm income	12,194	16,423	17,297	34.7	5.3
Total operator income	23,210	26,797	29,045	15.5	8.4

Table 19—Distribution of farm sector SIC farm expenses, livestock farms, 1983

Item	Total, all farms	Total, livestock farms	Cattle, hog, and sheep farms	Dairy	Poultry and eggs	Animal specialty farms	General livestock farms
<i>Thousands</i>							
Farms	2,370	1,283	992	161	49	47	34
<i>Million dollars</i>							
Crop cash receipts:							
Grain	37,446	5,492	4,291	624	172	10	395
Cotton and cottonseed	4,283	102	73	20	5	1	3
Tobacco	2,831	288	163	69	24	4	28
Field seeds, hay, forage, and silage	2,207	588	390	138	13	4	43
Vegetables, sweet corn, and melons	6,183	131	62	37	17	1	14
Fruits, nuts, and berries	6,153	81	41	19	16	1	4
Nursery and green- house products	4,479	13	6	1	4	1	1
Other crops	5,934	255	200	23	16	0	16
Subtotal, crop receipts	69,516	6,950	5,226	931	267	22	504
Livestock cash receipts:							
Poultry and products	9,960	9,897	78	22	9,732	1	64
Dairy products	18,808	18,520	484	17,267	62	2	705
Cattle and calves	28,694	26,354	24,695	1,263	131	19	246
Hogs and pigs	9,714	8,394	7,973	184	87	1	149
Sheep, lambs, and wool	418	379	373	3	1	0	2
Other livestock	1,609	1,555	147	9	4	1,375	20
Subtotal, livestock receipts	69,208	65,099	33,750	18,748	10,017	1,398	1,186
Direct Government payments	4,053	577	465	59	16	1	36
Cash grain and other	3,307	485	379	55	15	1	35
Cotton	662	16	11	3	1	0	1
Wool	84	76	75	1	0	0	0
Value of PIK commodities	5,242	705	550	81	23	1	50
Value of PIK grain crops	4,713	693	541	79	22	1	50
Value of PIK cotton	529	12	9	2	1	0	0
Total cash receipts	148,014	73,331	39,991	19,819	10,323	1,422	1,776
Nonmoney and other farm income:							
Machine hire and customwork	1,376	476	354	66	18	21	17
Recreational service	164	121	59	44	3	14	1
Imputed net rental value of operator dwellings	6,243	3,565	2,609	503	152	198	103
Home consumption	958	544	409	17	22	21	15
Subtotal, nonmoney and other income	8,841	4,706	3,431	690	195	254	136

Continued

Table 19—Distribution of farm sector SIC farm expenses, livestock farms, 1983 — Continued

Item	Total, all farms	Total, livestock farms	Cattle, hog, and sheep farms	Dairy	Poultry and eggs	Animal specialty farms	General livestock farms
<i>Million dollars</i>							
Other cash income	1,540	597	413	110	21	35	18
Total cash income	149,554	73,928	40,404	19,929	10,344	1,457	1,794
Gross farm income	156,855	78,037	43,422	20,509	10,518	1,676	1,912
Total cash expenses	109,484	59,631	36,871	12,227	8,346	927	1,260
Total expenses	129,010	68,770	41,866	14,486	8,862	1,220	1,676
Net cash income ¹	40,070	14,297	3,533	7,702	1,998	530	534
Total net farm income before inventory adjustment: ²	27,865	9,927	1,556	6,023	1,656	456	236
Returns to operators	20,920	6,080	-1,281	5,510	1,495	227	129
Net rent to operator landlords	602	282	228	10	9	31	4
Imputed net rental value of operator dwellings	6,343	3,565	2,609	508	152	198	103
<i>Dollars</i>							
Income per farm:							
Net cash income	16,907	11,143	3,561	47,838	40,775	11,276	15,705
Net farm income before inventory adjustment	11,757	7,721	1,569	37,409	33,795	9,702	6,941

¹ Total cash income less total cash expenses.

² Gross farm income plus net rent to operator landlords less total expenses. Includes cash and noncash income and expenses.

Farm Business-related Income

USDA farm income is based on four concepts: farm profit to operators (returns to operators), rent to landlords, wages to labor, and interest to lenders. However, the USDA farm income concept does not recognize that self-employed farmers may receive more than one kind of farm income. For example, a farmer can also be a lender. The farmer can distribute farm profit to family members as wages, rent, farmland sales, or interest on loans. Certain IRS regulations permit these distributions to cut back income taxes by reducing farm profit. The recent introduction of individual retirement accounts (IRA), the expanded contribution allowances for KEOGH retirement plans, and increased social security tax rates have increased the eco-

nommic incentive to redistribute farm profit as wages and rent to family members (16, 19).

Current USDA income concepts consider farm profit distributed as wages and interest as off-farm income. USDA does not record farmland and machinery sold by farm operators as either farm income or off-farm income because both USDA income measures exclude capital sales. Income realized by retired farmers as farmland rent, interest received, and farmland and machinery sales are entirely unrecorded.⁴

All wages paid by operators to themselves or their family members become fully charged to farm production expenses but are not credited to income

⁴See (16) and (19) for a more detailed analysis.

Table 20—Farm sector SIC farm expenses excluding households, livestock farms, 1983

Item	Total, all farms	Total, livestock farms	Cattle, hog, and sheep farms	Dairy	Poultry and eggs	Animal specialty farms	General livestock farms
<i>Million dollars</i>							
Directly prorated expenses:							
Livestock and poultry purchased	8,792	8,237	7,008	367	713	83	66
Feed	18,963	18,086	8,374	3,755	5,562	191	204
Seeds	3,468	871	557	252	17	4	41
Fertilizer	7,115	2,234	1,519	573	44	9	89
Agricultural chemicals, including lime	3,827	898	640	189	25	6	38
Energy and petroleum products	9,919	4,197	2,605	1,039	349	75	129
Hired farm labor ¹	10,258	3,539	1,719	1,090	495	158	77
Contract labor	1,189	184	115	34	24	7	4
Customwork	2,146	695	500	145	20	9	21
Subtotal, directly prorated expenses	65,677	38,941	23,037	7,444	7,249	542	669
Indirectly prorated expenses:							
Property taxes ²	4,260	1,943	1,502	292	48	43	58
Depreciation ²	19,501	8,455	5,048	2,219	488	283	417
Interest paid on—							
Real estate debt ²	10,001	4,702	3,264	969	253	113	103
Nonreal estate debt	10,367	5,258	3,782	1,079	193	84	120
Repairs ²	7,877	3,444	2,104	967	130	85	158
Rent	3,684	1,055	835	157	13	3	37
Subtotal, indirectly prorated expenses	55,690	24,857	16,535	5,693	1,125	611	893
Other expenses	7,643	4,312	2,294	1,349	488	67	114
Dairy expenses	640	630	16	588	2	0	24
Other	7,003	3,682	2,278	761	486	67	90
Total expenses	129,010	68,110	41,866	14,486	8,862	1,220	1,676

¹Excludes rental value of laborers' dwellings.

²Excludes households.

from farm sources. Based on current USDA concepts, this wage income is instead credited to off-farm income. Farm operators reported \$11.6 billion hired labor expenses in the 1983 FPES. Operators paid slightly more than \$2 billion of hired labor expenses to themselves or their family members for working on their own farm. This \$2 billion was 9.7 percent of returns to operators in 1983 (table 25).

Production expenses included interest paid to purchase farmland and machinery, but sales of farmland and machinery were not credited to either farm or off-farm income. Sales of farmland, at \$4.6 billion, was 21.9 percent of returns to operators in 1983 (table 25).

Before the 1982 FPES, USDA did not collect data on outright sales of farm machinery by farmers to other farmers. In contrast, farm surveys recorded all machinery purchases including purchases by farmers from other farmers. Sales of farm machinery totaled \$385 million in 1982, 1.8 percent of returns to operators.

Farm operators earn interest income on their farm financial assets that, under present USDA income accounting concepts, is credited to off-farm income rather than to income from farm sources. Two sources furnish farm business-related interest income: financial assets held by farm operators in support of their farming operations and loans made by farm operators to other farm operators. A major

Table 21—Distribution of USD₂ farm income before inventory adjustment, livestock farms, 1982

Item	Total, all farms	Total, livestock farms	Cattle, hog, and sheep farms	Dairy	Poultry and eggs	Animal specialty farms	General livestock farms
<i>Thousands</i>							
Farms	2,400	1,300	1,005	103	50	48	34
<i>Million dollars</i>							
Crop cash receipts:							
Grain	41,375	6,068	4,741	690	190	11	436
Cotton and cottonseed	4,948	119	85	23	6	1	4
Tobacco	3,342	340	192	82	23	5	33
Field seeds, hay, forage, and silage	2,010	536	355	126	12	4	39
Vegetables, sweet corn, and melons	6,020	127	60	36	17	1	13
Fruits, nuts, and berries	6,726	89	44	21	18	1	5
Nursery and greenhouse products	4,321	10	5	1	3	0	1
Other crops	5,882	253	198	23	16	0	16
Subtotal, crop receipts	74,624	7,542	5,680	1,002	290	23	547
Livestock cash receipts:							
Poultry and products	9,534	9,474	75	21	9,316	1	61
Dairy products	18,273	17,993	470	16,775	61	2	685
Cattle and calves	29,906	27,467	25,738	1,317	137	19	256
Hogs and pigs	10,586	9,148	8,689	200	95	2	162
Sheep, lambs, and wool	447	406	399	3	2	0	2
Other livestock	1,392	1,334	127	8	4	1,190	17
Subtotal, livestock receipts	70,138	65,834	35,498	18,324	9,615	1,214	1,183
Direct Government payments	3,492	449	358	48	13	1	29
Cash grain and other	2,646	388	303	44	12	1	23
Cotton	800	20	14	4	1	0	1
Wool	46	41	41	0	0	0	0
Total cash receipts	148,254	73,825	41,536	19,374	9,918	1,238	1,759
Nonmoney and other farm income:							
Machine hire and customwork	1,817	629	468	88	23	23	22
Recreational services	156	115	57	42	2	13	1
Imputed net rental value of operator dwellings	6,627	3,725	2,726	526	158	207	108
Home consumption	1,050	597	448	85	24	23	17
Subtotal, nonmoney and other income	9,650	5,066	3,699	741	207	271	148
Other cash income	1,973	744	525	130	25	41	23
Total cash income	150,227	74,569	42,061	19,504	9,943	1,279	1,782
Gross farm income	157,904	78,789	45,235	20,115	10,125	1,509	1,907
Total cash expenses	113,384	59,727	38,006	11,681	7,828	932	1,280
Total expenses	133,006	68,294	43,050	13,963	8,352	1,229	1,700
Net cash income ¹	36,843	14,842	4,055	7,823	2,115	347	502

Continued

Table 21—Distribution of USDA farm income before inventory adjustment, livestock farms, 1982 — Continued

Item	Total, all farms	Total, livestock farms	Cattle, hog, and sheep farms	Dairy	Poultry and eggs	Animal specialty farms	General livestock farms
<i>Million dollars</i>							
Total net farm income before inventory adjustment ²	24,898	10,597	2,185	6,152	1,773	280	207
Returns to operators	17,480	6,503	- 838	5,612	1,603	32	94
Net rent to operator landlords	791	369	297	14	12	41	5
Imputed net rental value of operator dwellings	6,627	3,725	2,726	526	158	207	108
<i>Dollars</i>							
Income per farm:							
Net cash income	15,351	11,416	4,034	47,993	42,300	7,229	14,764
Net farm income before inventory adjustment	10,374	8,151	2,174	37,742	35,460	5,833	6,088

¹Total cash income less total cash expenses.

²Gross farm income plus net rent to operator landlords less total expenses. Includes cash and noncash income and expenses.

reason for declining farm income in recent years has been rising interest rates which increased production expenses. On the other hand, rising interest rates increased the interest received from farm financial assets on hand.

Total interest income from loans made and farm financial assets owned by farm operators reached about \$1.4 billion, 6.8 percent of the returns to operators (table 25). Based on the 1979 Census of Farm Finance, farm operators owed other farm operators 5.7 percent of total farm debt. Applying this percentage against the \$13.8-billion interest paid on total farm debt based on the 1982 FPES resulted in an estimated \$789 million of farm interest paid to farmers by other farmers. Although all farm interest paid on farm debt was appropriately charged to production expenses, the USDA farm income accounts do not recognize interest income received on loans made by farm operators to other farm operators as an income from farm sources.

USDA estimated \$7.8 billion in currency and demand deposits on hand January 1, 1983, in support of the farming operation. Assuming an interest rate of 8 percent received on deposits, interest income earned on these deposits amounted to an estimated

\$624 million. Data sources and methodologies do not permit estimating certificates of deposit, money market funds, negotiated order of withdrawal (NOW) accounts, IRA's, or other types of financial assets.

Another aspect of farm income and well-being could be provided by measuring the income from agricultural production, farm business-related income, and off-farm income of current and retired farmers (table 26). Rather than presenting a single-income measure, table 26 provides a conceptual enumeration of the many kinds of farm income and participants receiving benefits from the farm sector. We advance no single-income measure as the most appropriate. However, table 26 offers the framework for further economic accounting research and data development. The implicit assumption was that each farm was associated with one farm family, and the benefits from farming were measured only in terms of the farm profit of the current farm operator families. But many types of benefits exist, and many types of participants populate the farm sector. For example, farmland rent received by retired farmers, which goes unrecognized in the present farm income accounts, was a benefit for past farming efforts. Rent paid to nonoperator

Table 22—Farm sector SIC farm expenses excluding households, livestock farms, 1982

Item	Total, all farms	Total, livestock farms	Cattle, hog, and sheep farms	Dairy	Poultry and eggs	Animal specialty farms	General livestock farms
<i>Million dollars</i>							
Directly prorated expenses:							
Livestock and poultry purchased	9,684	9,071	7,719	404	785	91	72
Feed	16,855	16,076	7,444	3,338	4,944	169	181
Seeds	3,985	1,023	664	289	19	4	47
Fertilizer	8,461	2,657	1,806	682	53	11	105
Agricultural chemicals, including lime	3,973	930	661	197	26	6	40
Energy and petroleum products	10,422	4,410	2,738	1,091	366	79	136
Hired farm labor ¹	10,593	3,656	1,777	1,125	512	163	79
Contract labor	1,234	192	120	35	25	8	4
Customwork	2,835	918	660	192	27	12	27
Subtotal, directly prorated expenses	68,042	38,933	23,589	7,353	6,757	543	691
Indirectly prorated expenses:							
Property taxes ²	4,084	1,864	1,441	280	46	41	56
Depreciation ²	19,765	8,568	5,116	2,249	494	287	422
Interest paid on—							
Real estate debt ²	9,634	4,529	3,143	934	244	109	99
Nonreal estate debt	11,702	5,935	4,269	1,218	217	95	136
Repairs ²	7,861	3,435	2,099	965	130	84	157
Rent	4,803	1,376	1,090	217	17	4	48
Subtotal, indirectly prorated expenses	57,849	25,707	17,158	5,863	1,148	620	918
Other expenses	7,115	3,654	2,303	747	447	66	91
Total expenses	133,006	68,294	43,050	13,963	8,352	1,229	1,700

¹Excludes rental value of laborers' dwellings.

²Excludes households.

landlords totaled \$3.7 billion in 1983, 18 percent of the \$20.9-billion returns to operators. How much of the \$3.7 billion paid reached retired farmers cannot be determined. Broadening the farm data system would make it possible to address these farm business-related income issues.

Off-farm income, as currently defined, includes much farm business-related income, but more detailed data collection is needed to measure fully and to understand this issue. Based on available data, the \$2-billion farm wage income earned from working on the operator's own farm, the \$600-million interest income earned from farm financial assets, and the \$800-million interest paid to farmers by other farmers summed to a total of \$3.4 billion of farm business-related income which was later measured as off-farm income. This \$3.4 billion made up 8 percent of the \$41-billion off-farm

income earned in 1983. Or, from another perspective, if this \$3.4 billion of farm business-related income were considered as returns to operators excluding inventory change, it would account for 14 percent of the estimated 1983 returns.

The establishment of a new category of farm business-related income would not affect the measure of total income of farm operator families. Instead, farm business-related income would be shifted from off-farm income to the new income category for the purpose of monitoring more closely the benefits received from farming. On the other hand, the sales of farmland and the farm business-related incomes of retired farmers have not been recorded under present USDA income accounting concepts. Another measure of farmers' income, including farm business-related income for current and retired farmers, would provide broader

Table 23—Cash receipts and number of farms by type of farms and value of sales class, 1978

Item	Value of sales class						All farms
	\$500,000 or more	\$100,000 to \$499,999	\$100,000 and over	\$20,000 to \$99,999	\$10,000 to \$19,999	Less than \$10,000	
	<i>Percent</i>						
Cash receipts:							
Cash grain	7.2	41.6	48.8	42.5	5.4	3.3	100.0
Cotton	31.3	43.5	74.8	22.1	2.1	1.0	100.0
Tobacco	3.3	25.1	28.4	44.7	12.6	14.3	100.0
Other field crops	12.2	25.5	37.7	37.7	10.4	14.2	100.0
Vegetables and melons	62.2	22.8	85.0	10.8	2.0	2.2	100.0
Fruit and tree nuts	43.7	30.7	74.4	19.8	3.2	2.7	100.0
Horticultural specialties	55.3	28.1	83.4	12.6	1.9	2.1	100.0
General crops	38.1	40.9	79.0	18.5	1.6	.9	100.0
Total, crop receipts	20.8	37.0	57.8	33.5	4.9	3.8	100.0
Cattle and calves	44.2	24.7	68.9	20.7	4.5	5.9	100.0
Hogs and pigs	9.4	44.5	53.9	37.6	4.5	4.0	100.0
Sheep and lambs	30.3	30.8	61.1	25.3	5.5	8.1	100.0
Dairy	13.1	38.8	51.9	45.6	2.0	.5	100.0
Poultry and eggs	41.9	47.2	89.1	10.2	.4	.3	100.0
Other livestock	32.1	24.5	56.6	22.7	6.7	14.0	100.0
Total, livestock receipts	32.8	33.4	66.2	26.3	3.5	4.0	100.0
Number of farms by type of farm:							
Cash grain	.2	9.7	9.9	38.5	16.1	35.5	100.0
Cotton	2.5	20.2	22.7	42.5	13.7	21.1	100.0
Tobacco	.1	2.4	2.5	17.5	14.5	65.5	100.0
Other field crops	.6	5.0	5.6	13.8	9.8	70.8	100.0
Vegetables and melons	3.1	8.2	11.3	17.7	11.8	59.2	100.0
Fruit and tree nuts	1.3	7.5	8.8	21.1	10.8	59.3	100.0
Horticultural specialties	3.2	11.2	14.4	23.7	11.8	50.1	100.0
General crops	.8	6.8	7.6	24.3	12.5	55.6	100.0
Total, crop farms	.6	8.1	8.7	29.5	14.1	47.7	100.0
Cattle, hogs, and sheep	.5	5.3	5.8	17.1	11.1	66.0	100.0
Dairy	1.0	17.0	18.0	66.1	9.9	6.0	100.0
Poultry and eggs	5.3	38.9	44.2	27.7	3.2	24.9	100.0
Animal specialties	.3	1.9	2.2	7.8	7.1	82.9	100.0
General livestock	.3	8.8	9.1	28.8	9.1	53.0	100.0
Total, livestock farm	.7	8.0	8.7	23.5	10.4	57.4	100.0

Source: 1978 Census of Agriculture.

perspective in evaluating farmers' well-being and the benefits derived from farming.

Interest Paid

The preceding analysis focused on measuring business-related income. Another possible source of error in estimating farm income exists in the current methodology for estimating USDA's interest-

paid series. Debt and interest-paid data collected in USDA-conducted farm surveys and by the Census of Agriculture have constituted about 65 percent of published USDA data. For example, interest-paid data in the 1983 FPES amounted to \$13.9 billion compared with the interest-paid estimate of \$20.4 billion contained in the USDA farm expenses series (table 25). The USDA interest paid draws from various reports issued by the Farm Credit Ad-

Table 24—Returns to operators before inventory adjustment, by type of farm, 1983¹

Farm type	All farms			Farms with sales of less than \$20,000			Farms with sales of \$20,000 or more			Percentage difference in returns per farm ²
	Number of farms	Returns to operators total	Returns to operators per farm	Number of farms	Returns to operators total	Returns to operators per farm	Number of farms	Returns to operators total	Returns to operators per farm	
	Thousands	Million dollars	Dollars	Thousands	Million dollars	Dollars	Thousands	Million dollars	Dollars	
Crops:										
Cash grains	568	5,783	10,181	270	-760	-2,816	298	6,543	21,956	216
Cotton	31	1,320	42,581	10	-28	-2,816	21	1,348	64,190	151
Tobacco	136	406	2,985	104	-293	-2,816	32	699	21,844	732
Other field crops	132	909	6,886	99	-279	-2,816	33	1,188	36,000	523
Vegetables and melons	34	2,684	78,941	22	-62	-2,816	12	2,746	228,833	290
Fruit and tree nuts	86	1,053	12,224	55	-155	-2,816	31	1,208	38,968	319
Horticultural specialties	31	1,829	59,000	19	-53	-2,816	12	1,882	156,833	266
General crops	69	864	12,522	42	-118	-2,816	27	982	36,370	290
Subtotal, all crop farms	1,087	14,848	13,660	621	-1,749	-2,816	466	16,597	35,616	261
Livestock:										
Cattle, hogs, and sheep	992	-1,271	-1,281	719	-2,025	-2,816	273	754	2,762	316
Dairy	161	5,509	34,217	25	-70	-2,816	136	5,579	41,025	120
Poultry and eggs	49	1,495	30,489	12	-34	-2,816	37	1,528	41,292	135
Animal specialties	47	227	4,787	39	-110	-2,816	8	335	41,852	874
General livestock	34	129	3,794	17	-48	-2,816	17	177	10,404	274
Subtotal, all livestock farms	1,283	6,080	4,723	812	-2,286	-2,816	471	8,346	17,720	375
Total, all farms	2,370	20,920	8,819	1,433	-4,035	-2,816	937	24,935	26,612	302

¹This table is based on the assumption that the per farm income of small farms is the same for all types of farms. It was developed to provide a rough indication of the impact of the negative income of small farms on the U.S. all-farm income average. Future efforts will be devoted to distributing the type of farm income estimates by value of sales.

²Returns to operators per farm of farms with sales of \$20,000 or more divided by returns to operators per farm of all U.S. farms.

Table 25—USDA farm income adjusted for farm business-related income and interest paid, 1983

Item	All farms	Cash grain	Other field crops, cotton, and tobacco	Vegetables and melons	Fruit and tree nuts	Horti-cultural specialties	General crop farms	Cattle, hogs, and sheep	Dairy and eggs	Poultry and livestock and animal specialties	
	<i>Thousands</i>										
Farm	2,370	568	299	34	86	31	69	992	161	49	81
	<i>Million dollars</i>										
Total income of farm operator families:											
Income from farm sources	27,865	7,326	3,387	2,806	1,441	1,923	1,063	1,556	6,023	1,656	692
Returns to operators	20,920	5,783	2,635	2,684	1,053	1,829	864	1,281	5,510	1,495	356
Net rent to operator landlords	602	187	68	7	33	3	22	228	10	9	35
Imputed net rental value of operator dwellings	6,343	1,356	684	115	355	91	177	2,609	503	152	301
Off-farm income	40,993	8,227	4,907	756	2,492	649	1,433	18,742	1,227	686	1,874
Total income	68,858	15,553	8,294	3,562	3,933	2,572	2,496	20,298	7,250	2,342	2,566
Farm business-related income:											
Wages paid by operators to themselves and their family members ¹	2,029	437	81	99	104	129	124	419	564	41	31
Farm interest received on—											
Farm debt owed by farmers to other farmers ²	789	290	44	12	18	9	62	198	138	13	5
Farm financial assets ³	624	230	35	9	15	7	49	156	109	10	4
Total	1,413	520	79	21	33	16	111	354	247	23	9
Sales of farmland for—											
Farm purposes ¹	3,431	1,132	103	20	104	34	1,079	492	310	45	112
Nonfarm purposes ¹	1,156	488	64	1	47	10	342	104	50	50	0
Total	4,587	1,620	167	21	151	44	1,421	596	360	95	112
Sales of farm machinery ¹	385	193	18	5	6	3	17	48	93	1	1
Total, farm business-related income	8,414	2,770	345	146	294	192	1,673	1,417	1,264	160	153
Interest paid adjustment:											
USDA interest paid	20,368	6,524	1,924	296	778	235	651	7,046	2,048	446	420
FPES interest paid ¹	13,853	5,097	776	207	323	156	1,094	3,465	2,413	226	96
Adjustment	6,515	1,427	1,148	89	455	79	-443	3,581	-365	220	324
Total income adjustments ⁴	14,929	4,197	1,493	235	749	271	1,230	4,998	899	380	477

Continued

NIPA: Estimating Farm Income by Type of Farm

Table 25—USDA farm income adjusted for farm business-related income and interest paid, 1983 — Continued

Item	All farms	Cash grain	Other field crops, cotton, and tobacco	Vegetables and melons	Fruit and tree nuts	Horti-cultural specialties	General crop farms	Cattle, hogs, and sheep	Dairy	Poultry and eggs	General livestock and animal specialties
<i>Dollars</i>											
Adjusted income, total:											
Income from farm sources	42,794	11,724	4,880	3,041	2,190	2,194	2,293	6,554	6,922	2,036	1,169
Returns to operators ⁵	35,849	10,181	4,128	2,919	1,802	2,100	2,094	3,717	6,409	1,875	833
Net rent to operator landlords	602	187	68	7	33	3	22	228	10	9	35
Imputed net rental value of operator dwellings	6,343	1,356	684	115	355	91	177	2,609	503	152	301
Off-farm income ⁶	37,551	7,270	4,747	636	2,355	504	1,198	17,969	416	622	1,834
Total income ⁷	80,345	18,994	9,627	3,677	4,545	2,698	3,491	24,523	7,338	2,658	3,001
<i>Percent</i>											
Percentage change in income from farm sources:											
Returns to operators	71.4	72.6	56.7	8.8	71.1	14.8	142.4	489.9	16.3	25.4	134.7
Rent received on farmland	0	0	0	0	0	0	0	0	0	0	0
Imputed rental value on operator dwellings	0	0	0	0	0	0	0	0	0	0	0
Off-farm income	-8.4	-11.6	-3.3	-15.9	-5.5	-22.3	-16.4	-4.1	-66.1	-9.3	-2.1
Total income	16.7	22.1	16.1	3.2	15.6	4.9	39.9	20.8	1.2	13.5	17.0

¹From the 1983 Farm Production Expenditure Survey.

²Estimated at 5.7 percent of FPES interest paid based on debt reported in the 1979 Census Survey of Farm Finance.

³Estimated based on an assumed interest rate received of 8 percent on currency and demand deposits.

⁴Farm business-related income plus interest paid adjustment.

⁵Returns to operators plus total income adjustments.

⁶Off-farm income less wages paid by operators to themselves and their family members and farm interest received.

⁷Includes income adjustments.

Table 26—Farm sector benefits and participants

Item	Farm operators				Nonoperators ¹			
	Operators primarily employed in farming	Operators not primarily employed in farming	Family members	Total	Retired operators	Other family members of retired operators	All other nonoperators	Total
Income from farm production:								
Returns to operators	X	X	—	X	—	—	—	—
Wages and salaries for working on farm owned ²	X	X	X	X	—	—	—	—
Interest income on farm-related financial assets ²	X	X	X	X	—	—	—	—
Interest income on farm mortgages held ²	X	X	X	X	X	X	X	X
Other income from farm sources:								
Sale of farm assets	X	X	X	X	X	X	X	X
Wages and salaries from work on other farms ²	X	X	X	X	X	X	X	X
Rent received on farmland	X	X	X	X	X	X	X	X
Net social security payments ^{2,3}	X	X	X	X	X	X	X	X
Imputed net rental value of operator dwellings	X	X	X	X	—	—	—	—
Home-produced food and fuel	X	X	X	X	—	—	—	—
Off-farm income:								
Wages and salaries	X	X	X	X	X	X	X	X
Nonfarm business and professional income	X	X	X	X	X	X	X	X
Interest and dividends	X	X	X	X	X	X	X	X
Pensions, retirement, and other transfer payments	X	X	X	X	X	X	X	X
Total income ⁴	X	X	X	X	X	X	X	X

X = included.

— = not applicable.

¹Nonoperators can be nonlandlords, for example, a family member holding a farm mortgage.

²Reduces off-farm income as currently defined by USDA by an identical amount.

³Payments received less payments made.

⁴Equals the sum of income from farm payments, other income from farm sources, and off-farm income.

ministration (FCA), Farmers Home Administration, the Life Insurance Institute, Federal Reserve System, and others. Benchmark data collected in the Farm Finance Survey determine interest paid to commercial banks, merchants, dealers, and individuals. Analysts have assumed that the resulting difference between interest-paid data reported by institutional lenders and the FPES data was traced to the sensitivity of financially related questions, which prompted farmers to underreport farm debt

and interest paid. However, IRS farm data paralleled FPES data, indicating this assumption may be false and that the FPES interest-paid data were not understated (table 27). The addition of this \$6.5-billion difference between the USDA and the FPES interest paid to the returns to operators series (see table 25) would increase returns by 25 percent.⁵

⁵ Lowering the amount of interest paid expenses automatically lowers the interest income earned by farmers on debt owed to other farmers.

Table 27—USDA, FPES, and IRS farm interest paid, excluding farm households, 1971-83

Year	U.S. Dept. of Agriculture ¹	Farm Production Expenditure Survey	Internal Revenue Service
<i>Million dollars</i>			
1971	3,377	2,531	2,815
1972	3,666	3,275	3,118
1973	4,433	3,655	3,833
1974	5,429	4,019	4,421
1975	6,075	4,755	5,196
1976	7,012	4,688	6,043
1977	8,146	6,033	6,511
1978	9,788	7,477	7,942
1979	12,533	9,212	9,914
1980	15,637	10,725	12,581
1981	19,118	12,553	NA
1982	21,335	14,046	NA
1983	20,368	13,905	NA

NA = not available.

¹ Interest paid in the USDA farm production expenses series is not based on the Census of Agriculture or the FPES. Instead, interest paid charges are based on administrative reports furnished by the Farm Credit Administration, Farmers Home Administration, and the Federal Reserve System. Borrowing by nonfarmers and nonfarm borrowing by farmers are the suspected causes for the discrepancy.

Source: (15).

Four areas help explain the discrepancy in interest paid as estimated by USDA from lender reports, IRS, and the FPES. First, portions of loans obtained from the FGA by farm operators may actually have been for nonfarm purposes. Second, commercial banks extended farmers' lines of credit which may have been used for nonfarm as well as farm purposes. Third, loans granted by merchants, dealers, and individuals may have been at concessionary rates. Fourth, many loans by agricultural lending institutions and secured by farm real estate were probably made to operators not primarily employed in farming and to landlords for nonfarm purposes. The FPES specifically asked for interest paid on farm real estate debt and on operating loans for the farm business. The operator, in responding to these

questions, may have accurately separated farm interest paid from nonfarm interest paid.

Returns to operators for all farms increased \$14.9 billion (71 percent) in 1983 after adjustment for farm business-related income and the difference in interest paid (see table 25). The \$2-billion adjustment for wages paid by operators to themselves and their family members and the \$1.4-billion adjustment for farm interest income received was not new income. Instead, these two farm business-related income adjustments shifted off-farm income to income from farm sources. The measure of total income of farm families from farm and off-farm sources was not affected. The shift of these two farm business-related income categories from off-farm income to income from farm sources provided a more accurate monitor of the benefits and well-being realized by farm operators from their farming activities. The capital sales adjustment for farmland and machinery sales of \$5 billion and the \$6.5-billion interest-paid adjustment accounted for 77 percent of the \$14.9-billion total income adjustments. This represented new income that is estimated to have increased the measure of total income of farm families from farm and off-farm sources.

Income adjustments were large for cattle, hog, and sheep farms, general livestock farms, and animal specialty farms. These farms shared four common characteristics: low returns to operators, high off-farm income, a high percentage of small farms with sales of less than \$20,000, and a low percentage of operators reporting farming as their primary occupation (table 28). These four characteristics exemplify tax-loss farming.

Tax-loss Farming

Tax-loss farming may have a significant impact on the SIC measure of farm income, but the actual impact will be difficult to evaluate (15). About 39 percent of all farmers reported a net farm loss on their tax returns in 1973, the year of record-high farm income, and 46 percent reported losses in 1978, a year of good farm income (table 29). Disposable per capita personal income of families residing on farms reached 104 and 97 percent, respectively, of the nonfarm population in 1973 and 1978. Thus,

Table 28—SIC farms with sales of less than \$20,000, primary occupation, and off-farm income

Type of farm	Percentage of farms with sales of less than \$20,000 ¹	Percentage of operators with farm primary occupation ¹	Off-farm income as a percentage of total income
	<i>Percent</i>		
Crop farms:			
Other field crops	81	42	62
Tobacco	80	52	58
Vegetables and melons	71	55	22
Fruit and tree nuts	70	44	43
General crops	68	53	53
Horticultural specialties	62	50	28
Cash grain	52	67	55
Cotton	35	82	27
Total, crop farms	62	58	48
Livestock farms:			
Animal specialties	90	24	99
Cattle, hogs, and sheep	77	43	67
General livestock	62	62	57
Poultry and eggs	28	57	22
Dairy	16	91	16
Total, livestock farms	68	50	56
Total, all crop and livestock farms	64	54	52

¹ From the 1978 Census of Agriculture.

some proportion of farms, perhaps as much as 39 to 46 percent, appeared to have sustained tax losses beyond their operating profits, even in years of favorable income (table 29).

By comparing IRS farm tax-loss data against USDA distributions of farm income by value of sales class and type of farm, the reader can see that a large proportion of tax-loss farmers are small farmers. About 80 percent of the 1976 farm returns showed losses of less than \$5,000 (table 30). The average nonfarm income of \$18,669 for individuals reporting farm losses was substantially higher than the average nonfarm income of \$8,245 for individuals reporting farm profits. Nonfarm income increased substantially as the size of the farm loss increased; meantime, the level of nonfarm income remained relatively constant for all levels of reported farm profit.

Operators of beef cattle feedlots reported the highest farm income loss at minus \$11,946, and the highest off-farm income, at \$47,742 per producer (table 31). Operators of general livestock, animal specialty, fruit and tree nut, and beef farms excluding feedlots reported farm losses ranging from minus \$3,561 to minus \$437 per farm. Their off-farm income ranged from \$17,116 to \$23,261, considerably higher than the range of \$8,524 to \$14,662 of those operators reporting farm profits.

The SIC farm and off-farm income estimates and distributions based on USDA and Census of Agriculture data seemed to reflect the structural farm profits and losses and off-farm income characteristics based on IRS data. The SIC estimates of farm income were biased downward to the extent that tax-loss farming became incorporated into the USDA farm sector data system, but

Table 29—Farm sole proprietorships, with and without income, 1971-80¹

Item	Unit	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Income analysis:											
Farms with income—											
Returns	Thousands	1,605	1,806	1,956	1,701	1,852	1,679	14,709	1,672	1,577	1,448
Business receipts	Mil. dols.	30,896	38,335	51,181	48,653	49,973	54,584	47,798	60,200	66,021	60,911
Total deductions	Mil. dols.	25,134	30,340	38,459	35,315	38,326	42,582	38,022	47,169	52,823	48,615
Net income	Mil. dols.	5,762	7,995	12,722	13,338	11,647	12,002	9,776	13,031	13,198	12,296
Interest paid	Mil. dols.	1,235	1,461	1,858	1,711	1,964	2,239	2,051	2,862	3,499	3,868
Receipts per return	Dollars	19,250	21,226	26,166	28,603	30,250	32,510	32,516	36,005	41,865	42,066
Net income per return	Dollars	3,590	4,427	6,504	7,841	7,050	7,148	6,650	7,794	8,369	8,492
Farms without income—											
Returns	Thousands	1,336	1,201	1,247	1,477	1,470	1,539	1,462	1,438	1,409	1,524
Business receipts	Mil. dols.	10,017	10,303	11,408	14,717	15,294	18,930	21,581	21,525	26,117	33,768
Total deductions	Mil. dols.	13,361	13,601	15,515	21,195	21,966	25,856	29,404	29,010	35,084	45,561
Net income	Mil. dols.	-3,344	-3,298	-4,107	-6,478	-6,672	-6,926	-7,823	-7,485	-8,967	-11,793
Interest paid	Mil. dols.	972	997	1,057	1,545	1,901	2,356	2,726	3,010	3,744	5,184
Receipts per return	Dollars	7,498	8,579	9,148	9,964	10,404	12,300	14,761	14,969	18,536	22,157
Net income per return	Dollars	-2,503	-2,746	-3,294	-4,386	-4,539	-4,500	-5,351	-5,205	-6,364	-7,738
Total farms, with and without income—											
Returns	Thousands	2,941	3,007	3,203	3,178	3,122	3,218	2,932	3,110	2,986	2,972
Business receipts	Mil. dols.	40,913	48,638	62,589	63,370	65,267	73,514	69,379	81,725	92,138	94,679
Total deductions	Mil. dols.	38,495	43,941	58,974	56,510	60,292	68,438	67,823	76,179	87,907	94,176
Net income	Mil. dols.	2,418	4,697	8,615	6,860	4,975	5,076	1,553	5,546	4,231	503
Interest paid	Mil. dols.	2,207	2,458	2,915	3,256	3,865	4,595	4,777	5,872	7,243	9,052
Receipts per return	Dollars	13,911	16,175	19,541	19,940	20,906	22,845	23,663	26,278	30,857	31,857
Net income per return	Dollars	822	1,562	2,690	2,159	1,594	1,577	666	1,783	1,417	169
Percentage of farms reporting losses	Percent	45.4	39.9	38.9	46.5	47.1	47.8	49.9	46.2	47.2	51.3

See footnote at end of table.

Continued

Table 29—Farm sole proprietorships, with and without income, 1971-80¹ — Continued

Item	Unit	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Financial analysis:											
Percentage of total—											
Farms with income:											
Business receipts	Percent	75.5	78.8	81.8	76.8	76.6	74.2	68.9	73.7	71.7	64.3
Interest paid	Percent	56.0	59.4	63.7	52.5	50.8	48.7	42.9	48.7	48.3	42.7
Farms without income:											
Business receipts	Percent	24.5	21.2	18.2	23.2	23.4	25.8	31.1	26.3	28.3	35.7
Interest paid	Percent	44.0	40.6	36.3	47.5	49.2	51.3	57.1	51.3	51.7	57.3
Farms with and without interest:											
Business receipts	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Interest paid	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Interest paid as a percentage of business receipts—											
Farms with income	Percent	4.0	3.8	3.6	3.5	3.9	4.1	4.3	4.8	5.3	6.4
Farms without income	Percent	9.7	9.7	9.3	10.5	12.4	12.4	12.6	14.0	14.3	15.4
Farms with and without income	Percent	5.4	5.1	4.7	5.1	5.9	6.3	6.9	7.2	7.9	9.6
Interest paid as a percentage of net income—											
Farms with income	Percent	21.4	18.3	14.6	12.8	16.9	18.7	21.0	22.0	26.5	31.5
Farms without income	Percent	-29.1	-30.2	-25.7	-23.8	-28.5	-34.0	-34.8	-40.2	-41.8	-44.0
Farms with and without income	Percent	91.3	52.3	33.8	47.5	77.7	90.5	244.6	105.9	171.2	1,799.6

¹ From the Internal Revenue Service, U.S. Dept. of Treasury, "Statistics of Income," "Business Income Tax Returns."

Table 30—IRS farm and off-farm income, by individuals reporting farm profits and losses, per farm, 1976

Item	Number of returns	Adjusted gross income	Farm income or loss	Off-farm income
	-----Thousands-----		-----Dollars-----	
Farm profits:				
\$50,000 or more	17	81,673	74,911	8,706
\$25,000 to \$49,999	81	37,671	32,979	5,684
\$10,000 to \$24,999	231	21,196	15,624	6,110
\$5,000 to \$9,999	210	13,291	7,178	6,507
\$2,000 to \$4,999	252	11,027	3,233	8,226
\$1,000 to \$1,999	179	9,872	1,441	9,148
\$1 to \$999	358	10,512	397	10,851
All farms with profits	1,328	15,366	7,716	8,245
Farm losses:				
\$50,000 or more	12	16,362	- 104,448	122,080
\$25,000 to \$49,999	24	17,366	- 33,942	51,602
\$10,000 to \$24,999	93	15,423	- 15,154	32,348
\$5,000 to \$9,999	191	13,571	- 6,836	20,641
\$3,000 to \$4,999	228	13,638	- 3,842	18,151
\$1 to \$2,999	917	13,329	- 1,184	14,864
All farms with losses	1,465	13,631	- 4,568	18,669
All individuals	2,793	14,533	1,268	13,877

statistically identifying and measuring expenses related to tax-loss farming was extremely difficult. However, SIC farm income by value of sales class data combined with primary occupation data provided a broad overview that seemed to help separate large commercially oriented producers from small noncommercial producers.

The U.S. all-farm measure of returns to operators was separated between the small farms with the sales of less than \$20,000 category and the larger farms with sales of more than \$20,000 category in table 24. This separation furnished a rough indication of the potential income distortion created by including the negative returns to operators of small noncommercial farms in the USDA all-farm income statistics. For example, by excluding the minus \$4 billion in farm returns to operators of the 1.4 million small noncommercial farms, one can determine that the 1983 returns to operators for all

farms increased 19 percent from \$20.9 billion to \$24.9 billion.

The 1.4 million small, noncommercial farms with sales of less than \$20,000 constituted 60 percent of all U.S. farms. Thus, the impact of excluding small farms on the U.S. per farm income average was great. On a per farm basis, returns to operators for all farms increased 302 percent (table 24). The effect of the number of small farms reporting negative farm income as well as the impact of the negative farm income itself distorts the all-U.S. income average and, in this analysis, the SIC sector per farm income average.

Farm Income by Type of Farm

The difference in production expense patterns between crop and livestock farms in 1983 largely paralleled the difference in their sources of cash

Table 31—IRS farm and off-farm income of individuals, by type of farm, 1976¹

SIC farms	Returns	Returns with off-farm income	Percentage reporting off-farm income	Farm income or loss	Off-farm income
	-----Number-----		Percent	-----Dollars-----	
Farms with profits:					
Dairy	223,393	215,992	96.7	5,727	5,908
Field crops	1,067,655	1,029,625	96.4	3,935	12,298
Poultry and eggs	65,079	59,543	91.5	2,289	10,520
Hogs, sheep, and goats	262,663	258,784	98.5	2,016	8,524
Vegetables and melons	65,726	65,700	100.0	385	12,534
Horticultural specialties	18,603	17,088	91.9	75	14,662
Farms with losses:					
Beef cattle feedlots	2,806	2,804	99.9	- 11,946	47,742
General livestock	67,294	67,287	100.0	- 3,561	17,469
Animal specialties	74,408	74,408	100.0	- 3,175	21,390
Beef cattle except feedlots	746,946	728,287	97.5	- 2,530	17,116
Farms not allocated	118,142	115,158	97.5	- 1,718	21,992
Fruit and tree nuts	87,211	87,211	100.0	- 437	23,261
Total farms	2,799,926	2,721,887	97.2	1,268	13,877

¹ Includes sole proprietorships only. Excludes partnerships and corporations. Includes landlords.

receipts. Feed (\$18.1 billion), interest (\$10 billion), depreciation (\$8.5 billion), and livestock and poultry purchased (\$8.2 billion) were the four largest expenses of livestock producers in 1983, representing 66 percent of their \$68.1-billion total farm production expenses (excluding household expenses). Livestock farmers accounted for 94 percent of total U.S. livestock purchases and 95 percent of total U.S. feed purchases. Depreciation (\$11 billion), interest (\$10.4 billion), labor (\$7.7 billion), energy and petroleum products (\$5.7 billion), and fertilizer (\$4.9 billion) accounted for 65 percent of 1983 total production expenses of \$60.9 billion of crop producers (excluding household expenses).

Cash Grain

Estimated net farm income per farm of \$12,897 in 1983 represented an increase of 73 percent from 1982, mostly because of the PIK program. Cash farm income per farm totaled \$22,276, up 34 percent. Direct cash Government payments increased \$886 per farm. The PIK amount of \$6,528 per farm

was accompanied by the PIK- and drought-related reduction in production costs of \$4,055 per farm to boost farm income by \$10,583. However, farm income per cash grain farm increased only \$5,421 because of a \$5,370 drop in cash grain receipts. Prices received for food grains increased 1 percent, but output dropped 17 percent because of the PIK and acreage-reduction programs and the drought. The 20-percent increase in prices received for feed grains was offset by a 47-percent drop in output. If the PIK payment of \$6,528 was not included, net farm income per cash grain farm would have dropped from \$7,476 in 1982 to \$948 in 1983 (assuming no change in all other factors).

Total farm production expenses declined 6 percent. Input use dropped in 1983 following substantially reduced planted and harvested acreages. As a result, energy and petroleum expenses dropped 5 percent, fertilizer expenses declined 16 percent, and agricultural chemical expenses decreased 4 percent. The \$800-million decline in these costs accounted

for 35 percent of the \$2.3-billion drop in total farm production expenses.

Exports accounted for about 22 percent of total U.S. cash receipts in calendar year 1983. Although the percentage is high, the aggregate U.S. data masked the importance of exports to each farm sector. For example, exports likely accounted for about 53 percent of 1983 crop and livestock cash receipts of cash grain farmers. About 59 percent of total wheat disappearance, 51 percent of rice, and 43 percent of soybeans were exported during fiscal year (FY) 1980 to FY 1984.

In contrast to food grain producers, domestic feed consumption affects farm income of feed grain producers more than exports. In FY 1983, farmers exported about 26 percent of the corn supply and fed 54 percent to animals.

Interest costs of cash grain farmers accounted for 19 percent of 1983 production expenses. The SIC income distributions, by highlighting the importance of exports to gross income and interest paid to expenses, provided a more direct link to evaluate the impact of monetary and fiscal policy on net farm income.

Cash grain farms in 1983 accounted for 24 percent of all farms, 24 percent of total cash receipts, and 28 percent of returns to operators. Farms with sales of less than \$20,000 in 1978 constituted 52 percent of total cash grain farms, but accounted for only 9 percent of total cash grain receipts (table 23).

Returns to operators for cash grain farms with sales of \$20,000 or more averaged \$21,956 per farm in 1983, about 216 percent more than the U.S. cash grain farm average (table 24). Off-farm income averaged \$13,750 per cash grain farm in 1982, or 65 percent of total income. This amount fell to 53 percent in 1983 when farm income increased. High off-farm income for cash grain farms was the direct result of the many small farms included in the cash grain farm sector. Small farm inclusion also explained why only 67 percent of cash grain farmers reported farming as their primary occupation in the 1978 Census of Agriculture.

Cotton

Net farm income per cotton farm increased an estimated 5 percent. The PIK payment in 1983 averaged \$15,419 per farm, 34 percent of the \$45,258 net farm income per farm. The PIK and drought-induced reduction in production expenses was \$8,741 per farm, 19 percent of the 1983 net farm income per farm. If PIK payments were not included, net farm income per cotton farm would have been dropped from \$43,161 in 1982 to \$27,742 in 1983 assuming no change in all other factors. Cash income per farm increased 4 percent to \$63,000.

Cotton cash receipts, excluding PIK, declined \$478 million in 1983, or \$16,387 per farm. A 13-percent increase in prices received could not offset a 36-percent drop in output from the PIK program and the drought. Domestic cotton use and exports totaled 12.9 million bales in FY 1983 with exports accounting for 7 million bales, or 54 percent; this share was 49 percent in FY 1982 and 55 percent in FY 1981, showing that cotton farmers were dependent on exports for about half of their cotton cash receipts.

Total farm production expenses declined \$271 million (6 percent) in 1983. Fertilizer, chemical, labor, energy, and customwork expenses declined \$154 million.

Cotton farms in 1983 accounted for 1 percent of all U.S. farms, 3 percent of total U.S. cash receipts, and 3 percent of total U.S. production expenses. Farms with sales of less than \$20,000 constituted 35 percent of total cotton farms in 1978 but accounted for only 3 percent of total cotton cash receipts (table 23). Returns to operators for cotton farms with sales of \$20,000 or more averaged \$64,190 per farm in 1983, 151 percent greater than the U.S. cotton farm average.

Off-farm income was not a large portion of total income in 1983, at 23 percent, because many cotton producers operated large farms. About 82 percent of cotton producers reported farming as their primary occupation in 1978.

Tobacco

Net farm income declined 29 percent per farm in 1983 to an estimated \$4,816. Net farm income per farm in 1983 was 29 percent below 1978. Tobacco cash receipts declined 15 percent in 1983 because of a 5-percent decrease in prices received and a 28-percent drop in production. Total production expenses declined \$149 million, but gross farm income dropped \$430 million. Cash income per farm dropped 22 percent to \$6,595.

Tobacco farms in 1983 accounted for 6 percent of all U.S. farms, 2 percent of total U.S. cash receipts, and 6 percent of returns to operators. Farms with sales of less than \$20,000 constituted 80 percent of total tobacco farms in 1978 but accounted for only 27 percent of total tobacco cash receipts. Returns to operators for tobacco farms with sales of \$20,000 or more averaged \$21,844 per farm in 1983, 733 percent more than the U.S. tobacco farm average.

Off-farm income was a high percentage of the total income of tobacco farmers because many tobacco producers also had jobs off-farm. Only 52 percent of tobacco producers reported farming as their primary occupation in 1978.

Other Field Crops

Net farm income per farm increased an estimated 46 percent in 1983 to \$10,083. Net farm income per farm in 1983 was 17 percent above 1978.

Other field crop farms in 1983 accounted for 6 percent of all U.S. farms, 5 percent of total U.S. cash receipts, and 4 percent of returns to operators. In 1978, farms with sales of less than \$20,000 constituted 81 percent of total other field crop farms but accounted for 24 percent of other field crop cash receipts. Returns to operators for other field crop farmers with sales of \$20,000 or more averaged \$36,000 per farm in 1983, 523 percent greater than the U.S. other field crop farm average.

Unlike cash grain and cotton farmers, off-farm income of other field crop farmers exceeded net farm income. Off-farm income made up 67 percent of total income of other field crop farmers in 1983.

Forty-two percent of other field crop operators reported farming as their primary occupation in 1978 compared with 82 percent of cotton producers and 67 percent of cash grain producers.

Vegetables and Melons

Estimated net farm income of \$82,235 per vegetable and melon farm was the highest of any other SIC crop or livestock farm type. Net farm income increased 12 percent from 1982 because of a 5-percent decrease in production expenses and a 2-percent increase in gross farm income. Vegetable output dropped 7 percent in 1983. Energy and petroleum costs dropped \$11 million; agricultural chemicals, \$8 million; and fertilizer, \$43 million. The drop in these three inputs composed 34 percent of the \$182-million decrease in total farm production expenses. Cash farm income in 1983 was \$91,088 per farm.

Vegetable and melon farmers constituted 1 percent of all U.S. farms in 1983 and accounted for 4 percent of total U.S. cash receipts and 4 percent of returns to operators. Farms with sales of less than \$20,000 in 1978 made up 71 percent of total vegetable and melon farms and accounted for 4 percent of total vegetable and melon cash receipts. Returns to operators for vegetable and melon growers with sales of \$20,000 or more averaged \$228,833 per farm in 1983, about 290 percent more than the U.S. vegetable and melon farm average.

Off-farm income in 1983 averaged \$22,222 per farm, 21 percent of total income of vegetable and melon farmers. Farming was the primary occupation of 55 percent of vegetable and melon producers in 1978.

Fruit and Tree Nuts

Estimated net farm income amounted to \$16,755 per farm in 1983; off-farm income was \$28,979; and total income was \$45,734. Net farm income declined 18 percent from 1982 and 37 percent from 1978. Fruit prices dropped 30 percent in 1983, which caused a 9-percent decline in fruit and nut cash receipts. A 4-percent decline in production ex-

penses partially offset the decline in cash receipts. The output of fruits and nuts declined 1 percent in 1983. Hired and contract labor was the largest single production expense, making up 34 percent of total production costs in 1983. Hired and contract labor costs dropped \$59 million in 1983, accounting for 25 percent of the \$235-million decline in total farm production expenses.

Fruit and tree nut farms composed 4 percent of all U.S. farms in 1983 and accounted for 4 percent of total U.S. cash receipts and 5 percent of returns to operators. Farms with sales of less than \$20,000 formed 70 percent of all fruit and tree nut farms in 1978 and accounted for only 6 percent of total fruit and tree nut cash receipts. Returns to operators for fruit and tree nut farms with sales of \$20,000 or more averaged \$38,968 per farm in 1983, 319 percent more than the U.S. fruit and tree nut farm average.

Farming was the primary occupation of 44 percent of fruit and tree nut producers in the 1978 Census of Agriculture. The off-farm income of \$28,979 in 1983 was the highest of any crop farm, second to animal specialty farms. Off-farm income constituted 43 percent of the total income of fruit and tree nut farmers in 1978, but this share climbed to 63 percent in 1983. Net farm income declined 37 percent from 1978 to 1983, and off-farm income increased 44 percent.

Horticultural Specialties

Horticultural specialty farms averaged an estimated \$62,032 in net farm income in 1983, up 21 percent from the previous year. The increase in net farm income in 1983 was caused by a 3-percent increase in gross farm income and a 5-percent drop in farm production expenses. Hired and contract labor, the largest single cost, declined \$38 million, 27 percent of the \$140-million decrease in total farm production expenses.

Horticultural specialty farms in 1983 accounted for 1 percent of all U.S. farms, 3 percent of total U.S. cash receipts, and 9 percent of returns to operators. Farms with sales of less than \$20,000 formed 62

percent of all horticultural specialty farms but accounted for 4 percent of horticultural specialty cash receipts. Returns to operators for horticultural specialty farms with sales of \$20,000 or more averaged \$156,833 per farm in 1983, 266 percent more than the U.S. horticultural specialty farm average.

Fifty percent of horticultural specialty farmers reported farming as their primary occupation in the 1978 Census of Agriculture. Off-farm income in 1983 averaged \$20,940, 25 percent of total operator income. The per farm net farm income and the per farm total operator income of horticultural specialty farmers ranked second to vegetable and melon farmers.

General Crops

Net farm income per farm increased an estimated 22 percent to \$15,405 for general crop farmers in 1983. Total farm production expenses declined 6 percent and offset a 1-percent decline in gross farm income. Declines in fertilizer, energy, and agricultural chemicals were largely responsible for the \$219-million decline in total farm production expenses.

General crop farms composed 3 percent of total U.S. farms in 1983, accounting for 3 percent of total U.S. cash receipts and 3 percent of total farm production expenses. Farms with sales of less than \$20,000 composed 68 percent of all general crop farms and accounted for 3 percent of other crop cash receipts. Returns to operators for general crop farms with sales of \$20,000 or more averaged \$36,370 per farm in 1983, 290 percent more than the U.S. general crop farm average.

Fifty-three percent of general crop farmers reported farming as their primary occupation in 1978. Off-farm income in 1983 averaged \$20,775 per farm, 57 percent of total operator income.

Cattle, Hogs, and Sheep

Net farm income of cattle, hog, and sheep farmers decreased 28 percent to an estimated \$1,569 per farm in 1983, 25 percent of 1978 income. Net farm

income per farm in 1983 made up 13 percent of the U.S. all-crop and livestock farm average. However, increases in off-farm income partially offset declines in net farm income. Total income in 1983 was 105 percent of 1978. Total income in 1983 constituted 70 percent of the U.S. all-crop and livestock farm average. Cash farm income per farm decreased 12 percent to \$3,561.

Total production expenses fell \$1.2 billion, and gross farm income dropped \$1.8 billion. Livestock cash receipts of cattle, hog, and sheep producers declined 5 percent because the 5-percent drop in prices received for meat animals offset a 2-percent increase in output. Feed, livestock, and poultry expenditures accounted for 37 percent of the \$42-billion total farm production expenses in 1983. Feed costs increased 13 percent, boosted by a 10-percent increase in feed prices paid. Prices paid for feeder animals declined 2 percent in 1983, but expenditures for livestock declined 9 percent, indicating that producers purchased fewer animals in 1983.

Cattle, hog, and sheep farms were the only farm type to experience negative returns to operators in 1982 and 1983. Returns to operators per cattle, hog, and sheep farm fell to minus \$1,281 in 1983, compared with minus \$838 in 1982. Returns to operators of farms with sales of \$20,000 or more was \$2,762 per farm in 1983. The low returns to operators and relatively high off-farm income of beef cattle, hog, and sheep producers have been partially influenced by the impacts of small farms and tax-loss farming.

In 1978, farms with sales of less than \$20,000 constituted 77 percent of U.S. cattle, hog, and sheep farms and accounted for 10 percent of cattle cash receipts, 9 percent of hog cash receipts, and 14 percent of sheep cash receipts. Farming was the primary occupation of only 43 percent of red meat producers in the 1978 Census of Agriculture. Off-farm income averaged \$18,893 per farm in 1983.

Dairy

Net farm income of dairy farms decreased an estimated 1 percent in 1983. Net farm income per farm in 1983 was 38 percent above 1978. Cash receipts increased 3 percent in 1983 because of a

4-percent increase in production. Prices received for dairy products did not change from 1982. Cash income per farm declined very little.

Net farm income of dairy farmers averaged \$37,409 in 1983, ranking first for all SIC livestock farm categories and behind cotton (\$45,258), vegetable and melon (\$82,235), and horticultural specialty (\$62,032) farms. Operating a dairy farm is time-consuming with little opportunity for off-farm work; the off-farm income average of \$7,621 per dairy farm was the lowest of any SIC farm, making up 44 percent of the U.S. average. Farming was the primary occupation of 91 percent of dairy farmers, the highest percentage of any farm type. Only cotton farms (82 percent) approached this high percentage, with cash grains (67 percent) third.

Total income of \$45,030 per dairy farm compared favorably to fruit and tree nut farms (\$45,734) and poultry and egg farms (\$47,807). Only cotton farms (\$58,934), horticultural specialty farms (\$82,972), and vegetable and melon farms (\$104,457) greatly exceeded the total income average of dairy farms.

The Government instituted dairy marketing deductions, a 50-cents-per-hundredweight (cwt) deduction from farm commercial milk marketings, on April 16, 1983. The 50-cent charge was made potentially refundable on September 1, 1983. Reported dairy cash receipts remained unaffected in value in the USDA farm income accounts because the deductions were recorded as expenses.

Total dairy cash receipts and total dairy marketing deductions were \$18.9 billion and \$600 million, respectively, in 1983. Dairy farms accounted for 92 percent of dairy cash receipts and 92 percent of milk marketing deductions in 1983. Milk marketing charges of dairy farmers were estimated at \$588 million in 1983, 3.4 percent of the dairy cash receipts of \$17.3 billion.

Milk marketing charges were \$3,652 per dairy farm and accounted for 4 percent of total production expenses. Feed expenses, which accounted for 26 percent of total farm production expenses in 1983, increased \$417 million, \$2,590 per farm. A \$492-million increase in dairy cash receipts helped

offset the \$1-billion total production increase caused by milk marketing deductions and feed purchases.

Dairy farms composed 7 percent of total U.S. farms in 1983 and accounted for 14 percent of total U.S. cash receipts and 26 percent of returns to operators. Farms with sales of less than \$20,000 accounted for 16 percent of all dairy farms in 1978 and 3 percent of dairy cash receipts. About 66 percent of dairy cash receipts came from medium-size farms with sales of \$20,000 to \$99,999 (table 23). Farms with sales of less than \$20,000 and farms with sales of more than \$100,000 were much less prevalent in the dairy sector than in other types of farms except poultry and egg. Accordingly the average \$41,025 in returns to operators per dairy farm with sales of more than \$20,000 was 120 percent more than the U.S. average for all dairy farms. This percentage difference in income is the smallest of any farm type, triggered by the absence of a high percentage of large and small farms.

Poultry and Eggs

Net farm income per poultry and egg farm was an estimated \$33,795 in 1983, down \$1,665 from 1982 and down \$385 from 1978. Cash receipts from poultry and poultry products increased 4 percent in 1983 because of a 7-percent increase in prices received for poultry and egg products. Broiler receipts jumped 13 percent, because of increased production and prices received.

Gross farm income of poultry and egg producers rose \$393 million in 1983, while total farm production expenses increased \$510 million. Feed expenditures accounted for 63 percent of total production expenditures of poultry and egg producers in 1983. The \$500-million increase in total farm production expenditures primarily stemmed from the \$600-million feed expenditure increase. Prices paid for feed increased 10 percent.

Poultry and egg farms made up 2 percent of total U.S. farms in 1983, accounting for 7 percent of total U.S. cash receipts and 7 percent of returns to operators. Farms with sales of less than \$20,000 constituted 28 percent of all poultry and egg farms

in 1978 and accounted for less than 1 percent of total poultry and egg cash receipts. This is a relatively small number of farms compared with other farm types. The average \$42,292 income from farm sources of poultry and egg farms with sales of \$20,000 or more was 120 percent greater than the U.S. average for all poultry and egg farms. The percentage difference was the smallest of any farm type except dairy.

Farming was the primary occupation of 57 percent of poultry and egg producers in 1978. Off-farm income averaged \$14,012 per farm in 1983, 81 percent of the U.S. average.

Animal Specialties

Net farm income per animal specialty farm increased an estimated 66 percent. Gross farm income of animal specialty farms increased \$167 million, while their total production expenses declined \$9 million.

Animal specialty farms in 1983 accounted for 2 percent of total U.S. farms, 1 percent of total U.S. cash receipts, and 1 percent of returns to operators. Farms with sales of less than \$20,000 made up 90 percent of total animal specialty farms in 1978 and accounted for 21 percent of other livestock cash receipts. Returns to operators for animal specialty farms with sales of \$20,000 or more averaged \$41,852 per farm in 1983 compared with \$4,787 for all animal specialty farms.

Off-farm income of \$30,917 per animal specialty farm in 1983 was the highest of any SIC farm type. Only 24 percent of animal specialty producers reported farming as their primary occupation in 1978. The combination of high off-farm income, low net farm income, and the low percentage of producers reporting farming as their primary occupation was unique to the animal specialty farming sector.

General Livestock

Net farm income per general livestock farm increased an estimated 14 percent in 1983. Gross

farm income increased \$5 million, and farm production expenses fell \$24 million. Dairy cash receipts accounted for 39 percent of the total cash receipts of general livestock farmers in 1983; grain cash receipts, 25 percent; cattle and calves, 15 percent; and hogs and pigs, 9 percent. Net farm income of \$6,941 per general livestock farm was 40 percent of the U.S. average for all farms. Total income per general livestock farm constituted 67 percent of the U.S. all-farm average.

General livestock farms in 1983 accounted for 1 percent of all U.S. farms, 1 percent of total U.S. cash receipts, and 1 percent of returns to operators. Farms with sales of less than \$20,000 constituted 62 percent of all general livestock farms in 1978 and 21 percent of other livestock cash receipts. Returns to operators of general livestock farms with sales of \$20,000 or more averaged \$10,404 per farm, 274 percent more than the U.S. general crop farm average.

Farming was the primary occupation of 62 percent of general livestock farm operators in 1978. Off-farm income averaged \$12,378 in 1983, 67 percent of total farm income.

The Relationship of SIC Income Distributions to USDA's Farm Sector Economic Accounts

SIC revenue and expense distributions can be incorporated into the national interindustry input-output tables and used to measure productivity of U.S. farms since they share a common farm accounting framework (table 32) and a common sector data set (table 33) (14). However, certain definitional differences exist in defining output and sectors. For example, value of production is the standard of output measurement in the productivity series and in the national input-output table whereas value of sales is the standard of output in the farm income series (13). Value of production is monitored in the productivity series because unsold seed, feed, and animals used on the farm where produced are important components of output and determinants of productivity.

Value of production is also the standard of output in the Commerce Department's national input-output table based on NIPA procedures. A four-digit SIC classification scheme was followed because the primary purpose of the input-output

table was to monitor production (stated in constant dollar terms) rather than to emphasize the well-being of farmers derived from all income from farm business-related sources.

The SIC classification for the farm sector was based on the value of sales concept rather than the value of production concept. Adoption of the value of production concept could shift the SIC classification of farms. For example, assume a farm produced \$50,000 worth of corn and fed \$20,000 of it to hogs. At the end of the year, the farmer sold the remaining \$30,000 of corn and \$40,000 worth of hogs. The farm in this example is classified as a livestock farm under the value of sales concept because the \$40,000 value of hog sales exceeded the \$30,000 value of corn sales. The farm would have been classified as a grain farm based on the value of production concept because the value of \$50,000 of corn production greatly exceeded the value of \$20,000 in hog production (\$40,000 hog sales less \$20,000 fed corn). This distortion in classifying sector primary production flows was one reason why the NIPA accounts, including the national input-output table and productivity series, followed the value of production concept rather than value of sales.

From an economic accounting perspective, the SIC farm income concept would equal the commodity accounting approach underlying the input-output table, productivity, and cost of production concepts if it were not for the joint production of two or more commodities. Since SIC farm income includes primary and secondary production, the development of cost of production estimates based on SIC data will more than challenge future researchers. Given the lack of detailed data in the SIC farm income accounts, the first step in estimating the supply of production is disaggregating production activities. However, the separability or nonjointness of these production activities will have to be tested. In addition, estimation of supply curves of the various types of farms will enhance the ability to understand how four-digit sector responds to price and other economic changes.

The recording of the time of payment of production costs can vary between the SIC income and cost of production accounts. For example, interest and rent costs paid after the crop production year may be

Table 32—Origination and use of data in the USDA farm sector economic accounts¹

Economic series	Farm sector economic accounts									Farm sector data system			
	Income and product flows			SIC distributions			Capital flows and stocks			Empirical data	Estimated data		
	Total net farm income	Farm productivity	Personal income and outlays	Farm income	Input-output	Costs of production	Capital flows	Capital finance	Balance sheet	Annual survey or report	Census of Agriculture	Secondary data sources	Residual
Capital stocks:													
Land ²	User	User				User			Originator	X	X		
Buildings	Originator	User				User			Originator	X	X	X	
Machinery and motor vehicles	Originator	User				User			Originator	X	X	X	
Livestock and crop inventories						User			Originator	X			
Financial assets								User	Originator			X	
Claims:													
Institutional debt	User	User	User	User				User	Originator	X	X		
Noninstitutional debt	User	User	User	User				User	Originator		X		
Net worth		User							Originator				X
Capital and financial flows:													
Farm inventory change	Originator	User		User	User	User	User	User		X			
Land purchases and sales	Originator			User			User	User		X			
Gross capital expenditures for machinery, vehicles, and buildings	Originator			User		User	User	User		X	X	X	
Capital consumption allowances													
Replacement value	Originator	User		User	User	User	User					X	
Book value			User					Originator				X	
Outright sales of machinery and vehicles	Originator			User			User	User		X			
Borrowing by purpose								Originator		X			
Net capital formation						Originator	User						X
Personal income and outlays (PIOA):													
Net farm income	Originator		User ³	User	User								X
Off-farm income	Originator		User	User							X	X	
Personal income taxes			Originator										
Self-employed social security taxes			Originator									X	
Consumption			Originator										
Farm saving													
By farm proprietors			User ³					Originator					X
By nonfarm sectors			User					Originator					

See footnotes at end of table.

Continued

Table 32—Origination and use of data in the USDA farm sector economic accounts¹ — Continued

Economic series	Farm sector economic accounts									Farm sector data system			
	Income and product flows			SIC distributions			Capital flows and stocks			Empirical data	Estimated data		
	Total net farm income	Farm productivity	Personal income and outlays	Farm income	Input-output	Costs of production	Capital flows	Capital finance	Balance sheet	Annual survey or report	Census of Agri-culture	Secondary data sources	Residual
Output:													
Sold output													
Major State	Originator	User		User	User	User					X	X	
Minor State	Originator	User		User	User	User						X	
Own-account (unsold) output													
Intermediate production (seed, feed, and livestock used on farms where produced)		Originator			Originator						X		
Home consumption	Originator	User		User	User					X			X
Gross rental value of farm dwellings	Originator			User	User								X
Other farm business income	Originator			User						X			
Inputs:													
Purchased inputs	Originator	User		User	User	User				X	X		X
Own-account		Originator			Originator					X	X		
Labor:													
Wages, all workers	Originator	User		User	User	User				X	X		
Wages, nonfamily workers	Originator			User		User				X			
Wages, family workers	Originator		User	User		User				X			
Total hours	User	Originator											X
Income distributions:													
Value of sales class	Originator												X
Type of farm		User		Originator	User	User							X
Business organization	Originator												X
Primary occupation	Originator												X
With and without debt	Originator												

X = data included.

¹Table 32 updates the data development plan and objectives outlined in table 2 in the article "The Relationship of the Farm Balance Sheet to Sector and National Income and Product" presented at the Proceedings of Workshop on Farm Sector Financial Accounts, April 14-15, 1977, Washington, D.C. Table 32 is for illustrative purposes only and is too aggregative for specific conclusions to be drawn.

²Land value data originating in the balance sheet account are used to estimate property taxes in the farm income account. All economic data originate in a particular economic account and are oftentimes used to estimate other economic accounts.

³The two PLOA entries, net farm income and saving, summarize many of the detailed entries contained in the farm income, capital flows, and capital finance accounts.

Table 33—Origination of data in the farm sector economic accounts, by survey source¹

Economic series	Annual							Census of Agriculture		Administrative data			
	Family Living Expenditure Survey ²	Cost of production	Farm Production Expenditure Survey	SRS agricultural prices	SRS production reports	SRS inventory stocks	SRS production disposition and income reports	Farm Finance Survey	United States summary	Internal Revenue Service	Farm Credit Administration	Other administrative reports	Other surveys
Capital stocks:													
Land	X	X	X					X	X				
Buildings	X	X	X	X				X	X				
Machinery and motor vehicles	X	X	X	X				X	X				
Livestock and crop inventories			X	X		X		X	X				
Financial assets	X							X					X
Claims:													
Institutional debt	X		X					X	X		X		
Noninstitutional debt	X		X					X	X		X		
Net worth	X												
Capital and financial flows:													
Farm inventory change						X							
Land purchases and sales			X					X					
Gross capital expenditures for machinery, vehicles, and buildings		X	X									X	
Capital consumption allowances													
Replacement value										X			
Book value													
Outright sales of machinery and vehicles			X										
Borrowing by purpose			X					X			X		
Net capital formation													
Personal income and outlays:													
Net farm income	X												
Off-farm income	X							X		X			
Personal income taxes	X									X			
Self-employed social security taxes	X												
Consumption	X												
Farm saving													
By farm proprietors													
By nonfarm sectors													

See footnotes at end of table.

Continued

Table 33—Origination of data in the farm sector economic accounts, by survey source¹ — Continued

Economic series	Annual							Census of Agriculture		Administrative data			
	Family Living Expenditure Survey ²	Cost of production	Farm production Expenditure Survey	SRS agricultural prices	SRS production reports	SRS inventory stocks	SRS production disposition and income reports	Farm Finance Survey	United States summary	Internal Revenue Service	Farm Credit Administration	Other administrative reports	Other surveys
Output:													
Sold output													
Major State			X	X	X		X			X	X		
Minor State										X	X		
Own-account (unsold) output													
Intermediate production (seed, feed, and livestock used on farms where produced)		X		X									
Home consumption	X			X			X						
Gross rental value of farm dwellings	X							X					
Other farm business income	X		X					X	X	X			
Inputs:													
Purchased inputs		X	X	X				X		X			
Own-account		X	X	X	X		X						
Labor:													
Wages, all workers				X	X			X	X	X			
Wages, nonfamily workers		X	X										
Wages, family workers				X	X								
Total hours													X
Income distributions:													
Value of sales class	X		X					X	X	X			
Type of farm			X					X	X	X			
Business organization			X						X	X			
Primary occupation			X						X				
With and without debt			X										

X = data included.

¹ Table 33 updates the data development plan and objectives outlined in table 2 in the article "The Relationship of the Farm Balance Sheet to Sector and National Income and Product" presented at the Proceedings of Workshop on Farm Sector Financial Accounts, April 14-15, 1977, Washington, D.C.

² Refers to the 1973 Farm Operator Family Expenditure Survey, a quarterly survey. Conceivably, all economic series in table 33 could be collected in an FLES because enumeration time restrictions and recall errors are not as significant as in a onetime survey collecting annual data.

recorded in the following calendar year under the SIC farm income concept. Depreciation costs and property taxes were relatively stable from year to year, and probably were not so affected by the period (calendar year versus crop year) as are other costs, such as seed, fertilizer, chemicals, labor, and fuel which were highly sensitive to the level of planted acreage.

If it were not for the value of sales concept, secondary production, and the differences in the time period (calendar year versus crop year), input-output tables, productivity indicators, and costs-of-production budgets could be directly developed by dividing sector primary production by the related sector expenses.

Input-Output

Prior to the development of the type of farm income estimates, the farm sector in the national input-output table was disaggregated by commodity activities. For example, the meat animal sector included meat animals produced by SIC meat animal farms and SIC nonmeat animal farms. (Nonmeat animal farms produce primarily crops.) In this example we assume that production of meat by meat animal and nonmeat animal farms can be separated from the production of nonmeat animal farm products. Then, we can develop a meat product-based sector composed of meat production. NIPA accountants refer to this methodology of accounting for production units as the product accounting approach.

The product accounting approach emphasizes production. In contrast to the product accounting approach, type of farm income (or income approach) includes the production, income, and expenses of all commodities produced on an establishment, that is, a farm where more than one production activity can take place. The appropriateness of either accounting approach ultimately depends upon the primary purpose of the analysis. For example, financial analysis is probably more appropriate on a type of farm basis than on a product accounting basis. With increasing specialization, the difference between the two accounting approaches has become less distinctive.

By incorporating the SIC type of farm income accounts into the national input-output table, the analysis of the economic impacts between nonfarm employment and income and farm income is enhanced. In addition, the SIC type of farm income accounts based on SIC codes encourage uniformity and comparability of data within the input-output table as well as between the input-output table and other farm economic accounts such as the balance sheet. For these reasons, efforts are underway to incorporate the type of farm income accounts into the national input-output table.

Income from farm sources in the USDA farm income accounts consists of returns to operators, the imputed net rental value of operator dwellings, and net farmland rent received by operator landlords. The imputed rental value of dwellings for input-output analysis is classified as farm sector or real estate sector value added depending upon the kind of owner of the farm. If the farm owner is a farm operator, the imputed rental value of the dwelling is accounted for as farm sector value added. The imputed net rental value of dwellings for operator landlords and nonoperator landlords is accounted for as real estate sector income.

Productivity

Productivity is measured based on the concept that the farm sector is one large farm. Productivity by SIC types of farms will allow analysts to measure efficiency and production of specialized establishments. Therefore, a better understanding of farm technology changes on farm establishments will more likely be achieved.

Costs of Production

Commodity costs-of-production budgets estimated by USDA have been crucial in farm policy analysis. The role of commodity costs of production for policy analysis will continue in the future. The SIC income estimates provide a different but parallel measure of costs and productivity. Thus, the development and improvement of farm income measures by type of farm paralleled the ongoing and continuing efforts to improve the input-output, productivity, and costs-of-production accounts as well as the aggregate estimates of farm income (1, 5, 7, 16, 21).

Data Limitations and Developments

The SIC income distributions also enjoyed the advantages of a strong statistical base from the Census of Agriculture. Although conducted only once every 5 years, Census Surveys were extremely detailed in sales of crop and livestock commodities, most operating expenses, farm-related income, and operator characteristics. Statistically reliable disaggregations of SIC farm income data by value of sales class, age, primary occupation, business and organization, and for farmers with debt and without debt can be obtained through the use of Census, IRS, and other primary and secondary data. Historical SIC data from the Census of Agriculture can provide depth to SIC-based income analyses as well as for the statistical evaluation of the estimates themselves.

Estimates of farm income by type of farm relied heavily on Census of Agriculture data. The Census of Agriculture provided the opportunity to publish type-of-farm data in detail. However, increasing costs and reduced budgets affected the available published data. For example, the 1978 Census of Agriculture did not include the Volume II series, which in previous Censuses furnished additional detailed type-of-farm data by value of sales class. Additional funding would allow publication of more detail such as type-of-farm data on corn, soybean, wheat, and rice farms, and would enhance analysis.

Before the Statistical Package for the Social Sciences (SPSS) was developed, large data files, such as the Census of Agriculture, could not be fully exploited to estimate the farm sector economic accounts. The analysis of SIC income, production, and expenses can now be improved and expanded by establishing two types of Census of Agriculture data files using SPSS for (1) primary farm sectors, such as corn, wheat, and soybean farms, and (2) primary commodities, such as all farms producing cotton. For example, using SPSS to analyze 1979 Census of Farm Finance data, Peterson found that financial characteristics of dairy farms varied substantially by size and age (11). However, financial characteristics of dairy farms varied little among regions, after controlling for age and size.

This type of effort with SPSS has greatly expanded the usefulness of the Census of Agriculture for farm income, production, and financial analysis.

Several estimates in this analysis were based on the 1979 Census of Farm Finance, which was conducted as an integral part of the 1978 Census of Agriculture. Budget and legal restrictions prevented a repeat of the Farm Finance Survey for the 1982 Census of Agriculture, which reduced the statistical reliability of future SIC farm income estimates. Collection of additional items such as repairs, cash and share rent paid, property taxes, and the value of operator dwellings will improve the 1987 Census of Agriculture for type of farm estimation and analysis.

Future Research

Distributions of farm income by value of sales class and the balance sheet are based on Census of Agriculture data (2, 20). We interpolate between Census years and extrapolate based on the previous Census for current year estimates. A research goal is to establish a distribution of SIC farms, gross farm income, total production expenses, and net farm income similar to the value of sales distributions published in the *Economic Indicators* series.

Identifying the shifts among SIC farms and determining the causes for these shifts are important steps in estimating total and per farm income by type of farm. Probability density functions will be estimated to describe the distribution of SIC farms in order to identify farm income changes over time. The estimated parameters of the functions will be regressed on factors affecting SIC farms. Given the regression equations, the number of farms by SIC will be forecast similar to the methodology used by Somwaru, Lee, and Seaver (18).

Changes in the number of farms by SIC also will be analyzed by using nonstationary transition probabilities which will be specified as functions of variables that affect SIC, similar to the procedure in (10).

Another research goal is the establishment of a prices paid to prices received ratio for each farm

type to supply an up-to-date monitor of income conditions in each SIC sector.⁶

Estimating farm income at the four-digit level will increase the understanding of income, and returns of highly specialized farms.

Finally, future research efforts will be devoted to integrating and coordinating the type-of-farm analysis with input-output analysis for the different farm types, the commodity supply and utilization accounts, productivity, and costs of production.

Conclusions

The SIC income distributions improve traditional farm income and policy analysis and route farm income and policy analysis to a more macro-oriented approach by linking:

1. Commodity analysis more directly to farm income analysis.
2. Traditional farm policy analysis of farm programs more directly to intersector farm sector impacts.
3. Monetary and fiscal policy more directly to farm income.
4. The farm sector economic accounts more directly by producing different but parallel measures of costs of production, production efficiency, and input-output.
5. The farm sector data system in support of the farm sector accounts.

The ability of the SIC income distributions to improve traditional farm income policy analysis was readily proven by the analysis of the PIK and dairy deductions program. The SIC distributions revealed that the PIK-induced reduction of production expenses was important in increasing farm income.

⁶ Schluter and Lee constructed this model using weights from the 1967 input-output table for 16 farm sectors. The farm sector definitions in the input-output table were primarily product-oriented, similar to the costs-of-production accounts which excluded secondary production. In contrast to the input-output table methodology, the SIC type of farm prices paid and received ratios included secondary and primary production.

The SIC income distributions directly measure the full macroeconomic impact for cost reductions as well as from price enhancement portions of market-place economic decisions and Government farm policy. The full impact of cost reductions and income enhancements are measured not only for the primary SIC production sector of the particular agricultural commodity such as cash grains, but also for those other farm sectors indirectly affected such as cattle, hog, dairy, and poultry and egg farms. Farm analysts have long been aware of these intersectoral impacts but have not been able to monitor them directly in the absence of the SIC income distributions. For example, the SIC income distributions also revealed that the drought and PIK program had a negative impact on livestock income by increasing feed costs.

SIC income distributions enhance the analysis of the impact of general macroeconomic policy including monetary, fiscal, and tax policy on farm income. In recent years, general economic policy has been targeted at reducing the rate of inflation, increasing after-tax income by reducing tax rates, and encouraging investment through more favorable depreciation and investment credit allowances. Each of these general economic policies would be difficult to monitor and evaluate within the costs-of-production conceptual framework. Each of these general economic policies impact differently on each farm type.

Development of SPSS to analyze Census of Agriculture data and the SIC income distributions expands the usefulness of the primary economic and social data source comprising the farm data system (the Census of Agriculture) with minimal costs. The statistical reliability of Census data are unparalleled in estimating and distributing the farm sector accounts.

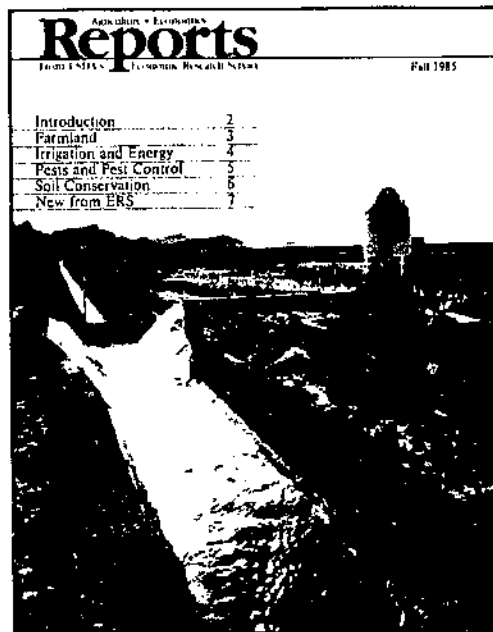
Future research efforts need to be devoted to expanding the SIC estimates, improving the statistical base upon which the distributions are based, and examining the relationship of SIC income to tax-loss farming and farm business-related income. The development of a prices paid to prices received ratio for each farm type will provide an up-to-date monitor of income conditions within each SIC farm sector. Farm income, production, investment, and

financial analysis are greatly improved by the SIC distributions, which introduce an integrated macroeconomic approach to farm sector economic accounting and the policy analysis based on the accounts.

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