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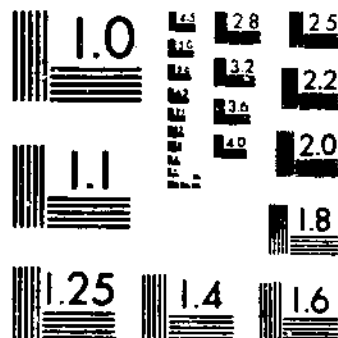
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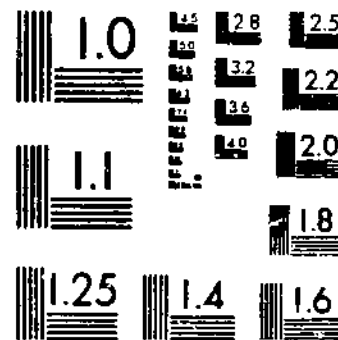
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SEP 1980 USDA STATISTICAL BULLETIN  
ECONOMIC INDICATORS OF THE FARM SECTOR: FARM SECTOR REVIEW, 1980  
SMITH, J. A. ET AL. 1-95

# START



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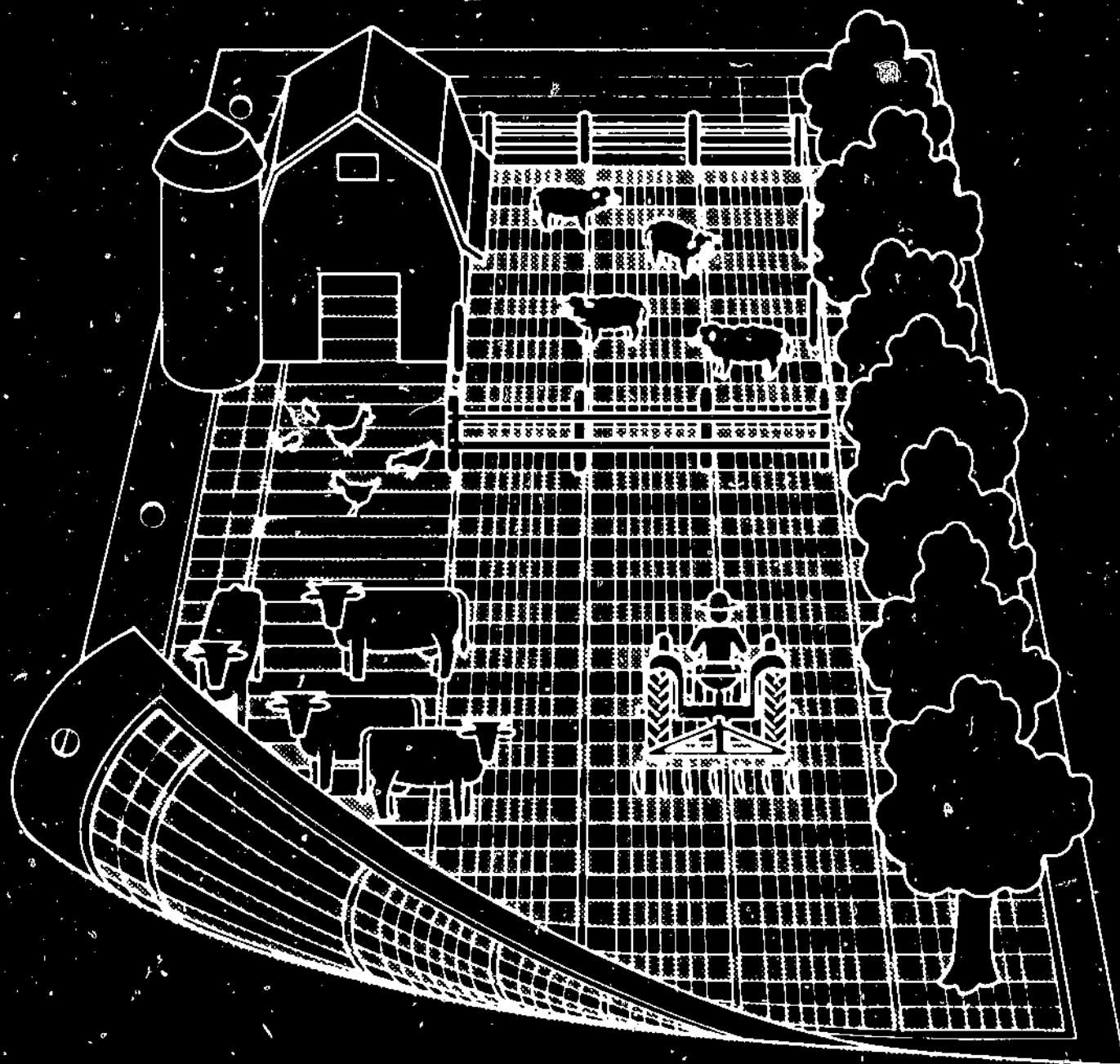
United States  
Department of  
Agriculture

Economic  
Research  
Service

Statistical  
Report  
Number 100

# Economic Indicators of the Farm Sector

Farm Sector Review, 1980



ECONOMIC INDICATORS OF THE FARM SECTOR: FARM SECTOR REVIEW,  
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U.S. Department of Agriculture. Statistical Bulletin No. 691.

ABSTRACT

The food and fiber system accounted for 20 percent of total U.S. business activity in 1980 and nearly 24 percent of total U.S. employment. Farmers' net cash income of \$32.6 billion in 1980 declined 15.2 percent from 1979. Net farm income dropped 39 percent. Mainly due to drought conditions, productivity decreased 3 percent from its 1979 record high. Farm output, which increased 28 percent from 1970 to 1979, dipped 5 percent in 1980. Savings, an important factor in increasing farm capacity output and productivity, continued at a high level--totaling 31 percent of gross cash inflows and 44 percent of net cash income.

Keywords: Net farm income, costs of production, capital flows, balance sheet, cash flow, savings, output, productivity, capacity.

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## PREFACE

Three sectors--input, farm, and product market--make up the food and fiber system. The U.S. Department of Agriculture (USDA) monitors agricultural production, income, capital formation, and efficiency through its farm sector accounts. The USDA marketing bill account monitors the efficiency of food manufacturing and distribution. The economic benefits derived from the food and fiber system are distributed to people as farm income received by farmers, wages received by labor, and food prices paid by consumers. Participant benefits are also monitored in USDA's economic accounts.

Production, income, and employment data from all sectors in the U.S. economy are combined in the national input-output table. The farm sector portion of the national input-output table is prepared by USDA analysts using data from the USDA farm sector accounts. In addition, income and employment of the farm input sector and the marketing bill account are estimated and included in the national input-output table. Goods and services from the farm input sector consist of fertilizer, chemicals, petroleum, and machinery as well as numerous other input items. The national input-output table can be used to analyze the interdependence of production, income, and employment generated by intersector transactions within the domestic economy and by foreign transactions. In this report, the economic impact of farm sector production on nonfarm income and employment is analyzed using the national input-output table.

All of the USDA economic accounts are used by the U.S. Department of Commerce to estimate the State and regional personal income series, the national income and product accounts, and the national input-output table.

This is the final report in the 1980 Economic Indicators of the Farm Sector series. Other reports are Income and Balance Sheet Statistics, State Income and Balance Sheet Statistics, and Production and Efficiency Statistics.

The 1981 Economic Indicators of the Farm Sector series will be available by subscription through the Government Printing Office. See the order form elsewhere in this report.

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## HIGHLIGHTS

Farmers' net cash farm income in 1980 declined 15.2 percent from the year before to \$32.6 billion. Weak consumer demand and large supplies of meat and grain combined to limit returns to farmers. Rapidly rising interest rates and debt, high costs of petroleum-based inputs, and a surplus farm product inventory further blunted U.S. agriculture's earnings, triggering a 39-percent sag in net farm income. Agricultural exports remained bright in 1980, posting the 12th consecutive record-high earnings of \$41.2 billion, up 19 percent from 1979.

This report examines developments in the 1980 farm sector, and summarizes data from national and State economic and balance sheet statistics as well as production and efficiency statistics. Also, three separate articles analyze the methodology of procedures in gathering farm data.

The increasing importance of off-farm income to farmers continued with a \$2.8-billion rise from 1979 to \$36 billion. Capital gains (excluding farm households) surged to \$78.2 billion, which pushed the net worth of farm proprietors up by \$62.4 billion. Equity registered more than \$755 billion, continuing the static farm debt-to-farm asset ratio with increases in farm debt virtually matching increases in farm asset values.

Borrowing's role in total cash flow widened, increasing farm susceptibility to default. Borrowing equaled 51 percent of cash farm income in 1976-80, sharply higher than the 28-percent rate of 1971-75, which significantly shifted cash flow toward interest payments. Capital expenditures in 1980 (excluding farm households) declined 7.4 percent, mirroring the high cost of borrowing. Drought limited farm output in 1980, forcing a 5-percent slide from 1979's record farm productivity level. In 1980, food spending absorbed 16.6 percent of the consumer dollar, matching 1979's level; however, the farm value of food, which increased by 4.4 percent, was outdistanced by the 11.7-percent rise in retail value.

The food and fiber system continued as an important employer, retaining 24 percent of the U.S. work force and generating 20 percent of total U.S. business activity.

# Economic Indicators of the Farm Sector:

## Farm Sector Review, 1980

### FOOD AND FIBER SECTOR DEVELOPMENTS

The food and fiber sector produced about \$426 billion worth of goods in 1980, consisting of \$260 billion in consumer purchases of domestically produced food, \$41 billion of agricultural exports, \$105 billion of consumer expenditures for clothes and shoes, and \$20 billion of consumer expenditures for tobacco (fig. 1). Farmers purchased \$99.7 billion of inputs in 1980 comprised of \$32.9 billion of farm-origin inputs and \$66.8 billion from the farm input sector. Food marketers purchased \$81.4 billion of farm goods in 1980. Processing and distributing these goods added another \$178.6 billion in costs. Food marketing profits before taxes in 1980 equaled 4.2 percent of sales.

Pre-tax net farm income of \$19.9 billion in 1980 equaled 13.2 percent of gross farm income. Returns to equity from current income was 1.5 percent, becoming 11.4 percent with nominal capital gains added. Net cash farm income must also be used to acquire farm production capital as well as meeting family living needs. Gross farm savings in 1980 were 31 percent of gross cash inflows and 44 percent of net cash farm income.

Farm sector output and capacity have been increasing in response to substantially larger planted acreages, increased livestock production, increased productivity, and sustained high levels of farm saving. Farm output increased 28 percent for the 10 years from 1970-79, an annual compound rate of 2.5 percent per year. The farm sector's potential was not fully realized in 1980 when drought caused farm output to fall 5 percent. Crop output increased 44 percent from 1970 to 1979 but fell 9 percent in 1980. Livestock output increased 8 percent from 1970 to 1980. Savings were important in increasing farm productivity and capacity output. Fertilizer, agricultural chemicals, improved crop varieties, and improved animal breeding were also vital to increasing productivity. The level of farm production inputs remained stable during the seventies because increased use of machinery and equipment offset the decline in labor and land. The mechanical power and machinery input index increased 28 percent from 1970 to 1980, while the farm labor input index declined 27 percent and the index of farm real estate declined 5 percent. The input

index of agricultural chemicals (fertilizer, lime, and pesticides) increased 51 percent from 1970 to 1980.

## FARM SECTOR DEVELOPMENTS

Rapidly increasing interest rates, escalating costs of petroleum-based farm inputs, and a decline in farm inventory change dropped net farm income from \$32.7 billion in 1979 to \$19.9 billion in 1980, a decline of 39 percent (table 1 and fig. 2). Net cash farm income declined 15.2 percent to \$32.6 billion. Total income of farm operator families from farm and off-farm sources totaled \$55.8 billion, or \$23,822 per farm (fig. 3).

The decline in farm income hurt livestock producers more than crop growers. Cash receipts for livestock and livestock products declined slightly from \$68.5 billion in 1979 to \$67.4 billion in 1980 as the index of livestock prices received by farmers declined 3 percent and the volume of marketings increased 2 percent (tables 2 and 3). In contrast, cash receipts from crops climbed from \$63.4 billion in 1979 to \$69 billion in 1980, a 9-percent increase (table 3). Total farm production expenses increased 9 percent, pushed by a 12-percent increase in prices paid by farmers (fig. 4).

Figure 1

### The Food and Fiber Sector, 1980

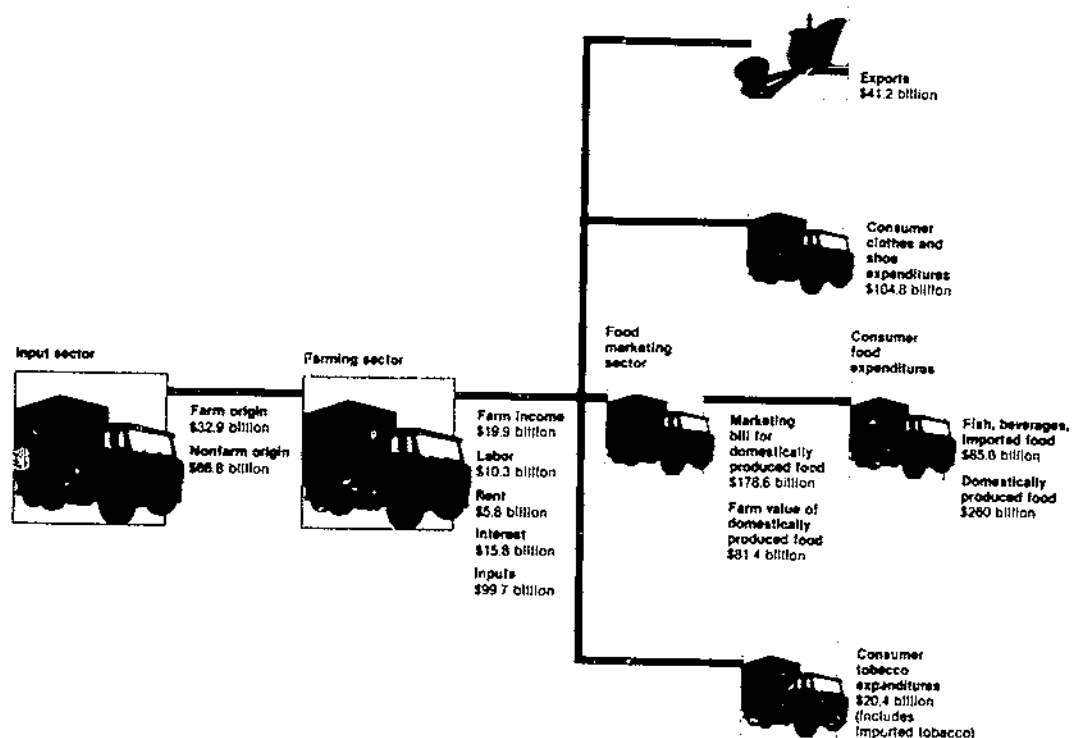


Table 1--Major net farm income components (including net Commodity Credit Corporation loans and farm households), 1970-80

Item	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Million dollars											
Farm marketings	50,539	52,859	61,190	87,068	92,449	88,209	94,780	96,289	112,924	131,916	136,431
Crops	20,976	22,276	25,520	41,132	51,090	45,150	48,668	48,650	53,711	63,394	69,026
Livestock	29,563	30,583	35,670	45,936	41,359	43,059	46,112	47,639	59,213	68,522	67,405
Net inventory change	6	1,397	861	3,406	-1,611	3,400	-2,366	971	572	5,345	-1,997
Government payments	3,717	3,145	3,961	2,607	531	807	734	1,819	3,030	1,375	1,286
Other farm income	543	641	663	813	989	1,233	1,357	1,561	1,710	2,129	2,217
Gross rental value of farm dwellings	3,019	3,226	3,474	3,913	4,687	5,420	5,973	7,074	8,248	9,915	11,425
Home consumption	751	732	831	1,104	1,295	1,269	1,334	970	1,060	1,234	1,154
Gross farm income	58,575	62,000	70,980	98,911	98,340	100,338	101,812	108,684	127,544	151,914	150,516
Nonfactor payments	34,976	37,604	40,799	50,505	55,862	59,109	65,421	70,862	78,885	92,761	99,705
Intermediate product expenses	25,620	27,550	30,097	38,674	42,203	43,190	48,001	51,579	57,951	69,259	73,868
Farm origin	13,279	14,244	16,180	22,906	21,726	19,890	22,778	23,992	27,503	33,187	32,909
Feed	8,028	8,049	8,397	13,224	14,513	12,647	14,370	14,054	14,301	17,101	18,474
Livestock	4,324	5,123	6,668	8,065	5,131	4,950	5,871	7,033	10,148	12,687	10,523
Seed	927	1,072	1,115	1,617	2,082	2,293	2,537	2,904	3,054	3,400	3,912
Manufactured inputs	5,342	5,778	6,047	6,986	10,460	12,081	12,945	13,562	14,817	18,046	21,966
Fertilizer and lime	2,390	2,633	2,690	3,354	5,808	6,383	6,141	6,142	6,193	6,965	8,865
Pesticides	937	1,086	1,312	1,375	1,490	1,780	2,043	2,009	2,429	3,057	3,070
Fuel and oil	1,711	1,722	1,688	1,877	2,690	3,318	3,966	4,356	4,805	6,383	8,251
Electricity	304	337	357	380	472	600	795	1,055	1,389	1,641	1,780
Other	6,999	7,528	7,870	8,782	10,017	11,219	12,278	14,026	15,630	18,025	18,993
Repair and operation	2,828	2,985	3,020	3,352	3,969	4,488	5,130	5,765	6,617	7,411	8,116
Machine hire, custom work, and contract labor	1,355	1,570	1,665	2,045	2,158	2,540	2,660	3,089	3,328	4,090	4,322
Marketing charges	821	871	970	1,004	1,100	1,082	1,269	1,468	1,460	1,757	1,740
Other	1,995	2,102	2,215	2,381	2,790	3,109	3,219	3,705	4,225	4,767	4,815
Capital consumption allowances	6,760	7,350	7,887	8,945	10,563	12,586	13,813	15,342	17,315	19,677	21,775
Business taxes	2,596	2,704	2,815	2,886	3,096	3,333	3,607	3,940	3,619	3,823	4,062
Interest	3,382	3,551	3,899	4,706	5,773	6,377	7,034	8,336	10,022	12,115	15,812
Real estate	1,618	1,646	1,767	2,211	2,729	2,956	3,182	3,971	4,902	6,446	8,503
Nonreal estate	1,764	1,905	2,132	2,495	3,044	3,421	3,852	4,365	5,120	6,149	7,309
Wages to hired labor	3,934	3,966	4,126	4,672	5,475	5,777	6,455	7,038	7,289	8,346	9,325
Net rent to nonoperator landlords	2,132	2,246	3,491	5,679	5,100	4,600	4,220	4,058	4,891	5,388	5,814
Total production expenses	44,424	47,367	52,315	65,562	72,210	75,863	83,130	90,293	101,087	119,217	130,656
Net farm income of operators	14,151	14,633	18,665	33,349	26,130	24,475	18,682	18,391	26,457	32,697	19,860
Charges against gross farm income	58,575	62,000	70,980	98,911	98,340	100,338	101,812	108,684	127,544	151,914	150,516
Addenda:											
Total operator income	31,548	33,461	39,281	57,108	52,646	51,928	48,960	43,720	54,552	65,908	55,842
Net farm income of operators	14,151	14,633	18,665	33,349	26,130	24,475	18,682	18,371	26,457	32,697	19,860
Off-farm sources	17,397	18,828	20,616	23,759	26,516	27,453	30,278	25,329	28,095	33,211	35,982

Figure 2

**Net Farm Income**

\$ billion

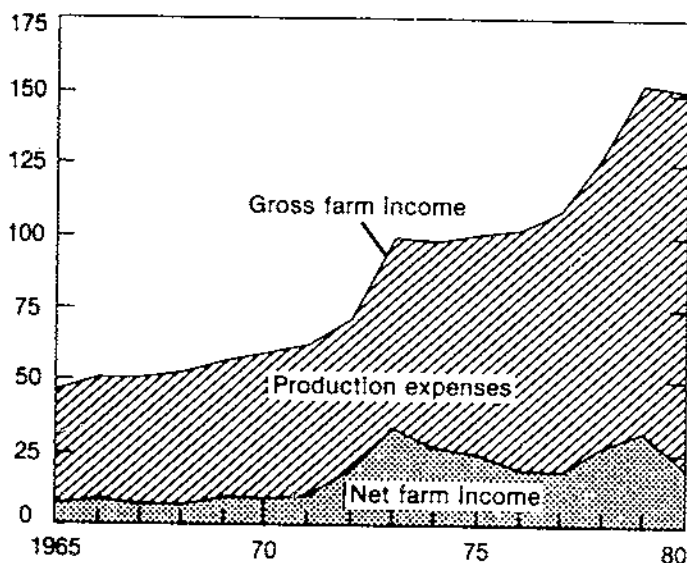
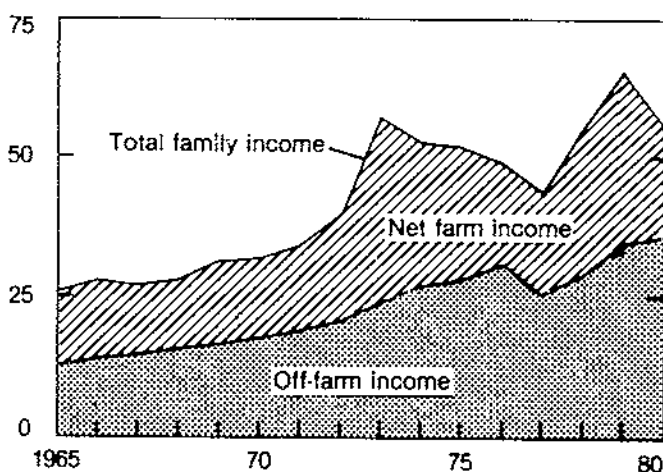


Figure 3

**Income of Farm Operator Families**

\$ billion



Net farm income includes an adjustment for changes in year-end crop and livestock inventories and represents returns to operator families' labor, capital, and management.

Offsetting the rapid increase in prices paid was the 2-percent decrease in the level of inputs used by farmers (table 2). Interest paid, fuel, fertilizer, and depreciation accounted for 78 percent of the \$10.9-billion increase in total farm production expenses. Livestock purchases declined \$2.2 billion.

Gross Farm Income

Gross farm income of \$151 billion in 1980 was composed of cash receipts, net farm inventory change, Government payments, other farm income, gross rental value of farm dwellings, and home consumption. Cash receipts in 1980 totaled 91 percent of gross farm income. Noncash imputations for home consumption, the gross rental value of operators' dwellings, and net farm inventory change accounted for 7 percent of gross farm income.

Cash Receipts

Higher receipts from dairy products and broilers failed to offset reduced receipts from cattle, calves, hogs, and eggs. Cattle and calf marketings, which equaled about one-half of all livestock receipts and about a quarter of receipts from all commodities, were down \$3.2 billion, or 9 percent. Reduced prices, not the volume marketed, triggered most of the reductions in cattle and calf receipts. The index of prices received for meat animals declined 6 percent from 1979 to 1980. Cash receipts to dairy producers increased 13 percent, reflecting a 9-percent increase in prices and a 3-percent increase in milk production. Receipts from broilers and chickens increased 6 percent. Receipts from sheep, eggs, turkeys, and hogs changed only slightly.

Table 2--Economic indicators of farm income developments

Economic indicator	1977	1978	1979	1980
<u>1,000 acres</u>				
Principal crops:				
Planted	345,207	336,787	346,756	356,924
Harvested	333,604	326,766	337,686	340,905
<u>1967=100</u>				
Volume of inputs index	105	105	108	106
<u>1977=100</u>				
Volume of marketings index:				
All commodities	100	102	106	108
Livestock	100	100	100	103
Crops	100	104	113	114
Prices received by farmers index:				
All commodities	100	115	132	134
Livestock	100	124	147	144
Crops	100	106	116	125
Prices paid by farmers index:				
All production items, interest, taxes, and wage rates	100	109	125	140

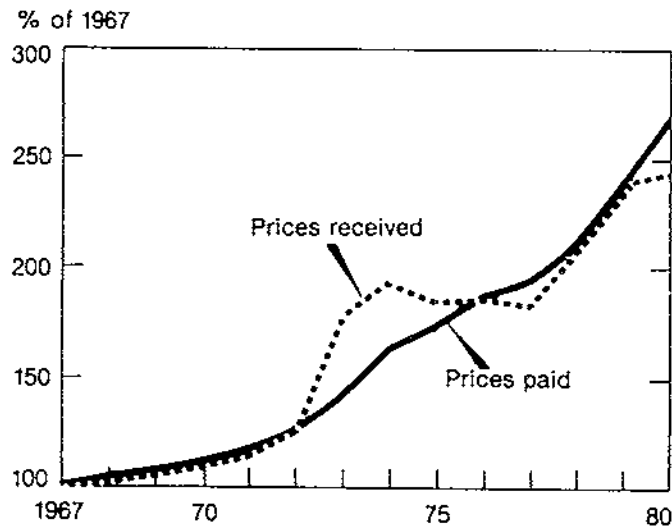
Table 3--Cash receipts from marketings of livestock and crops  
(including net Commodity Credit Corporation loans), 1977-80

Commodity	1977	1978	1979	1980
<u>Million dollars</u>				
All commodities	96,289	112,924	131,916	136,431
Livestock and products	47,639	59,213	68,522	67,405
Cattle and calves	20,225	28,248	34,399	31,173
Dairy products	11,752	12,690	14,659	16,598
Hogs	7,281	8,753	9,027	8,920
Broilers and farm chickens	3,239	3,851	4,189	4,431
Eggs	2,918	2,953	3,317	3,248
Turkeys	1,059	1,326	1,400	1,458
Sheep and lambs	386	453	474	471
Other livestock products <sup>1/</sup>	778	939	1,058	1,106
Crops	48,650	53,711	63,394	69,026
Feed crops	11,906	11,427	14,023	16,794
Oil-bearing crops	9,722	13,023	14,358	14,540
Food grains	6,055	5,839	9,048	10,531
Vegetables	5,638	5,941	6,647	6,817
Fruit and tree nuts	4,613	5,764	6,443	6,472
Cotton and cottonseed	3,470	3,465	4,305	4,476
Tobacco	2,331	2,606	2,271	2,672
Other crops <sup>2/</sup>	4,915	5,645	6,298	6,724

1/ Ducks, geese, pigeons, wool, horses, mules, mohair, honey, beeswax, bees, and fur animals. 2/ Sugar crops, greenhouse and nursery products, forest products, legumes and grass seeds, hops, mint, broomcorn, popcorn, hemp fiber and seed, and flax fiber.

Figure 4

### Prices Received and Paid by Farmers



Prices paid includes commodities and services, interest, taxes, and wage rates.

Principal crops were planted on 357 million acres in 1980, up 10 million acres from 1979 and the largest acreage since 1953. Harvested acreage of principal crops totaled 341 million acres, up only 3 million acres from a year earlier. Two major droughts brought heavy abandonment of row crops and a 4-percent decline in acreage harvested from hay. The drought in the Northern Plains region began in January and continued to plague parts of the area during much of the summer. The drought in the South, coupled with high moisture demand because of the excessive heat, placed crops, livestock, and pastures under persistent stress from June to late September when heavy rain finally fell.

Crop cash receipts increased \$5.6 billion in 1980 as the index of prices received by farmers for all crops was up 8 percent from a year earlier. The increases in corn cash receipts of \$2.6 billion and wheat cash receipts of \$1.2 billion accounted for 68 percent of the increase in crop cash receipts. Soybeans, corn, and wheat accounted for one-half of the crop cash receipts. Soybean cash receipts were up only 3 percent, while cotton lint and cottonseed cash receipts increased 4 percent.

### Net Inventory Change

The value of the change in inventory in 1980 was minus \$2 billion, reflecting the drought-reduced 1980 crop production and a decline in the hog inventory. Crop inventory values fell \$3.7 billion because of declines in corn and soybean production. Livestock inventories rose \$1.7 billion on the strength of increasing cattle and sheep inventories.

### Other Farm Income

Direct Government payments equaled \$1.3 billion in 1980, down 6 percent from the previous year. Home consumption of products grown on the farmstead of \$1.2 billion also declined 6 percent. The imputed gross rental value of farm dwellings climbed 15 percent to \$11.4 billion. Income earned from customwork, machine hire, and farm recreation increased 4 percent to \$2.2 billion. The gross rental value of farm dwellings of \$11.4 billion, less operator dwelling expenses of \$5.6 billion, totaled a net rental value of \$5.8 billion in 1980.

### Farm Production Expenses

Farm production expenses (excluding farm households) of \$125.9 billion in 1980 were up \$10.9 billion from the previous year, the third largest increase on record, exceeded only by 1973 and 1979. Farm production expenses rose 9 percent spurred by rapidly rising interest rates paid on increasing levels of farm debt, surging costs of the petroleum-based inputs of fertilizer and fuel, and a 12-percent increase in the prices paid by farmers for all production items. Despite the increase in planted acreage, the volume of inputs used for farming declined 2 percent.

Interest paid increased \$3 billion, fertilizer costs rose \$1.9 billion, and fuel, oil, and electricity costs jumped \$2 billion (table 4). The cost increase of these three inputs in 1980 averaged 21 percent, and accounted for 62 percent of the \$10.9-billion increase in total farm production costs. The cost of farm origin inputs declined about 1 percent due to a 17-percent drop in livestock purchased. The cost of all other remaining inputs increased \$4.2 billion, up only 7 percent from 1979. The increases in capital consumption allowances (a noncash expense) of \$1.7 billion registered 39 percent of the \$4.2-billion increase.

Interest paid soared more than any other farm production input in 1980 when both debt outstanding and the average interest rate paid rose dramatically (tables 5 and 6). Total farm debt, excluding CCC loans, increased \$15.7 billion, the third largest increase on record. Interest paid on nonreal estate debt increased 29 percent as nonreal estate debt outstanding rose 11 percent and the average interest rate on nonreal estate debt increased from 9.4 percent in 1979 to 10.8 percent in 1980.

The 19-percent increase in interest paid on real estate debt was substantially lower than the 29-percent increase in non-real estate interest paid. While real estate debt outstanding rose 11 percent, the average rate of interest paid on real estate debt increased only one-half point from 8.1 percent in 1979 to 8.6 percent in 1980. In addition to new borrowings, refinancing requirements also caused an increase in the average interest rate. Refinancing requirements are naturally greater for nonreal estate debt, which is shorter in term than real estate debt.



Table 4--Total farm production expenses (excluding farm households), 1977-80

Item	1977	1978	1979	1980	Total value change, 1979-80	Percentage value change, 1977-80	Percentage value change, 1979-80
	-----Million dollars-----					-----Percent-----	
Intermediate products	50,877	57,099	68,264	72,795	4,531	43.1	6.6
Farm origin	23,992	27,503	33,187	32,909	-278	37.2	-.8
Feed	14,054	14,301	17,101	18,474	1,373	31.5	8.0
Livestock	7,033	10,148	12,687	10,523	-2,164	49.6	-17.1
Seed	2,904	3,054	3,400	3,912	512	34.7	15.6
Manufactured inputs	13,562	14,817	18,406	21,966	3,920	62.0	21.7
Fertilizer and lime	6,142	6,193	6,965	8,865	1,900	44.3	27.3
Pesticides	2,009	2,429	3,057	3,070	13	52.8	.4
Fuel and oil	4,356	4,805	6,383	8,251	1,868	89.4	29.3
Electricity	1,055	1,389	1,641	1,780	139	68.7	8.5
Other inputs	13,323	14,779	17,030	17,920	890	34.5	5.2
Repair and operation	5,430	6,227	6,965	7,616	651	40.3	9.3
Machine hire, customwork, and contract labor	3,089	3,328	4,090	4,322	232	39.9	5.7
Marketing charges	1,468	1,460	1,757	1,740	-17	18.5	.1
Other	3,337	3,763	4,218	4,242	24	27.1	.6
Interest	7,943	9,566	12,182	15,172	2,990	91.0	24.5
Real estate	3,971	4,665	5,606	6,669	1,063	67.9	19.0
Nonreal estate	3,971	4,902	6,576	8,503	1,927	114.1	29.3
Wages to hired labor	7,038	7,289	8,346	9,325	979	32.5	11.7
Net rent to nonoperator landlords	4,606	5,552	6,115	6,597	482	43.2	7.9
Capital consumption allowances	13,114	14,703	16,575	18,239	1,664	39.1	10.0
Business taxes	3,650	3,342	3,538	3,755	217	-2.9	6.1
Total production expenses	87,227	97,552	115,020	125,883	10,863	44.3	9.4
Addenda:							
Total cash production expenses	73,550	82,269	97,784	106,909	9,125	45.4	9.3

Table 5--Total outstanding farm debt (excluding farm households), Jan. 1, 1977-81

Year	Real estate	Nonreal estate	Price support and	Total 1/, 2/	
	debt	debt excluding	storage loans made	Excluding	Including
	<u>1/</u>	CCC	or guaranteed	CCC loans	CCC loans
		loans <u>2/</u>	by CCC		
<u>Million dollars</u>					
1977	51,488	42,920	1,012	94,408	95,420
1978	58,071	48,643	4,489	106,714	111,203
1979	64,602	56,940	5,242	121,542	126,784
1980	75,461	66,950	4,500	142,411	146,911
1981 <u>3/</u>	84,064	74,090	4,367	158,154	162,521
<u>Percent</u>					
Change from--					
1977 to 1978	6,583	5,723	3,477	12,306	15,783
1978 to 1979	6,531	8,297	753	14,828	15,581
1979 to 1980	10,859	10,010	-742	20,869	20,127
1980 to 1981 <u>3/</u>	8,603	7,140	-133	15,743	15,610
<u>Percent</u>					
Change from--					
1977 to 1978	12.8	13.3	343.6	13.0	16.5
1978 to 1979	11.2	17.1	16.8	13.9	14.0
1979 to 1980	16.8	17.6	-14.2	17.2	15.9
1980 to 1981 <u>3/</u>	11.4	10.7	-3.0	11.1	10.6
<u>Distribution:</u>					
1977	54.0	45.0	1.1	98.9	100.0
1978	52.2	43.7	4.0	96.0	100.0
1979	51.0	44.9	4.1	95.9	100.0
1980	51.4	45.6	3.1	96.9	100.0
1981 <u>3/</u>	51.7	45.6	2.7	97.3	100.0

1/ Excludes debt on operators dwellings. 2/ Excludes debt for nonfarm purposes. 3/ Preliminary.

Table 6--Average interest rates on business and farm borrowings, 1977-81

Quarter	Prime 4 to 6 month commercial paper 1/	Business loans		Farm loans at banks					Farm Credit System 7/			
		at banks 2/		Short-term farm loans, ninth district 4/	Feeder cattle loans, seventh district 5/	Nonreal estate farm loans, 2/, 3/			Production Credit Associations	Federal land banks		
		Prime rate, large banks :	Average, all banks 3/ :			Large banks 6/ :	Other banks :	All banks :				
<u>Percent</u>												
1977												
-Q1	4.7	6.35	7.6	9.1	8.7	8.3	8.9	8.8	8.2	8.5		
-Q2	4.9	6.35	7.6	9.2	8.7	8.1	8.9	8.7	8.1	8.4		
-Q3	5.4	6.86	7.9	9.2	8.7	8.4	8.9	8.7	7.9	8.3		
-Q4	6.6	7.90	8.6	9.2	8.8	9.1	9.0	9.1	8.0	8.3		
1978												
-Q1	6.8	8.16	8.9	9.2	8.9	9.3	9.1	9.2	8.4	8.2		
-Q2	6.9	8.16	9.1	9.2	8.9	9.6	9.2	9.3	8.7	8.3		
-Q3	7.9	9.20	10.0	9.4	9.1	10.4	9.3	9.6	9.0	8.3		
-Q4	9.0	10.78	11.4	9.5	9.4	11.7	10.0	10.4	9.2	8.4		
1979												
-Q1	10.3	12.09	12.2	10.2	10.1	12.5	10.4	11.0	10.0	8.7		
-Q2	9.9	12.09	12.3	10.4	10.5	12.8	10.7	11.2	10.6	9.0		
-Q3	9.8	12.09	12.3	10.8	10.8	12.9	10.9	11.3	10.9	9.3		
-Q4	13.2	16.39	15.8	11.8	11.7	16.2	13.1	13.6	11.0	9.3		
1980												
-Q1	12.7	16.39	15.7	13.6	13.5	16.0	13.7	14.1	12.1	9.8		
-Q2	14.9	18.81	17.8	16.4	17.1	18.5	17.1	17.4	13.7	10.6		
-Q3	8.3	11.30	11.6	15.3	14.0	12.8	13.7	13.5	13.3	10.6		
-Q4	12.3	15.56	15.6	14.0	14.3	16.3	15.3	15.5	12.0	10.3		
1981												
-Q1	15.1	20.56	19.8	17.6	17.3	19.9	17.5	17.9	12.9	10.6		
-Q2	14.2	19.90	19.9	17.0	16.5	19.5	17.5	17.9	14.2	10.9		
-Q3	16.1	21.55	21.0	18.0	17.7	20.8	19.1	19.6	15.1	11.4		
-Q4	14.7	18.54	17.4	18.9	18.6	18.9	18.7	18.8	15.8	11.7		

1/ Average, first month of quarter.

2/ First full business week of second month of quarter.

3/ Dollar-weighted average of effective rates on loans of \$1,000 or more made in the week indicated.

4/ Average of most common rates at banks representative of farm lending, first day of quarter.

5/ Average of typical rates at agricultural banks, first day of quarter.

6/ "Large banks" (survey strata 1 to 3) correspond roughly to banks with over \$450 million in total assets in 1981.

7/ Unweighted average of quoted rates, first day of quarter. Stock purchases and loan fees required of borrowers from these cooperatives are not taken into account in the rates shown.

Source: Melichar, Emanuel, and Paul T. Balides. Agricultural Finance Databook. Board of Governors of the Federal Reserve System, Division of Research and Statistics, Washington, D.C.

Fuel and oil costs increased 29 percent in 1980, equaling slightly less than \$1.9 billion, almost as much as the increase in fertilizer costs. As with fertilizer, most of the fuel and oil cost increases were attributable to rising prices rather than increasing use. Diesel use declined 7 percent, while liquified petroleum gas (LPG) use declined 10 percent. Gasoline use rose 4 percent. In contrast to the trends in use, the index of fuels and energy prices paid by farmers (1977=100) jumped 37 percent.

Fertilizer expenses increased \$1.9 billion in 1980, a 27-percent increase. Most of the fertilizer cost increases were traced to rising prices rather than to increasing use. The index of primary plant nutrients used, including nitrogen, phosphate, and potash (1967=100), increased 2 percent, but the index of fertilizer prices paid by farmers (1977=100) increased 24 percent.

#### Costs of Production

In addition to looking at production expenses on an aggregate basis, USDA also calculates expenses on a per acre or head basis for the major crop and livestock commodities. Costs of crop production for 11 major U.S. crops rose by an average of 12.4 percent per acre in 1980. The average cost per acre including land, increased by 17 percent for corn, 11 percent for sorghum, 15 percent for wheat, 13 percent for rice, 11 percent for soybeans, and 6 percent for cotton (table 7). Costs per acre were relatively unaffected by the drought which reduced yields and harvests significantly for all 11 crops.

Costs of livestock production, excluding land, increased for all livestock commodities except feeder pig finishing. Dairy production costs per hundredweight (cwt) of milk increased from \$10.61 in 1979 to \$12.20 in 1980 (table 8). Fed cattle costs of production per cwt in the western United States rose from \$66.96 in 1979 to \$72.62 in 1980, an 8.5-percent increase. Midwestern U.S. fed cattle costs of production increased 13 percent. Hog farrow-to-finish production costs per cwt rose 9.3 percent to \$60.30.

Costs of production and total farm production expenses are not synonymous. Total farm production expenses are allocated by State but are not broken down by commodity. Costs of production for the various crop and livestock commodities in tables 7 and 8 also include additional charges for the operators' labor, management, and capital.

#### Total Income per Farm Operator Family

Net farm income (before inventory adjustment) varied widely by value of sales class. Farms with sales of \$20,000 or more earned about 90 percent of cash receipts in 1980. Net farm income per farm for farms with sales of \$20,000 or more was \$19,325, compared with \$9,002 for all farms (table 9). Net farm income per farm for farms with sales of \$19,999 or less was \$2,401. Net farm income of small farms was less affected by changes in farm production and prices than larger farms because noncash imputations for dwelling value and home consumption were a greater proportion of net farm income. For

Table 7--Crop production costs, 1975-80

Item	1975	1976	1977	1978	1979	1980
	Dollars					
Corn:						
Per acre, excluding land	137.13	141.11	147.00	150.23	178.62	212.01
Per acre, including land	191.33	187.69	194.56	199.20	237.94	277.59
Per bushel, excluding land	1.60	1.62	1.66	1.49	1.63	2.35
Per bushel, including land	2.23	2.15	2.19	1.98	2.13	3.05
Sorghum:						
Per acre, excluding land	88.96	91.59	95.68	97.68	120.33	139.85
Per acre, including land	113.56	110.69	118.24	119.58	150.01	166.52
Per bushel, excluding land	1.94	1.99	1.77	1.84	1.96	3.24
Per bushel, including land	2.48	2.41	2.19	2.25	2.48	4.07
Barley:						
Per acre, excluding land	70.11	75.39	74.44	92.30	114.70	130.14
Per acre, including land	95.31	98.82	96.25	118.65	143.08	161.03
Per bushel, excluding land	1.73	1.83	1.88	2.02	2.40	3.01
Per bushel, including land	2.35	2.39	2.43	2.59	3.04	3.79
Oats:						
Per acre, excluding land	48.94	50.51	53.25	72.90	86.22	101.47
Per acre, including land	74.14	71.67	77.96	95.79	113.81	137.04
Per bushel, excluding land	1.12	1.25	.99	1.46	1.69	2.17
Per bushel, including land	1.70	1.78	1.45	1.91	2.30	2.81
Wheat:						
Per acre excluding land	68.49	69.11	68.30	74.30	90.98	109.38
Per acre including land	91.48	91.22	89.27	98.46	121.71	140.55
Per bushel, excluding land	2.40	2.55	2.47	2.48	2.81	3.66
Per bushel, including land	3.21	3.37	3.22	3.29	3.74	4.81
Rice:						
Per acre, excluding land	303.33	295.10	258.14	280.72	322.76	374.81
Per acre, including land	355.11	348.09	319.44	338.61	398.10	451.06
Per hundredweight, excluding land	6.66	6.31	5.87	6.31	7.06	8.68
Per hundredweight, including land	7.80	7.44	7.26	7.61	8.29	10.07
Soybeans:						
Per acre, excluding land	83.42	86.44	91.85	99.13	115.05	127.67
Per acre, including land	125.00	131.80	143.64	150.23	169.44	187.66
Per bushel, excluding land	2.95	3.43	3.04	3.39	3.61	4.93
Per bushel, including land	4.42	5.23	4.76	5.14	5.15	7.19
Sunflowers:						
Per acre, excluding land	N/A	N/A	N/A	N/A	90.93	104.20
Per acre, including land	N/A	N/A	N/A	N/A	116.07	130.61
Per hundredweight, excluding land	N/A	N/A	N/A	N/A	6.89	10.85
Per hundredweight, including land	N/A	N/A	N/A	N/A	8.80	13.78
Peanuts:						
Per acre, excluding land	283.89	292.17	357.38	377.91	405.85	439.24
Per acre, including land	340.07	347.23	448.06	471.72	508.34	535.08
Per pound, excluding land	.112	.119	.147	.145	.157	.288
Per pound, including land	.134	.142	.184	.181	.198	.357
Flax:						
Per acre, excluding land	49.84	51.81	53.01	57.19	67.90	75.20
Per acre, including land	64.84	64.36	68.13	73.23	86.12	96.73
Per bushel, excluding land	5.48	7.30	4.95	4.61	5.14	7.37
Per bushel, including land	7.13	9.06	6.37	5.91	6.57	9.60
Cotton:						
Per acre, excluding land	214.97	245.11	261.56	262.12	317.19	346.43
Per acre, including land	246.28	282.97	298.62	299.87	361.07	383.06
Per pound, excluding land	.517	.563	.518	.672	.631	.943
Per pound, including land	.592	.651	.591	.769	.721	1.060

N/A = Not available.

Table 8--U.S. livestock production costs excluding land, 1976-80

Commodity	1976	1977	1978	1979	1980
	<u>Dollars</u>				
Western fed cattle production costs, per cwt, all sizes:					
Variable costs	N/A	39.92	47.16	65.95	71.50
Total costs	N/A	40.70	48.02	66.96	72.62
Midwestern fed cattle production costs, per cwt, all sizes:					
Variable costs	N/A	38.84	41.85	59.67	67.19
Total costs	N/A	47.97	51.70	70.85	80.04
Cow-calf production costs, per cwt, all sizes:					
Variable costs	37.37	48.80	49.23	55.40	60.61
Total costs	74.33	95.16	101.95	129.77	147.84
Feeder pig production costs, per cwt, all sizes:					
Variable costs	45.09	47.17	48.66	55.06	60.95
Total costs	93.97	87.73	91.65	104.26	114.39
Feeder pig finishing production costs, per cwt, all sizes:					
Variable costs	47.18	38.65	42.52	49.08	42.05
Total costs	57.89	48.18	52.39	60.11	54.44
Farrow-to-finish production costs, per cwt, all sizes:					
Variable costs	30.67	30.87	31.39	35.36	38.59
Total costs	49.17	47.55	48.84	55.17	60.30
Sheep production costs, per ewe, all sizes:					
Variable costs	N/A	24.94	27.65	31.92	35.38
Total costs	N/A	48.42	56.34	66.49	73.21
Dairy production costs, per cwt, all sizes:					
Variable costs	N/A	N/A	N/A	7.79	8.83
Total costs	N/A	N/A	N/A	10.61	12.20

N/A = Not available.

Table 9--Income per farm operator family (including farm households),  
by major sources, by value of sales class, 1960-80

Year	Farms with sales of--								
	\$100,000 and over	\$40,000 to \$99,999	\$40,000 and over <sup>1/</sup>	\$20,000 to \$39,999	\$10,000 to \$19,999	\$5,000 to \$9,999	\$2,500 to \$4,999	Less than \$2,500	All farms
Dollars									
Net farm income before inventory adjustment: <sup>2/</sup>									
1970	40,543	17,319	(22,953)	10,405	5,856	3,235	1,696	902	4,797
1971	35,206	16,037	(20,868)	9,672	5,399	2,976	1,571	905	4,561
1972	52,011	19,816	(28,645)	11,369	6,325	3,470	1,882	1,115	6,226
1973	83,809	26,368	(43,935)	13,573	7,150	3,818	2,090	1,344	10,607
1974	72,780	23,816	(39,085)	11,989	6,133	3,251	1,786	1,350	9,925
1975	49,894	19,782	(29,118)	10,237	5,177	2,737	1,499	1,399	7,617
1976	46,407	19,033	(27,639)	9,909	4,979	2,636	1,446	1,390	7,687
1977 <sup>3/</sup>	30,586	17,295	(27,386)	9,686	4,774	2,526	1,396	1,397	7,093
1978	49,204	21,322	(32,002)	11,449	5,771	3,240	1,940	1,719	10,627
1979	49,362	19,506	(32,330)	9,662	5,031	2,915	1,842	1,813	11,256
1980	33,972	16,674	(24,009)	8,280	4,299	2,512	1,582	1,821	9,002
Off-farm income:									
1970	7,614	3,949	(4,838)	3,359	4,190	5,450	6,184	7,437	5,899
1971	7,603	4,102	(4,984)	3,689	4,677	6,046	6,947	8,190	6,488
1972	7,573	4,253	(5,164)	4,093	5,297	6,829	7,969	8,154	7,208
1973	7,715	4,601	(5,554)	4,824	6,447	8,347	9,953	10,961	8,416
1974	8,060	4,997	(5,952)	5,512	7,444	9,640	11,566	12,411	9,487
1975	8,042	5,066	(5,989)	5,833	7,902	10,207	12,207	12,851	9,922
1976	9,006	5,618	(6,684)	6,526	8,868	11,473	13,736	14,484	11,058
1977 <sup>3/</sup>	9,095	5,702	(6,862)	6,465	8,685	11,169	13,259	13,289	10,313
1978	9,981	6,233	(7,688)	7,224	9,835	12,703	15,269	15,267	11,533
1979	11,675	7,292	(9,113)	8,623	11,844	15,361	18,534	18,618	13,667
1980	12,922	7,922	(10,042)	9,358	12,847	16,768	20,156	20,242	14,820
Total income from farm and off-farm sources: <sup>2/</sup>									
1970	48,157	21,268	(27,791)	13,764	10,046	8,685	7,880	8,339	10,696
1971	42,809	20,139	(25,852)	13,361	10,076	9,022	8,518	9,095	11,049
1972	59,584	24,069	(33,809)	15,462	11,622	10,299	8,851	10,269	13,434
1973	91,524	30,969	(49,489)	18,397	13,597	12,165	12,043	12,305	19,023
1974	80,840	28,813	(45,037)	17,501	13,577	12,891	13,352	13,761	19,412
1975	57,936	24,848	(35,107)	16,070	13,079	12,944	13,706	14,190	17,539
1976	55,413	24,651	(34,323)	16,435	13,847	14,109	15,182	15,874	18,745
1977 <sup>3/</sup>	39,681	22,997	(34,248)	16,151	13,459	13,695	14,655	14,686	17,406
1978	59,185	27,555	(39,670)	18,673	15,606	15,943	17,149	16,986	22,160
1979	61,037	26,798	(41,443)	18,285	16,875	18,276	20,376	20,431	24,923
1980	46,894	24,596	(34,051)	17,638	17,146	19,280	21,738	22,063	23,822

NA = Not available. <sup>1/</sup> The numbers in parentheses present the weighted average of the first two columns. <sup>2/</sup> Includes Government payments, the value of farm products consumed in farm households, and the rental value of farm dwellings. <sup>3/</sup> Based on the 1974 Census of Agriculture definition of a farm that has sales of \$1,000 or more, and applies to 1977 and all following years.

example, net farm income for farms with sales of \$19,999 or less declined only \$281 per farm from 1979 to 1980; net farm income per farm for all farms declined \$2,254.

The well-being of small farmers was greatly influenced by off-farm income, and capital gains had a great impact on the well-being of large farmers. Seventy-four percent of off-farm income was received by farms with sales of \$19,999 or less, averaging \$18,000 per farm. However, off-farm income remained a significant source for income to larger farmers. Off-farm income equaled 29 percent of total income received by farms with sales of at least \$40,000.

Capital gains reached \$78.2 billion, or approximately 400 percent of net farm income. During the past 4 years, real estate appreciation equaled 82 percent of total capital gains. In contrast to off-farm income, the recipients of the benefits realized from capital gains were large farms. Approximately 65 percent of farmland was held by landowners producing sales of at least \$40,000.

#### Balance Sheet

Despite the dampening effects of declining farm income, declining capital expenditures, rising interest rates, and drought, the value of farm production assets increased \$78 billion during 1980, 9 percent above the previous year (table 10). Net worth increased \$62.4 billion because of capital gains increases of \$78.2 billion. Land value per acre increased 9 percent, accounting for 85 percent of the \$78.2-billion capital gains. An increasing debt of \$15.7 billion and net farm disinvestment of \$2.9 billion offset the increase in capital gains. Net farm disinvestment of minus \$2.9 billion occurred because of the farm inventory value change of minus \$2 billion and the \$1 billion of farmland converted to nonfarm uses. Farm financial assets increased \$2.7 billion.

The total farm debt increase of \$15.7 billion, up 11 percent from 1979, was the second largest on record, exceeded only by the 1979 increase of \$20.9 billion. The debt-to-asset ratio has been fairly stable since 1966 as increases in farm debt have been matched by increases in farm asset values. The debt-to-asset ratio during 1966-81 ranged only 1.8 percent from a low of 16.2 percent in 1977 to a high of 18 percent in 1970. The 1981 debt-to-asset ratio was 16.6 percent compared with 16.3 percent in both 1980 and 1979, and 17 percent in 1978.

All categories of nonreal estate lending levels declined in 1980 except for merchants, dealers, individuals, and others who, perhaps, either could, or were required, to provide more favorable lending terms (table 11). Emergency loans due to severe drought conditions caused a \$2.4-billion increase in lending by the Farmers Home Administration.

Federal land banks accounted for 67 percent of the \$8.6 billion in real estate debt outstanding in 1980 (table 12). Federal land bank debt became a larger proportion of total



Table 10--Change in farm balance sheet account (excluding farm households), 1980

Item	Balance	Balance	Total	Due to transactions				Total	Due to
	sheet of	sheet of		Capital	Capital	Capital assets	Debt	trans-	asset
	the farming	the farming	value	acquired	consump-	transferred	incurred	actions	valuations
	sector,	sector,	change		tion			1/	2/
	Jan. 1, 1981	Jan. 1, 1980							
Million dollars									
Assets	980,062	902,033	78,029	19,148	18,239	1,043	0	-134	78,163
Real estate	758,860	691,712	67,148	5,214	4,049	1,043	0	122	67,026
Land	694,701	632,398	62,303	1,126	0	954	0	172	62,131
Service structures	64,159	59,314	4,845	4,088	4,049	89	0	-50	4,895
Nonreal estate	193,894	185,753	8,141	11,194	14,190	0	0	-2,996	11,137
Machinery and motor									
vehicles	96,623	90,844	5,779	13,191	14,190	0	0	-999	6,778
Livestock and poultry	60,881	61,375	-494	1,679	0	0	0	1,679	-2,173
Crops	36,390	33,534	2,856	-3,676	0	0	0	-3,676	3/6,399
Financial assets	27,308	24,568	2,740	2,740	0	0	0	2,740	0
Claims	980,062	902,033	78,029	0	0	0	0	0	0
Liabilities	162,521	146,911	15,610	0	0	0	15,610	-15,610	0
Real estate debt	84,064	75,461	8,603	0	0	0	8,603	-8,603	0
Nonreal estate debt	74,090	66,950	7,140	0	0	0	7,140	-7,140	0
CCC debt	4,367	4,500	-133	0	0	0	-133	133	0
Equity	817,541	755,122	62,419	19,148	18,239	1,043	15,610	-15,744	78,163

1/ Capital acquired less capital consumption, capital assets transferred, and debt incurred.

2/ Total value change less total transactions.

3/ Adjusted for CCC loan activity of \$133 million. Crop inventories in the balance sheet include crops under CCC loans because debt outstanding includes CCC loans. Crop inventory change in the farm income statement excludes CCC stocks to prevent double accounting because net CCC loans made are counted as cash receipts. Crop capital gains in the change in balance sheet account must therefore be adjusted for the net change in CCC loans outstanding to prevent double accounting of capital gains.

Table 11--Outstanding farm nonreal estate debt (excluding farm households), Jan. 1, 1977-81 <sup>1/</sup>

Year	Owed to reporting institutions (excluding CCC)					Owed	Total	Price	Total
	All	Production	Federal	Farmers	Total	to individ- uals and others <sup>2/</sup>	excluding CCC loans	support and storage loans made or guaranteed by CCC	including CCC loans
	operating bank	Credit Associations	intermediate credit banks	Home Admini- stration					
Million dollars									
1977	22,002	11,744	368	1,652	35,766	7,154	42,920	1,012	43,932
1978	24,295	12,968	374	2,764	40,401	8,242	48,643	4,489	53,132
1979	26,718	14,415	509	5,087	46,728	10,212	56,940	5,242	62,182
1980	29,327	17,567	665	7,905	55,465	11,486	66,950	4,500	71,450
1981 <sup>3/</sup>	29,989	19,226	810	10,346	60,370	13,720	74,090	4,367	78,457
Percent									
Change from--									
1977 to 1978	2,293	1,224	6	1,112	4,635	1,088	5,723	3,477	9,200
1978 to 1979	2,423	1,447	135	2,322	6,327	1,970	8,297	753	9,050
1979 to 1980	2,610	3,152	156	2,818	8,736	1,274	10,010	-742	9,268
1980 to 1981	661	1,658	145	2,441	4,905	2,234	7,140	-133	7,007
Percent									
Change from--									
1977 to 1978	10	10	2	67	13	15	13	344	21
1978 to 1979	10	11	36	84	16	24	17	17	17
1979 to 1980	10	22	31	55	19	12	18	-14	15
1980 to 1981	2	9	22	31	9	19	11	-3	10
Distribution:									
1977	50	27	1	4	81	16	98	2	100
1978	46	24	1	5	76	16	92	8	100
1979	43	23	1	8	75	16	92	8	100
1980	41	25	1	11	78	16	94	6	100
1981	38	25	1	13	77	17	94	6	100

<sup>1/</sup> Excludes debt for nonfarm purposes. <sup>2/</sup> Data for 1978-81 include farm loans owed to the Small Business Administration.

<sup>3/</sup> Preliminary.

Table 12--Outstanding farm real estate debt (excluding farm households), Jan. 1, 1977-81 <sup>1/</sup>

Year	Federal land banks	Farmers Home Admin- istration	Life insurance companies	Com- mercial banks	Individ- uals and others	Total
Million dollars						
1977	16,767	3,310	6,834	6,060	18,518	51,488
1978	19,458	3,608	8,147	7,051	19,807	58,071
1979	22,415	3,737	9,682	7,675	21,093	64,602
1980	27,011	6,445	11,243	7,746	23,015	75,461
1981 <sup>2/</sup>	32,790	6,998	11,950	7,874	24,452	84,064
Change from--						
1977 to 1978	2,691	298	1,314	991	1,289	6,583
1978 to 1979	2,956	130	1,535	624	1,286	6,531
1979 to 1980	4,597	2,708	1,561	71	1,922	10,859
1980 to 1981	5,779	533	706	128	1,437	8,603
Percent						
Change from--						
1977 to 1978	16	9	19	16	7	13
1978 to 1979	15	4	19	9	6	11
1979 to 1980	21	72	16	1	9	17
1980 to 1981	21	9	6	2	6	11
Distribution:						
1977	33	6	13	12	36	100
1978	34	6	14	12	34	100
1979	35	6	15	12	33	100
1980	36	9	15	10	30	100
1981	39	8	14	9	29	100

<sup>1/</sup> Excludes debt on operators dwellings. <sup>2/</sup> Preliminary.

real estate debt for two reasons. First, the Federal land banks have the lowest cost funds because of the Farm Credit Administration policy of basing interest rates on their average cost of funds (see table 6). Second, farmers in 1980 restructured their short-term debt into long-term debt to obtain more favorable repayment terms. Farmers reported using 14.8 percent of their 1980 Federal land bank borrowings to refinance nonreal estate debt compared with 9.8 percent in 1979 (table 13). This ratio averaged 10.8 percent from 1972 to 1978.

#### Cash Flows

Cash flow analysis in table 14 is concerned with the adequacy of current cash flows to meet loan repayment requirements and to acquire farm production capital. A primary concern is the current reliance on annual borrowing to provide an ever-increasing share of cash inflows, thus increasing farmers' susceptibility to default in periods of low income or

Table 13--Percentage distribution of Federal land bank farm loans made, 1972-80

Type of loan	1972	1973	1974	1975	1976	1977	1978	1979	1980
	<u>Percent</u>								
Purchase real estate	31.3	36.6	35.8	30.9	34.6	31.6	31.5	33.8	30.1
Refinance									
Federal land bank loans	20.8	15.5	14.7	17.0	18.7	20.8	18.5	19.8	18.3
Mortgage loans held by others	16.2	19.0	17.8	19.4	15.2	15.1	16.3	15.1	16.5
Short-term loans held by others	11.5	8.0	10.0	12.3	10.5	12.6	10.8	9.8	14.8
Improve land and buildings	9.5	11.0	11.6	9.9	10.9	10.0	11.4	11.9	9.9
Operating expenses <sup>1/</sup>	3.3	3.0	3.5	3.8	3.1	3.0	2.8	2.7	2.8
Other purpose <sup>2/</sup>	7.4	6.9	6.6	6.7	7.0	6.9	8.7	6.9	7.6
All purposes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1/</sup> Purchase livestock and machinery and for general operating expenses.

<sup>2/</sup> Primarily land bank stock but includes miscellaneous purposes.

Source--Farm Credit Administration, Characteristics of Federal Land Bank Loans, 1980, Economic Analysis Division, Stat. Bull. 27, Washington, D.C.

Table 14--Analysis of farm sector cash flows (excluding farm households), 1977-80

Item	1977	1978	1979	1980	1981
	<u>Million dollars</u>				
Total debt outstanding	95,420	111,203	126,784	146,911	162,521
Real estate debt	51,488	58,071	64,602	75,461	84,064
Nonreal estate	43,932	53,132	62,182	71,450	78,457
Net change in total debt outstanding	15,783	15,581	20,127	15,610	N/A
	<u>Percent</u>				
Average interest rate on outstanding debt	7.51	7.85	8.66	9.51	N/A
	<u>Million dollars</u>				
Interest paid	8,336	10,022	12,725	15,812	N/A
	<u>Percent</u>				
Interest paid, percentage of net change in outstanding debt	52.8	64.3	63.2	101.3	N/A

N/A = Not available.

tight credit. Net farm borrowing of \$15.7 billion in 1980 equaled 48 percent of net cash income. From 1968 to 1970, borrowing totaled only 13 percent of cash farm income. This ratio more than doubled to 28 percent for the period 1971-75. Borrowing, as a percentage of operators' cash farm income, almost doubled again for the period 1976-80, equaling 51 percent.

Interest payments have exceeded the amount of annual net borrowing because of the past high borrowing levels. Interest paid in 1980 reached 101 percent of annual net farm borrowing (table 14). Individual circumstances naturally varied for each farmer. But, for the farm sector as a whole, interest payments exceeding the net inflow of borrowed funds represented a significant financial drain. For many farmers, restoring farm profitability and financial health will require a better balance between borrowing and earnings.

### Capital Flows

Capital expenditures in 1980 for land improvements, motor vehicles, tractors, other machinery and equipment, and buildings for farm production purposes dropped to \$18.4 billion, down 7 percent from the previous year (table 15). With the effects of inflation removed, gross capital expenditures in constant dollars (1977=100) declined 13 percent. Net capital formation in 1980 registered minus \$2.8 billion, caused by the negative farm inventory change of \$2 billion and net real estate transfers of \$1 billion.

Net capital formation in the capital flows account was new net capital available for production. All entries in the capital flows accounts were economic activities recorded in the farm income accounts except net real estate transfers to nonfarm sectors. Thus, by monitoring the capital accumulation process, the capital flows account can reflect the direct effects of farm income on the balance sheet. Published estimates of farm sector capital gains were based on the farm sector balance sheet and the capital flows account.

Sales and purchases of farm real estate within the farming sector represented only a transfer of ownership and not a change in the magnitude of capital available for the production of crops and livestock. It is therefore inappropriate to include purchases of real estate as gross capital expenditures in the capital flows account based on national income and accounting procedures, except to the extent that net acquisition of real estate from nonfarm sectors was positive. The net decline in acres in farms reported in Number of Farms and Land in Farms was valued by the average per acres sold to nonagricultural uses reported in Farm Real Estate Market Developments. This procedure estimated net real estate transfers to nonfarm sectors in the capital flows account. The decline of 875,000 acres in the farming sector in 1980 was valued at \$1,192 per acre to estimate the net real estate transfer value of more than \$1 billion in the capital flows account.

Table 15--Farm sector capital flows (excluding farm households), 1970-80

Item	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Million dollars											
Gross capital expenditures	6,793	6,789	7,480	10,172	11,444	12,384	13,968	15,012	17,948	19,874	18,405
Land improvements	301	308	303	303	453	592	1,641	1,400	1,562	1,265	1,126
Service structures	1,574	1,608	1,482	2,222	2,796	3,139	2,330	3,031	3,647	4,323	4,088
Tractors	1,123	1,188	1,418	1,923	2,236	2,460	2,648	2,776	3,283	3,746	3,687
Trucks	597	630	672	733	864	1,083	1,547	1,652	1,829	2,054	1,808
Automobiles	310	319	374	410	305	290	409	496	469	484	382
Other machinery and equipment	2,888	2,736	3,231	4,581	4,790	4,820	5,393	5,657	7,158	8,002	7,314
Inventory change	6	1,397	861	3,406	-1,611	3,400	-2,366	971	572	5,345	-1,997
Crops	-659	937	416	1,588	-2,065	4,445	-1,684	2,232	1,849	788	-3,676
Livestock	665	460	445	1,818	454	-1,045	-682	-1,261	1,277	4,557	1,679
Gross saving	6,799	8,186	8,341	13,578	9,833	15,784	11,602	15,983	18,520	25,219	16,408
Capital consumption allowance	4,687	6,362	6,812	7,665	9,129	10,857	11,919	13,114	14,703	16,575	18,239
Depreciation	4,578	6,248	6,681	7,504	9,005	10,690	11,756	12,929	14,507	16,390	18,037
Service structures	1,163	1,297	1,441	1,684	2,107	2,252	2,270	2,444	3,083	3,489	3,863
Tractors	1,012	1,085	1,120	1,264	1,610	2,009	2,359	2,449	2,717	3,176	3,621
Trucks	617	709	740	797	871	1,012	1,247	1,538	1,628	1,851	1,858
Automobiles	355	367	377	396	408	411	438	575	640	671	671
Other machinery and equipment	2,594	2,790	3,003	3,363	4,009	5,006	5,442	5,923	6,439	7,203	8,024
Accidental damage	109	114	131	161	124	167	163	185	196	185	202
Service structures	95	100	117	147	109	152	148	170	181	169	186
Vehicles and machinery	14	14	14	14	15	15	15	15	15	16	16
Net real estate transfers	1,950	1,746	1,466	2,342	4,418	4,367	5,076	2,998	1,442	899	1,043
Net capital formation	162	78	63	3,571	-3,714	560	-5,393	-129	2,375	7,745	-2,874
Gross capital disappearance plus net capital formation	6,799	8,186	8,341	13,578	9,833	15,784	11,602	15,983	18,520	25,219	16,408

Gross saving rates, as a percentage of gross cash inflows and net cash income in 1980, dropped substantially from 1979 (table 16 and fig. 5). A major future concern is whether farm proprietors will maintain their historically high rates of saving in conditions of declining farm income, inflation, high interest rates, and high debt servicing requirements.

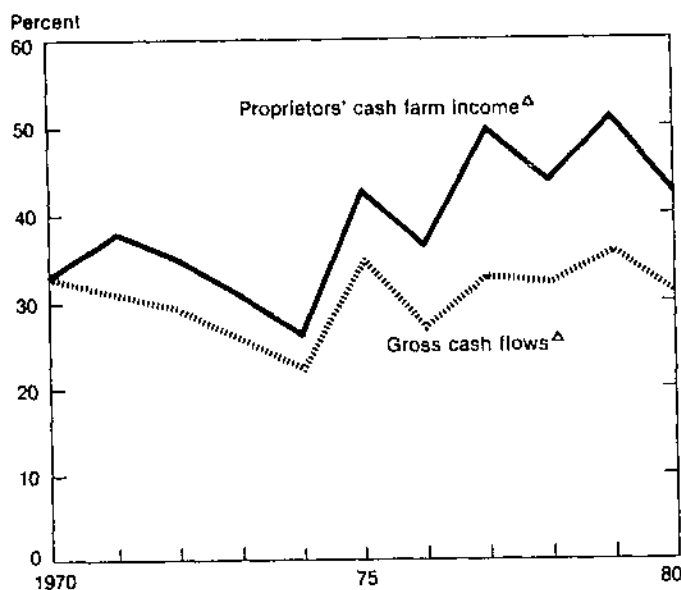
From 1970 to 1979, farm output increased 28 percent (fig. 6). During this period, the use of mechanical power and machinery increased 30 percent, and the use of labor decreased 26 percent. Tractor horsepower on farms increased 33 percent. The decline in farm output and productivity in 1980, caused by

Table 16--Analysis of farm sector gross saving (including net CCC loans and excluding farm households), 1977-80

Item	:	1977	:	1978	:	1979	:	1980
	:	<u>Million dollars</u>						
Cash flow summary:	:							
Net rent to all landlords	:	4,606		5,552		6,115		6,597
Cash income from farming	:	26,118		35,395		37,636		33,025
Farm proprietors' cash farm income	:	30,724		40,947		43,751		39,622
Change in loans outstanding	:	12,306		14,828		20,869		15,743
Gross cash flow	:	43,030		55,775		64,620		55,365
Saving summary:	:							
Gross capital expenditures	:	15,012		17,948		19,874		18,405
Farm inventory change	:	971		572		5,345		-1,997
Gross farm saving	:	15,983		18,520		25,219		16,408
Addenda:	:							
Farm proprietors' cash farm income plus inventory change	:	31,695		41,519		49,096		37,625
Gross cash flow plus inventory change	:	44,001		56,347		69,965		53,368
	:					<u>Percent</u>		
Saving analysis summary:	:							
Gross capital expenditures as a percentage of--	:							
Farm proprietors' cash income	:	48.9		43.8		45.4		46.5
Gross cash flow	:	34.9		32.2		30.8		33.2
Gross farm saving as a percentage of--	:							
Farm proprietors' cash farm income plus inventory change	:	50.4		44.6		51.4		43.6
Gross cash flow plus inventory change	:	36.3		32.9		36.0		30.7

Figure 5

### Farm Sector Saving Rate as a Percentage of Income and Cash Flow

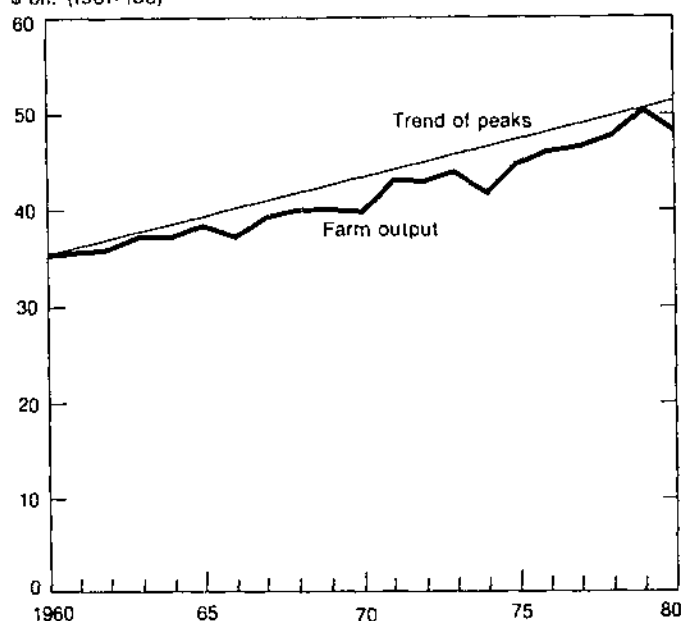


△ Includes inventory change

Figure 6

### Capacity Farm Output

\$ bil. (1967=100)



the two severe droughts, can be regarded as an aberration in the long-term trend. Farm output in 1980, despite a drop of 5 percent, was still 19 percent above 1970.

### Productivity

Productivity declined 3 percent in 1980 when output fell 5 percent but inputs dropped only 2 percent (table 17). Farm output fell 5 percent as the 9-percent decrease in crop production offset a 4-percent increase in livestock production. All categories of livestock and livestock products including meat animals, dairy products, and poultry and eggs increased. Decreases in crop production were led by oil crops, cotton, and feed grains. The index of cotton output dropped 23 percent; the index of oil crop production declined 22 percent; and the index of feed grain output fell 17 percent. The index of food grain production increased 9 percent.

The index of total farm inputs declined 2 percent. The use of farm labor continued its decline, dropping 1 percent. The input index of farm real estate held constant. The input index of mechanical power and machinery declined 2 percent, only the second decline in this input since 1963. The input index of agricultural chemicals decreased 5 percent, only the second decline since 1933.

As discussed earlier, diesel and LPG used for farming declined 7.2 and 9.6 percent, respectively, from 1979 to 1980, and gasoline use increased 4 percent. The 37-percent increase in fuel and energy prices paid forced less intensive tillage and



Table 17--Indexes of farm output, input, and productivity,  
United States, 1945-80  
(1967=100)

Year	Output	Input	Productivity <u>1/</u>
1945	70	103	68
1946	71	101	71
1947	69	101	68
1948	76	103	74
1949	74	105	71
1950	74	104	71
1951	76	107	71
1952	79	107	74
1953	79	106	75
1954	80	105	76
1955	82	105	78
1956	82	103	80
1957	81	101	80
1958	87	100	87
1959	88	102	87
1960	91	101	90
1961	91	100	91
1962	92	100	92
1963	96	100	96
1964	95	100	95
1965	98	98	100
1966	95	98	97
1967	100	100	100
1968	102	100	102
1969	102	99	103
1970	101	100	102
1971	110	100	110
1972	110	100	110
1973	112	101	111
1974	106	100	105
1975	114	100	115
1976	117	103	115
1977	119	105	114
1978	122	105	116
1979	129	108	119
1980 <u>2/</u>	122	106	115

1/ Data computed from unrounded index numbers. 2/ Preliminary.

cultivation because planted acreage increased 10 million acres and harvested acres rose 3 million acres.

#### Agricultural Trade

The growing dependence of foreign countries on U.S. agriculture and the importance of the export market to farm income are shown in table 18. Food grains were produced primarily for export. The United States exported 65 percent of its wheat for crop year 1979 and 68 percent of 1979 crop year rice. About 55 percent of U.S. soybeans are exported either as beans or meal. About two-thirds of feed grain production is retained in the United States to support the livestock and poultry industries.

Only a small percentage of U.S. livestock and poultry meat is exported. Domestic meat consumption averaged 210 pounds per person in 1980, one of the highest per capita levels in the world. However, nearly two-thirds of U.S. cattle hides produced are exported to leather goods industries worldwide, particularly shoe industries. Nearly half of U.S. edible tallow goes overseas to be processed into soap and other products. The major textile producers in China, Japan, Korea, Hong Kong, and Thailand relied increasingly on U.S. cotton to meet their growth in textile production for exports, and, in the case of China, to meet domestic demands.

#### Marketing Bill

Consumer expenditures for domestically produced food increased 9.3 percent in 1980. The farm value of domestically produced food rose only 4.4 percent, offsetting the 11.7-percent increase in food marketing charges (table 19). The food marketing increase was led by upturns in transportation (18.8 percent), packaging (14.2 percent), and labor (10.6 percent). The farm value of retail expenditures for domestically produced food ranged from a low of 30 percent to a high of 37 percent during 1970-80 (table 19).

Expenditures for food in relation to disposable income remained at the 1979 level of 16.6 percent (table 20). Approximately 2/ percent of consumers' food expenditures were for food eaten away from home. Food expenditures in table 20 include foreign imports and fishery products as well as domestically produced food.

#### Income and Employment in the Food and Fiber Sector

The food and fiber system accounted for nearly 24 percent of employment in the domestic U.S. economy and 20 percent of total business activity in 1980 (table 21). Approximately 23.7 million workers were employed in the food and fiber sector. The farm sector employed 3.3 million people, or about 3 percent of total U.S. employment. Nonfarm employment in the food and fiber sector totaled 20.4 million people, or 19.5 percent of total U.S. employment. Farm sector employment held fairly steady from 1972 to 1980, ranging from 3.3 to 3.4 million for most years. Total food and fiber sector employment increased to 23.7 million in 1980 from 20.7 million in 1972. Agricultural exports in 1980 accounted for 700,000 jobs in the nonfarm food and fiber sector.

Table 18--U.S. agricultural production, exports, and export shares:  
Volume by selected commodity, 1977/78 through 1980/81

Commodity	Production--year ending Dec. 30				Exports--year ending Sept. 30				Export share of production			
	1977	1978	1979	1980	1978	1979	1980	1981	1978	1979	1980	1981
	-----Thousand metric tons-----								-----Percent-----			
Wheat <u>1/</u>	55,670	48,322	58,080	64,492	33,627	32,980	37,627	44,015	60	68	65	68
Rice, milled	3,120	4,272	4,326	4,802	2,276	2,396	2,955	3,172	73	56	68	66
Corn	165,235	184,614	201,655	168,855	49,112	53,885	61,417	59,368	30	29	30	35
Grain sorghum	19,837	18,575	20,546	14,936	5,392	5,222	8,199	7,702	27	28	40	52
Sunflowerseed <u>1/</u>	1,252	1,732	3,309	1,726	971	1,445	2,143	1,726	78	83	65	100
Soybeans <u>1/</u>	48,097	50,859	61,722	49,453	26,682	27,736	32,858	27,694	55	55	53	56
Almonds <u>2/</u>	136	78	165	147	74	55	108	92	54	71	65	63
Peanuts <u>2/</u>	1,271	1,356	1,357	786	346	386	368	154	27	28	27	20
Walnuts <u>2/</u>	63	52	68	65	18	12	17	20	29	23	25	31
Cattle hides <u>3/</u>	42,770	40,420	34,420	34,550	24,022	24,609	20,181	19,345	56	61	59	56
Tallow, inedible	2,713	2,663	2,661	2,771	1,149	1,183	1,409	1,354	42	44	53	49
Cotton, raw	3,133	2,364	3,185	2,422	1,317	1,341	1,986	1,210	42	57	62	50
Tobacco <u>4/</u>	763	808	609	707	272	287	283	252	36	36	46	36
Hops <u>1/</u>	25	25	25	34	11	14	18	17	44	56	72	50
Prunes, dried	144	120	123	148	53	43	44	56	37	36	36	38
Beans, dried	751	859	929	1,184	199	228	353	661	26	27	38	56
Poultry <u>5/</u>	5,535	5,880	6,519	6,619	194	208	320	395	4	4	5	6
Pork <u>5/</u>	5,920	5,992	6,926	7,453	104	101	85	100	2	2	1	1
Beef and veal <u>5/</u>	11,694	11,163	9,830	9,911	54	57	59	70	--	1	1	1

-- = Negligible. 1/ Exports include products. 2/ Shelled basis. 3/ Cattle hides in thousand pieces. 4/ Export weight. 5/ Production in carcass weights.

Table 19--Marketing bill, 1970-80

Item	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Million dollars											
Farm value	35,477	36,150	39,820	51,671	56,446	55,610	58,264	58,030	69,425	78,019	81,427
Meat products	14,374	14,584	17,259	21,271	19,844	20,533	21,632	21,634	28,001	30,710	30,885
Dairy products	6,922	6,941	7,150	8,210	9,381	9,985	11,249	11,041	12,947	14,718	16,059
Poultry and eggs	4,013	3,770	3,810	6,441	5,826	6,351	6,605	6,546	7,407	8,184	8,326
Fruits and vegetables	5,140	5,334	5,810	7,347	8,289	8,360	8,815	8,677	10,193	10,787	11,431
Grain mill products	565	595	623	939	1,166	1,183	1,009	854	994	1,563	1,609
Bakery products	1,412	1,609	1,752	2,699	3,694	3,022	2,626	2,327	2,739	3,222	3,423
Miscellaneous	3,051	3,317	3,416	4,764	8,246	6,156	6,328	6,951	7,143	8,836	9,695
Marketing bill	75,113	78,477	82,373	87,146	98,168	111,410	125,037	134,268	144,868	159,918	178,628
Labor	34,313	34,877	36,573	39,746	44,268	46,710	53,337	58,368	65,268	71,618	79,228
Packaging	8,900	9,600	8,900	9,400	11,800	13,500	14,600	15,200	16,300	18,300	20,900
Transportation	5,200	6,000	6,100	6,400	7,500	8,500	9,100	9,800	10,300	11,700	13,900
Fuel and energy	2,200	2,400	2,500	2,800	3,700	4,600	5,000	5,600	6,200	7,300	8,600
Profits before taxes	3,600	3,900	4,000	5,400	6,100	7,500	7,600	8,000	9,000	9,900	11,000
Other	20,900	21,700	24,300	23,400	24,800	30,600	35,400	37,300	37,800	41,100	45,000
Consumer expenditures for domestically produced farm food	110,590	114,627	122,192	138,817	154,614	167,020	183,301	192,298	214,293	237,937	260,055
Farm value plus marketing bill:											
Meat products	33,748	35,187	39,040	43,680	46,260	48,019	54,859	56,622	65,927	73,680	78,422
Dairy products	16,729	15,176	17,957	19,294	21,823	23,316	26,386	27,441	29,606	32,503	36,699
Poultry and eggs	9,113	8,977	9,023	12,333	11,987	10,742	13,913	14,279	14,959	17,137	17,818
Fruits and vegetables	22,647	24,277	24,631	28,608	32,371	35,634	38,546	41,631	45,160	50,978	57,124
Grain mill products	3,622	3,504	3,419	4,203	5,163	5,934	6,083	6,112	6,915	8,021	9,357
Bakery products	9,954	11,810	11,916	13,008	15,455	18,216	18,817	19,799	21,812	22,998	25,032
Miscellaneous	14,777	15,746	16,206	17,691	21,634	25,159	24,697	26,414	29,914	32,620	35,605
Percent											
Addenda:											
Farm value share of retail cost	32	32	33	37	37	33	32	30	32	33	31

Table 20--Food expenditures in relation to disposable income, 1960-80

Year	:	:	Disposable personal income	Expenditures for food--					
				At home <u>1/</u>	:	Away from home <u>2/</u>	:	Total	
	:	:							
	:	:	-----Mil. dol.-----	Pct.	Mil. dol.	Pct.	Mil. dol.	Pct.	
1960	:	:	351,992	56,244	16.0	14,234	4.0	70,478	20.0
1961	:	:	365,750	57,322	15.7	15,042	4.1	72,364	19.8
1962	:	:	386,791	57,826	15.0	16,090	4.2	73,916	19.1
1963	:	:	405,879	58,800	14.5	16,968	4.2	75,768	18.7
1964	:	:	440,587	62,187	14.1	17,969	4.1	80,156	18.2
1965	:	:	475,779	66,797	14.0	18,980	4.0	85,777	18.0
1966	:	:	513,690	72,397	14.1	20,210	3.9	92,607	18.0
1967	:	:	547,911	73,960	13.5	20,997	3.8	94,957	17.3
1968	:	:	593,418	79,357	13.4	23,269	3.9	102,626	17.3
1969	:	:	638,933	84,869	13.3	25,252	4.0	110,121	17.2
1970	:	:	695,288	91,956	13.2	27,686	4.0	119,642	17.2
1971	:	:	751,751	94,330	12.5	29,061	3.9	123,391	16.4
1972	:	:	810,322	100,613	12.4	31,819	3.9	132,432	16.3
1973	:	:	914,495	112,193	12.3	35,699	3.9	147,892	16.2
1974	:	:	998,345	127,296	12.8	40,191	4.0	167,487	16.8
1975	:	:	1,096,068	139,407	12.7	45,813	4.2	185,200	16.9
1976	:	:	1,194,359	149,286	12.5	51,162	4.3	200,448	16.8
1977	:	:	1,311,537	160,630	12.2	57,268	4.4	217,898	16.6
1978	:	:	1,462,939	177,209	12.1	64,233	4.4	241,442	16.5
1979	:	:	1,641,729	199,907	12.2	73,337	4.5	273,244	16.6
1980	:	:	1,821,699	222,487	12.2	80,381	4.4	302,868	16.6

1/ Includes purchases for off-premise consumption and food produced and consumed on farms.

2/ Includes food furnished commercially to Government employees and purchased meals and beverages.

Table 21--The food and fiber sector and the domestic economy, 1972-80

Item	1972	1973	1974	1975	1976	1977	1978	1979	1980
<u>Millions</u>									
Employment:									
Farm sector	3.3	3.2	3.3	3.1	3.3	3.3	3.4	3.4	3.3
Nonfarm sectors	17.4	17.5	18.0	18.1	18.3	18.7	19.4	20.1	20.4
Food processing	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Resources and services	2.1	2.1	2.2	2.2	2.2	2.3	2.4	2.5	2.5
Manufacturing	4.2	4.3	4.5	4.4	4.5	4.6	4.8	5.0	5.1
Transportation, trade, and retailing	6.5	6.5	6.7	6.7	6.8	7.1	7.3	7.6	7.7
Eating establishments	2.8	2.9	3.0	3.0	3.0	3.1	3.2	3.3	3.4
Total food and fiber sector	20.7	20.7	21.3	21.2	21.6	22.0	22.8	23.5	23.7
Total domestic economy <sup>1/</sup>	86.5	88.7	91.0	92.6	94.8	97.4	100.4	102.9	104.7
<u>Percent of total</u>									
Farm sector	3.8	3.6	3.6	3.3	3.5	3.4	3.4	3.3	3.2
Nonfarm sectors	20.1	19.7	19.8	19.6	19.3	19.2	19.3	19.5	19.5
Total food and fiber sector	23.9	23.3	23.4	22.9	22.8	22.6	22.7	22.8	22.7
Total domestic economy	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Billion dollars</u>									
Value added by activity: <sup>2/</sup>									
Farm sector	30.3	43.1	43.0	47.8	44.3	45.6	54.6	67.0	66.8
Nonfarm sectors	210.1	219.9	240.6	275.3	306.5	340.4	374.0	414.8	466.0
Food processing	32.4	31.2	34.4	39.8	44.7	49.6	53.0	57.1	66.9
Resources and services	43.0	46.3	50.3	58.0	65.9	74.4	82.5	95.2	95.6
Manufacturing	42.7	44.2	48.4	56.4	62.3	68.4	76.8	83.3	98.6
Transportation, trade, and retailing	75.0	79.7	87.4	98.0	108.5	120.0	131.3	146.0	165.5
Eating establishments	17.0	18.5	20.1	23.1	25.1	28.0	30.4	33.2	39.4
Total food and fiber sector	240.4	263.0	283.6	323.1	350.8	386.0	428.6	481.8	532.8
Total domestic economy	1,185.9	1,326.4	1,434.2	1,549.2	1,718.0	1,918.0	2,156.1	2,413.9	2,626.1
<u>Percent of total</u>									
Farm sector	2.6	3.2	3.0	3.1	2.6	2.4	2.5	2.8	2.5
Nonfarm sectors	17.7	16.6	16.8	17.8	17.8	17.7	17.4	17.2	17.8
Total food and fiber sector	20.3	19.8	19.8	20.9	20.4	20.1	19.9	20.0	20.3
Total domestic economy	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1/</sup> Represents the available work force.<sup>2/</sup> Value added equals profits, rent, interest, wages, indirect business taxes, and depreciation.

## RESEARCH ARTICLES

### Methodology Selection for CCC Loans in Cash Receipts

Roger P. Strickland\*

Two series of cash receipts from the marketing of farm produced commodities are estimated and published in the Economic Indicators of the Farm Sector series. One series includes the net value of Commodity Credit Corporation (CCC) loans made and repaid, and the second new series includes only those loans which are not repaid and the crop forfeited to CCC (table 22). Budget constraints do not now permit the continued estimation of both series. Therefore, this paper reviews and analyzes the appropriate income accounting treatment of CCC loans in the USDA farm cash receipt series. The conceptual problem surrounding the appropriate income accounting of CCC loans is whether to treat CCC loans as borrowed funds or as income. Farm cash receipts should include only CCC loans forfeited if CCC loans are considered as borrowing.

CCC loan programs have been an important marketing tool for U.S. farmers for several decades. Prior to 1980, CCC loans were accounted for in USDA's farm income estimates by adding the value of new loans made to open market sales at the farm gate. Old loans repaid were subtracted in order to avoid double-counting when the commodity was subsequently marketed.

This procedure had been questioned on the grounds that, if CCC loans are indeed loans and not sales, they should be treated like other loans and distinguished from open market sales receipts. The alternative to including CCC loan payments as receipts when received is to account for only those loans which the farmers never repay, referred to as loans forfeited or liquidated. The value of loans forfeited or liquidated would be added to open market sales when the loan is terminated and the Government takes ownership of the commodity.

About 2 years ago, a decision was made to estimate two series of cash receipts from the marketing of farm-produced commodities, one including the net value of CCC loans made and repaid and the second including only those loans liquidated. At first, the plan was to publish both cash receipts series and the resulting two farm income series so as to acquaint users with the new series. After several years the old series would be discontinued. Both series of cash receipts and farm income were published in the 1980 and 1981 issues of the Economic Indicators of the Farm Sector series.

In one key aspect, the treatment of the CCC loans really is not critical to the estimation of net farm income. All production must be accounted for as marketed, either directly or via livestock, or added to inventory stocks. Thus, a change in quantity marketed due to a change in the treatment of CCC loans has an offsetting effect on quantity in

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Table 22--Crop cash receipts including  
and excluding net CCC loans, 1977-80

Year	Cash receipts			
	Excluding	Including	Difference	
	net CCC loans	net CCC loans		
Million dollars				
1977	45,060	48,650	-3,590	
1978	53,923	53,711	212	
1979	64,164	63,394	770	
1980	68,588	69,026	-438	

inventory. If net farm income is defined to include the value of inventory change, then the treatment of CCC loans will not substantially affect net farm income. It can, however, have a significant effect on realized net farm income, defined to exclude the value of inventory change.

The conceptual argument against the new series and supporting the old series is as follows. An analysis of the terms and payments under the CCC loans program indicates that, although a CCC loan does possess some attributes of other types of loans (bank, Production Credit Association, and others), the loan has several key attributes of a sale. In fact, a case can be made that a CCC loan is a sale to CCC or to the Government for a price that is at or above market price with an option (for a fee labeled as interest) to purchase an equal quantity at a later date, if it becomes advantageous to the producer.

CCC loans possess the following nonloan features:

1. The decision as to whether to "repay the loan" or "forfeit the collateral" and complete the sale is solely at the discretion of the payee.
2. If the farmer decides it is not desirable to pay the interest cost associated with the agreement, the loan is not repaid nor is it revoked, but the option of reclaiming the commodity is lost.
3. The collateral specifies a quantity and grade of the commodity held in reserve. It does not specify a particular bushel of grain in the way that an automobile loan specifies a particular automobile. So, the right to repay the CCC loan and reclaim a quantity of the commodity is really an option to buy a certain quantity at a given price. Under a true production loan from a bank or PCA that is secured by the commodity, the farmer would be



expected to repay the loan and dispose of the collateral. The farmer would bear all risk of a drop in the commodity price. Under a CCC loan, the farmer bears no downside risk and reclaims the commodity only if the current market price exceeds the loan or "call" price.

The Internal Revenue Service (IRS) allows the farmer the option of reporting the funds received either when the loan proceeds are received or when the contract is terminated, either by forfeiting and delivering ownership of the commodity to CCC or by reclaiming and selling the commodity. In cases where payments from CCC are reported when received but the option to reclaim and market the grain is exercised, only the portion of the sale value above the amount originally reported is taxable income reportable in the year of sale. Once a farmer selects one of the two options, permission to change must be requested from IRS. This requirement tends to discourage frequent year-to-year switches.

The test that IRS usually applies to determine when a payment becomes reportable income is the point at which the payee has control over the money to do with as he or she pleases. Thus, one can have reportable income before receiving money, that is, because payment is delayed due to an action or decision of the payee. One can have earned income, but it is not reportable income because the money is not yet available. For example, profit from the sale of common stock is not reportable until the settlement date, which is a week after the sale date. The seller knows on the day of sale how much profit was made but cannot get access to the funds until settlement date.

Since IRS allows the payee an option on when payments may be reported, this flexibility could be construed as evidence that it considers CCC payments to be income. IRS does not normally give taxpayers the opportunity to select the timing of payments to minimize their taxes; on the contrary, IRS has definite rules for determining when income is reportable.

The option granted by IRS gives the farmer two income tax strategies from which to choose. The CCC payments may be reported upon sale of the commodity instead of the receipt of loan disbursement. By continually rolling over a series of loans, the farmer could postpone reporting the sale of the crop placed under loan indefinitely or until the commodity is redeemed and sold. That may well occur during a year of high prices in which the storage bins are emptied.

Alternatively, the farmer can opt to report the payment as income when the loan is received. Under a progressive tax structure, taxes can be minimized by timing the sale of agricultural products to smooth the year-to-year variation in

taxable income reported. Postponing the reporting of receipts from CCC until the contract is terminated may result in reporting income from the sale of several years' production in a single year and in a year of high market prices.

Thus, the CCC commodity loans have attributes similar to those of other loan types, for example, repayment, interest, and collateral, but the disposition of the proceeds of CCC loans is solely at the discretion of the payee. The payee may opt not to pay the money back to CCC. The option to pay back would be chosen only if the grain could be sold for profit. In such a case, the farmer's additional income received in the current year would be the difference between the amount of the repayment to CCC and the receipts from selling the commodity on the open market.

In December 1981, a decision was made by the Farm Sector Analysis staff to discontinue both the estimation and publication of the new cash receipts series. Conceptually, questions had arisen concerning the appropriateness of defining receipts to producers from CCC commodity-loan programs as loans. Historical data necessary for the re-estimation of cash receipts, and thus net farm income, under the new definition are only available for about 4 years. New budget constraints will not permit the continued estimation of both series. To discontinue the old series would have left USDA without the long historical series for cash receipts and net income that are required to support time-series statistical and trend analysis.

Estimating Land  
Returns in  
Costs of  
Production

Cole Gustafson\*

Land is among the most difficult items to value in the costs of production budgets, whether based on share rents, cash rents, or an imputation for farmer-owned land. The latter value varies significantly since some operators purchased land long ago at relatively low prices while others have had to pay current market prices. To complicate matters, capital gains are not considered as a return in costs of production estimates, although land costs are fully charged as an expense. The purpose of this article is to clarify the procedures used to value land in the costs of production enterprise budgets.

Crop Land  
Allocation

Typically in the United States, a person raising crops has three methods of acquiring land for production: cash rent, share rent, and owner-operator. Cash rent means the operator pays a single fee for the right to use the land for one or more production periods. In share renting, the operator provides the machinery, labor, and a portion of the inputs needed to raise the crop and, in return, receives a portion of the crop. The landlord provides the land and the other portion of inputs in return for the remaining portion of the crop. An owner-operator raises crops on personally owned land. This person may or may not be making payments on the purchase; however, there are alternate uses for the land, which encourage opportunity cost calculations.

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**Cash Rent**                      USDA conducts periodic costs-of-production surveys to obtain information for calculating each cost including the land allocation. For the cash rent component, the producers are asked to report any cash rent paid. Between survey years, the cash rents are adjusted using the index of rents reported by ERS in Farm Real Estate Market Developments.

**Share Rent**                      The value of the crop is determined by multiplying the landlord's percentage of the production by the season average price. From this, the cost of inputs typically provided by the landlord is subtracted. This residual is the amount the operator forfeits for the use of the land and is the share rent cost.

**Owner-operator**                  For the owner-operator, cropland values by crop reporting district are weighted by crop acreages in these districts to produce a land value for each State. The land value derived in this way is then multiplied by the average annual interest rate charged for real estate loans by the Federal land bank to give an annual allocation. Average farm real estate taxes are included. USDA calculates the owner-operator value of the land by different methods to reflect two different situations. First, the value of land in the current year is used as calculated above to approximate the return to land a new entrant would require to stay in business. Second, a 35-year average of land values is used to reflect the position of the average operator. Approximately 3 percent of the farmland is sold each year. Theoretically, then, all land would change ownership over the 35-year period.

In 1981, the average cash rent for corn was \$63.80 (table 23). Share renting land cost the operator an equivalent of \$77.21. Although the larger 1981 yield would tend to raise the cost of share renting, the lower price received for the crop in 1981 was more than enough to bring the cost down from the 1980 share rent of \$93.54.

For corn, the cost of owning land may be more or less than the costs of renting, depending on when the land was purchased. Interest on land purchased over the past 35 years amounted to \$56.52. A new entrant, however, would have to allocate \$202.17 based on a current valuation of land at \$1,772.69 per acre.

The situation is reversed for peanuts. The owned land estimates are lower than the costs of cash or share renting because the rental rates include the cost of renting peanut allotments as well as the cost of renting land.

The composite allocation at current value is a weighted average of the share rent, the cash rent, and the owner-operator land allocation using current land values. The composite allocation at acquisition value is a weighted average of the share and cash rent allocations and the owner-operator land allocation using the 35-year average of

Table 23--Returns to land per acre, selected crops, 1981

Item	Corn	Wheat	Cotton	Peanuts
<u>Dollars</u>				
Returns to land:				
Cash rent	63.80	36.53	65.25	169.92
Share rent	77.21	35.28	37.44	154.92
Owner-operators, current value	202.17	94.89	142.47	85.87
Owner-operators, acquisition value	56.52	27.90	34.16	17.68
<u>Percent</u>				
Proportion of land values:				
Cash rented	19	10	19	54
Share rented	30	33	41	17
Owned by operators	51	57	40	29
Total	100	100	100	100
<u>Dollars</u>				
Composite land allocations:				
Current value	138.84	69.63	84.66	142.77
Acquisition value	64.03	31.17	41.38	122.99

land values. The weights needed to calculate the composite are obtained from the survey and are in proportion to each crop produced under each tenure situation.

For corn in 1981, as an example, \$63.80, \$77.21, and \$202.17 are multiplied by their respective weights of 0.19, 0.30, and 0.51 to arrive at the composite at the current value land allocation of \$138.84 per acre (table 23). The composite land allocation at acquisition value of \$64.03 is the weighted average of \$63.80, \$77.21, and \$56.52.

Production costs, as calculated by USDA, represent the portion of the crop produced by operators. Thus, the per acre return to land for the cash renter and the owner-operator can be divided by the total yield per acre to obtain a per unit return to land. When dividing the share rent return per acre, the operator's share of the yield is used, not the total yield per acre. Therefore, the share rent per unit and the resulting composites on a per unit basis cannot be multiplied by the total yield per acre in order to work back to the respective per acre allocation.

## Livestock Land Allocation

Land in the livestock budgets consists of the feedlots, pasture, and any land farm buildings occupy. The land charge for feed production is implicitly contained in the livestock budgets by using market prices for feeds or cost of production, whichever is applicable to a particular area based on the survey. Interest on the investment in land is not charged as a cost of production in the livestock budget but is left to be covered by residual returns. In contrast to the crop budgets, taxes on the land used for livestock purposes are included in the ownership cost of the budgets on a cash cost (except for rented or leased land). The land taxes are based on the current value of land.

## A Shortcoming

When land costs are imputed for the crop budgets, the financial situation of the farm operator is not directly obtained. Simply subtracting total costs from the revenues of production (yield x price) leaves the operator in what appears to be a very unfavorable position. However, not all the returns are being accounted for. Anticipated capital gains are a potentially significant return especially in crop production. The survey shows that most producers own a large portion of the land they operate. Investment in land may be an attractive hedge against inflation. The production of some commodities may be used to earn at least a portion of the costs incurred in owning land to obtain anticipated capital gains. USDA is currently developing a methodology for handling this return to land in the production cost computations.

## Income Estimates for Crop and Livestock Farms Using Census of Agriculture Data\*

As farms have become more specialized, estimating income by the Standard Industrial Classification (SIC) of farms has become more prominent. This article discusses methodology to estimate SIC farm income based on Census of Agriculture data. Comparability of data among the 1969, 1974, and 1978 censuses will be analyzed as well as comparability of census data with USDA data. The items to be examined are: farm numbers, farm marketings, other income items, and production expenses.

Data to estimate SIC income are not limited to the Census of Agriculture. SIC data are also available from the annual Farm Production Expenditure Survey (FPES). However, census data are much more statistically reliable because the census sample size includes all farms. The FPES includes a sample size of less than 10,000. The FPES will be examined at a later date as a possible data source to estimate SIC farm income between census bench mark years.

Type-of-farm classification based on the SIC shows the degree of agricultural specialization and the pattern of agricultural production. To be classified as a particular type, a farm must have sales of a particular product or group of products equal to 50 percent or more of the total value of all farm products sold during the year.

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The SIC consists of 13 types of farms in the 1978 Census. This article classifies the farms into two major categories, all crop farms and all livestock farms. However, the methodology to estimate income for the 13 types of farms is the same as for all crop and all livestock categories. The following types of farms are classified as crop farms: cash grain farms; cotton farms; sugar crop farms; other field crop farms; vegetable and melon farms; fruit and tree nut farms; horticultural specialty farms; and general crop farms. The following types of farms are classified as livestock farms: beef cattle, hog, and sheep farms; dairy farms; poultry and egg farms; animal specialty farms; and general livestock farms.

#### Number of Farms

Farms for the 1969, 1974, and 1978 censuses are compared in table 24. However, the 1969 and 1974 censuses did not summarize SIC data for farms with sales of less than \$2,500. The 1978 census was the first time the less-than-\$2,500-sales class has been summarized since the 1959 census. Second, the definition of a farm for the 1974 census was changed to exclude farms with sales of less than \$1,000.

In addition to these two factors, the Bureau of the Census found that the number of farms in the 1969 census should be increased 15 percent from 2.7 million to 3.1 million, and 10.7 percent in 1974 from 2.3 million to 2.6 million for undercounting. The majority of the undercount is for smaller farms, particularly those farms with sales of less than \$2,500. The undercount for farms with sales over \$2,500 was only 3.3 percent in 1969 and 4.7 percent in 1974. Distribution of total income and total expenses are not as greatly affected as per farm averages. For example, census farms with sales over \$2,500 accounted for 97.9 percent of total sales in 1969 and 99.2 percent in 1974.

USDA annually estimates the number of farms in the United States. Differences between USDA and the census total number of farms occurred because USDA adjusted its farm numbers for the census undercount and data collected in the USDA June Enumerative Survey. A detailed explanation of these differences can be found in the December 24, 1980, Farm Numbers publication by the Crop Reporting Board. In this article, it is assumed that the percentage distribution for the SIC types of farms for USDA and census are identical. In 1969 and 1974, the percentage distributions for farms with sales over \$2,500 are assumed to be the same as for all farms including farms with sales less than \$2,500. This assumption is not necessary in 1978 because data were available for all farms.

Type of farm classification expanded slightly between the 1969 and 1974 censuses. The number of farms in the other field crop category jumped from 31,000 farms in 1969 to 81,000 in 1974. This change resulted from alfalfa, field seed, hay, and timothy farms being classified as general farms in 1969 and other field crop farms in 1974. Four new SIC farm categories

Table 24--Comparison of number of census SIC farms

Type of farm	Sales over \$2,500			Sales less than \$2,500		All farms
	1969	1974	1978	1978	1978	
	Thousand farms					
Crop farms:						
Cash grain	369	580	525	68	593	
Cotton	41	31	30	2	32	
Tobacco	90	95	108	35	143	
Other field crops <sup>1/</sup>	31	81	86	52	138	
Vegetable and melon	20	20	25	10	35	
Fruit and tree nut	53	51	58	32	90	
Horticultural specialty	N/A	20	27	6	33	
General crop	<sup>2/</sup> 90	<sup>2/</sup> 51	45	27	72	
Total crop farms	694	929	904	232	1,136	
Livestock farms:						
Beef cattle, hogs, and sheep	648	494	705	332	1,037	
Dairy farms	261	196	166	2	168	
Poultry and egg	58	43	42	9	51	
Animal specialty	N/A	11	26	24	50	
General livestock	73	22	22	13	35	
Total livestock farms	1,040	766	961	380	1,341	
Subtotal, unadjusted:						
Crop and livestock farms	1,734	1,695	1,865	612	2,477	
Farms with sales less than \$2,500	<sup>3/</sup> 994	617	612	612	--	
Abnormal farms	2	2	2	--	2	
Total crop and livestock farms <sup>4/</sup>	2,730	2,314	2,479	612	2,479	
	Percentage distribution					
Crop farms:						
Cash grain	21.3	34.2	28.2	11.1	24.0	
Cotton	2.3	1.8	1.6	.3	1.3	
Tobacco	5.2	5.6	5.8	5.7	5.8	
Other field crops	1.8	4.8	4.6	8.5	5.6	
Vegetable and melon	1.1	1.2	1.4	1.6	1.4	
Fruit and tree nut	3.1	3.0	3.1	5.3	3.6	
Horticultural specialty	N/A	1.2	1.4	1.0	1.3	
General crop	<sup>2/</sup> 5.2	<sup>2/</sup> 3.0	2.4	4.4	2.9	
Total crop farms	40.0	54.8	48.5	37.9	45.9	
Livestock farms:						
Beef cattle, hogs, and sheep	37.4	29.1	37.8	54.2	41.8	
Dairy farms	15.1	11.6	8.9	.3	6.8	
Poultry and eggs	3.3	2.5	2.2	1.5	2.1	
Animal specialty	N/A	.7	1.4	3.9	2.0	
General livestock	4.2	1.3	1.2	2.2	1.4	
Total livestock farms	60.0	45.2	51.5	62.1	54.1	
Total crop and livestock farms	100.0	100.0	100.0	100.0	100.0	

N/A = Not available.

<sup>1/</sup> Includes sugar, Irish potatoes, hay, peanuts, and other field crop farms.<sup>2/</sup> Includes miscellaneous farms that have been allocated to crop and livestock farms.<sup>3/</sup> Includes 571,000 farms with sales of less than \$1,000 that would have been excluded from the 1974 and 1978 farm definitions.<sup>4/</sup> Number of farms has not been adjusted for census undercount.

were added in 1974. Horticultural specialty farms, animal specialty farms, general crop farms, and general livestock farms were previously combined in general or miscellaneous farms. A comprehensive explanation of these changes can be found in the 1974 Census of Agriculture, vol. II, part 8, Standard Industrial Classification of Farms.

Three growth trends in the number of farms by SIC may exist for census years 1969, 1974, and 1978 (table 25). The number of farms apparently is declining for cotton, dairy, and poultry and egg farms. An upturn is seen for tobacco, vegetable and melon, and other field crop farms.

A third category of farms is the shifting classification between cash grain farms and beef cattle, hog, and sheep farms. Their classification seems to follow the percentage distribution of total cash receipts between crop cash receipts and livestock cash receipts (table 26). Perhaps cash grain farmers shift to increased livestock production when it becomes profitable. Changes in prices received by farmers can also shift the SIC classification of a farm even though physical production practices remain the same. These significant increases and decreases for the two major types of farms complicate the methodology to estimate SIC farm income. Cash grain farms and beef cattle, hog, and sheep farms equaled about 66 percent of total farms in 1978 and accounted for 57 percent of total cash receipts.

#### Farm Marketings

The census divides the value of agricultural products into 14 major categories and summarizes them by 13 SIC types of farms. Farm marketings and their percentage distribution for the three census years are compared between crop and livestock

Table 25--Trends in number of SIC farms with sales of at least \$2,500

Type of farm	: 1969	: 1974	: 1978
		Thousands	
Declining SIC farms <sup>1/</sup>	360	270	238
Increasing SIC farms <sup>2/</sup>	141	196	219
Shifting SIC farms:			
Cash grain farms	369	580	525
Beef cattle, hog, and sheep farms	648	494	705
Subtotal, shifting farms	1,017	1,074	1,230
Unclassifiable for entire period <sup>3/</sup>	216	155	178
Total farms	1,734	1,695	1,865

<sup>1/</sup> Cotton, dairy, and poultry and egg farms.

<sup>2/</sup> Tobacco, other field crops, and vegetable and melon farms.

<sup>3/</sup> Horticulture specialty, general crop, animal specialty, general livestock farms, and fruit and tree nut farms.



Table 26--Comparison between census cash grain farms  
and beef cattle, hog, and sheep farms

Item	: 1969	: 1974	: 1978
Farm type	:	<u>Thousand</u>	
Cash grain	: 369	580	525
Beef cattle, hogs, and sheep	: 648	494	705
Total	: 1,017	1,074	1,230
	:	<u>Percent</u>	
Percentage increase:	:		
Cash grain	: N/A	57.2	-9.5
Beef cattle, hogs, and sheep	: N/A	-23.8	42.7
Total	: N/A	5.6	14.5
Percent of total:	:		
Cash grain	: 36.3	54.0	42.7
Beef cattle, hogs, and sheep	: 63.7	46.0	57.3
Total	: 100.0	100.0	100.0
Cash receipts	:	<u>Million dollars</u>	
Crop	: 19,606	51,090	53,711
Livestock	: 28,573	41,359	59,213
Total	: 48,179	92,449	112,924
	:	<u>Percent</u>	
Percentage increase:	:		
Crop	: N/A	160.6	5.1
Livestock	: N/A	44.7	43.2
Total	: N/A	91.9	22.1
Percent of total:	:		
Crop	: 40.7	55.3	47.6
Livestock	: 59.3	44.7	52.4
Total	: 100.0	100.0	100.0

N/A = Not available.

farms in table 27. USDA farm marketings are prorated in table 28 based on the census percentage distribution in table 27. USDA farm marketings for 1979 and 1980 are prorated based on the 1978 census distribution.

Farm Production  
Expenses and Other  
Income Items

Census data on selected production expenses, other income items, and other farm values are shown in table 29. The percentage distributions are used to allocate USDA expenses and other income items between crop and livestock farms. Production expenses are heavily weighted toward the livestock farms at 74.7 percent in 1969, 64.6 percent in 1974, and 66.3 percent in 1978.

Table 27--Comparison of census market value of products sold by SIC farms

Farm marketings	1969			1974			1978		
	Crops	Livestock	Total	Crops	Livestock	Total	Crops	Livestock	Total
Million dollars									
Market value of agricultural products sold:									
Grain	6,203	1,905	8,108	21,783	2,838	24,621	22,961	3,946	26,907
Tobacco	854	141	995	1,519	151	1,670	2,151	245	2,396
Cotton and cottonseed	955	96	1,051	2,197	63	2,260	3,026	74	3,100
Fieldseeds, hay, forage, and silage	314	587	901	1,575	427	2,002	1,695	617	2,312
Vegetables, sweet corn, and melons	1,214	57	1,271	2,282	57	2,339	3,188	68	3,256
Fruits, nuts, and berries	1,677	43	1,720	2,896	39	2,935	4,562	61	4,623
Nursery and greenhouse products	707	190	897	1,694	4	1,698	2,857	8	2,865
Other crops	1,448	233	1,681	3,926	222	4,148	2,960	133	3,093
Poultry and poultry products	24	3,883	3,907	62	6,129	6,191	55	8,518	8,573
Dairy products	55	5,363	5,418	227	7,967	8,194	173	11,092	11,265
Cattle and calves	684	12,403	13,087	2,219	16,082	18,301	2,431	27,381	29,812
Hogs and pigs	1/373	1/3,982	1/4,355	1,022	4,373	5,395	1,106	7,034	8,140
Sheep, lambs, and wool	N/A	N/A	N/A	64	384	448	58	581	639
Other livestock products	67	1,063	1,130	16	380	396	30	858	888
Subtotal, unadjusted farm marketings	14,575	29,946	44,521	41,482	39,116	80,598	47,253	60,616	107,869
Sales by farms with sales of less than \$2,500	N/A	N/A	935	N/A	N/A	697	N/A	N/A	N/A
Sales by abnormal farms	N/A	N/A	153	N/A	N/A	236	N/A	N/A	245
Total farm marketings	N/A	N/A	45,609	N/A	N/A	81,531	N/A	N/A	108,114
Percentage distribution									
Agricultural products sold:									
Grain	76.5	23.5	100.0	88.5	11.5	100.0	85.3	14.7	100.0
Tobacco	85.9	14.1	100.0	90.9	9.1	100.0	89.8	10.2	100.0
Cotton and cottonseed	90.9	9.1	100.0	97.2	2.8	100.0	97.6	2.4	100.0
Fieldseeds, hay, forage, and silage	34.8	65.2	100.0	78.6	21.4	100.0	73.3	26.7	100.0
Vegetables, sweet corn, and melons	95.5	4.5	100.0	97.6	2.4	100.0	97.9	2.1	100.0
Fruits, nuts, and berries	97.5	2.5	100.0	98.7	1.3	100.0	98.7	1.3	100.0
Nursery and greenhouse products	78.8	21.2	100.0	99.7	.3	100.0	99.7	.3	100.0
Other crops	86.1	13.9	100.0	94.7	5.3	100.0	95.7	4.3	100.0
Poultry and poultry products	.6	99.4	100.0	1.0	99.0	100.0	.6	99.4	100.0
Dairy products	1.0	99.0	100.0	2.8	97.2	100.0	1.5	98.5	100.0
Cattle and calves	5.2	94.8	100.0	12.1	87.9	100.0	8.2	91.8	100.0
Hogs and pigs	1/8.6	1/91.4	1/100.0	18.9	81.1	100.0	13.6	86.4	100.0
Sheep, lambs, and wool	N/A	N/A	N/A	14.3	85.7	100.0	9.1	90.8	100.0
Other livestock products	6.0	94.0	100.0	4.2	95.8	100.0	3.3	96.7	100.0
Total farm marketings	32.7	67.3	100.0	51.5	48.5	100.0	43.8	56.2	100.0

N/A = Not available.

1/ Includes sheep, lambs, and wool.

Table 28--USDA farm marketings prorated on basis of census data

Farm marketings	1969			1974			1978		
	Crops	Livestock	Total	Crops	Livestock	Total	Crops	Livestock	Total
Million dollars									
Grain	6,971	2,141	9,112	27,400	3,571	30,971	24,249	4,168	28,417
Cotton and cottonseed	1,240	124	1,364	2,813	80	2,893	3,382	83	3,465
Tobacco	1,113	183	1,296	1,907	190	2,097	2,340	266	2,606
Fieldseeds, hay, forage, and silage	252	471	723	1,288	350	1,638	1,267	460	1,727
Vegetable, sweet corn, and melons	1,919	90	2,009	3,197	79	3,276	4,266	92	4,358
Fruits, nuts, and berries	2,117	55	2,172	3,389	46	3,435	5,688	76	5,764
Nursery and greenhouse products	731	197	928	1,463	4	1,467	2,630	7	2,637
Other crops	1,724	278	2,002	5,030	284	5,314	4,533	204	4,737
Poultry and poultry products	27	4,321	4,348	62	6,066	6,128	51	7,910	7,961
Dairy products	63	6,133	6,196	261	9,184	9,445	195	12,495	12,690
Cattle and calves	657	11,915	12,572	2,160	15,659	17,819	2,304	25,944	28,248
Hogs and pigs	1/441	14,714	1/4,742	1,321	5,653	6,974	1,189	7,564	8,753
Sheep, lambs, and wool	N/A	N/A	N/A	64	385	449	41	412	453
Other livestock products	18	284	302	23	520	543	37	1,071	1,108
Total farm marketings	17,273	30,906	48,179	50,378	42,071	92,449	52,172	60,752	112,924

See footnotes at end of table.

continued--

Table 28--USDA farm marketings prorated on basis of census data--continued

Farm marketings	1979 2/			1980 2/		
	Crops	Livestock	Total	Crops	Livestock	Total
Million dollars						
Grain	30,196	5,190	35,386	34,221	5,881	40,102
Cotton and cottonseed	4,202	103	4,305	4,369	107	4,476
Tobacco	2,039	232	2,271	2,399	273	2,672
Fieldseeds, hay, forage, and silage	1,496	544	2,040	1,661	604	2,265
Vegetables, sweet corn, and melons	4,792	103	4,894	4,800	103	4,903
Fruits, nuts, and berries	6,358	84	6,443	6,386	86	6,472
Nursery and greenhouse products	2,975	8	2,983	3,163	9	3,172
Other crops	4,853	219	5,072	4,750	214	4,964
Poultry and poultry products	55	8,667	8,722	57	8,872	8,929
Dairy products	225	14,434	14,659	255	16,343	16,598
Cattle and calves	2,805	31,594	34,399	2,542	28,631	31,173
Hogs and pigs	1,227	7,800	9,027	1,212	7,708	8,920
Sheep, lambs, and wool	43	431	474	43	428	471
Other livestock products	42	1,199	1,241	44	1,270	1,314
Total farm marketings	61,308	70,608	131,916	65,902	70,529	136,431

N/A = Not available.

1/ Includes sheep, lambs, and wool.

2/ Prorated based on 1978 census data.

Table 29--Comparison of census production expenses, other income items, and other farm values

Item	1969 1/			1974 1/			1978		
	Crops	Livestock	Total	Crops	Livestock	Total	Crops	Livestock	Total
Million dollars									
Selected production expenses:									
Livestock and poultry purchased	333	7,584	7,917	968	8,832	9,800	1,024	15,186	16,210
Feed for livestock and poultry	231	6,661	6,892	882	12,484	13,366	739	15,250	15,989
Animal health costs	N/A	N/A	N/A	61	330	391	68	597	665
Seeds, bulbs, plants, and trees	492	346	838	1,358	416	1,774	1,958	676	2,634
Commercial fertilizer	1,186	921	2,107	3,646	1,382	5,028	4,373	2,002	6,375
Other agricultural chemicals, including lime	616	265	881	1,408	333	1,741	2,227	681	2,908
Petroleum products	816	942	1,758	1,870	1,105	2,975	2,850	1,907	4,757
Electricity and other energy	N/A	N/A	N/A	N/A	N/A	N/A	672	678	1,350
Hired farm labor	1,812	1,451	3,263	3,103	1,463	4,566	4,448	2,343	6,791
Contract labor	383	79	462	472	73	505	766	140	906
Customwork, machine hire, and machine rental	459	416	875	950	359	1,309	1,199	573	1,772
Total selected production expenses	6,328	18,665	24,993	14,678	26,777	41,455	20,324	40,033	60,357
Other income items:									
Government payments	1,444	924	2,368	161	105	266	N/A	N/A	N/A
Customwork and machine hire	263	208	471	409	186	595	427	226	653
Recreational income	12	27	39	10	29	39	N/A	N/A	N/A
Land rent to operator/landlord	N/A	N/A	N/A	223	178	401	N/A	N/A	N/A
Other farm values:									
Land and building	80,602	98,879	179,481	179,276	129,614	308,890	348,942	292,756	641,698
Machinery and equipment	10,040	12,262	22,302	26,410	17,547	43,957	45,226	34,013	79,239
Real estate debt	7,731	10,813	18,544	11,263	11,114	22,378	N/A	N/A	N/A
Nonreal estate debt	3,313	6,960	10,273	4,844	6,466	11,310	N/A	N/A	N/A
Percentage distribution									
Selected production expenses:									
Livestock and poultry purchased	4.2	95.8	100.0	9.9	90.1	100.0	6.3	93.7	100.0
Feed for livestock and poultry	3.3	96.7	100.0	6.6	93.4	100.0	4.6	95.4	100.0
Animal health cost	N/A	N/A	N/A	15.5	84.5	100.0	10.3	89.7	100.0
Seeds, bulbs, plants, and trees	58.8	41.2	100.0	76.5	23.5	100.0	74.3	25.7	100.0
Commercial fertilizer	56.3	43.7	100.0	72.5	27.5	100.0	68.6	31.4	100.0
Other agricultural chemicals, including lime	70.0	30.0	100.0	80.8	19.2	100.0	76.6	23.4	100.0
Petroleum products	46.4	53.6	100.0	62.9	37.1	100.0	59.9	40.1	100.0
Electricity and other energy	N/A	N/A	N/A	N/A	N/A	N/A	49.8	50.2	100.0
Hired farm labor	55.5	44.5	100.0	68.0	32.0	100.0	65.5	34.5	100.0
Contract labor	82.7	17.3	100.0	85.7	14.3	100.0	84.6	15.4	100.0
Customwork, machine hire, and machine rent	52.4	47.6	100.0	72.6	27.4	100.0	67.7	32.3	100.0
Total selected production expenses	25.3	74.7	100.0	35.4	64.6	100.0	33.7	66.3	100.0
Other income items:									
Government payments	61.0	39.0	100.0	60.6	39.4	100.0	65.4	34.6	100.0
Custom income	55.9	44.1	100.0	68.7	31.3	100.0	N/A	N/A	N/A
Recreation income	30.6	69.4	100.0	25.4	74.6	100.0	N/A	N/A	N/A
Land rent to operator income	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other farm values:									
Land and buildings	44.9	55.1	100.0	58.0	42.0	100.0	54.4	45.6	100.0
Machinery and equipment	45.0	55.0	100.0	60.1	39.9	100.0	57.1	42.9	100.0
Real estate debt	41.7	58.3	100.0	50.3	49.7	100.0	N/A	N/A	N/A
Nonreal estate debt	32.2	67.8	100.0	42.8	57.2	100.0	N/A	N/A	N/A

N/A = Not available.

1/ For farms with sales over \$2,500.

USDA expenses are allocated based on census data shown in table 30. Since data from the 1979 Farm Finance Survey has not been summarized, real estate and nonreal estate interest for 1978 are prorated on the basis of 1974 data. Other operating expenses are prorated on the basis of value of agricultural products sold. An example is cotton ginning expenses prorated from cotton sales. Some expenses such as building depreciation are prorated from the total of directly prorated expenses and indirectly prorated expenses.

The optimal proration method is to have census data directly available for all USDA expense categories. Direct data are available for 54.7 percent of total expenses in 1969, 56.6 percent in 1974, and 55.1 percent in 1978. The second best method would be to use census data that are correlated to a specific expense. An example is using total real estate debt to prorate indirectly real estate interest expenses. Indirectly prorated data accounted for 32.4 percent of total expenses in 1969, 28.8 percent in 1974, and 32.8 percent in 1978. Directly and indirectly prorated data accounted for 87.1 percent of expenses in 1969, 85.4 percent in 1974, and 87.9 percent in 1978. Remaining expenses are prorated in the same ratio as total prorated expenses (table 30). The 1979 Farm Finance Survey will provide data to prorate building depreciation, building repairs, and accidental damage. Therefore, 92.5 percent of total expenses can be prorated in 1978. The only major expense item without a proration basis in the Census of Agriculture is farm rent. The 1980 FPES that collected share and cash rent might be used to make the rent distribution.

#### Statement of Farm Income

Income statements for crop, livestock, and all farms are shown in table 31. The income statements exclude farm inventory change. The income statements for 1979 and 1980 are based on the 1978 census distributions. Even though the 1979 and 1980 estimates are limited, general trends in the income and financial conditions of crop and livestock farms are, perhaps, better understood than failing to use any estimate. Home consumption is prorated on the basis of the number of farms. Because data for recreational, rent, and Government payments income are not available from the 1979 Farm Finance Survey, the 1974 census data were used to prorate the 1978 USDA data.

Livestock farms accounted for a greater percentage of gross receipts than crop farms except for 1974. However, when comparing returns to operators, crop farms showed a greater percentage of the total returns except for 1969. Crop farms totaled more than \$6.4 billion, or 49.7 percent, of the returns to operators in 1969; \$21 billion, or 81.9 percent, in 1974; \$13.2 billion, or 60.4 percent, in 1978; \$14.5 billion, or 65 percent, in 1979; and \$12.5 billion, or 78.4 percent, in 1980. Except for 1969, per farm average returns to operators were much more profitable for crop farms than livestock farms. Per farm returns for crop farms equal 374 percent of livestock farms in 1974, 180 percent in 1978, 220 percent in 1979, and 429 percent in 1980.

Table 30--USDA production expenses prorated on basis of census data

Production expenses	1969			1974			1978		
	Crops	Livestock	Total	Crops	Livestock	Total	Crops	Livestock	Total
Million dollars									
Directly prorated:									
Livestock and poultry purchased	178	4,047	4,225	507	4,624	5,131	641	9,507	10,148
Feed for livestock and poultry	237	6,863	7,100	958	13,555	14,513	661	13,640	14,301
Animal health	--	--	1/N/A	75	411	486	82	713	795
Seeds, bulbs, plants, and trees	512	359	871	1,593	489	2,082	2,270	784	3,054
Commercial fertilizer	1,243	966	2,209	4,099	1,553	5,652	4,143	1,896	6,039
Other agricultural chemicals, including lime	706	303	1,009	1,331	315	1,646	1,978	605	2,583
Petroleum products	797	920	1,717	1,691	999	2,690	2,879	1,926	4,805
Electricity and other energy products	--	--	2/N/A	--	--	2/N/A	692	697	1,389
Hired farm labor	2,059	1,648	3,707	3,720	1,755	5,475	4,774	2,515	7,289
Contract labor	368	77	445	481	80	561	675	123	798
Custom work, machine hire, and machine rental	494	449	943	1,159	438	1,597	1,712	818	2,530
Total, directly prorated expenses	6,594	15,632	22,226	15,614	24,219	39,833	20,507	33,224	53,731
Indirectly prorated:									
Prorated on the basis of census value of machinery and equipment:									
Depreciation, motor vehicles	--	--	1,995	--	--	2,889	--	--	4,985
Depreciation, other machinery and equipment	--	--	2,438	--	--	4,009	--	--	6,439
Repairs, motor vehicles and machinery	--	--	1,846	--	--	2,992	--	--	5,029
Personal property taxes	--	--	417	--	--	444	--	--	5,598
Subtotal, depreciation, repairs, and personal property tax	3,015	3,681	6,696	6,209	4,125	10,334	9,732	7,319	17,051
Prorated on the basis of census value of land and buildings:									
Real estate taxes	827	1,014	1,841	1,399	1,011	2,410	1,493	1,252	2,745
Prorated on the basis of census value of real estate debt:									
Real estate interest	612	856	1,468	1,391	1,373	2,764	2,348	2,316	4,664
Prorated on the basis of census value of nonreal estate debt:									
Nonreal estate interest	475	959	1,434	1,169	1,560	2,729	2,099	2,803	4,902
Prorated on the basis of sales of various agricultural products:									
Other operating expenses	602	1,122	1,724	1,123	927	2,050	1,374	1,289	2,663
Total, indirectly prorated expenses	5,531	7,632	13,163	11,291	8,996	20,287	17,046	14,979	32,025
Nonprorated expenses:									
Net rent, all landlords	--	--	2,354	--	--	5,791	--	--	5,552
Depreciation, buildings	--	--	1,091	--	--	2,107	--	--	3,083
Repairs, buildings	--	--	618	--	--	673	--	--	1,198
Insurance, fire, wind	--	--	194	--	--	284	--	--	516
Accidental damage	--	--	131	--	--	124	--	--	196
Electricity	--	--	278	--	--	472	--	--	--
Other	--	--	591	--	--	843	--	--	1,247
Total, nonprorated expenses	1,801	3,456	5,257	4,607	5,687	10,294	5,164	6,628	11,792
Total production expenses	13,926	26,720	40,646	31,512	38,902	70,414	42,717	54,831	97,548

continued--

See footnotes at end of table.

Table 30--USDA production expenses prorated on basis of census data--continued

Production expenses	1979			1980		
	Crops	Livestock	Total	Crops	Livestock	Total
Million dollars						
Directly prorated:						
Livestock and poultry purchased	802	11,885	12,687	665	9,858	10,523
Feed for livestock and poultry	791	16,310	17,101	854	17,620	18,474
Animal health	91	793	884	101	881	982
Seed, bulbs, plants, and trees	2,527	873	3,400	2,908	1,004	3,912
Commercial fertilizer	4,660	2,131	6,793	5,960	2,728	8,688
Other agricultural chemicals, including lime	2,473	756	3,229	2,487	760	3,247
Petroleum products	3,825	2,558	6,383	4,944	3,307	8,251
Electricity and other energy products	817	824	1,641	886	894	1,780
Hired farm labor	5,467	2,879	8,346	6,108	3,217	9,325
Contract labor	771	141	912	861	157	1,018
Customwork, machine hire, and machine rental	2,151	1,027	3,178	2,235	1,068	3,303
Total, directly prorated expenses	24,375	40,179	64,554	28,009	41,494	69,503
Indirectly prorated:						
Prorated on the basis of census value of machinery and equipment:						
Depreciation, motor vehicles	--	--	5,698	--	--	6,150
Depreciation, other machinery and equipment	--	--	7,203	--	--	8,024
Repairs, motor vehicles and machinery	--	--	5,689	--	--	6,288
Personal property tax	--	--	591	--	--	1,606
Subtotal, depreciation, repairs, and personnel property tax	10,948	8,233	19,181	12,025	9,043	21,068
Prorated on the basis of census value of land and buildings:						
Real estate taxes	1,603	1,344	2,947	1,712	1,437	3,149
Prorated on the basis of census value of real estate debt:						
Real estate interest	2,822	2,784	3/5,606	3,357	3,313	3/6,670
Prorated on the basis of census value of nonreal estate debt:						
Nonreal estate interest	2,816	3,760	3/6,576	3,641	4,862	3/8,503
Prorated on the basis of sales of various agricultural products:						
Other operating expenses	1,662	1,402	3,064	1,486	1,544	3,030
Total, indirectly prorated expenses	19,851	17,523	37,374	22,221	20,199	42,420
Nonprorated expenses:						
Net rent, all landlords	--	--	6,115	-	-	6,597
Depreciation, building	--	--	3,489	-	-	3,863
Repairs, building	--	--	1,276	-	-	1,328
Insurance, fire, wind	--	--	671	-	-	531
Accidental damage	--	--	185	-	-	202
Electricity	--	--	1,358	-	-	1,440
Total, nonprorated expenses	5,681	7,413	13,094	6,266	7,695	13,961
Total production expenses	49,907	65,115	115,022	56,496	69,388	125,884

N/A = Not available.

-- = Expenses not prorated. 1/ Included in other prorated expenses. 2/ Included in nonprorated expenses. 3/ Prorated using 1974 Census of Agriculture because data from the 1979 Agriculture Census of Farm Finance are not yet available.

Table 31--Farm sector SIC income statement excluding inventory change

Item	1969			1974			1978		
	Crops	Livestock	Total	Crops	Livestock	Total	Crops	Livestock	Total
<u>Million dollars</u>									
Gross income:									
Farm marketings	17,273	30,906	48,179	50,378	42,071	92,449	52,172	60,752	112,924
Government payments	2,313	1,481	3,794	322	209	531	1,818	1,212	2,030
Custom hire income	284	225	509	625	285	910	1,044	553	1,597
Recreational income	15	35	50	20	59	79	28	84	112
Land rent to operator landlord	163	130	293	385	306	691	368	293	661
Value of home consumption	292	439	731	710	585	1,295	486	574	1,060
Total gross income	20,340	33,216	53,556	52,440	43,515	95,955	55,916	63,468	119,384
Production expenses	13,926	26,720	40,646	31,512	38,902	70,414	42,717	54,831	97,548
Returns to operators before inventory adjustment	6,414	6,496	12,910	20,928	4,613	25,541	13,199	8,637	21,836
<u>Thousands</u>									
Per farm averages:									
Number of farms	1,800	1,200	3,000	1,532	1,263	2,795	1,118	1,318	2,436
<u>Dollars</u>									
Gross receipts	11,300	27,680	17,852	34,230	34,454	34,331	50,014	48,155	49,088
Production expenses	7,737	22,267	13,549	20,569	30,801	25,193	38,208	41,602	40,044
Returns to operators before inventory adjustment	3,563	5,413	4,303	13,661	3,653	9,138	11,806	6,553	8,964

continued—

Table 31--Farm sector SIC income statement excluding inventory change--continued

Item	1979			1980		
	Crops	Livestock	Total	Crops	Livestock	Total
<u>Million dollars</u>						
Gross income:						
Farm marketings	61,308	70,608	131,916	65,902	70,529	136,431
Government payments	825	550	1,375	772	514	1,286
Custom hire income	1,312	695	2,007	1,364	722	2,086
Recreational income	31	91	122	33	98	131
Land rent to operator landlord	405	322	727	436	347	783
Value of home consumption	566	668	1,234	529	625	1,154
Total gross income	64,447	72,934	137,381	69,036	72,835	141,871
Production expenses	49,907	65,115	115,022	56,496	69,388	125,884
Returns to operators before inventory adjustment	14,540	7,819	22,359	12,540	3,447	15,987
<u>Thousands</u>						
Per farm averages:						
Number of farms	1,115	1,315	2,430	1,114	1,314	2,428
<u>Dollars</u>						
Gross income	57,800	55,463	56,535	61,971	55,430	58,431
Production expenses	44,760	49,517	47,334	50,714	52,807	51,847
Returns to operators before inventory adjustment	13,040	5,946	9,201	11,257	2,623	6,584



## Conclusion

Data deficiencies and definitional changes among the 1969, 1974, and 1978 Censuses of Agriculture make estimating farm income by type of farm difficult for years before 1978. Detailed SIC data from the 1978 Census of Agriculture and the 1979 Census of Farm Finance greatly improved the statistical basis to estimate net farm income by type of farm for 1978. Additional analysis of Census data is needed to estimate farm income for all thirteen SIC farm types. Analysis is also needed of the annual Farm Production Expenditure Survey to estimate SIC farm income for noncensus years.

The difference in farm income between crop farmers and livestock farmers was dramatic. Per farm returns for crop farms of \$11,806 in 1978 almost doubled the per farm returns for livestock farms of \$6,553. Per farm returns for crop farmers quadrupled livestock farmers in 1980. Farm income estimates by SIC type of farm greatly improved farm income and financial analysis.

**END**