INCOME AND ASSET VALUATION EFFECTS OF FOOD AND AGRICULTURAL POLICY — A PERSPECTIVE ON DATA AND ANALYSIS

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Traditionally, any discussion of food and agricultural policy may include topics as diverse as international commodity assistance, nutrition programs, natural resources, agricultural land and water conservation, and agricultural credit. However, all food and agricultural policy discussions invariably consider the relationships among these topics and various farm income and price support programs because economists have long recognized that the implementation of credit, consumer demand, research, and support policies affects the organization, resource use, and distribution and level of income and wealth within the farm sector. Although most research efforts have not focused on the effects that these programs may have on various types, sizes, or locations of farms, research has focused on the income distribution effects of farm price and income support programs. This circumstance has occurred for two reasons: (1) the expressed goal of the programs to improve the income situation of family farmers and (2) the level of federal outlays transferred to the sector through the programs. The primary questions researchers usually address are "Who benefits from these programs?" and "How do the economic viability and income levels of various types of farm families change as a result of these programs?"

In order to address two research problems, our paper focuses only on the distributional implications of traditional commodity programs, providing a related, but somewhat different, perspective of food and agricultural policy.

First, distributional analyses of commodity programs and income have been directed toward benefits and the level of federal outlays without directly addressing the issue of whether the distribution of benefits may or may not alter the distribution of income by size and type of farm. In general, these studies have compared the distribution of receipts and net income with the distribution of government payments in an effort to reach conclusions about the effect of payments on income distribution.

Second, previous studies have generally used aggregate sales class data, made up of heterogeneous farms, to analyze program effects. The use of aggregate sales class data for these studies is analytically incorrect because the implicit assumption that all farms within the sales class are homogeneous is incorrect. The authors do recognize that previous studies have been limited by data since only general sales class data has been available to date for research purposes. Nevertheless, since farms that choose to participate in commodity programs tend to differ in terms of size, commodities produced, and input mix from those farms which choose not to participate, conclusions drawn from aggregate data can be misleading. As Prescott and Baum have indicated, the distribution of farm types within and across sales classes is heterogeneous, making conclusions drawn from aggregate sales class data highly tentative. Consequently, we suggest that further research efforts concerned with farm income distribution should be based directly on aggregated farm level survey data that delineate participants from nonparticipants and that allow the measurement of the contribution of payments to participant cash incomes.

In the following available literature section we provide a brief discussion of the farm program limitations and scope of the characteristics of farm program participants and distribution of benefits based on special tabulations from the 1979 Farm Finance Survey; and then assess whether and to what extent benefits affected the distribution of income and wealth using similar tabulations from the 1982 Farm Production Expenditure Survey (FPES).

Income Distribution and Farm Programs — Historical Perspective

Bryant and others have provided an easily accessible and thorough discussion of the literature concerning the distribution of income and wealth [2]. A portion of their article discusses the income distribution consequences of farm programs and concludes, "The literature is not easily categorized and partitioned, an indication of the experimental nature of the techniques employed and the lack of consensus on appropriate methods for exploring equity issues." [2,p.25]. And "Studies of the income distribution effects of government programs are relatively recent and consequently suffer from the inadequacies of all new work: inappropriate data and the absence of good models." [2,p.29]. To directly deal with these problems, we also reevaluated the literature to develop a deeper understanding of the data and methods used in analyzing the effects of commodity programs on farm income and asset distribution [1; 3; 5; 7; 8; 13; 15; 16; 17; 18; 19].

In addition to the distribution of income, a related but separate set of studies has focused on the effects of commodity programs on the capitalized value of farm inputs, particularly land. Wilcox estimated that without price supports the residual earnings to farm real estate

investment would fall, leaving the capitalized value of such earnings (at 4 percent) only a fifth of their actual level [20]. Johnson, Seagraves, Shuffett and Hoskins, Reinsel and Krenz, Gaffney, and Robinson also studied the effects of programs on the capitalized value of inputs [7; 15; 16; 11; 3; 12]. Robinson suggests in summary that

> economic theory offers at least a general idea as to what effects income transfers into agriculture are likely to have on resource use and on the prices of factors of production . . . Income transfers presumably shift the demand schedule for factors of production to the right. This leads to bidding up the prices of factors with inelastic supply schedules and increased use of factors with more elastic supply schedules. In the short run, the supply of family labor is relatively inelastic. Therefore, one would expect income transfers to raise the average real income of farm families. Ultimately, this added income, in the absence of more favorable earnings opportunities outside of agriculture, would be capitalized into land values. At the same time, the demand for nonfarm inputs, especially fertilizer, chemicals and machinery, could be expected to increase. Since the supply schedules for these goods are presumably relatively elastic at the going market price, the effect would be mainly to increase sales of these items rather than to raise price [12, pp. 62–63].

These studies usually have measured income concentration using the Gini coefficient by assessing aggregate sales class data with inconclusive results. As Tweeten and Schreiner have argued, the logical relationship between farm receipts and government payments is not as simple as an analysis using Gini coefficients would suggest because of the heterogeneity of farms within homogeneously defined sales classes as well as the heterogeneity among farms receiving direct program benefits and those farms which do not participate.

We suggest four data and analysis refinements that could improve estimates of the commodity program effects on farm income distribution:

- Since sales class and other economic aggregates are composed of heterogeneous farm units, these farmers who choose to participate, receive direct benefits, and bear program participation costs should be distinguished from those who do not. This disaggregation would allow for a more correct cost/benefit determination.
- To measure the effects of commodity programs on income distribution, sources of income and expenses of participants and nonparticipants should be identified in detail.
- Before conclusions are drawn about program effects on income distribution, a separate determination of the benefit distribution must be made.

- To move beyond discussion of the distributional effects of commodity programs on income and focus on their input-pricing effects, information about input ownership in addition to knowledge of the income distribution, is required.

The authors recognize that these suggestions very easily burden readily available data since they call for use of farm level data on program participation including sources of income (especially payments); sales of commodities (including those affected by price support activities); expenses (including those affected by support programs); and asset ownership. Thus, to acquire the micro-data necessary for this study, data were obtained from two national probability surveys of the farm sector.

The Census of Agriculture conducted a Farm Finance Survey in 1979 as a follow-on survey to the 1978 Census of Agriculture. Special cross tabulations were obtained on the characteristics of farmers who reported government farm benefit programs. These data are efficient to provide background data to analyze the production, income, and net worth characteristics of operators who received some program benefits, but not to analyze income distribution.

To estimate commodity programs' effects on the distribution of income among farms, the Farm Production Expenditure Survey (FPES), jointly conducted by the Statistical Reporting Service and the Economic Research Service, was used. This annual on-farm enumerated survey provided data on expenses by type, production characteristics, government program participation, and farm-related income by source.

Since past analyses of the distribution of farm program payments have been limited in scope due to inadequacies in available published data, special tabulations from the Census of Agriculture's Farm Finance Survey were used to broaden and amplify the current perspective about the distribution of program payments.

Distribution by Acreage Class. Farmers who reported receiving farm program payments tended to be larger, in terms of acreage, than all farms combined (Table 1). Farms with less than 140 acres accounted for a substantially larger share of all farms receiving payments. Farmers who received payments and farmed more than 500 acres accounted for a third of program payment recipients, but only 15 percent of all farms. These farmers also accounted for 70 percent of reported payments.

Tenure. Three-fifths of all operators reported owning their operation with another 27 percent owning a portion of their operation. In contrast, a substantially larger percentage of operators reporting payments were part owners. An even larger percentage of crop insurance participants were part-owner or tenant operations (Table 2). This is consistent with other studies showing program participants being larger in terms of acreages operated and sales.

Table 1

DISTRIBUTION OF FARMS BY AVERAGE SIZE

Acres	Percent of Payment	All Farms	Farms Receiving		
			Farm Program Payments	ACP	Crop Insurance
			Percent		
1 to 9		8.5	.2	1.1	1.1
10 to 49	1.3	19.2	4.7	7.5	11.5
50 to 69		6.4	3.9	4.7	3.5
70 to 99	1.7	9.7	6.2	6.7	5.2
100 to 139		9.1	7.6	7.2	8.2
140 to 179	4.7	7.9	8.1	8.1	10.7
180 to 219		5.0	6.0	5.6	4.5
220 to 259	4.5	4.3	5.7	5.5	5.2
260 to 499	17.9	14.7	24.2	23.1	21.2
500 to 999	19.9	8.4	18.2	16.2	13.7
1000 to 1999	26.6	4.0	9.5	8.8	9.2
2000 or more	23.2	2.5	5.9	5.6	6.1

Source: Census of Agriculture

Table 2

DISTRIBUTION OF FARMS BY TENURE OF OPERATOR

Tenure	All Farms	Farm Reporting:		
		Farm Program Payments	ACP	Crop Insurance
		Percent		
Full owner	60.5	44.4	45.6	34.6
Part owner	27.5	43.4	43.3	49.0
Tenants	12.0	12.2	11.1	16.4

Source: Census of Agriculture

Distribution by Sales Class. When measured by sales volume, the payments were concentrated among larger farm units, with the largest 12 percent of farms (those with sales in excess of $100,000) having more than 44 percent of the reported payments (Table 3). These farms also accounted for more than two-thirds of farm product sales.

Commodity Specialization. The Standard Industrial Classification Code (SIC) provides one means of analyzing the distribution of participation and program benefits among specific farm types. Cash grain farms amounted to 23 percent of all farms, but accounted for 35 percent of the farms reporting receipts of program payments and about 41 percent of the farms with crop insurance (Table 7). Together cash grain and livestock farms accounted for nearly three-fourths of the farms which reported program payment in 1979.

While accounting for about a third of payment recipients, cash grain farms received 45.8 percent of government payments. Livestock farms

received about 30 percent of government payments while those with field crops received 13 percent. Vegetable and melon, fruit, horticultural, poultry, animal specialty, and general livestock farms together received about 2 percent of payments while accounting for about 10 percent of farm businesses.

Net Cash Income. Nearly 6 percent of all farms and 8 percent of farms which received program payments had negative net cash incomes in 1979 (Table 4). Farms with negative cash income received 13 percent of government payments. Meanwhile, farms with more than $30,000 in net cash income accounted for 24.5 percent of all farms, 33.3 percent of farms which received payments, and 50.9 percent of all government payments. Farms with relatively large cash incomes and farms with losses received a larger share of government payments than did farms with less than $10,000 net income.

Asset Values. Forty percent of all farms and 20 percent of farms which received program payments reported less than $100,000 in total farm assets (value of land and buildings). Based on this measure, farms with less than $100,000 in assets received 4.7 percent of payments (Table 5). Of the farms with payments, 80 percent had less than $500,000 in assets (compared to 89 percent of all farms), and received 43 percent of program payments. The 6.2 percent of farms with more than $1,000,000 in assets which received program payments accounted for 28.4 percent of those program payments.

In summary, as in previous program benefit studies, current data also shows that farmers with reported payments were relatively larger in terms of acreage and sales [4; 9]. Three-fourths of all farms were owner-operated units while only about two-fifths of farms reporting program payments were full-owner units; another 43 percent were part-owner units. Most program payments went to the operators of cash grain and livestock operations — consistent with payments being made only for cotton, food and feed grains. Program payments are also relatively concentrated with respect to net cash income and asset values. Based on cash income, the largest third of farmers reporting payments received half of these payments. The largest 6 percent of farms based on asset values received a fourth of these payments.

Income Distribution and Commodity Programs — Current Survey Data Perspective

To adequately analyze the distribution of income it is necessary to identify the products produced and inputs used on individual farms (to estimate potential revenue effects) and identify payment recipients (since payments go only to farmers participating in the programs). Commodity programs create a stream of income flows primarily in three ways: through market related price support activities; acreage reduction and other land diversion programs such as the payment in kind program; and direct income supplements such as deficiency pay-

Table 3

NUMBER AND SALES OF OPERATORS REPORTING PARTICIPATION IN GOVERNMENT FARM BENEFIT PROGRAMS BY VALUE OF SALES

	Farms Receiving Benefit From:									
	All Farms		Program Payments			ACP		Crop Insurance		
Value of Sales	Number	Share of Total	Number	Percent of All Farms	Share	Number	Share	Number	Share	Percent of Payments
Total										
Farms	2,354,225	100	306,672	13.0	100	405,482	100	43,270	100	
$1,000	122,751,492	100	21,242,906	17.3	100	28,690,882	100	2,946,262	100	100
Less Than $2,500										
Farms	546,667	23.2	20,727	3.8	6.8	34,941	8.6	2,301	5.3	
$1,000	576,416	.5	22,851	4.0	.1	40,972	.1	3,229	.1	1.5
$2,500 to $4,999										
Farms	326,227	13.9	24,688	7.5	8.1	34,879	8.6	3,659	8.5	
$1,000	1,149,430	.9	88,270	7.7	.4	123,518	.4	13.978	.4	2.0
$5,000 to $9,999										
Farms	302,512	12.8	32.680	10.8	10.7	44,248	10.9	5,340	12.3	
$1,000	2,123,906	1.7	234,635	11.0	1.1	3,120,139	1.1	39,836	1.4	3.8

continued

Value of Sales	All Farms		Farms Receiving Benefit From:							
			Program Payments			ACP		Crop Insurance		
	Number	Share of Total	Number	Percent of All Farms	Share	Number	Share	Number	Share	Percent of Payments
$10,000 to $19,999										
Farms	270,845	11.5	34,125	12.6	11.1	46,355	11.4	5,282	12.2	
$1,000	3,775,751	3.1	478,664	12.7	2.3	677,561	2.3	74,065	2.5	4.3
$20,000 to $39,999										
Farms	257,919	11.0	51,075	19.8	16.7	62,112	15.3	6,930	16.0	
$1,000	7,355,279	6.0	1,491,637	20.3	7.0	1,810,126	6.3	194,628	6.6	10.3
$40,000 to $59,999										
Farms	178,243	7.8	41,114	23.1	13.4	50,098	12.4	5,299	12.2	
$1,000	8,566,293	7.0	1,991,437	23.2	9.4	2,412,269	8.4	260,570	8.8	
$60,000 to $99,999										33.6
Farms	195,433	8.3	45,771	23.4	14.9	53,701	13.2	7,324	16.9	
$1,000	14,907,068	12.1	3,534,279	23.7	16.6	4,119,300	14.4	575,631	19.5	
$100,000 to $199,999										
Farms	173,737	7.4	37,301	21.5	12.1	50,437	12.4	4,567	10.6	
$1,000	23,528,261	19.2	5,100,492	21.7	24.0	6,897,155	24.0	592,865	20.1	22.7
$200,000 or more										
Farms	102,592	4.4	19.191	18.7	6.3	28,711	7.1	2,568	5.9	
$1,000	60,769,089	49.5	8,300,642	13.7	39.1	12,307,942	42.9	1,191,462	40.4	21.7

Source: Census of Agriculture

Table 4

DISTRIBUTION OF FARMS RECEIVING PAYMENTS BY NET CASH INCOME

Net Cash Income	All Farms	Farms Receiving			Percent of Payments
		Program Payments	ACP	Crop Insurance	
	Percent				
Less than 0	5.9	8.3	7.7	8.9	13.2
0 to 2,999	5.2	2.4	2.6	4.3	1.7
3,000 to 4,999	5.0	2.2	3.0	5.1	1.4
5,000 to 9,999	13.0	9.5	8.5	11.8	4.2
10,000 to 19,999	26.8	24.4	24.5	24.8	15.2
20,000 to 29,999	19.4	20.0	20.1	19.2	13.3
30,000 to 49,999	14.6	14.1	18.2	13.4	17.8
50,000 or more	9.9	14.2	15.5	12.5	33.1
Total cash income ($100,000)	59,983	8,753	12,094	1,200	–

Table 5

DISTRIBUTION OF FARMS RECEIVING PAYMENTS BY VALUE OF TOTAL FARM ASSETS[1]

Value of Assets	All Farms	Farms Reporting			Percent of Payment[1]
		Program Payments	ACP	Crop Insurance	
	Percent				
Less than $25,000	7.1	2.3	2.6	6.2	
25,000 to 49,999	10.2	4.1	4.7	8.0	4.7
50,000 to 99,999	23.5	13.3	14.7	12.2	
100,000 to 199,999	25.4	25.9	24.3	23.6	8.7
200,000 to 299,999	12.0	15.4	16.1	14.8	
300,000 to 499,999	10.7	18.1	16.9	15.9	29.6
500,000 to 699,999	4.7	8.8	8.7	8.6	
700,000 to 999,999	3.1	6.0	5.7	4.5	28.7
1,000,000 to 1,999,999	2.5	4.5	4.7	4.8	
2,000,000 to 4,999,999	.8	1.4	1.5	1.1	28.4
5,000,000 or more	.2	.3	.3	.1	

Source: Census of Agriculture

[1]Based on values of land and buildings.

ments. In turn, each one of these flows likely has a different effect on the distribution of income.

FPES data were used to analyze the distributional effects of program payments in 1982 and how receipts and expenses arising from these programs would have changed if commodity programs were not in effect. Consequently, the analysis is a partial equilibrium study in that all other sector behavior is assumed to remain unchanged, and in that the output mix of receipts and expenses is assumed to remain fixed. These assumptions were necessary since the authors did not have alternative, and more justifiable, methods for adjusting production patterns by farming unit. A remaining issue, not addressed in

this study, is to empirically measure the change in relative input and output prices and, thereby, the changes in use in response to government programs. Thus, although our study takes advantage of micro-farm level data, the analytical limitations and assumptions should be carefully noted.

Estimating Benefit Levels. The Food and Agricultural Policy Simulator, (FAPSIM), was used to estimate aggregate farm sector effects, given the commodity programs in 1982. FAPSIM is an annual econometric model that estimates a simultaneous price-quantity equilibrium for the livestock, grains, oilseeds, and cotton subsectors. Aggregate farm production, expenses, cash receipts, and net farm income are endogenously estimated. Farm prices and aggregate cash receipts were enhanced as a result of the price and income support programs (Table 6).

Since the effect of the changes in receipts on the distribution of farm income depends upon the mix of crop and livestock commodities produced and sold and the inputs purchased by type and size of farm within each sales class, receipts and expenses were changed by adjusting farmers' reported sales or expenses using FAPSIM results. Estimates of direct payments were taken directly from the FPES.

Sources of Income. Crop sales accounted for 44 percent of total sales on farms with sales of $500,000 or more, 46 percent on farms of $250,000 to $499,999 in sales, and less than 40 percent on farms of less than $10,000 in sales. Feed grains, wheat, soybeans, and cotton sales accounted for about 19 percent of total sales and less than a third of crop sales on farms with sales of $500,000 or more. In contrast, fruits and

Table 6

ESTIMATES OF THE EFFECT OF COMMODITY PROGRAMS IN 1982

Selected Commodities	Change from Base Estimate with Programs as Implemented					
	Acreage	Production	Use	Price	Cash Receipts	Production Expenses
	Percent					
Wheat	−7.2	−3.0	−4.3	+20.4	+16.2	
Corn	−4.6	−2.8	−3.6	+16.7	+2.8	
Sorghum	−4.1	−1.3	−.7	+14.0	+6.5	
Barley	−1.4	−1.1	+.5	+14.3	+8.2	
Oats	−1.7	−1.7	+1.6	+10.9	+6.2	
Cotton	+7.5	+5.4	−2.9	+11.8	+9.7	
Fluid milk		+1.1a	−2.7	+9.6b	+10.2	
Soybeans	−1.4	−1.4	−1.4	+9.6	+4.2	
Sugar				+24.4		
Peanuts				+27.3		
Total				–	+3.5	+.7

Source:

a. Fluid milk available for manufacturing use.

b. Dairy products.

vegetables accounted for more than 40 percent of crop sales and 20 percent of total sales on farms of $500,000 or more in sales. Only sales of cattle were more important as a source of revenue on these large farms. Sales of fruits and vegetables were also relatively important on farms which sold less than $10,000.

Feed grains, wheat, cotton, and soybean sales accounted for more than 60 percent of all crop sales on farms with sales of $20,000 to $250,000. For farms with average sales of $40,000 to $250,000, corn sales were, on average, the largest source of receipts. Even on farms with average sales of $250,000 to $499,000, feed grain, wheat, cotton, and soybean sales account for more than half of total crop sales and 28 percent of all sales. Cotton sales, were, on average, more important on farms with sales of $200,000 or more.

Distribution of Production Expenses. The distribution of production expenses among farms of different sizes depends upon the technology employed and the mix of commodities produced. Purchases of livestock and feed accounted for 42 percent of the cash expenses on farms with sales of more than $500,000. Meanwhile, farms in the $500,000 and over sales class spent proportionately less for fertilizer, lime, chemicals, seed, machinery repairs, and gas and oil than farms in all but the smallest sales classes.

Purchased feed accounted for a substantial portion of total cash expenses on all size classes of farms, amounting to more than 15 percent of expenses on farms of less than $2,500 in sales. Purchased livestock expenses fell considerably in the smaller size classes. Fertilizers, chemicals, seed, machinery repairs, and gas and oil proportionally increased on farms with more than $2,500 in sales but less than $500,000 in sales, reflecting a greater specialization of these farms toward crop production.

Percentage Distribution of Income — All Farms. Gross cash income from all sources was relatively concentrated. Farms in the $100,000 plus sales classes accounted for about 18 percent of farms and 73 percent of gross income (Table 7). These same farms had about 70 percent of total expenses. Thus, net cash income was also relatively concentrated among larger farms. Meanwhile, farms with less than $10,000 in sales showed a negative net cash income.

To compare the percentage distributions of gross and net cash income with a no program scenario, payments were eliminated as an income source on each farm having payments. The aggregate sales class data were then reaggregated using probability based expansion factors unique to each farm contained in the survey. The percentage distribution of gross income excluding payments differed little from the gross income measure including payments. Farms with sales in excess of $500,000 accounted for a 0.2 percent larger portion of gross income while farms with sales between $100,000 and $500,000 had about 0.2 percent less income. Other farms remained essentially un-

Table 7

PERCENTAGE DISTRIBUTION OF CASH INCOME FROM FARMING, ALL FARMS

Sales Class	Percent of Farms	Total Sales	Other Cash Income	Gov't. Pay-ments	Total Ex-penses	Gross Cash Income	Net Cash Oper-ating Income	Gross Cash Income Excluding Payments	Net Cash Operating Income Excluding Payments	Gross Cash Income Excluding Payments and Price Effect	Net Cash Operating Income Excluding Payment and Price Effect	Change in Per Farm Net Operating Income
$500,000 Plus	1.9	30.06	20.77	18.56	30.09	29.76	28.39	29.95	29.32	30.61	34.24	−24.5
$250,000 499,999	3.6	17.08	17.18	19.86	15.78	17.08	22.62	17.03	22.88	16.94	24.85	−31.2
$200,000 249,999	2.4	7.47	9.85	9.05	6.69	7.55	11.20	7.52	11.40	7.44	12.54	−29.9
$100,000 199,999	9.9	18.96	22.37	23.78	17.39	19.07	26.25	18.99	26.49	18.71	27.63	−34.1
$50,000 99,999	13.9	13.87	17.45	14.67	13.32	13.99	16.83	13.97	17.04	13.70	16.29	−39.4
$40,000 49,999	4.7	3.04	2.81	3.78	3.02	3.03	3.08	3.02	3.01	3.00	2.82	−42.6
$25,000 39,999	8.5	3.84	5.14	4.89	4.32	3.88	2.01	3.87	1.74	3.84	0.52	−83.8
$20,000 29,999	3.9	1.15	0.81	1.01	1.36	1.14	0.18	1.14	0.10	1.15	−.32	−1,025.0
$10,000 19,000	12.1	2.49	2.04	2.81	3.12	2.47	−.27	2.47	−0.57	2.51	−1.66	−278.7
$2,500 9,999	22.5	1.73	1.17	1.13	3.23	1.71	−4.76	1.72	−5.32	1.79	−8.02	−5.5
Average cash income per farm						71,888	13,667	70,700	12,479	66,688	8,559	−37.4

changed. These results are consistent with the sales of livestock and other non-supported commodities being relatively more important on the very largest and smallest farms while sales of program crops are relatively more common on mid-sized farms. Average income among all farms was estimated to be about 2 percent less under the assumption of no payments.

After adjusting the farm level net cash incomes to reflect estimated changes in both receipts and expenses, farms with more than $100,000 in sales showed a larger percentage share of net income. This arises because farms with $500,000 or more in sales sell more livestock, fruits, vegetables, and other non-supported commodities and purchase more feed and feeder livestock as inputs. Thus, these farms have a larger share of the adjusted sales and a slightly smaller share of expenses. But while farms with $100,000 or more in sales received a larger percentage share of the sector's remaining net cash income, their level of net cash income declined by a substantial amount. Overall, estimated net income per farm decreased by more than a third.

Distribution of Income — Participating Farms. Participating farms were more concentrated in the larger sales classes than all farms. Farms with over $100,000 in sales accounted for 25 percent of participating farms and 18 percent of all farms (Table 8). This result is consistent with the well documented observation that program participants tend to be larger. But participating operators in the $500,000 and over sales class had a smaller portion of sales, expenses, and gross and net cash income than did all farms with over $500,000 in sales because of the tendency for fruit, vegetable, horticultural, and the larger livestock operations, generally nonparticipants in commodity programs, to be concentrated in the largest sales class. These large farms had about 14 percent of corn and wheat, oat and barley sales; 17 percent of rice sales; 29 percent of sorghum sales; and nearly 62 percent of the cotton sales of participating farmers.

Meanwhile, participating operators with sales from $40,000 to $500,000 also had a larger percentage share of gross and net cash income than did all farms in these sales classes. Farms in these sales classes had 75 percent of the corn and wheat, barley and oat sales; two-thirds of the sorghum sales; and four-fifths of all rice sales.

The percentage of government payments was more concentrated among participating producers than for all farms. The largest 10 percent of participating operators received 50 percent of the payments. The percentage distribution of gross income, under an assumption of no program payments, differed little from the distribution including payments. Farms with $500,000 or more in sales had about a tenth larger share of income with the remaining change spread across other farm sizes. Payments on farms with $500,000 or more in sales compose a smaller portion of gross income than for other size classes. Thus it is reasonable that gross income for this size class would be less affected

Table 8

PERCENTAGE DISTRIBUTION OF CASH INCOME FROM FARMING, PROGRAM PARTICIPANTS

							— Percent —					
$500,000 Plus	2.1	23.39	20.10	18.86	24.70	23.26	17.25	23.36	17.03	23.96	18.36	−42.9
$250,000 499,999	4.8	18.25	18.60	20.05	17.46	18.26	21.59	18.22	21.80	18.25	24.38	−39.5
$200,000 249,999	3.6	8.93	10.73	9.14	8.18	9.00	12.44	9.00	12.89	8.96	15.04	−35.2
$100,000 199,999	15.0	22.72	23.01	24.04	20.73	22.73	31.11	22.70	32.07	22.45	35.77	−38.3
$50,000 99,999	19.4	15.16	15.81	14.87	14.42	15.19	18.37	15.19	18.84	14.88	18.37	−46.3
$40,000 49,999	6.7	3.31	2.66	3.74	3.32	3.28	3.14	3.27	3.06	3.24	2.65	−54.7
$25,000 39,999	11.4	4.10	5.16	4.89	4.74	4.14	1.64	4.13	1.19	4.09	−.98	−132.2
$20,000 24,999	4.3	1.06	.96	.98	1.28	1.06	.15	1.06	.03	1.06	−.62	−327.6
$10,000 19,999	12.8	2.09	2.17	2.68	2.72	2.09	−.54	2.08	−.98	2.09	−2.79	−176.5
$2,500 9,999	13.6	.90	.69	.66	1.95	.89	−3.50	.90	−4.07	.92	−7.07	−10.3
Average income per farm						91,608	17,697	89,485	15,574	83,321	9,494	−46.4

by the absence of payments. But gross income per farm would be about 2 percent less under a no payment option.

After adjusting farmer receipts and expenses for the estimated impacts of no farm program payments, farms with $100,000 or more in sales accounted for a higher percentage of net cash income than under the program option. This result likely occurs because even the larger participating farms receive nearly half or more of their total sales from livestock. In the absence of programs, livestock receipts were estimated to be lower but would not drop by as much as receipts for program crops. Expenses such as feed and purchased livestock would be lower and again contribute to an increased percentage of net cash income even though net cash income per farm was estimated to be lower under the no program option. Net cash income would decrease by a considerably higher percentage on the larger participating farms in comparison to all large farms.

In summary, results of this study show benefits to be skewed with a large proportion going to a small proportion of farms. As Robinson strongly suggested theoretically, our empirical study demonstrates that very likely the current set of farm programs only marginally affects an already unequal distribution of income among farmers based on sales class. As a further note, Herendeen also concluded that incomes would fall if farm programs were eliminated but there would be differences among regions due to product specialization. Although this study did not analyze changes in income among regions due to differences in farm size or products produced, our analysis did show that cash grain, livestock and dairy farms account for most of the specialized types of farms which received payments.

Asset Valuation Affects of the Commodity Programs

Robinson argued that changes in income due to the commodity programs would shift the demand schedules for factors of production. Since sector income is estimated to fall under a no program option, at least in the short term, the demand for the services of land to produce supported commodities would likely fall, and, given a relatively inelastic supply schedule, lead to a reduction in its value. Other relatively fixed inputs, such as owner supplied labor and machinery, would also likely have reduced values.

Calkins and DiPietre illustrated that farm programs related to land have had two opposing effects. The support programs tended to increase returns and the price of land, and regulatory programs tended to increase costs thereby reducing land prices. Given that returns would likely be less under a no program scenario, a present value formulation would also suggest that asset values would likely be lower.

The functional distributional issue is who owns the relatively fixed agricultural resources, particularly land and machinery, equipment, and livestock. Survey data indicate that livestock assets are generally

concentrated on farms with $100,000 or more in sales, while tractors and other farm machinery are relatively concentrated on mid-sized farms with sales of $50,000 to $500,000. Owned land, in terms of value, is relatively concentrated both in the mid-sized sales classes which held about 50 percent of the land and in the smallest size sales classes, which held about 20 percent of the land.

Rented land is also relatively concentrated in the mid-sized sales classes, with the 30 percent of farms indicating sales of $50,000 to $500,000 having about 70 percent of the leased land, based on value. These data suggest that reductions in asset values would likely substantially affect these operators and their landlords. Moreover, recent data on land leasing indicates a concentration in the Corn Belt, Northern Plains, Pacific, and Lake States. Since data describing who owns the leased assets in agriculture is not readily available, a better understanding of how changes in asset values would be redistributed among current members of the farm sector, rural and non-rural areas, and non-farm owners of farming assets will be left for future research.

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WORKSHOPS

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