



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Retail Value and Farm Income by Commodity Groups

By Harry C. Norcross

This article analyzes 1955 data on gross farm income, production expenditures, net income, and marketing charges, by major commodity groups. This piece of research is largely a byproduct of the Agricultural Industrial Relations Study of 1955 which provided some insights into the impact of purchases and sales of the farm economy. The framework of analysis is the same as that used in an earlier article published in the January 1952 issue of Agricultural Economics Research, "Some Relationships Between Agriculture and the General Economy," by Karl A. Fox and the author of the present paper. In the earlier article, data for the year 1947 were analyzed. The analysis in the article that follows shows the way each of seven major groups of expenditures is distributed among the commodity categories, and the percentage use that each commodity group makes of each expenditure group in its total production expenses.

BASIC DATA for this study were obtained largely from materials prepared in the Agricultural Marketing Service for other purposes—in many instances, a great deal of adaptation was necessary. Information from the 1955 Agricultural-Industrial Relations Study was used as a basis for the breakdown of the production expenditures in section 4 of table 1.

It was used also in arriving at some of the cash receipt items in section 2 of table 1. Information on food marketing charges in the first section, and that for nonfood products and byproducts for domestic use in the second section, was adapted from data prepared for the National Farm-Retail Food Marketing Bill. Most of the remaining information on cash farm income was based on commodity supply and distribution statistics worked up for use in the *National Food Situation*, issued by the Agricultural Marketing Service. The information on gross farm income and its breakdown in the third section was derived from estimates regularly prepared for publication in the *Farm Income Situation*, issued by the Agricultural Marketing Service. The new figures are based on the informed judgment of competent analysts and on other data and procedures that are commonly used for the purpose. The data are considered to be reasonably accurate estimates.

Net income of farmers reflects changes in the final demand for farm products and in production costs. Any attempt to allocate marketing charges or production expenses where a single input relates to joint products or different products is difficult conceptually and empirically. Allocations of these inputs by commodity groups are frequently based on fragmentary data and usually

require considerable judgment. Thus, net farm income by commodity group is necessarily a rough approximation.

Farmers' cash receipts for major groups of commodities are estimated regularly by the Agricultural Marketing Service. For some analytical purposes, it is helpful to know something of the impact of changes in marketing charges and production expenses on farmers' net income from various products. These approximations for some nine commodity groups are shown in table 1.

The estimates show retail value of farm food products, and their equivalent farm value by major commodity groups. They show cash farm income broken down on the basis of the type of user, both for food and nonfood. Gross farm income and production expenditures are also presented by principal items and realized net income of farm operators is derived for the nine major product groups. The table is a breakdown of estimates, by major commodity group of total production expenditures, cash receipts and gross and net farm income as published in the *Farm Income Situation*; estimates of food marketing charges as reported for the National Farm-Retail Food Marketing Bill in the *Marketing and Transportation Situation* issued by the Agricultural Marketing Service; and estimates of food sales and distribution upon which are based the consumption estimates published in the *National Food Situation* (table 2).

Production Expenditures

Estimates of production expenditures by commodity groups shown in the lower part of table

TABLE 1.—Marketing charges, production expenditures, and sources of gross and net farm income, by commodity groups, United States, 1955¹

Item	Meat animals	Dairy prod- ucts	Poultry and eggs	Fruits and vege- tables	Food grains	Feed crops	Cotton and cotton- seed	Tobac- co	Miscel- laneous	All com- modi- ties
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<i>Billions of dollars</i>	<i>Billions of dollars</i>	<i>Billions of dollars</i>	<i>Billions of dollars</i>	<i>Billions of dollars</i>	<i>Billions of dollars</i>	<i>Billions of dollars</i>	<i>Billions of dollars</i>	<i>Billions of dollars</i>	<i>Billions of dollars</i>
(1) Food marketing charges:										
Retail value of farm food products.....	12. 87	8. 77	4. 43	9. 94	² 6. 48	-----	-----	-----	³ 3. 75	⁴ 46. 24
Food marketing charges.....	6. 17	4. 83	1. 49	7. 37	5. 18	-----	-----	-----	2. 92	27. 96
Equivalent farm value.....	6. 70	3. 94	2. 94	2. 57	² 1. 30	-----	-----	-----	³ . 83	18. 28
Sources of:										
(2) Cash farm income: ⁵										
Sales for food used by domestic civilians ⁶	6. 73	4. 01	3. 02	2. 63	. 89	. 16	. 13	-----	. 71	18. 28
Food use by Armed Forces.....	. 19	. 13	. 07	. 24	. 02	-----	-----	-----	-----	. 65
Nonfood and by-products for domestic use.....	. 22	-----	. 22	-----	. 68	. 97	2. 06	. 90	⁷ 1. 69	6. 74
Exports and shipments.....	. 02	-----	. 02	. 13	. 46	. 15	. 41	. 32	. 18	1. 69
Interfarm sales.....	1. 19	-----	-----	. 01	. 03	1. 31	-----	-----	. 19	2. 73
Balancing item ⁷	- . 15	+ . 08	- . 13	- . 18	- . 09	- . 05	- . 03	-----	-----	- . 55
Cash receipts from farm marketings.....	8. 20	4. 22	3. 20	2. 83	1. 99	2. 54	2. 57	1. 22	2. 77	29. 54
(3) Gross farm income:										
Cash receipts from farm marketings.....	8. 20	4. 22	3. 20	2. 83	1. 99	2. 54	2. 57	1. 22	2. 77	29. 54
Home consumption.....	. 35	. 49	. 26	. 47	-----	. 01	-----	-----	. 12	1. 70
Rental value of dwellings.....	. 30	. 35	. 13	. 16	. 16	. 15	. 25	. 12	. 12	1. 74
Gross farm income ⁸	8. 85	5. 06	3. 59	3. 46	2. 15	2. 70	2. 82	1. 34	3. 01	32. 98
(4) Production expenditures: ⁹										
Purchased livestock.....	1. 19	-----	. 34	-----	-----	-----	-----	-----	-----	1. 53
Purchased feed.....	1. 06	. 89	1. 66	. 01	. 02	. 02	. 03	. 02	. 02	3. 73
Hired labor.....	. 52	. 47	. 08	. 53	. 06	. 13	. 59	. 16	. 20	2. 74
Operation of motor vehicles.....	. 66	. 47	. 20	. 23	. 27	. 35	. 21	. 10	. 28	2. 77
Miscellaneous goods and services.....	1. 05	. 70	. 27	. 61	. 34	. 44	. 55	. 17	. 32	4. 45
Taxes, interest, net rent.....	. 78	. 47	. 18	. 16	. 30	. 24	. 21	. 08	. 21	2. 63
Depreciation.....	. 70	. 92	. 28	. 26	. 30	. 47	. 20	. 12	. 50	3. 75
Production expenditures.....	5. 96	3. 92	3. 01	1. 80	1. 29	1. 65	1. 79	. 65	1. 53	21. 60
(5) Realized net income of farm operators:										
Gross farm income.....	8. 85	5. 06	3. 59	3. 46	2. 15	2. 70	2. 82	1. 34	3. 01	32. 98
Production expenditures.....	5. 96	3. 92	3. 01	1. 80	1. 29	1. 65	1. 79	. 65	1. 53	21. 60
Realized net income of farm operators ^{8 10}	2. 89	1. 14	. 58	1. 66	. 86	1. 05	1. 03	. 69	1. 48	11. 38

¹ Farm income and expenditure data as shown above differ slightly from the latest revisions.

² Bakery and cereal products. Farm value includes value of other bakery-product ingredients as well as value of flour, cornmeal, and so on.

³ Food only. Includes some cottonseed oil and corn products (wet process) in addition to products classified as "Miscellaneous" in sections 2 and 3 of this table.

⁴ Includes \$0.03 billion of marketing taxes, mainly on sugar.

⁵ Figures in section 2 are equivalent farm values of the respective commodity flows.

⁶ Same as row above, except that farm values of bakery and cereal products and miscellaneous foods have been redistributed according to farm-product categories of sections 2 and 3.

⁷ Includes changes in nonfarm stocks, statistical discrepancies, rounding errors, and so on.

⁸ Excluding Government payments.

⁹ Cash expenditures for current operations, plus allowance for depreciation.

¹⁰ Includes returns for the labor of farm operators and unpaid family workers, as well as for management and investment.

1 were obtained by breaking down the 1955 published estimates for each expenditure item. The breakdown was made first on the basis of all products produced for sale or for further production. Adjustments were then made to allow for products used for animal consumption. Proportional

shares of the expenditures in each of the feed producing sectors were assigned to the respective livestock sectors.

The methods used in making the original expenditure allocations varied greatly. In cases where the expenditure applied to only one com-

modity group there was little question about the allocation. Such expenditures included purchased livestock and some of the smaller miscellaneous items like cotton ginning, miscellaneous dairy supplies, milk hauling, and grazing fees. Since they required no breakdown other than what was readily available from the national estimates, they were assigned at once to meat animals, cotton, or dairy products, as the case might be.

Most of the expenditures, however, were common to many or all groups. In many of these

TABLE 2.—*Cash farm income by sources, United States, 1955*

Source	Cash farm income	
	Amount	Percentage of total
Total cash receipts from farm marketings.....	<i>Billions of dollars</i> 29.54	<i>Percent</i> 100.0
Sales for food use by domestic civilians.....	18.28	61.9
Food use by Armed Forces.....	.65	2.2
Nonfood products and by-products for domestic use.....	6.74	22.8
Interfarm sales.....	2.73	9.2
Exports and shipments.....	1.69	5.7
Balancing item.....	-.55	-1.8

cases, the breakdown for the allocations among the commodity sectors were based on the results of the 1955 Agricultural Industrial Relations Study. Part of such costs originated in the non-farm area of the economy. Some expenditure items represented inputs into agriculture from several different industries.

Much of the input distributing had already been done in the development of the Agricultural Industrial Relations Study. Some regrouping had to be done, however, to adjust from a 17-sector breakdown for the 1955 study to the 9 sectors used in this study. In making the sector distributions, information concerning purchases and sales by agriculture and industry were generally used. Such data were available in the 1955 Farm Expenditure Study, the 1954 Census of Agriculture, the 1954 Census of Manufactures, and a great deal of miscellaneous but authoritative information was obtained from such sources as agricultural bulletins, trade journals, and transportation and employment publications.

For example, in breaking down the national expenditure for fertilizer it was found that the contributing industries to the final product used were inorganic chemicals; phosphate rock; potash, soda, and borate minerals; and mixed fertilizers. By the use of such information as *Consumption of Fertilizers and Primary Plant Nutrients in the*

TABLE 3.—*Percentage distribution of major production expenditures by commodity groups, United States, 1955*

Commodity groups	Expenditures by farm operators for—						
	Total production expenditures	Purchased feed	Operation of motor vehicles	Depreciation on vehicles, equipment, buildings	Hired labor	Taxes, interest, and net rent to nonfarm landlords	Miscellaneous (including purchased livestock)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
All commodities.....	<i>Percent</i> 100.0	<i>Percent</i> 100.0	<i>Percent</i> 100.0	<i>Percent</i> 100.0	<i>Percent</i> 100.0	<i>Percent</i> 100.0	<i>Percent</i> 100.0
Meat animals.....	27.6	28.4	23.9	18.7	18.9	29.7	37.5
Dairy products.....	18.1	23.7	16.8	24.5	17.2	17.9	11.7
Poultry and eggs.....	13.9	44.5	7.3	7.5	3.0	6.8	10.0
Fruits and vegetables.....	8.3	.4	8.3	6.9	19.4	6.2	10.2
Food grains.....	6.0	.4	9.7	8.0	2.0	11.5	5.8
Feed crops.....	7.7	.7	12.5	12.4	4.8	9.2	7.4
Cotton and cottonseed.....	8.3	.9	7.6	5.3	21.5	7.9	9.3
Tobacco.....	3.0	.5	3.8	3.2	6.1	3.0	2.7
Miscellaneous.....	7.1	.5	10.1	13.5	7.1	7.8	5.4

TABLE 4.—Percentage distribution of production expenditures for major commodity groups, United States, 1955

Commodity groups	Expenditures by farm operators for—						
	Total production expenditures	Purchased feed	Operation of motor vehicles	Depreciation on vehicles equipment, buildings	Hired labor	Taxes, interest, and net rent to nonfarm landlords	Miscellaneous (including purchased livestock)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
All commodities-----	Percent 100.0	Percent 17.3	Percent 12.8	Percent 17.4	Percent 12.7	Percent 12.2	Percent 27.6
Meat animals-----	100.0	17.8	11.1	11.7	8.7	13.1	37.6
Dairy products-----	100.0	22.6	11.9	23.5	12.0	12.1	17.9
Poultry and eggs-----	100.0	55.2	6.7	9.4	2.8	6.0	19.9
Fruits and vegetables-----	100.0	.8	12.7	14.3	29.5	9.0	33.7
Food grains-----	100.0	1.2	21.0	23.4	4.2	23.6	26.6
Feed crops-----	100.0	1.5	20.9	28.1	7.9	14.7	26.9
Cotton and cottonseed-----	100.0	1.9	11.7	11.0	32.8	11.6	31.0
Tobacco-----	100.0	2.6	16.3	18.5	25.5	12.3	24.8
Miscellaneous-----	100.0	1.3	18.3	33.2	12.7	13.4	21.1

United States, published by Agricultural Research Service in September 1960, and per-ton prices obtained from *Agricultural Prices*, issued monthly by Agricultural Marketing Service, the retail values of the various fertilizing nutrient carriers (ammonium nitrate, ammonium sulfate, sodium nitrate, etc.) were derived. Those values were then cumulated for the inputs from each industry—inorganic chemicals, phosphate rock, and so on. The industry input values were assigned to the commodity groups on the basis of percentages developed by means of information on fertilizer applications to different crops provided in *Fertilizer Used on Crops and Pasture in the United States, 1954 Estimates*, released by the Agricultural Research Service, August 1957 (table 4).

National expenditures for such general items as farm mortgage interest, electricity, short-term interest, fire and wind insurance, and telephone fees were broken down into commodity categories by first allocating expenditures by major type of farms, using the type of farm data provided by the 1955 Farmers' Expenditure Study. These allocations of expenditures by type of farm were then broken down into the nine commodity sectors on the basis of the distribution of sales or value of production of these commodity groups.

The form taken by the expenditure data was determined by the commodity group breakdown of cash receipts ordinarily used in analyzing and reporting farm income. The expenditures allocated to each commodity group or sector refer only to those incurred in the production of the products sold. For example, the production expenditures assigned to feed crops include only the costs for producing corn, oats, barley, grain sorghums, or hay sold by farmers. Expenditures for production of feed fed on farms where grown are assigned to the livestock that consume the feeds rather than to feed crops, food grains, and other feed-producing sectors. Such homegrown feeds include some of the dairy products, food grains, feed crops, vegetables, oil-bearing crops, legume and grass seeds, and some miscellaneous crops. The adjustments are based largely on data furnished by the 1955 Agricultural Industrial Relations Study, which show the value of the flow of products from one agricultural sector to another. The expenditures for these transferable items are valued at slightly more than \$4 billion.

By far the largest part of this adjustment results from the transfer of feed crops to livestock, particularly to meat and dairy animals. Much smaller reallocations were due to transfers of food grains to meat animals and poultry and eggs, the transfer of small quantities of feed crops to all

TABLE 5.—*Farm food products: Percentage distribution of retail value, total marketing bill, farm value, and the ratio of farm to retail value by major commodity groups, United States, 1955*

Commodity group	Retail value	Total marketing bill	Farm value	Ratio farm to retail value
	(1)	(2)	(3)	(4)
All food products-----	Percent 100	Percent 100	Percent 100	Percent 40
Meat products..	28	22	36	52
Dairy products..	19	17	22	45
Poultry and eggs..	10	5	16	66
Fruits and vegetables---	21	26	14	26
Bakery and cereal products..	14	19	7	20
Miscellaneous--	8	11	5	22

groups for feeding work stock, legume and grass seeds to the crop groups for grass and cover crops, vegetables for feed to meat animals, and milk to meat animals for calf feeding. Because of these adjustments, expenditures formerly assigned to feed crops were reduced by \$4 billion; those to the miscellaneous group, \$50 million; and food grains, \$8 million. Meat animals, with an increase of nearly \$2 billion, received the largest addition to its expenditures, dairy products second with \$1.5 billion. Poultry and eggs, cotton, fruits and vegetables, and tobacco followed at much lower levels.

The breakdown in table 1 is based on groups of commodities instead of types of farming, and cash receipts as well as expenditures assigned to each sector are those which apply to the commodities included in the group only. As a result, there is no provision for allocating to any given sector the receipts and costs of joint or supplementary enterprises unless their products are included in that particular commodity group. For example, any income from or expenditures because of the sale of dairy animals for slaughter are transferred to meat animals, as the dairy category includes only milk and butterfat.

Marketing Margins

The distribution of marketing margins by commodity groups is shown in section 1 of table 1, along with the retail-store value of farm food products and the equivalent farm value. The estimates of the retail-store value of farm-produced foods were made by multiplying retail prices obtained from the Bureau of Labor Statistics by utilization of food commodities estimated by the Agricultural Marketing Service and published in annual supplements to the bulletin, *Consumption of Food in the United States, 1909-52*, Agriculture Handbook No. 62. Average monthly farm prices obtained from *Agricultural Prices*, published by the Agricultural Marketing Service, were multiplied by quantities of farm-produced foods to arrive at the equivalent farm values. The food-marketing charges were then derived by subtracting the equivalent farm values from the retail-store value of farm food products (table 5).

Comparison of 1955 with 1947

In general, the type of data used and the methods employed in handling them were similar in 1955 to those used in the 1947 study. Comparability was maintained so far as possible, but there were a few important exceptions. The material compiled in connection with the 1955 Agricultural-Industrial Relations Study provided greater precision in the methods used in working up some of the expenditure statistics in section 4 of table 1, and the statistics shown in tables 3 and 4. This was true particularly in computing the adjustments in expenditure data such as home-grown feed, seeds, and so on, transferred from the producing to the consuming sectors. In the earlier study, this adjustment was made for expenditures relating to the transfer of feed crops alone. The availability of more information for 1955 probably gave the recent data a little greater reliability. But, as shown previously, the total of all expenditure transfers except feed crops was small and the difference made by including them was not substantial.

The reason why there was so little change in gross income for all commodities from 1947 to 1955 was that prices received by farmers averaged 16 percent lower in 1955 than in 1947, while a rise of 17 percent in the volume of marketings was about offsetting (table 6).

TABLE 6.—*Gross farm income by commodities, 1947 and 1955*

	1947 ¹	1955 ²	Percent 1955 of 1947
	<i>Billions of dollars</i>	<i>Billions of dollars</i>	
All commodities.....	34.03	32.98	96.9
Meat animals.....	10.26	8.85	86.3
Dairy products.....	5.08	5.06	99.6
Poultry and eggs.....	3.50	3.59	102.6
Fruits and vegetables.....	3.76	3.46	92.0
Food grains.....	2.89	2.15	74.4
Feed crops.....	2.46	2.70	109.8
Cotton and cottonseed.....	2.41	2.82	117.0
Tobacco.....	1.11	1.34	120.7
Miscellaneous.....	2.56	3.01	117.6

¹ From table 1, page 4, *Agricultural Economics Research*, January 1952.

² From table 1, this article.

Production expenditures, on the other hand, rose 25 percent from 1947 to 1955 due mostly to higher prices of goods and services. The larger volume of farm marketings resulted in larger requirements for materials and services for production purposes. The prices farmers paid for goods and services used in production also rose about 16 percent in the 8-year period. With a substantial rise in production expenditures, realized net income of farm operators, the difference between the total production expenditures and the realized gross farm income, dropped from \$16.80 billion in 1947 to \$11.38 billion in 1955, a decline of nearly a third.

Prices farmers paid for most items used in production ¹ averaged much higher in 1955 than in 1947, particularly those that were purchased outside of agriculture. Prices in 1955 for farm machinery, motor vehicles, building and fencing materials, motor supplies, farm supplies, and fertilizer averaged about 15 to 50 percent above 1947. On the other hand, prices paid for purchased feed and purchased livestock in 1955 averaged 11 percent and 5 percent below 1947. Purchased livestock, purchased feed, hired labor, and the item including taxes, interest, and net rent in each instance was a smaller percentage of total expenditures in 1955 than in 1947. But

¹ Average annual prices paid obtained from AMS price reports as recorded by Statistical Services Section of Agricultural Economics Division, A.M.S.

TABLE 7.—*Realized net income of farm operators, 1947 and 1955*

Item	Realized net income	
	1947 ¹	1955 ²
	<i>Billions of dollars</i>	<i>Billions of dollars</i>
All commodities.....	16.80	11.38
Meat animals.....	6.07	2.89
Dairy products.....	2.03	1.14
Poultry and eggs.....	1.02	.58
Fruits and vegetables.....	1.85	1.66
Food grains.....	1.66	.86
Feed crops.....	1.65	1.05
Cotton and cottonseed.....	1.32	1.03
Tobacco.....	.72	.69
Miscellaneous.....	.48	1.48

¹ From table 1, page 14, *Agricultural Economics Research*, January 1952.

² From table 1, this article.

the operation of motor vehicles, miscellaneous goods and services, and depreciation were each a larger part of the expenditure total in 1955 than in the earlier year.

Changes in final product demand marketing charges and farm production expenses from 1947 to 1955 resulted in a drop in realized net income to \$11.4 billion in 1955 from a high of \$16.8 billion in 1947, or 32 percent. The rough allocation of production expenses and marketing margins estimated above suggests also that each of the major commodity groups shared in the decline (table 7).

Meat animals accounted for more than half of the decline in realized net income for all commodities. Cash receipts from meat animals dropped sharply because of relatively low prices in 1955, especially for hogs.

Food grains, feed crops, and dairy products also contributed substantially to the decline in total net income. The drop in net income from food grains reflected lower prices for all major products, smaller production of wheat, and higher prices paid for goods and services used in production. Cash receipts from feed crop marketings rose because increased production of all principal commodities more than offset the 29 percent drop in average prices. Nearly all cost items, however, rose to higher levels and total expenditures increased sharply.

Lower prices for dairy products were more than offset by larger marketings, and cash receipts rose slightly. However, total expenditures increased by about a fourth, with larger quantities of higher priced materials used in production.

The rest of the decline in net income from all commodities (about a sixth of the total) was shared by poultry and eggs, cotton and cottonseed, fruits and vegetables, and tobacco. In all instances, cash receipts in 1955 exceeded 1947. But in each instance, except for fruits and vegetables, expenditures increased substantially.

The study reported in this article makes available rough estimates of final product demand for each major group of farm products, the charges for marketing each of these groups of products, associated production expenses, and the resulting net farm income for each major commodity group. This type of presentation permits a rough indication of the effect of changes in final demand for farm products on the marketing system, demand by farmers for nonfarm inputs, and the impact of these changes on the net income of farmers.

Winn Finner, for a number of years our Assistant Editor, has left the Marketing Economics Research Division, Agricultural Marketing Service, to serve on a 1-year appointment with the Food and Agriculture Organization of the United Nations as a marketing adviser to the Government of Jamaica, to develop an improvement program in the national marketing of that country. Kenneth E. Ogren, Director of the Marketing Economics Research Division and a past contributor, has replaced Mr. Finner as Assistant Editor.

A mimeographed index for Volume XII is now available upon request from

Marketing Information Division
Agricultural Marketing Service
U.S. Department of Agriculture
Washington 25, D.C.