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# Perspective on Farm Size and Structure Provided by Value-Added Measures

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**Abstract.** *Much wider use of net value-added, instead of gross sales, can lend perspective on how farm size and structure are changing in the United States. Net value-added is a more appropriate economic measure to use in comparing farms by size or type on a consistent basis. Net value-added emphasizes the net returns to farm households from the use of their land, labor, capital, and management in agricultural production. Net value-added as a percentage of gross farm income is highest (over 60 percent) on vegetable, greenhouse and nursery, and cash grain farms. It is much lower on livestock farms that buy substantial amounts of their inputs (fed cattle and hogs). Wider use of net value-added directs attention to the economic impact of resources used in agricultural production in the form of returns to those resources.*

**Keywords.** *Net value-added, size distribution, farm structure*

Structural change in American agriculture, including the number and size distribution of farms, has prompted policy discussions on the implications of the continued concentration of production. For example, policymakers recently debated a proposal to limit direct Government payments to producers based on some maximum level of farm size. This proposal would have implied a limitation on the receipt of payments in addition to the existing \$50,000-per-person limit. The motivation behind the targeting of Government payments is often the preservation of family farms, that is, small and midsized farms. The Small or Limited Resource Farmers' Initiative, administered by USDA's Farmers Home Administration, bases eligibility for loan assistance, in part, on farm size.

The most common measure of farm size is gross sales. USDA has for some time tracked such characteristics as the distribution of income and wealth, and land tenure by gross sales classes. For

example, the first US net farm income estimates by the value of agricultural product classes were published in 1944 (USDA, 1988).<sup>1</sup> USDA now maintains an annual series of farm income, assets, and debt by gross sales classes beginning with the year 1960 (USDA, 1991). However, gross sales as an indicator of farm size do not consider inventory adjustments or Government payments. Gross sales from farms that produce their final product from large quantities of agricultural commodities used as intermediate goods, like fed cattle operations, overstate the farms' size and importance in the sector (Hanson, Stanton, and Ahearn, 1989).

Net value-added is another measurement of farm size and more appropriate to making relevant comparisons across different types of farming. Net value-added measures the share of net output that remains in the farm sector to reward all persons who have committed land, labor, capital, or management skills to these businesses.

The purpose of this article is to show how net value-added can be measured for individual farms to provide a more effective way of looking at the structure of agriculture. Systematic study of distributions of net value-added for individual farms can help the public appreciate more fully which types and sizes of farms are most important in adding to net agricultural output and why gross sales may give misleading impressions when studying structural change.

## Value-Added Accounts in an International Setting

Value-added estimates are frequently included in the aggregate national income and product accounts of many countries, including the United States (US Dept. Commerce, 1985). A standard set of economic accounts for agriculture has been established for the 23 participating countries in the Organization for Economic Cooperation and Development (OECD). Final agricultural output, gross value-added at market prices and at factor cost, net value-added, net operating surplus, and net income from agriculture are determined annually for each country (OECD, 1991). The defini-

<sup>1</sup>Sources are listed in the References section at the end of this article.

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tions and methodology used rely heavily on the original concepts established by the Statistical Office of the United Nations and the modifications and experience of the 12 member countries of the European Community (EC) in harmonizing their national accounts into one comprehensive system. Estimates of net value-added at factor cost are available for the United States and nearly all other countries from 1974 on. Hayami and Yamada (1991), using this basic methodology, have estimated annual compound rates of growth for both gross and net value-added from agriculture in Japan for 1880-1985.

Value-added measures are less common for individual firms. However, they are beginning to appear in the annual statements of a few US corporations as a part of what Meek and Gray (1988) termed "corporate social responsibility disclosure." A number of industrial corporations in Britain have published such estimates since the late 1970's (McLeay, 1983, Morley, 1979). Value-added for individual farms has been estimated in Canada (Brinkman, 1989), the United Kingdom (Murphy, 1989, Outlaw and Croft, 1982), and the EC (Farm Accounting Data Network, 1986). While details of estimation differ modestly, "value-added can be conceptually recognized as the residual after deduction of exhaustible inputs, that is to say purchased materials used up in the production process, depreciation charges (capital consumption), and as far as accounting procedures will allow, other purchased items such as energy and repairs to machinery" (Murphy, 1989). In some analytic work, net value-added is distributed finally to farm employees, landowners, lending agencies, and the farm operator-manager (Jenkins and Ahearn, 1991).

## Database for Analysis

Individual farm records from the 1989 Farm Costs and Returns Survey (FCRS) provided the basic data for this study. The FCRS has been conducted annually since 1984 by USDA. The 11,836 farmers interviewed for the 1989 survey statistically represented 1.7 million farms. Substantial experimentation and analysis on value-added calculations were also completed using FCRS data for 1986-88.

We do not include an estimate for the depreciation expense incurred by landlords and contractors because it is not available from our data source. The FCRS is a survey of farm operators. Operators of farm businesses are asked to provide estimates of expenses paid by contractors and landlords. Operators will generally not be able to provide reliable estimates of depreciation for landlords and

contractors. The effect of excluding landlord and contractor depreciation is to overstate net value-added by the amount of that depreciation.

## Issues in Defining Value-Added for Individual Farms

Although the value-added concept is basic and widely recognized by economists, variations exist in the details of measurement.<sup>2</sup> If value-added is being calculated for all industries in the economy, the accounting must adhere to strict rules that avoid double-counting. We are interested only in a single industry, agriculture, however, so we have made modifications to standard national income conventions.

Our specific accounting for value-added is as follows:

<i>Gross income</i>	<i>Deductions</i>
Commodity sales of operation	All production expenses except
Changes in inventory	Wages and related expenses
Government payments	Taxes
Value of home consumption of farm products	Interest
Farm-related income	Rent (cash and share)
Value of commodities produced under production contracts	
Value of share rents	

Gross farm income – Total deductions = Net value-added

## Accounting for Value-Added

For much of agriculture, government payments and programs are not a major issue. Prices and production for fruits, vegetables, hay, soybeans, many field crops, and all livestock except dairy are determined primarily in the marketplace. That is not the case for food and feed grains, peanuts, cotton, tobacco, sugar, and dairy products. Controls on production and imports of peanuts and sugar, for example, insure farm prices well above those in international markets. In contrast, direct payments are made to producers who participate in government programs that require reductions in acreage.

We include direct government payments as a source of gross income because these payments are

<sup>2</sup>"The value-added by a firm is its revenue from selling a product minus the amounts paid for goods and services purchased from other firms, or value-added = wages + interest + rents + taxes paid + profit" (Baumol and Blinder, 1979).

a component of market prices that would have occurred if government intervention were not so prevalent worldwide. Part of the payments can be regarded as rent for acres idled in commodity programs. The standard procedure used by OECD countries in their economic accounts for agriculture is to add "subsidies" to gross value-added (market prices) and then deduct "taxes linked to production" to obtain gross value-added (factor cost). For the United States in 1989, subsidies were \$9.4 billion and taxes were nearly \$4.7 billion in these accounts (OECD, 1991).

In the national income accounts, the value of the use of the operators' farm dwellings is included as part of value-added in the farm sector. It has been difficult historically to separate the value of the operator's house from the rest of farm real estate (USDA, 1988). More than a million farms produce less than \$10,000 in gross sales. Net value-added on many of these farms is negative or close to zero except for the rental value of the house, which in many cases is higher than the value of agricultural sales. Excluding the rental value of operators' dwellings emphasizes the economic contributions arising from agricultural production, a truer measure of value-added.

Depreciable capital is used up in production over more than one time period. The difference between *gross value-added* and *net value-added* is that net value-added includes a charge made for depreciation and obsolescence. Because net value-added more adequately reflects the true addition to the value of output than does gross value-added, our analysis is based on the "net" concept, that is, after a charge for the operator's estimated depreciation. Because this analysis is based on farm record data, the depreciation estimates are in large measure those made for tax purposes, and not what would have been ideal, that is, economic depreciation based on replacement value.

Rent as payment for the use of agricultural land can be either on a share or a cash basis. In the US national income accounts, agricultural land not owned by a farm operator is considered part of the real estate sector, not agricultural production. In the FCRS summaries, all agricultural land used for farming, regardless of ownership, is considered part of the farm sector. Since more land is being rented by farm operators (225 million acres in 1969 compared with 338 million in 1988) (US Dept. Commerce, 1990), rental payments, received or paid, are considered in calculating net value-added.

Farm businesses regularly buy such services as artificial insemination, aerial spraying, and ac-

counting. In the US national income accounts, labor is considered as net value-added to agriculture if the payments are made directly to individual workers. Contract labor, however, is not considered net value-added because the service is hired through a crew boss, even though these services are almost exclusively directed to production agriculture. Consequently, contract services are treated here like a purchased input that creates value-added for the services sectors.<sup>3</sup>

### Net Value-Added and the Size Distribution of Farms

The most common method of examining the size distribution of farms in the United States is by gross sales class (table 1).<sup>4</sup> The 34,000 largest farms with sales of \$500,000 or more in 1989 made up 2 percent of farms, 33 percent of gross cash income, and 41 percent of net cash income. By gross sales class, 31 percent of farms with sales of \$40,000 or more accounted for 90 percent of gross farm income.

When net value-added is substituted for gross sales (table 2), the production gap between farms is even more dramatic. Some 504,400 farms with net value-added of \$20,000 or more (29 percent of the total) accounted for 95 percent of the positive net value-added in the 1989 FCRS.

Nearly 35 percent of all farms recorded negative net value-added in 1989. Twenty-nine percent of these farms had net value-added between minus \$1 and minus \$9,999. Of greater interest, more than 100,000 farms with net value-added of minus \$10,000 or less reduced the value of the sector's contribution to the economy by 7 percent. These less productive farms call attention to the contrasts and variability within the farm sector. Some large farms with net value-added of \$500,000 or more (about 17,000) accounted for 35 percent of the sector's total net value-added. Another group of 26,000 farms at the other end of the distribution erodes almost 5 percent of the total. Size by itself does not ensure positive returns.

Just under 1 million of the 1.73 million farms showed net value-added between minus \$10,000 and \$10,000. The majority of these farms are operated by individuals whose primary source of

<sup>3</sup>It can also be argued that specialized agricultural services should be recognized as a separate component of the services sector and then considered as part of the larger food and agricultural industry.

<sup>4</sup>Gross sales data are based on values of all commodities removed from an operating farm but include both the operator's and the landlord's shares. This is true for statistics from USDA and the Bureau of the Census.

**Table 1—Distribution of farms by sales class, FCRS data, 1989**

Sales class	Farms	Gross cash income		Net cash income
		Number	Percent	
\$500,000 or more	34,318	2 0	33 4	40 9
\$250,000 to \$499,999	67,608	3 9	18 3	21 0
\$100,000 to \$249,999	192,870	11 1	25 0	30 8
\$40,000 to \$99,999	236,834	13 7	13 2	13 7
\$20,000 to \$39,999	180,040	10 4	4 7	2 7
\$10,000 to \$19,999	214,335	12 4	2 7	-0 7
Less than \$10,000	808,809	46 6	2 8	-8 4
Total	1,734,800	100 0	100 0	100 0

family income does not come from commercial agriculture. But, where farming is their primary business or where farm operations generate annual sales of \$50,000 or more, it would be useful to know more about the small margins and lack of value-added. Relative inefficiency may result from bad weather, natural disaster, or ill health, or it may reflect endemic problems: poor management, cash-flow problems related to high debt-to-asset ratios, or uncompetitive physical resources.

The 163,500 farms with net value-added of \$100,000 or more in 1989 accounted for 79 percent of aggregate net value-added (table 2). Average gross income per farm (operators cash income plus the value of inventory changes, and landlord and contractor shares) was large for each of these three classes (table 3). Average gross income for each of the classes provides additional perspective on the scope of these businesses. Farms with small value-added, either negative or positive, typically had small gross income. For the 35 percent of the farms with negative net value-added, most had gross income of \$20,000 or less. But farms with the largest negative value-added, -\$30,000 or less, had substantial gross income, averaging \$147,000.

Further analysis of the 45 percent of all farms that had net value-added between \$4,999 and minus \$4,999 indicated that all but 5 percent of these farms had gross income of \$20,000 or less. The small net value-added was primarily a function of the size of their business activity and associated lack of operating efficiency.

Net value-added on each farm was expressed as a percentage of gross farm income. The average percentage for each of the size classes is presented in table 3. In general, the larger size intervals for net value-added also had the highest average percentages, but there was an important amount of variability within each class interval. The average for all farms, 44 percent, is an average of totals—total net value-added for all farms divided by total gross income. Farms with value-added in the interval, \$40,000-\$99,999, at 43 percent,

**Table 2—Farm numbers by net value-added, FCRS data, 1989**

Net value-added class	Farms	Percent of net value-added	
		Number	Percent
\$500,000 and over	16,900	1 0	35 2
\$250,000 to \$499,999	29,900	1 7	15 6
\$100,000 to \$249,999	116,700	6 7	28 0
\$40,000 to \$99,999	183,100	10 6	18 0
\$20,000 to \$39,999	157,800	9 1	7 1
\$10,000 to \$19,999	129,900	7 5	2 9
\$5,000 to \$9,999	126,800	7 3	1 4
0 to \$4,999	368,900	21 3	1 1
-\$1 to -\$4,999	404,600	23 3	-1 2
-\$5,000 to -\$9,999	98,400	5 7	-1 1
-\$10,000 to -\$19,999	52,200	3 0	-1 2
-\$20,000 to -\$29,999	23,400	1 3	-0 9
Less than -\$30,000	26,200	1 5	-4 9
Total	1,734,800	100 0	100 0

closely approximated the average for the sector as a whole.

Negative percentages occurred on about 35 percent of the farms. Most of these are small businesses. Nevertheless, for the 5 percent with somewhat larger operations, it reflects an important negative reality that can be expected as one part of the structural dimensions of the farm sector.

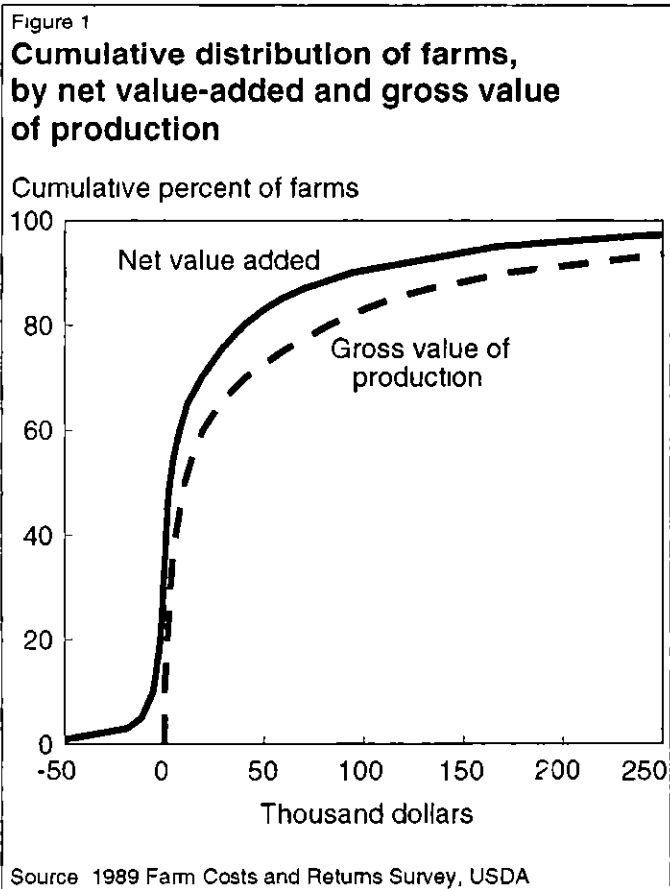
### Cumulative Distributions

A comparison of the size distributions of farms for value-added and gross farm income is presented in figure 1.<sup>5</sup> Two cumulative frequency distributions are compared for farms in the 1989 FCRS. The distribution for net value-added has an important negative component while gross farm income starts at 0. The two distributions are nearly contiguous in the 20- to 40-percent range. There is a much wider range of values, however, for gross farm

<sup>5</sup>Gross value of production is used as a proxy for gross farm income in this figure. The two distributions are virtually identical when plotted graphically.

**Table 3—Relationship of net value-added to gross farm income per farm, FCRS data, 1989**

Net value-added class	Farms	Average gross farm income	Net value-added as portion of gross farm income
	<i>Number</i>	<i>Thousand dollars</i>	<i>Percent</i>
\$500,000 and over	16,900	2,000	66
\$250,000 to \$499,999	29,900	607	56
\$100,000 to \$249,999	116,700	300	52
\$40,000 to \$99,999	183,100	147	43
\$20,000 to \$39,999	157,800	73	40
\$10,000 to \$19,999	129,900	41	35
\$5,000 to \$9,999	126,800	25	30
\$0 to \$4,999	368,900	10	19
-\$1 to -\$4,999	404,600	5	-37
-\$5,000 to -\$9,999	98,400	12	-61
-\$10,000 to -\$19,999	52,200	20	-71
-\$20,000 to -\$29,999	23,400	30	-81
Less than -\$30,000	26,200	147	-83
<b>Total</b>	<b>1,734,800</b>	<b>85</b>	<b>44</b>



income than for value-added in the range where 40-80 percent of the farms are located. The upper tail of gross farm income extends beyond that of net value-added. Figure 1 shows the large percentage of farms to be in the middle range for net value-added (minus \$5,000 to \$50,000).

### Net Value-Added by Type of Commodity Specialty

One of the problems with using gross sales as a measure of size of business in agriculture is the substantial amount of double-counting that occurs when a large proportion of those sales results from buying much of what is sold from other farmers. An example of this is livestock operations, which feed out animals purchased from other farmers. When considering structure questions or making comparisons across different types of farms, a size distribution based on net value-added will allow more appropriate evaluations of the differences observed.

### Crops

Table 4 gives an indication of the importance of differences in net value-added for various types of farms. Types of farms are ranked by the percentage that net value-added makes up of gross farm income. Thus, vegetable farms, where gross farm income came primarily from vegetables, had the highest ratio of value-added, 63.7 percent, in 1989. These are generally large farms, where hired labor is a major component of costs and hence a major contributor to net value-added. Some of the same logic holds for other types of farms with higher percentages: greenhouse and nursery, sugar rice, and cotton. Tobacco also requires substantial amounts of hired labor, but smaller enterprises are the general rule.

Cash grain enterprises are less labor intensive. Other cash grains (no dominant enterprise), corn, wheat, and other field crops use less labor and include a high proportion of farms with net value-

**Table 4—Net value-added by type of farm, FCRS data, 1989**

Type of farm <sup>1</sup>	Farms <sup>2</sup>	Mean value-added <sup>2</sup>	Portion of farms with net value-added of \$25,000 or more	Net value-added as portion of gross income
	<i>Number</i>	<i>Thousand dollars</i>	<i>Percent</i>	
<b>Crops</b>				
Vegetables	21,100	213	50	63.7
Other cash grain	17,400	69	29	63.1
Greenhouse, nursery	24,300	126	38	62.0
Sugar	3,300	193	82	58.1
Tobacco	53,000	20	16	56.9
Corn	84,900	64	51	54.9
Rice	3,200	122	80	53.1
Cotton	13,300	153	72	53.0
Fruit, nuts	58,700	51	26	49.6
Other field crops <sup>3</sup>	121,400	67	56	48.1
Wheat	54,600	36	38	47.4
Soybeans	63,300	23	26	45.6
Peanuts	7,000	45	57	42.5
Hay, forage	104,800	8	7	38.2
Unclassified	186,200	5	4	46.2
<b>Livestock</b>				
Cow-calf	496,400	20	14	49.7
Poultry	33,500	163	56	42.5
Dairy	140,000	65	64	38.7
Other livestock	80,700	21	22	30.8
Hogs	74,600	23	25	27.9
Sheep, wool	27,100	4	3	18.5
Fed cattle	65,900	29	21	15.5

<sup>1</sup>Type of farm classified on the basis that 50 percent or more of the value of production comes from that commodity

<sup>2</sup>Numbers rounded to facilitate comparisons

<sup>3</sup>Includes farms where no single crop like sugarbeets, soybeans, peanuts, cotton, tobacco, or potatoes accounted for 50 percent of the value of production

added between \$10,000 and \$100,000. Soybeans and peanuts also have similar characteristics.

In contrast, hay and forage includes a large number of small units where it is likely that off-farm income is the primary source of family income. A large number of "unclassified" farms (10.7 percent of the total) are primarily made up of operations with small gross incomes.

### Livestock

More than 28 percent of all farms were classified as cow-calf operations and 8 percent as dairy farms. An indication of their structural dispersion is provided in this frequency distribution:

Net value-added	Cow-calf farms	Dairy farms
-\$10,000 or less	28,600	5,400
-\$5,000 to -\$9,999	33,000	3,200
-\$1 to -\$4,999	144,100	3,200
\$0 to \$4,999	137,500	6,700
\$5,000 to \$9,999	41,800	5,400
\$10,000 to \$24,999	43,700	20,200
\$25,000 and over	67,600	89,200

Most of the cow-calf enterprises are small in terms of net value-added. While some enterprises sustained losses, more than 110,000 farms had net value-added of \$10,000 or more.

In contrast, dairy farms had a substantially different distribution. Most of these farms furnished employment for more than one worker. More than 75 percent of the dairy farms had a net value-added of \$10,000 or more. In general, the ratio of value-added to gross income rises as farm size increases, more labor is employed, and less purchased inputs are used per unit of gross income.

Fed cattle and sheep and wool farms are at the other end of the distribution in terms of value-added per unit of gross income. Purchases, both animals and feed, make up a much larger proportion of every dollar of gross income for fed cattle. In the case of sheep and wool farms, small enterprises on part-time farms account for most of the numbers and the relatively low ratio. About 1,000 sheep and wool farms showed a net value-added of \$25,000 or more, where value-added per

dollar of gross income was about 50 percent, more nearly like cow-calf operations

### Stability of Net Value-Added to Gross Income by Type of Farm

Similar ratios were calculated using the FCRS data sets in 1987 and 1988 with a somewhat different methodology for classifying types of farms and less complete data for landlord expenses and contract items. For some types of crop farms, like greenhouse and nursery, the stability across 3 years is surprisingly constant (64, 66, and 62 percent), as it was for cotton (55, 53, and 53 percent). For others, like wheat, there is substantial variation (58, 67, and 47 percent). The differences in prices received during 1987-89 explain an important part of the year-to-year variability.

The stability of the cow-calf ratios over the 3 years was also significant (47, 49, and 50 percent). Similar percentages calculated for dairy farms were also stable (41, 37, and 39 percent). Fed cattle generated the lowest numbers (8, 14, and 16 percent) in each of the years. The numbers for poultry and hogs were more variable, in part related to changing prices received in the different years.

If one wants to find a common denominator in looking at the size distribution of businesses in a State or region, these ratios of value-added to gross income provide a rough method of calculation (Purcell, Eddleman, Kunz, 1982). Thus, one could recognize that \$1 million of gross income from fed cattle is about equal to \$245,000 of gross income from vegetables in terms of value-added ( $\$1 \text{ million} \times 0.155 = \$155,000$ , and  $\$245,000 \times 0.637 = \$156,000$ ). In a similar manner, \$400,000 of gross income on a dairy farm equals \$1 million of gross income for fed cattle in value-added terms.

### Aggregate Value-Added by Type of Farm

Aggregate output from the farm sector can be effectively described in terms of value-added by type of farm and commodity specialty (table 5). All the FCRS farms were included in one or another of the commodity classifications. Cow-calf and dairy have the two largest aggregates, followed closely by "other field crops." The calculation of net value-added increases the relative importance of crops compared with an equivalent table based on the value of sales. Vegetable, greenhouse and nursery, and fruit and nut farms gain greater visibility among farms where crops are central to production.

The various types of farms classified as primarily crops accounted for \$34 billion, 52.6 percent of the

**Table 5—Aggregate value-added by type of farm, FCRS data, 1989**

Type of farm	Farms	Aggregate net value-added
	Number	Million dollars
Cow-calf	496,400	9,684
Dairy	140,000	9,107
Other field crops	121,400	8,142
Corn	84,900	5,453
Poultry	33,500	5,451
Vegetables	21,100	4,494
Greenhouse, nursery	24,300	3,050
Fruit, nuts	58,700	2,979
Cotton	13,300	2,042
Wheat	54,700	1,966
Fed cattle	65,900	1,890
Other livestock	80,700	1,725
Hogs	74,600	1,721
Soybeans	63,300	1,461
Other cash grain	17,400	1,208
Tobacco	53,000	1,056
Unclassified	186,200	974
Hay, forage	104,800	864
Sugar	3,300	633
Rice	3,200	390
Peanuts	7,000	313
Sheep, wool	27,100	117
Total	1,734,800	64,720

sector aggregate. Livestock farms provide \$29.7 billion, nearly 46 percent. The unclassified farms make up the other 1.5 percent. Net value-added puts the contributions of the different types of farms into an economic context where returns to land, labor, capital, and management are emphasized.

### Relative Importance of Type of Farm by Gross Sales and Value-Added

Value-added provides a different relative ranking for different types of farms compared with one based on gross sales (table 6). On most livestock farms, except for cow-calf operations, gross sales yield a higher relative ranking or suggest greater importance than does value-added. Value-added emphasizes net additions to output. Purchased feed and purchased feeder animals are deducted from gross income in calculating value-added. Therefore, for farms that specialize in fed cattle, the difference between gross sales and value-added is substantial. In contrast, for cow-calf operations, where purchased inputs are relatively much smaller, the value-added measure increases the rank in percentage terms. For most crop farms, value-added consistently increases the relative rankings (table 6).



**Table 6—Impact of the value-added measure on relative ranking of selected types of farms, FCRS data, 1989**

Type of farm	Percent of aggregate value for United States	
	Gross sales	New value-added
	Percent	
Livestock		
Cow-calf	12.4	15.0
Dairy	16.0	14.1
Fed cattle	8.8	2.9
Hogs	4.6	2.7
Crops		
Other field crops	11.1	12.6
Corn	6.4	8.4
Vegetables	5.0	6.9
Wheat	2.4	3.0

## Conclusions

Net value-added provides a more accurate economic assessment of the relative importance of individual farms and types of farming than traditional approaches. Size of business as measured by net value-added is described in terms of what has been added to economic output as a result of business operations. It calls attention to investments in the productive resources of farming—wages, interest, rent, and management return.

More attention directed to estimating value-added from farming, and its distribution across farms, will provide policymakers with useful information for understanding how changing conditions will affect different types of farm businesses in the context of national and local economies. More specifically, as a measure of farm size, net value-added insures that inventory adjustments are considered, government payments are recognized where appropriate, and the contributions of firms with large amounts of purchased agricultural inputs are treated in a fashion similar to other types of producers. For example, the very large sales per farm or ranch of a number of fed cattle operations are more accurately assessed because purchases of feeder cattle and feed are deducted in calculating net value-added. Crop farms increase in relative importance in terms of their contribution to sector returns to resource use. Most livestock farms command less of the aggregate for net value-added than for gross income or gross sales. Greater visibility given to value-added rather than gross sales or net farm income will enhance public understanding of economic contributions from agricultural production.

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**Appendix table 1—Calculation of net value-added  
averages, all specialized wheat farms, FCRS data,  
1989**

Description	Average per farm
	<i>Dollars</i>
Gross farm income	
Commodity sales of farming operation	47,605
Changes in inventory	5,155
Government payments	11,947
Value of home consumption of farm products	176
Farm-related income	4,256
Value of commodities produced under production contracts	72
Value of share rents	8,592
Total	77,803
Deductions, except compensation to labor, taxes interest, and rent	41,822
Gross farm income - deductions = net value- added	35,981