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Value-Added Contributions by Agricultural Cooperatives

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Abstract

Using a data set developed by USDA/Rural Development Administration's Cooperative Service, wealth creation by agricultural cooperatives was quantified by value-added measurement. Small sized cooperatives generated more value-added per member than medium-sized cooperatives. Cooperative type had less influence on value-added. Value-added amounts created per member were similar for marketing and supply cooperatives. Employees received the largest portion of value-added while members received the second largest. As marketing activity increased, the percentage of value-added going to members tended to increase.

Value-Added Contributions by Agricultural Cooperatives

Jerry C. Namken
E. Eldon Eversull
David S. Chesnick

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Preface

The purpose of this research was to study the value-added concept and its usefulness to cooperatives as a measure of economic performance. Current industry-accepted performance measures usually evaluate individual operations or investments and, used singly, are inadequate for assessing overall performance.

Knowledge of overall performance is important to decisions affecting efficiency and competition in the marketplace. Value-added estimation has been presented as a method of evaluating the wealth an entity has been able to create by its own and its employees' efforts.

Because cooperatives have distinctive business features and exist as vertical integrations of production agriculture, gross sales, currently used as an indicator of overall performance measurement, may not be appropriate. Some cooperatives produce their final product from large quantities of agricultural commodities. This may not accurately state their size and importance. A value-added statement provides an appropriate supplement to the income statement. It shows how the dollar amount of value that is added to the product is distributed to those contributing to its creation.

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INTRODUCTION

Farmers in the United States make up about 2 percent of the population, yet feed more than 250 million of the nation's people. Additionally, large amounts of agricultural production are traded globally and offered as assistance during food shortages.

These farmers often join in cooperatives to enhance their own business performance. Cooperatives fill several roles for their members. They provide farm and ranch supplies, market the members' produce, and provide otherwise unavailable services.

Most cooperatives were organized to serve a relatively homogenous group of farmers. In recent years, however, structural changes in farming have increased the size of many farms even though the number of farmers has declined. Meanwhile, new technologies have been adapted and global and domestic markets have been expanded.

These broad structural changes, along with the changing demographics of the "baby boom" generation, have also affected cooperatives. Overall numbers of cooperatives have decreased, while the business volumes of those remaining increase.

As competition for land, labor, and capital increases, a key question is whether these cooperatives are economically efficient in delivering supplies and services to their members. Performance measurements are needed to point out inefficiencies and address policy questions affecting future decisions regarding cooperatives.

Value-Added Concept

One such performance measurement is value-added (VA). VA is the net value of a cooperative's sales minus the value of purchases it makes from other firms. When a cooperative makes purchases, in the form of either products or services, it increases the value of those purchases by adding some unique combination of form, space, and time utility. VA for cooperatives is defined as the difference between the price the cooperative pays for its purchases and the price at which it sells them once they have been processed, manufactured, transported, stored, or otherwise modified or handled.

VA is important for several reasons. First, VA is a useful tool for measuring and comparing business performance. This is important for understanding how a cooperative makes its profit. The current standard measurement, gross sales, can give a distorted view of size and importance when the cost of goods sold is high and the final product is produced from large quantities of agricultural commodities used as intermediate goods (Stanton et al., 1993). Also, marketing-type cooperatives have higher cost of goods sold than do farm and ranch input supply-type cooperatives.

Second, VA has become synonymous with "wealth creation." This is important for understanding where the profit a cooperative makes is distributed. A cooperative's activities affect a much wider group than just its members. Cooperatives create wealth, employ people, reward lenders for risking their funds, and pay taxes. VA estimates the profitability available to all stakeholders dependent upon the continued well-being of the cooperative.

In a cooperative, these stakeholders are the members, employees, suppliers of short- and long-term capital, and the Government. Stated another way, VA equals the payments to land, labor, capital, and entrepreneurship that a cooperative creates. Because VA measures what each cooperative contributes to the value of its product, it may be a more appropriate measurement for comparing the effect of various policies.

Third, measuring VA in cooperatives presents a special case. Owners of cooperatives play a unique, dual role. They are both shareholders and the majority of the customers. Frequently, cooperatives are not only in business to derive profits, but also to sell goods or perform services that are otherwise unobtainable. For instance, the general manager of a large east coast farm supply and marketing cooperative which has \$20 million in annual sales refers to services provided customers, such as fertilizer spreading, product use instruction, and over-the-counter information, as VA that the cooperative creates.

Fourth, cooperatives have distinctive business features and exist as vertical integrations of production agriculture. Gross sales is often used as an indicator of overall economic contribution or size. This may not be appropriate. Some cooperatives produce their final product from large quantities of agricultural commodities. This may not accurately state the size and importance of these cooperatives to other businesses. A VA statement provides an appropriate supplement to the income statement. It shows how the dollar amount of value that is added to the product is distributed to those contributing to its creation.

Other Forms of VA

Use of the term "Value-Added" has expanded to become associated with other concepts of economic measurement. One of these is Economic-Value-Added (EVA) (Baarda, 1993). In EVA calculations, the cost of capital is subtracted from after-tax net operating profit in a given year. The cost of capital includes the cost of equity and the cost of debt, applied at the beginning of the year. This reflects the opportunity cost of the capital and measures

the return to lenders and those who furnish equity. Such a measurement is useful for estimating the true cost of the capital used by a business.

Another measurement is Market-Value-Added (MVA). This is calculated by summing all the capital used by the company including investment by shareholders, loans from bondholders and banks, and retained earnings. From this, outstanding stock and debts are subtracted. A positive figure reflects wealth created by the company. A negative number reflects wealth destruction. Because this calculation includes debt stretching beyond the current year, it reflects the market assessment of the company's prospects.

EVA can predict MVA. If a company has a positive EVA, and investors expect this to continue, they will invest more capital, thereby raising MVA. A company with a negative EVA could have a positive MVA if investors felt the company was on the road to improvement and were willing to invest.

Previous VA Research

While the concept of VA is generally understood by economists, opinions differ about its exact definition. This is because VA is calculated using accounting figures.

Different researchers have studied how to adapt the VA concept to practice. In 1979, Morley defined the double-entry structure of VA as net profit plus taxes, interest, and wages on one side and sales revenue minus cost of all materials and services on the other. To express the relationship between VA and profit, he defined retained profit for a given year as what is left after costs, dividends, and taxes had been deducted from sales revenue or:

$$R = S - P - \text{Dep} - W - I - \text{Div} - T \quad (1)$$

where:

- R = retained profit,
- S = sales revenue,
- P = total of purchased materials and services,
- Dep = annual depreciation charge,
- W = annual wage cost,

- I = interest payable for year,
 Div = total of dividends payable for the year, and
 T = corporate taxes.

Morley rearranged equation (1) to become:

$$S - P - \text{Dep} = W + I + \text{Div} + T + R \quad (2)$$

so that each side equaled value-added.

In 1988, Meek and Gray compared a VA statement with an income statement. They argued that VA is more important to an organization's stakeholders than to its shareholders. They explained that profits only measure the owners' share of a business activity. VA, they argued, shows another dimension of a company's performance because it focuses on the success of a company to create wealth and generate national income by including wages, taxes, interest, and dividends in the equation. This, they explained, highlighted the interdependence of the various stakeholders and the effect of policy decisions by any one of these groups on the others.

They said that the VA statement is not a rearrangement of the income statement. One difference is that "in the income statement, labor, and depreciation are combined with other costs of production and allocated to cost of sales on the basis of finished goods inventory sold during the period. Labor and depreciation associated with unsold inventory are placed on the balance." The VA statement differs by including the full amounts of labor and depreciation for the period.

A second difference is that research and development expenses add materials, labor, and depreciation into a single figure which is deducted in deriving income. These are shown in separate places on a VA statement.

In 1993, Stanton et al., applied the VA concept to gain a perspective of changes in farm size and structure they believed was not possible with the use of gross sales measurements. Gross sales, they said, do not consider inventory adjustments. Government payments are not included, and gross sales from farms (such as feedlots), which produce their output from large quantities of intermediate goods (goods that are completely used up in the production of another good), overstate their size and importance. They used the formula:

$$VA = (O + V + G + H + F + C + S) - (P - (W + T + I + R)) \quad (3)$$

where:

- VA = value-added,
 O = commodity sales of operation,
 V = changes in inventory,
 G = Government payments,
 H = value of home consumption of farm products,
 F = farm-related income,
 C = value of commodities produced under production contracts,
 S = value of share rents,
 P = all production expenses,
 W = wages and related expenses,
 T = taxes,
 I = interest, and
 R = rent (cash and share).

They addressed several issues related to the accounting methodology for estimating VA for farms in the U.S. They included direct Government payments as a source of gross income, while not including the value of the farm operator's house. Their analysis was based on the net value-added concept by including a charge for depreciation. Rent payments either received or paid for land were considered in their calculation of net value-added, while contract services were treated as a purchased input.

Advantages of Using VA as a Performance Measure (Morley)

1. VA improves the attitudes of employees toward their employers. Employees may not be concerned with maximizing profit that rewards people other than themselves. Because VA is the wealth created by those employed in the production process, it can be a performance measure, as seen from the perspective of the entire production team, rather than through the eyes of management whose emphasis is on gross sales. This is a more appropriate method for calculating employee bonuses.

2. Including a VA statement in the annual report makes it easier for businesses to introduce

employee productivity bonus plans based on a VA/payroll ratio.

3. VA based ratios are useful tools which provide otherwise unavailable information and perspectives. Especially useful is value-added/sales, which measures the degree of vertical integration of a group among several.

4. VA measures the size and importance of a company. Value-added is a better measure of size and importance than sales because it does not include expenses passed on to customers. This is also appropriate for comparing capital-intensive to labor-intensive organizations.

5. The VA statement links a company's financial accounts to national income.

6. The VA statement is built on the basic principles currently accepted in balance sheets and earnings statements.

Disadvantages of Using VA To Measure Performance

1. A VA statement treats a company as a team of cooperating groups, and this may be at variance with the facts.

2. Inclusion of the VA statement in an annual report can cause confusion with the earnings statement.

3. VA raises the danger of inefficient management, because managers may wrongly seek to maximize their company's VA.

4. Inclusion in an annual report would involve extra work, therefore extra costs and delay, and also a slight loss of confidentiality in view of the additional disclosure involved.

5. VA statements are unstandardized.

Issues Surrounding VA

Previously published research has attempted to define the concept of VA with equations. Because there are different accounting perspectives, most issues surrounding VA concern what should be included in the VA equation. There are several different approaches to estimating VA. They differ in their treatment of specific account items.

Strong arguments can be made for using either gross VA or net VA. Depreciation is included in the calculation of gross VA. This contends that reinvestment of used-up physical assets is necessary for the business to remain operational. The method of calculating depreciation is unimportant when gross VA is estimated.

Several arguments favor the net VA approach. Depreciation represents an input cost, and treating it as such is consistent with the treatment of other input costs. Including depreciation overstates the wealth created during the accounting period. Furthermore, use of net VA avoids depreciation being considered a stakeholder.

Meek and Gray agreed with Morley that excluding taxes represents the view that Government did not play a part in the wealth created. Including taxes represents the Government as contributing to the success of the business. National defense, public highways, and information dissemination are used as arguments for the role Government plays in the business.

Extraordinary non-operating gains and losses do not arise from ordinary production activities. They do, however, affect the overall fortunes of businesses. Meek and Gray justify including these amounts as a basis for reconciliation with the income statement.

Farming has several unique characteristics associated with estimating VA. Stanton et al., argue that Government "payments are a component of the prices that would have occurred in the marketplace if wide spread Government intervention were not present in these national and international markets" and should therefore be treated as a source of gross income.

The value of the farmer's house is included in accounting for national income. Stanton et al., exclude this figure because they wanted "to recognize the VA from producing crops and livestock products, not from producing housing."

In accounting for national income, agricultural land not owned by the farm operator is considered part of the real estate sector, not production agriculture. However, renting land and sharecropping are common practices in the farm sector.

Therefore, Stanton et al., argue for considering it when calculating net VA.

Another practice is the regular use by farmers of specialized service such as artificial insemination, aerial spraying, and accounting. Stanton et al., argue that these services be treated as any purchased input.

DATA DESCRIPTION

A data set of accounting information taken from selected farm supply and marketing cooperatives provided the basis for this study. In 1986, a stratified random sample of 2,286 cooperatives were surveyed. Of 1,298 cooperatives responding, 899 included advertising expenses, an indicator of a detailed income statement, in their annual report. By tracking these cooperatives through to the end of 1990, complete accounting data for the 1986-90 period was available for 118 of them. This analysis focused on the aggregate VA performance by these cooperatives. No pooled-type grain bargaining cooperatives were included.

VA was estimated for each cooperative in the study by subtracting total expenses and taxes from total revenues. This provided a profit or net margin figure. For the cooperative case, net margins include retained earnings, cash patronage refunds, allocated equity, and dividends. Expense items are intermediate products used in the production process. Therefore wages, interests, and taxes—payments to the factors of production (factor payments)—were added to net margins. This summation equaled a cooperative's VA (see

Appendix). These VA figures were then deflated by the Gross Domestic Product (GDP) (1987 = 100) deflator to account for inflation.

ANALYSIS OF FARM SUPPLY COOPERATIVE DATA FOR VA

The cooperatives were classified into four types based on each cooperative's percent of revenue generated by farm supply sales. Supply cooperatives received 90 percent or more revenue from farm sales; mixed supply received 50 to 89 percent; mixed marketing received 25 to 49 percent; and marketing cooperatives had less than 25 percent from farm supply sales.

Each of these types were sorted according to their volume of gross business. Cooperatives were designated as small if they had gross sales of less than \$5 million; medium, between \$5 and \$10 million; large, between \$10 and \$20 million; and super, greater than \$20 million.

Most sampled cooperatives were classified as either small- or medium-size cooperatives. In some cases, cooperatives advanced or retreated from one size class to another during the 5-year period. (Table 1)

VA on a Total Basis

Table 2 shows total deflated VA for each type of cooperative for each year. Figure 1 shows that total deflated VA decreased from about \$114 million in 1986 to about \$107 million in 1987, and increased each following year to more than \$120

Table 1—Number of cooperatives in study by type and size

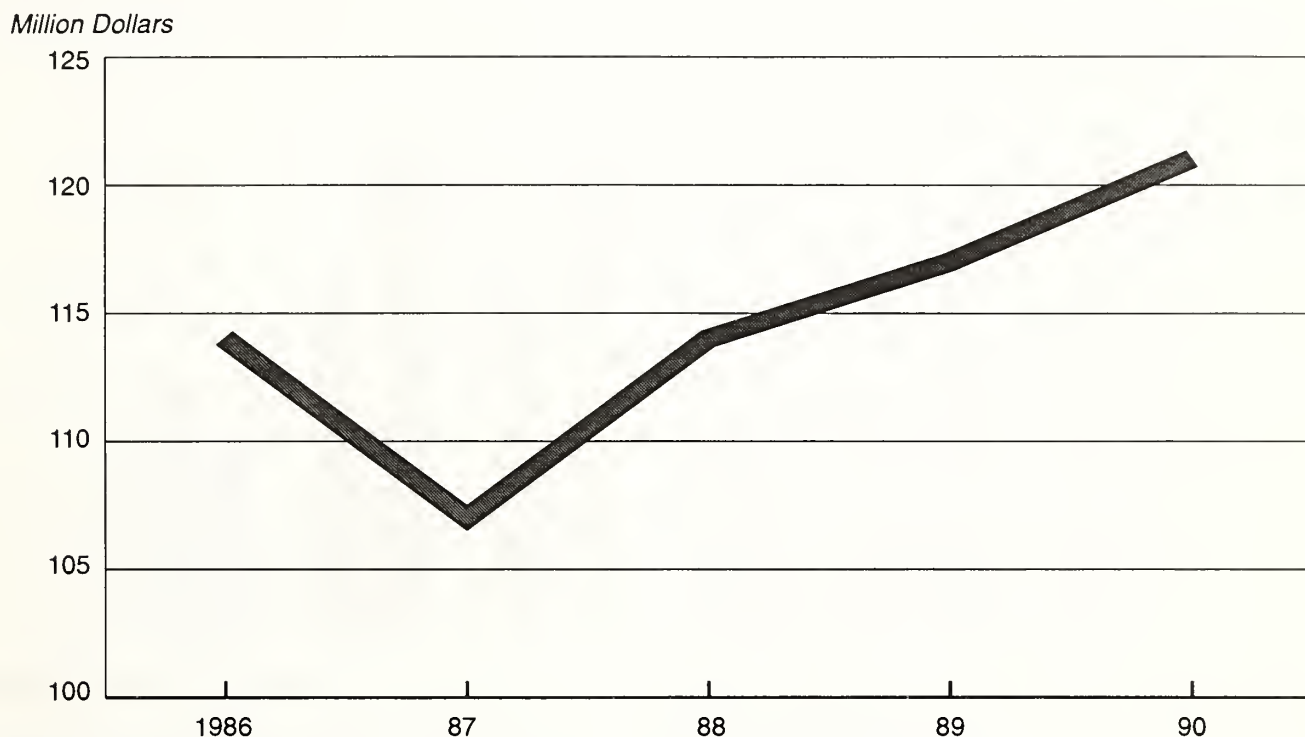
	Supply		Mixed Supply		Mixed Marketing		Supply	
	1986	1990	1986	1990	1986	1990	1986	1990
Small	51	49	6	3	14	7	9	7
Medium	10	12	3	4	5	12	8	7
Large	0	0	1	2	6	3	1	3
Super	1	1	1	2	2	5	0	1
Sum	62	62	11	11	27	27	18	18

Table 2—Total deflated VA for the study period by type of cooperative.

	Size 1	Size 2	Size 3	Size 4	Total
Year	Marketing Type Cooperatives				
1986	\$3,509,044	\$8,509,270	\$1,457,426	*	\$13,475,740
1987	\$3,730,999	\$5,342,717	\$1,439,001	*	\$10,512,717
1988	\$2,464,713	\$6,292,341	\$2,368,686	*	\$11,125,741
1989	\$2,326,489	\$5,569,326	\$1,645,129	*	\$9,540,944
1990	\$1,912,327	\$5,670,308	\$1,955,139	*	\$9,537,774
	Mixed Marketing Type Cooperatives				
1986	\$6,255,104	\$4,645,502	\$18,665,729	\$6,897,653	\$36,463,987
1987	\$5,285,265	\$10,910,810	\$5,451,180	\$10,704,734	\$32,351,989
1988	\$4,079,144	\$8,130,111	\$7,762,909	\$14,999,559	\$34,971,722
1989	\$1,478,094	\$9,086,471	\$6,977,843	\$18,044,137	\$35,586,546
1990	\$1,658,639	\$10,278,990	\$5,799,570	\$18,230,340	\$35,967,539
	Mixed Supply Type Cooperatives				
1986	\$4,236,562	\$4,742,604	\$4,210,418	\$5,556,848	\$18,746,432
1987	\$5,503,122	\$3,851,038	\$4,376,835	\$5,841,571	\$19,572,566
1988	\$3,893,861	\$4,145,967	\$2,062,947	\$10,992,743	\$21,095,519
1989	\$2,480,615	\$5,449,543	\$2,230,105	\$11,219,658	\$21,379,921
1990	\$1,543,487	\$4,602,491	\$5,066,731	\$11,492,476	\$22,705,186
	Supply Type Cooperatives				
1986	\$24,833,984	\$13,832,332	*	\$6,244,847	\$44,911,164
1987	\$28,691,577	\$ 9,710,729	*	\$5,997,313	\$44,399,619
1988	\$27,041,004	\$12,708,391	*	\$6,754,350	\$46,503,746
1989	\$27,666,105	\$14,716,177	*	\$6,158,192	\$48,540,473
1990	\$25,393,491	\$18,922,216	*	\$6,206,973	\$50,522,680

* No cooperatives fell into this category.

Figure 1—Total VA by Year



million for 1990, the last year of the study. Total deflated VA for marketing type cooperatives fell during the study period, while all other types gained.

In all cases except mixed supply, total deflated VA fell during 1987, possibly due to the cutback in activities of the Commodity Credit Corporation (CCC) (figure 2). CCC program income added to the bottom line of many cooperatives. Many marketing cooperatives were heavily invested in anticipation of a continuing program. When the CCC payments stopped, these cooperatives were still burdened with investment debt (figure 2).

Figures 3 through 6 show the total deflated VA contributions by size for each type of cooperative in the study. In figure 3, small supply cooperatives contributed the most total deflated VA, \$25 million or more, when compared with other sizes. Super-size cooperatives remained steady at about \$5 million throughout the study period. The differ-

ence between the small- and super-size cooperatives highlights the argument that, in many cases, gross sales is not the best indicator of cooperative performance.

Mixed supply cooperatives showed a lot of movement between size classes and total deflated VA for each class responded as shown in figure 4. Deflated total VA for small cooperatives ranged from more than \$5 million in 1987 to about \$1.5 million in 1990. The jump of super-size cooperative figures in 1988 is due mostly from the growth of large-size cooperatives, rather than better performance by the super-size cooperatives.

Much the same effect can be seen in figure 5 for mixed marketing cooperatives. Again, total deflated VA for small mixed marketing cooperatives decreased drastically from more than \$5 million to less than \$1 million during the study period. This may reflect the effect of the general decline of the national economy during the same period.

Figure 2—Value Added by Type of Co-op

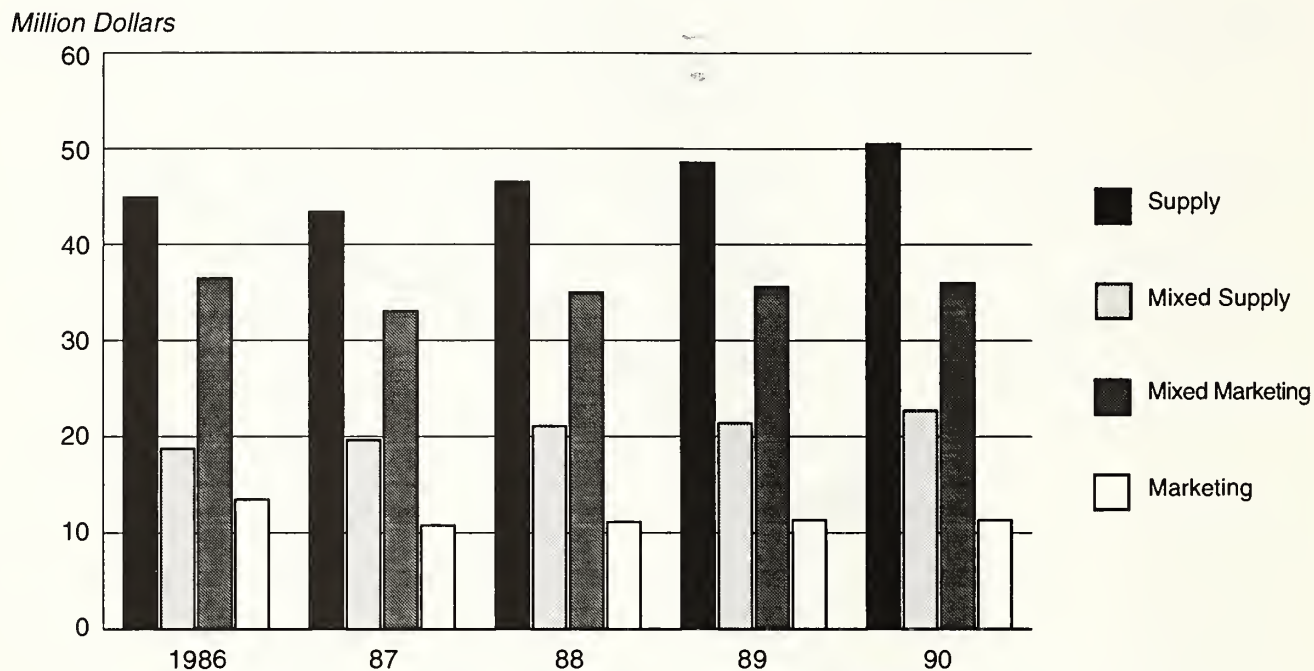


Figure 3—Deflated VA Supply Co-ops by Size

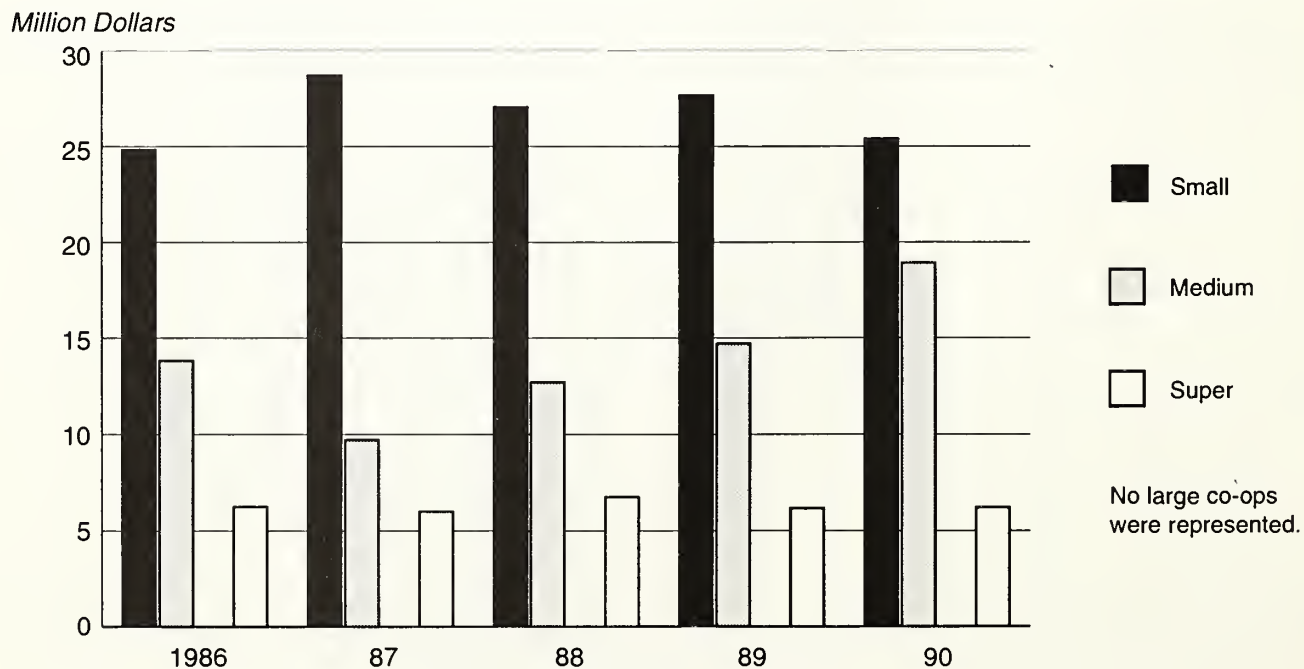


Figure 4—Deflated VA by Size of Mixed Supply Co-ops

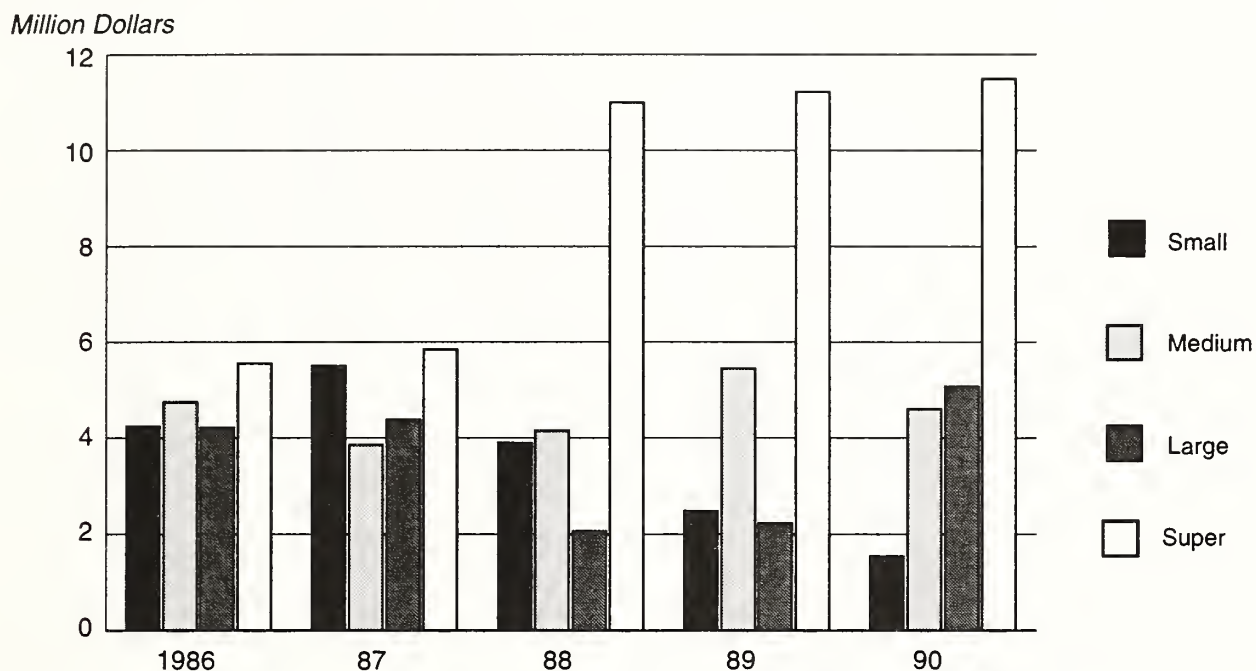
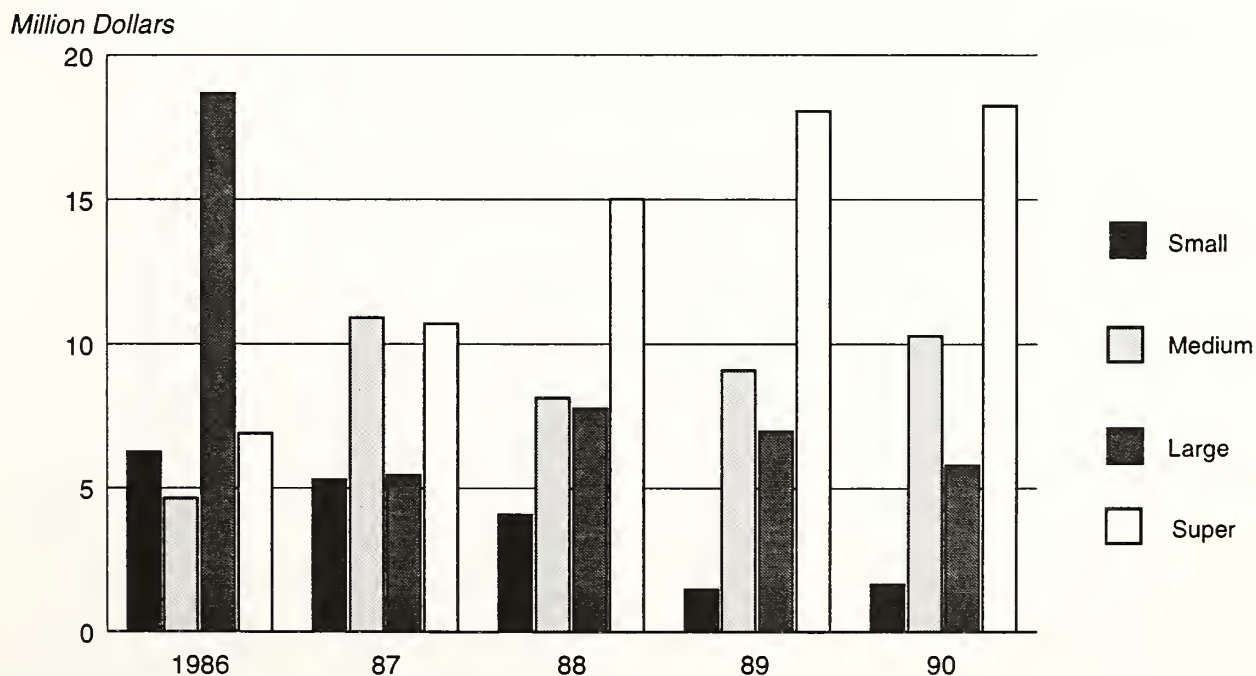


Figure 5—Deflated VA by Size of Mixed Marketing Co-ops



Medium-size marketing cooperatives contributed the most deflated VA compared with other sizes of marketing cooperatives (figure 6). Total deflated VA for small marketing cooperatives fell from \$3.5 million in 1987, to about \$2 million in 1990.

Medium-size marketing cooperatives displayed more VA compared to small- and large-size cooperatives. This amount fell, however, from a high of about \$8 million in 1986 to less than \$6 million in 1990. The effect of the general decline in the national economy is apparent.

Figures 7 through 10 show total deflated VA contribution comparisons of the different types within each size. Small supply cooperatives with VA figures in excess of \$25 million outperformed other types of small cooperatives, most of which had VA figures below \$5 million. Typically, small supply cooperatives have more employees than other types of small cooperatives.

The same effect can be seen in figure 8, with medium-size supply cooperatives totaling near the \$15 million mark. Other types were below \$10 mil-

lion and closer to \$5 million for mixed marketing and marketing cooperatives. Again, supply and mixed supply cooperatives have larger numbers of employees than other types.

The story is different for large-size cooperatives (figure 9). After a drop from nearly \$20 million in 1986, mixed supply cooperatives accounted for more than \$5 million in each year of the study. Mixed marketing figures varied from more than \$5 million in 1986 and 1987 to less than \$2.5 million in 1988 and 1989, increasing to \$5 million in 1990.

Figure 10 shows super-size supply cooperatives having a fairly even annual total deflated VA figure of about \$5 million. Both super-sized mixed supply and mixed marketing cooperatives increased their VA during the study period. Mixed marketing cooperatives, showing the most VA overall, went from a little more than \$5 million in 1986 to more than \$17.5 million in 1990.

Because total figures are a function of the number of cooperatives in the study, they are not useful for comparison of type and size class impor-

Figure 6—Deflated VA by Size of Marketing Co-ops

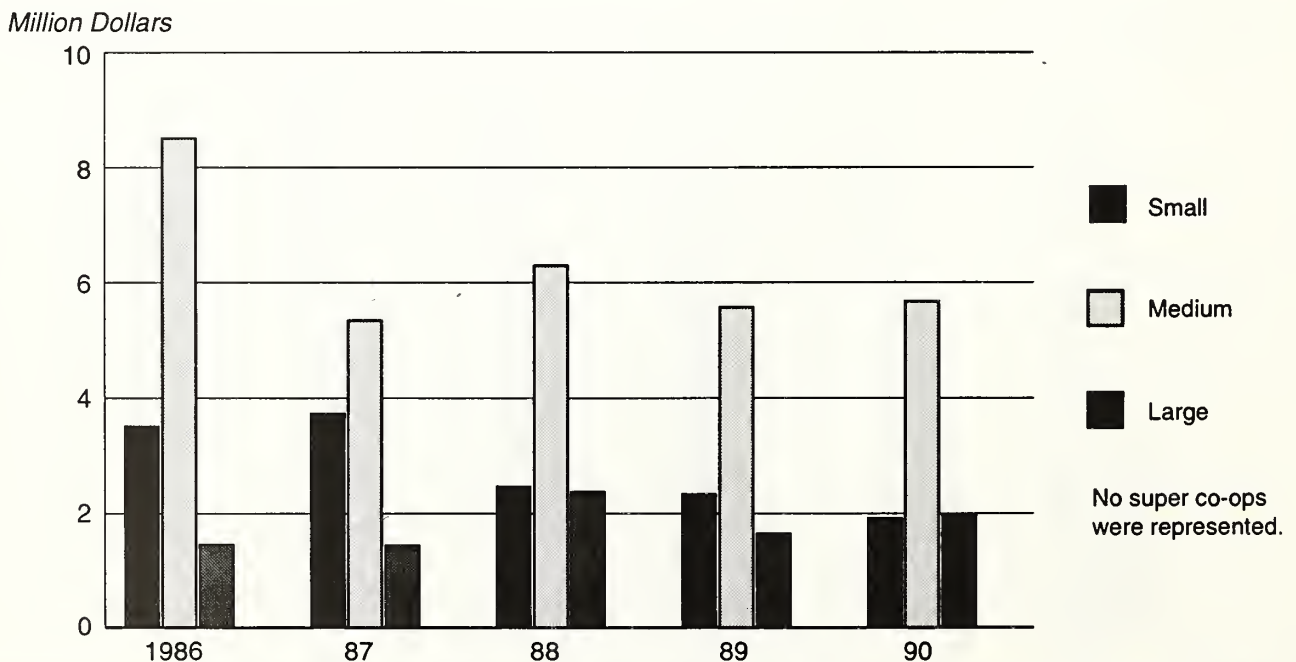


Figure 7—Comparison of Small Size Co-ops by Type

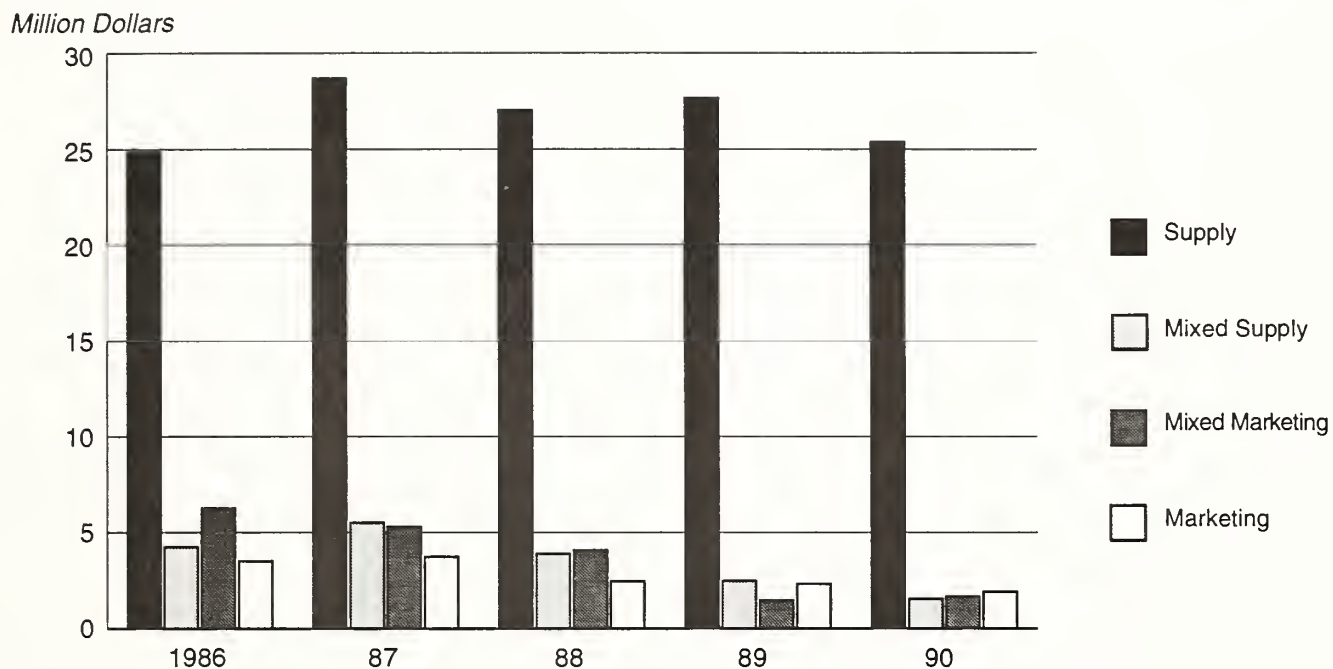


Figure 8—Comparison of Medium Size Co-ops by Type

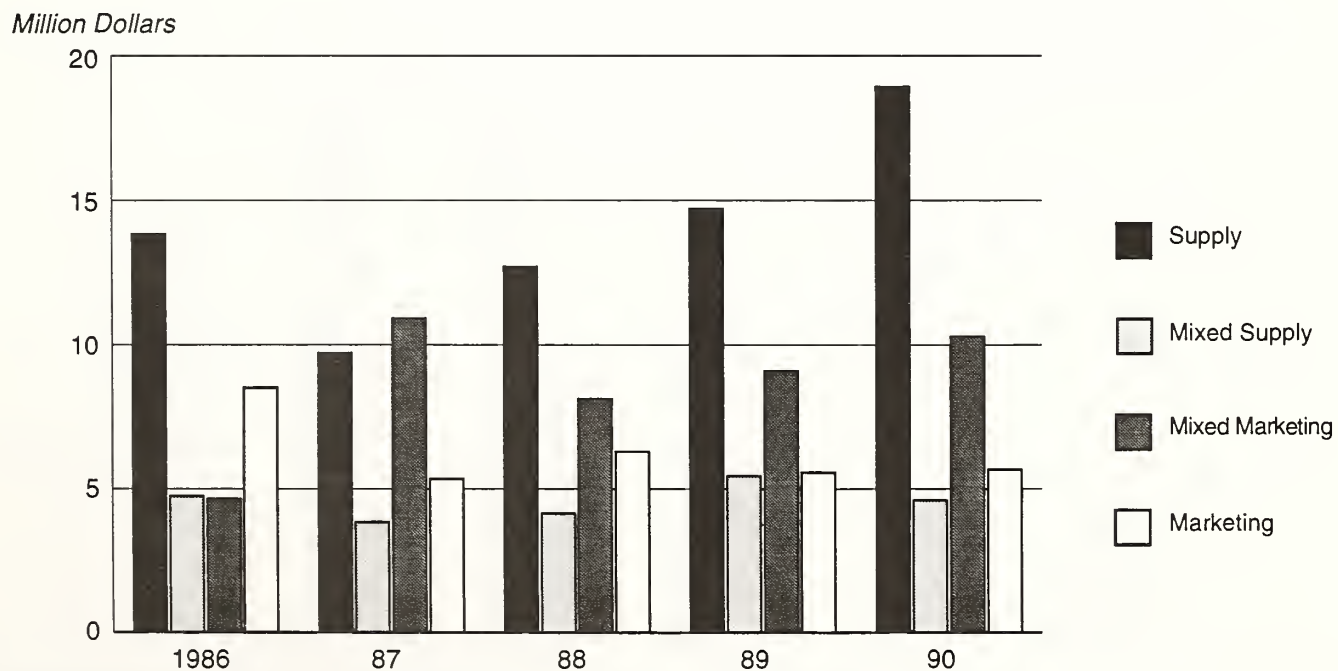


Figure 9—Comparison of Large Size Co-ops by Type

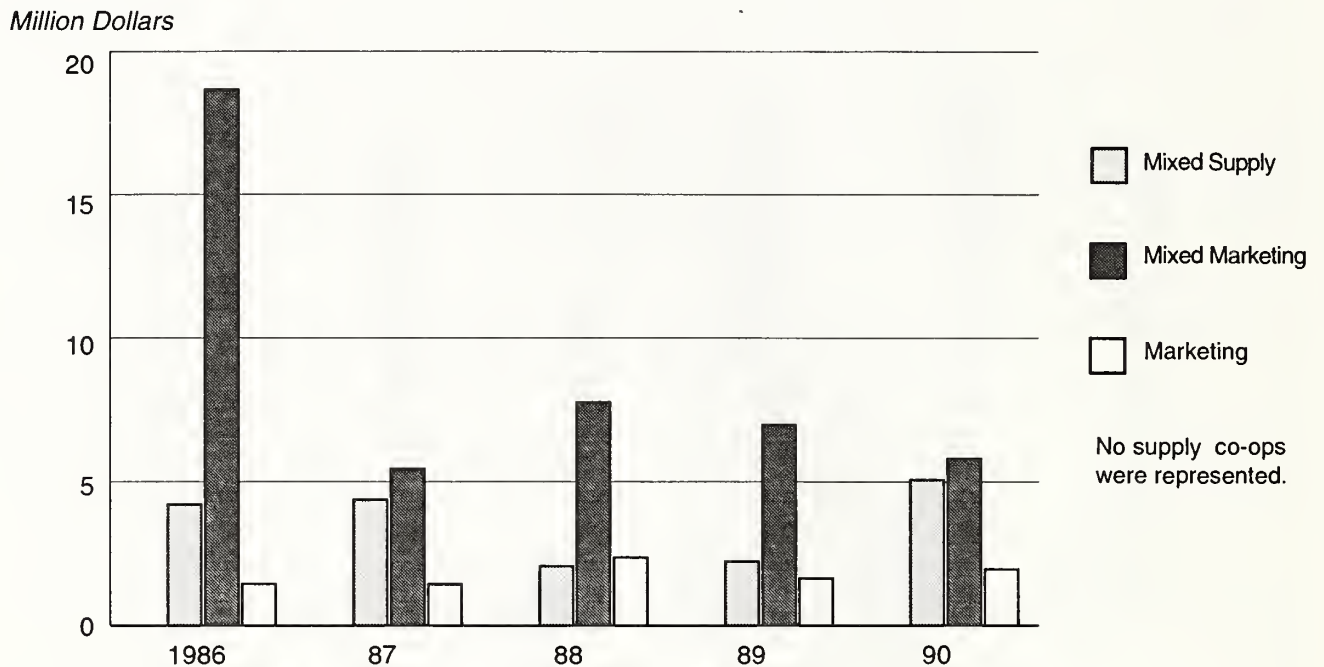
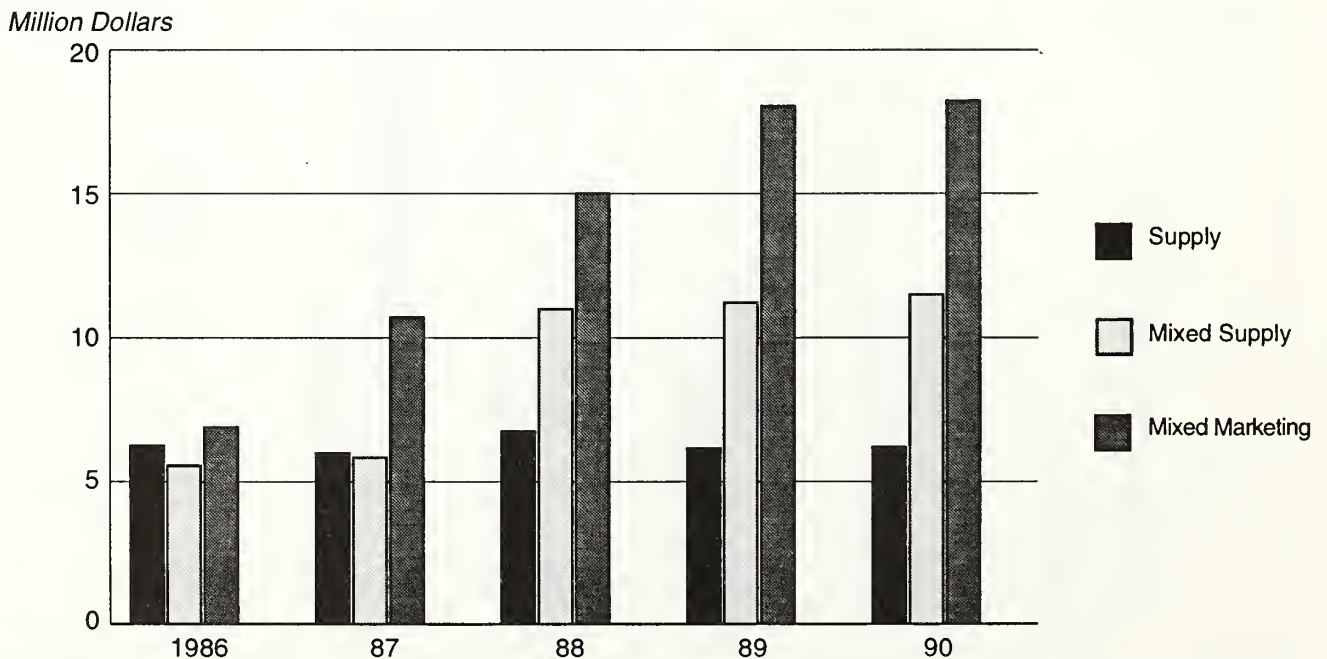


Figure 10—Comparison of Super Size Co-ops by Type



tance. A more appropriate comparison between and within types and sizes is provided in the following average basis.

VA on an Average Basis

An annual average of the deflated VA was taken within each size and type of cooperative for each of the 5 years. These figures are represented in figure 11. Average deflated VA dropped by about \$80,000 from \$1.1 in 1986 to \$1 million in 1987. Average deflated VA for all cooperatives began to increase from the 1987 low of \$1.07 million to nearly \$1.22 million for 1990.

Figure 12 shows average deflated VA by type during the period. The average for all types except marketing cooperatives increased slightly. The biggest gainers were mixed supply type cooperatives—up from about \$1.75 million in 1986 to more than \$2 million in 1990. Average figures for mixed marketing and marketing type cooperatives decreased only slightly during the study.

Table 3 compares the deflated average VA within each type by size (also see figures 13 through 16). Table 4 compares the deflated average VA within each size by type (see figures 17 through 20).

Figures 13 through 16 show average deflated VA for each size by type of cooperative. Average VA by supply cooperatives remained remarkably stable for the period (figure 13). The super-size cooperatives showed the greatest average deflated VA of about \$6 million. Small-size cooperatives averaged around \$500,000; while medium-sized ones averaged about \$1.5 million.

Figure 14 shows VA decreased in large mixed supply cooperatives, however this is explained by the few cooperatives represented and the growth of one or two into the next larger class size. Amounts of VA varied little from year to year in the other size classes. Small mixed cooperatives averaged about \$5 million, medium-size about \$1.5 million.

For mixed marketing cooperatives, figure 15 shows nearly the same thing. Again, the decline in

Figure 11—Average Deflated VA by Year, all Co-ops

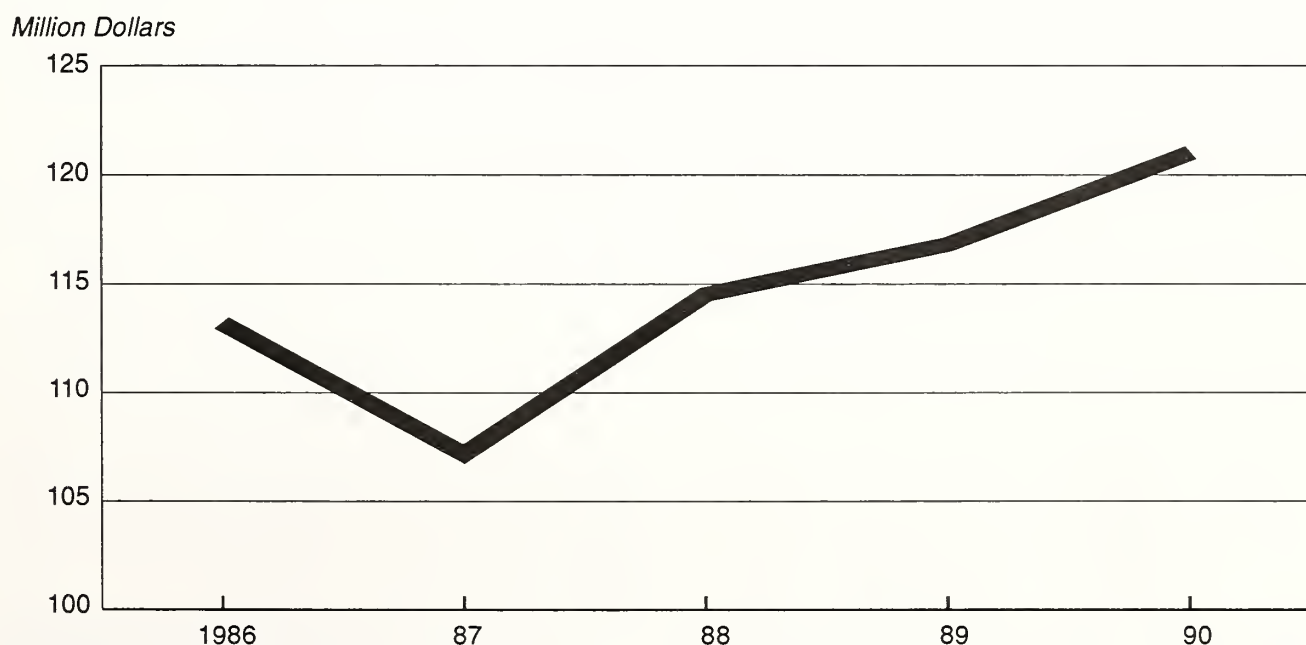
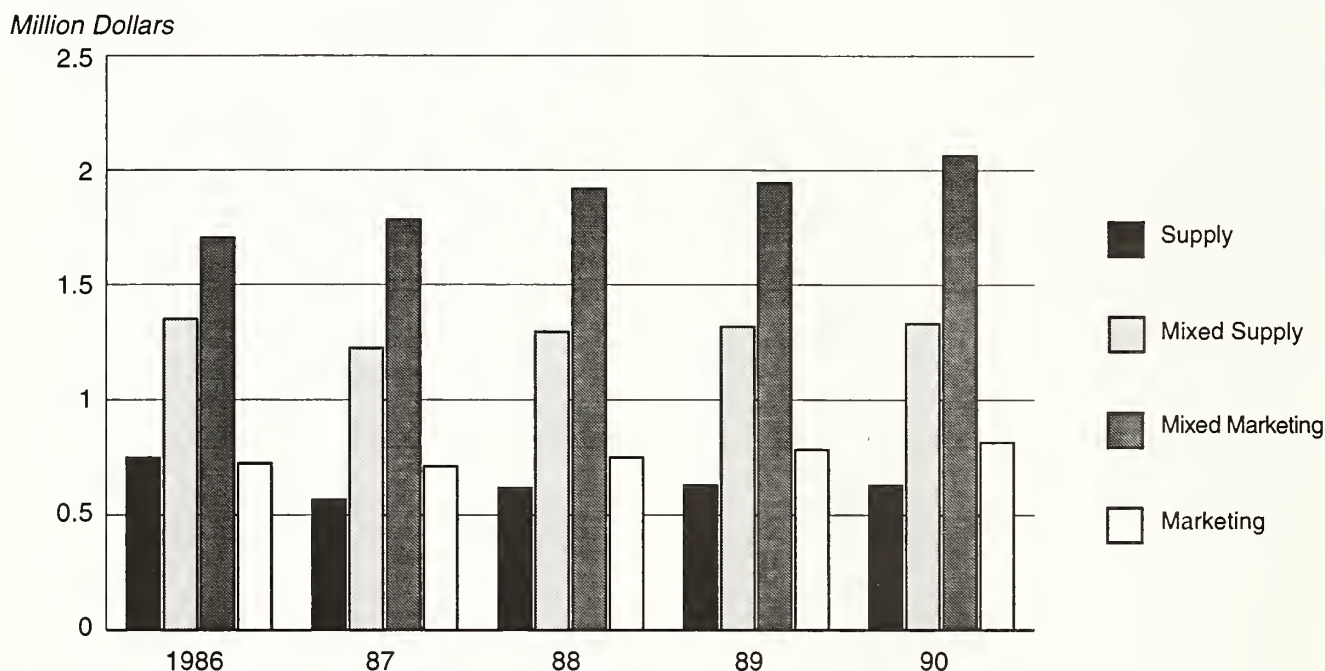


Figure 12—Average Deflated VA by Type of Co-op



average deflated VA by large cooperatives is due to the growth of one or two into the next larger class.

There is a noticeable decline of average deflated VA in all sizes of marketing cooperatives (figure 16). This follows with the general decline of the national economy and the loss of CCC program payments. Average deflated VA for large marketing cooperatives fell from about \$1.5 million to about \$600,000. For small-size marketing cooperatives, the decline was from \$400,000 to just over \$200,000.

Figures 17 through 20 show VA for each type of cooperative by size. In figure 17, average deflated VA by small mixed supply cooperatives is greatest, but falls from a high of about \$800,000 to \$500,000. Small supply cooperative VA figures held at \$500,000. Both mixed marketing and marketing cooperatives declined.

In figure 18, medium size supply cooperatives increased average deflated VA slightly at the \$1.5 million mark. Mixed supply increased to nearly \$2 million in 1987, but fell to about \$750,000 in 1990. Mixed marketing cooperatives followed the same pattern as the mixed supply, but at a somewhat

lower level. Marketing cooperatives decreased \$500,000 from 1986 to 1987, but held steady at the \$750,000 mark for the rest of the study period.

Large cooperatives (figure 19) decreased about \$200,000 from 1987 to 1988. Much of this was caused by the growth of some cooperatives to a larger class. Most notable is the relatively small value for average deflated VA by any of the large cooperatives, when contrasted with other size cooperatives.

Average deflated VA (figure 20) remained constant throughout the study. Super-size supply cooperatives average about \$6 million, closely followed by mixed supply cooperatives. Mixed marketing cooperatives averaged about \$3.5 million in VA.

These results conflicted with the increase in average total VA by cooperatives (figure 11). This is due to the effect of averaging and the fact that some cooperatives grew large enough to move to a higher class (table 1).

Table 3—Deflated (GDP)(1987 = 100) average value added by different size and type co-op, 1986 —90

Year	Small	Medium	Large	Super
Supply				
1986	\$486,941	\$1,383,233	*	*
1987	\$531,325	\$1,387,247	*	*
1988	\$520,019	\$1,412,043	*	*
1989	\$542,473	\$1,471,618	*	*
1990	\$518,235	\$1,576,851	*	*
Mixed Supply				
1986	\$706,094	\$1,580,868	*	*
1987	\$786,160	\$1,925,519	*	*
1988	\$778,772	\$1,381,989	*	\$5,496,372
1989	\$620,154	\$1,362,386	*	\$5,609,829
1990	\$514,496	\$1,150,623	\$2,533,366	\$5,746,238
Mixed Marketing				
1986	\$446,793	\$929,100	\$3,110,955	\$3,448,827
1987	\$406,559	\$1,212,312	\$2,725,590	\$3,568,245
1988	\$370,831	\$1,016,264	\$1,940,727	\$3,749,890
1989	\$211,156	\$826,043	\$1,744,461	\$3,608,827
1990	\$236,948	\$856,582	\$1,933,190	\$3,646,068
Marketing				
1986	\$389,894	\$1,063,659	*	*
1987	\$379,597	\$763,245	*	*
1988	\$352,102	\$699,149	\$1,184,343	*
1989	\$332,356	\$696,166	\$822,565	*
1990	\$273,190	\$810,044	\$651,713	*

* Less than two cooperatives represented.

Table 4—Average deflated VA by different type and size co-op, 1986—90

Year	Supply	Mixed Supply	Mixed Marketing	Marketing
Small				
1986	\$486,941	\$706,094	\$446,793	\$389,894
1987	\$531,325	\$786,160	\$406,559	\$379,597
1988	\$520,019	\$778,772	\$370,831	\$352,102
1989	\$542,473	\$620,154	\$211,156	\$332,356
1990	\$518,235	\$514,496	\$236,948	\$273,190
Medium				
1986	\$1,383,233	\$1,580,868	\$929,100	\$1,063,659
1987	\$1,387,247	\$1,925,519	\$1,212,312	\$763,245
1988	\$1,412,043	\$1,381,989	\$1,016,264	\$699,149
1989	\$1,471,618	\$1,362,386	\$826,043	\$696,166
1990	\$1,576,851	\$1,150,623	\$856,582	\$810,044
Large				
1986	*	*	\$3,110,955	*
1987	*	*	\$2,725,590	*
1988	*	*	\$1,940,727	\$1,184,343
1989	*	*	\$1,744,461	\$822,565
1990	*	\$2,533,366	\$1,933,190	\$651,713
Super				
1986	*	*	\$3,448,827	*
1987	*	*	\$3,568,245	*
1988	*	\$5,496,372	\$3,749,890	*
1989	*	\$5,609,829	\$3,608,827	*
1990	*	\$5,746,238	\$3,646,068	*

* Less than two cooperatives represented.

Figure 13—Average Deflated VA by Size of Supply Co-ops

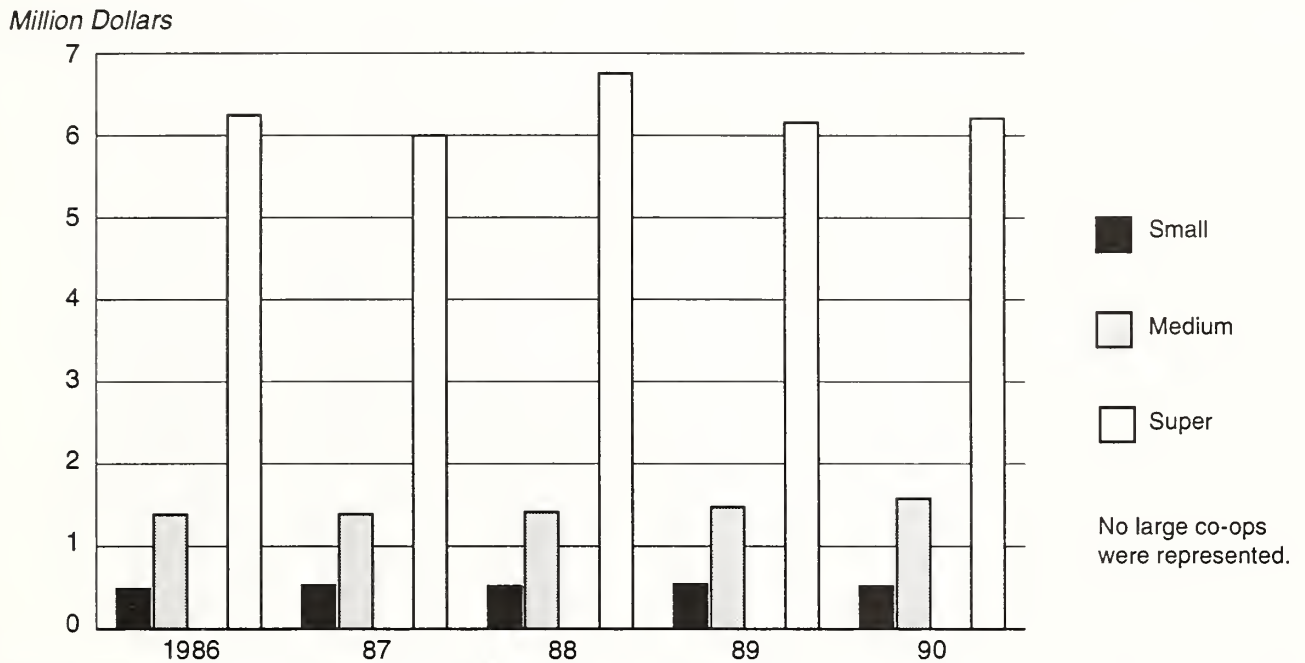


Figure 14—Average Deflated VA by Size of Mixed Supply Co-ops

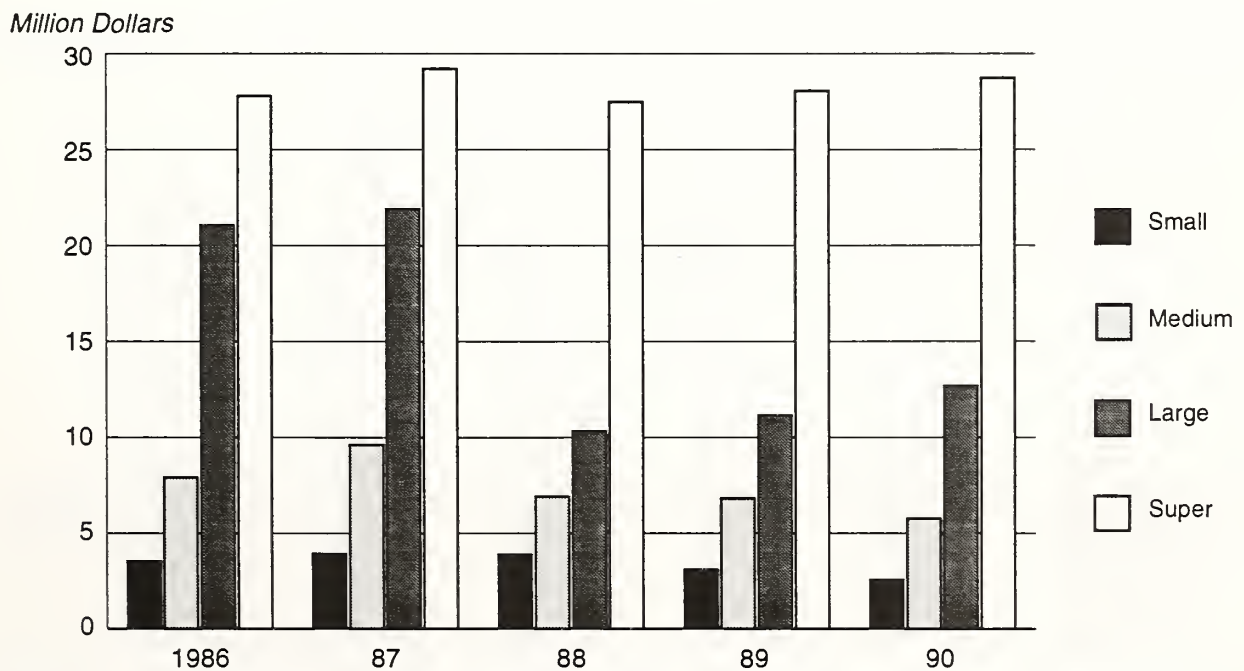


Figure 15—Average Deflated VA by Size of Mixed Marketing Co-ops

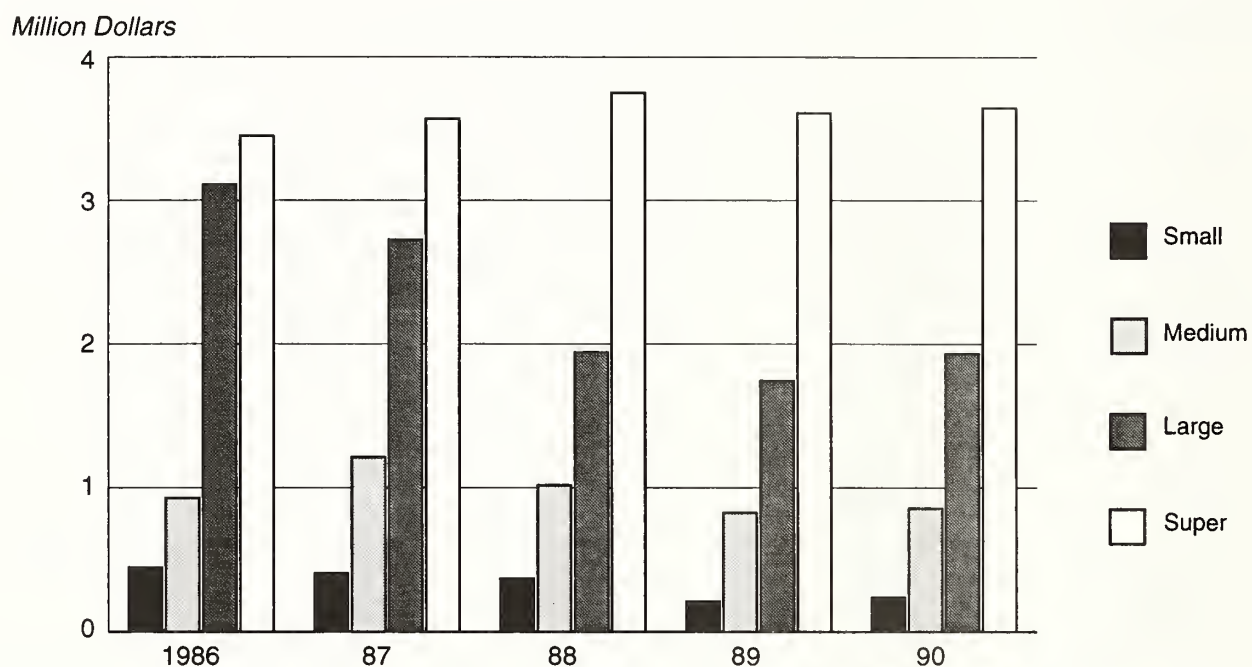


Figure 16—Average Deflated VA by Size of Marketing Co-ops

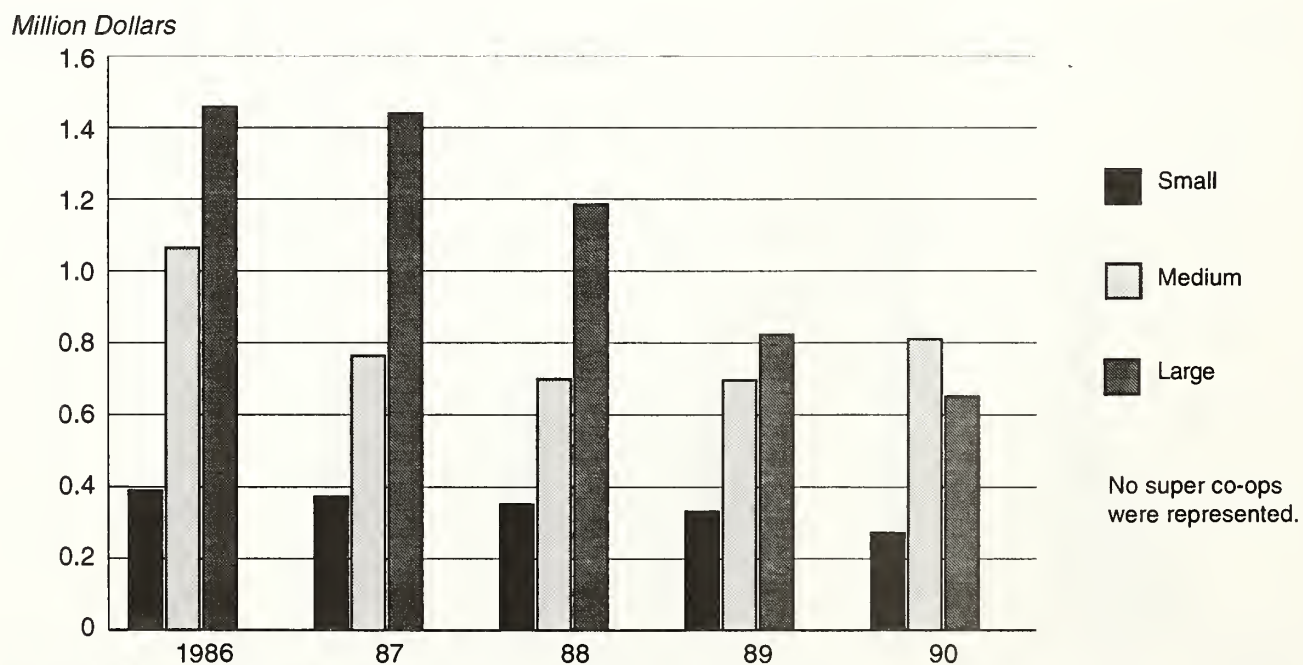


Figure 17—Comparison of Average Annual Deflated VA by Small Size Co-ops

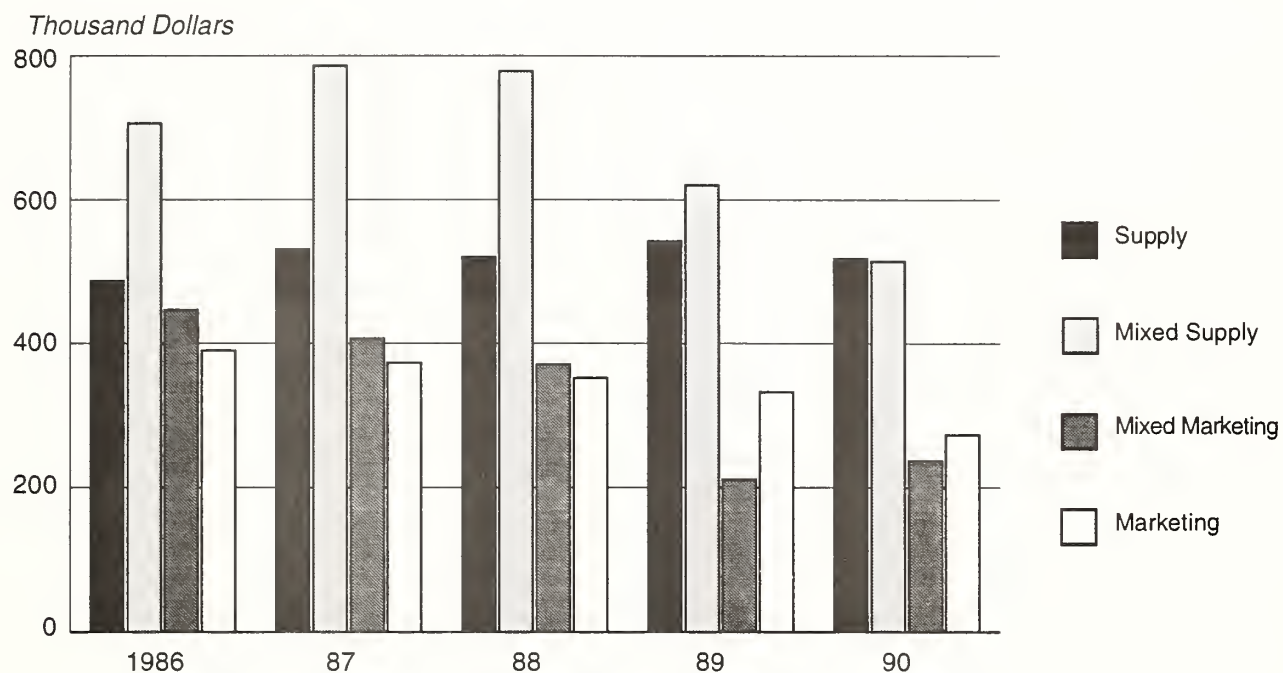


Figure 18—Deflated VA by Medium Size Co-ops

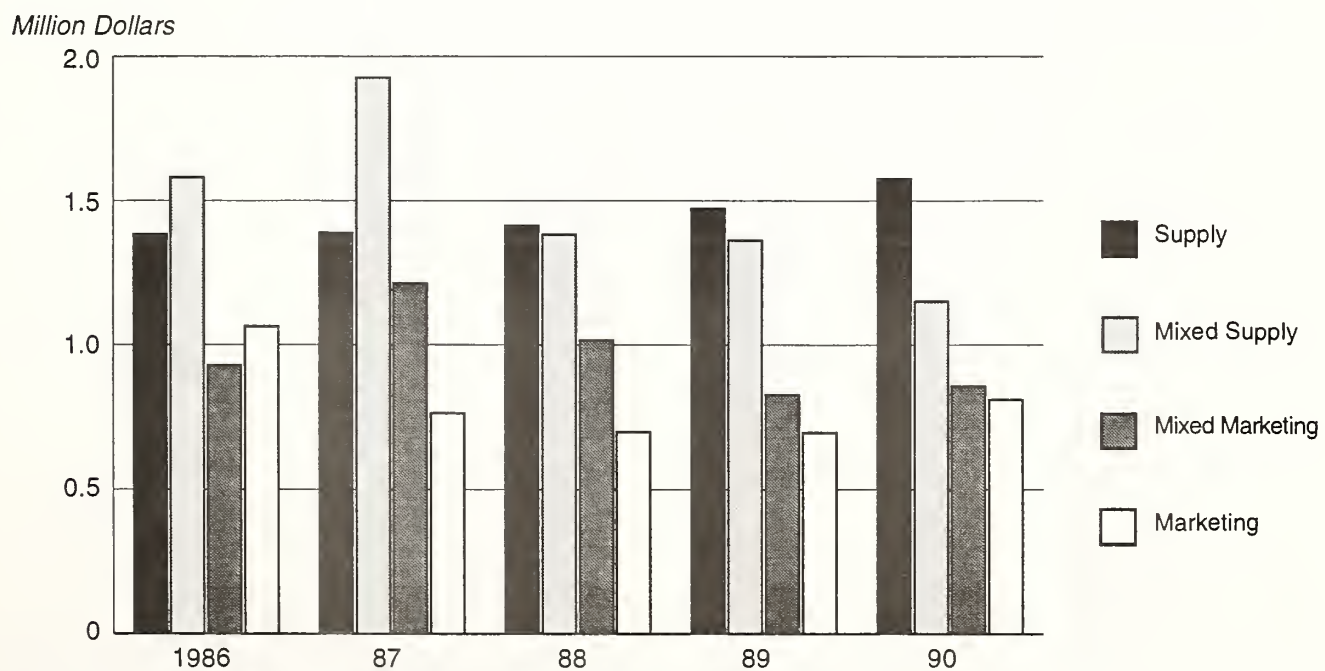


Figure 19—Deflated VA by Large Size Co-ops by Type

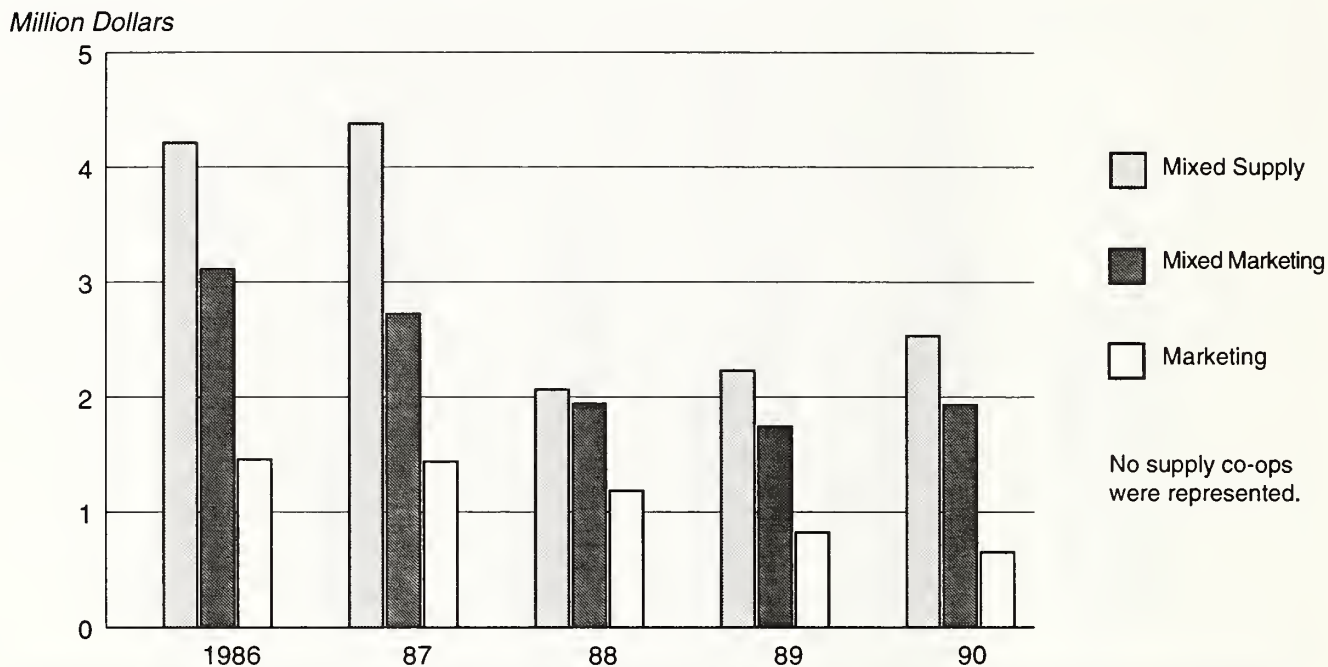
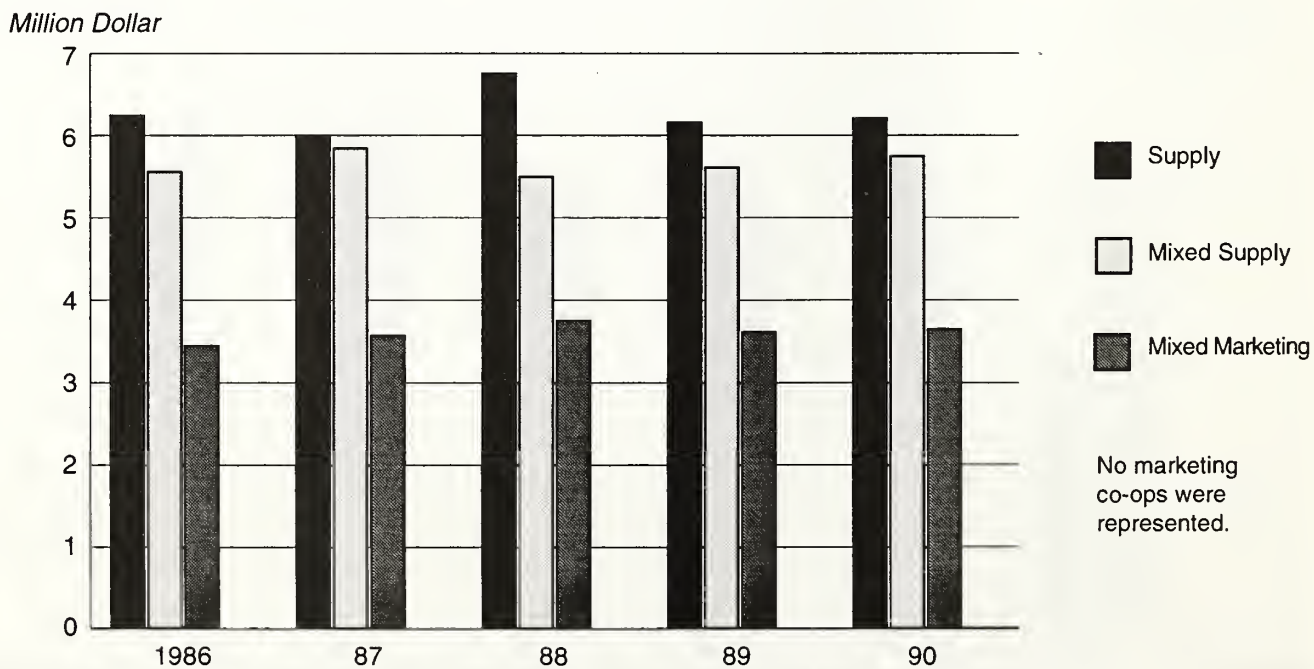


Figure 20—Deflated VA by Super Size Co-ops



Distribution on a Total Basis

The four stakeholders, or recipients of a cooperative's VA, are its employees, its members, those to whom it pays interest, and those to whom it pays taxes. Collectively, these VA distributions may be referred to as factor payments. Wages represent the employee's interest or stake in the cooperative. Interest is paid to lenders, taxes represent the Government's stake, and profits are returned to the members.

Figure 21 shows the distribution of total deflated VA to the different stakeholders who have an interest in the well-being of the cooperatives. At about \$80 million, employees received the largest share, followed by members with about \$20 million, and the Government and lenders at about \$5 million each. Marketing cooperatives received about \$75 million annually during the study.

Figure 22 shows total VA distribution to employees. The highest total amount of deflated VA, about \$35 million, went to supply coopera-

tives, followed by mixed marketing at \$20 million and mixed supply cooperatives at \$15 million.

Figure 23 shows annual total VA received by members. Supply cooperatives had increases of \$3 million to nearly \$8 million. Mixed marketing and marketing type cooperatives decreased during the study. Mixed supply totaled around the \$5-million mark. Mixed marketing totals went from \$12 million in 1986 to \$7 million in 1990, while marketing figures went from \$5 million in 1986 to \$3 million in 1990.

Figure 24 shows total deflated VA going to lenders as decreasing slightly from 1986 and then increasing by about \$1 million. For supply cooperatives, this figure was around \$1.5 million. Total VA for mixed marketing hung around the \$1.75 million mark, while marketing cooperative totals going to lenders were about \$500,000.

Figure 25 shows the portion of total deflated VA, in the form of taxes, received by the Government as relatively stable for all types of cooperatives. Supply cooperatives contributed the

Figure 21—Distribution of VA to Stakeholders

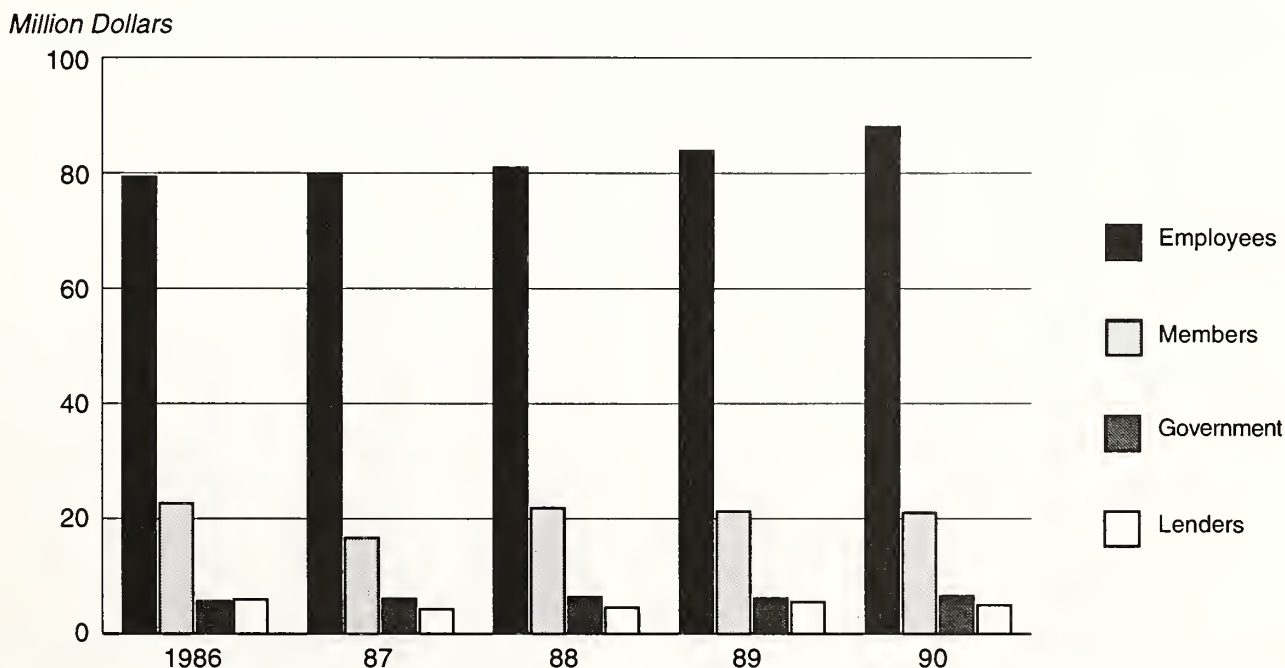


Figure 22—Distribution of VA to Employees by Co-op Type

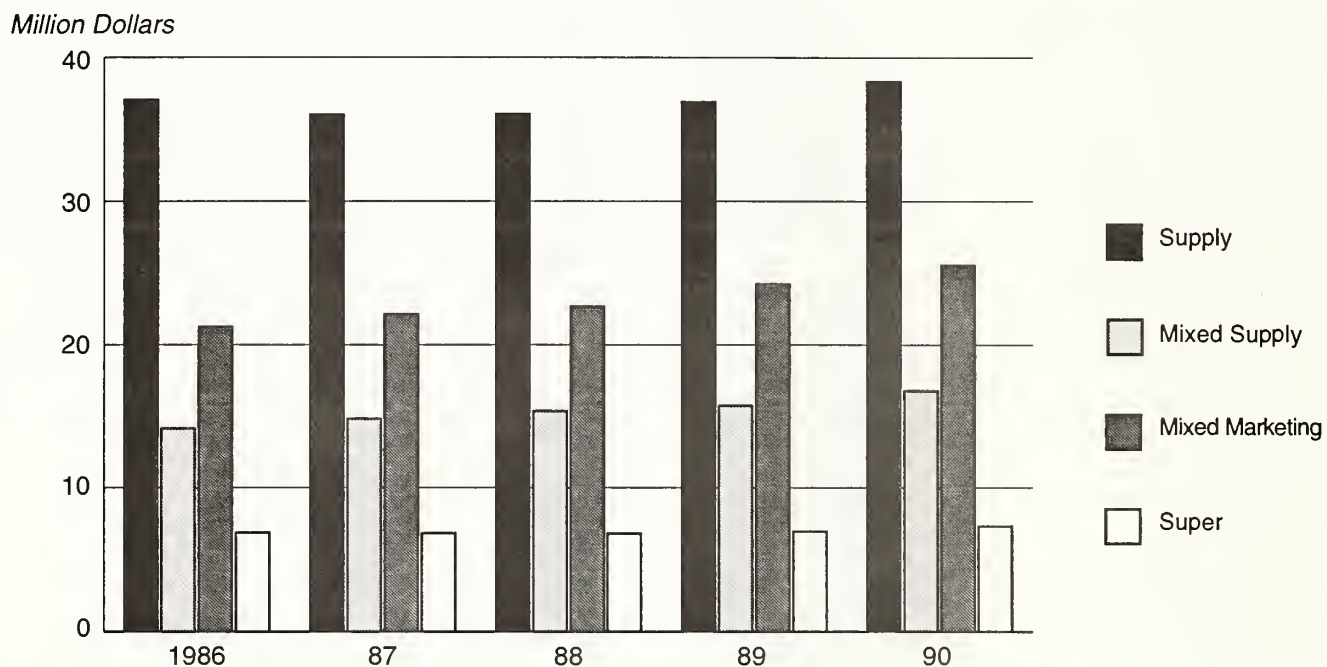


Figure 23—Distribution of VA to Members by Co-op Type

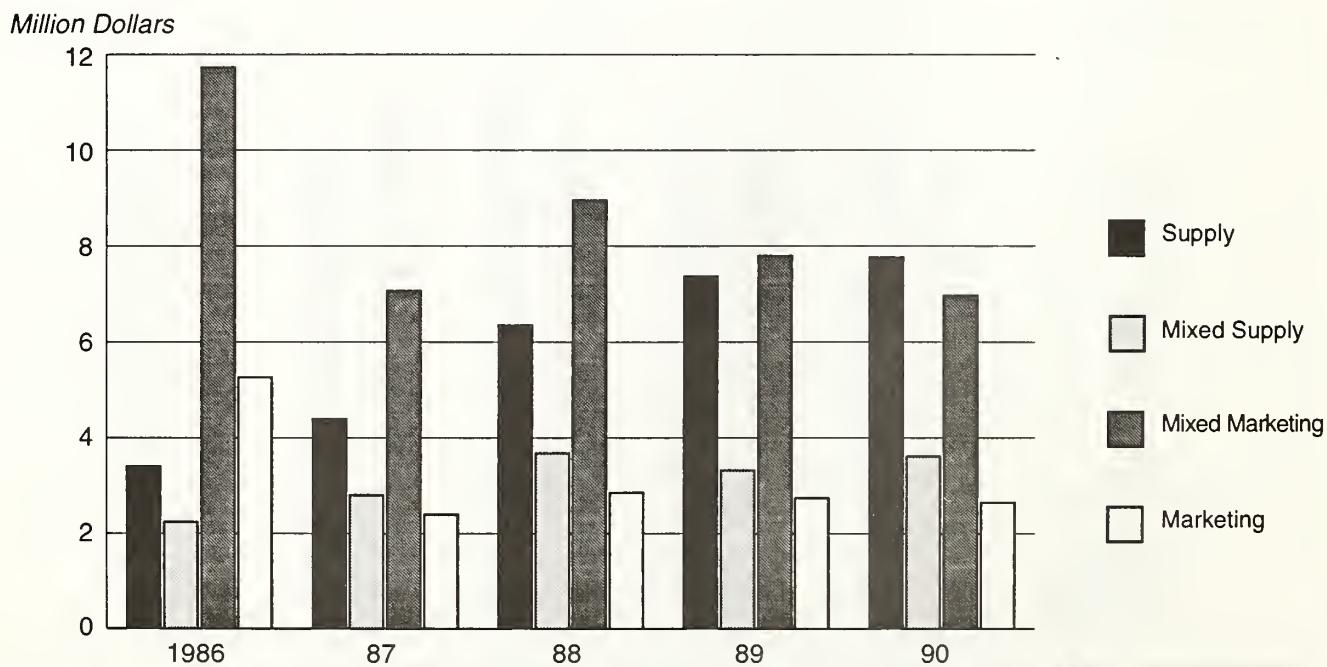


Figure 24—Distribution of VA to Lenders by Co-op Type

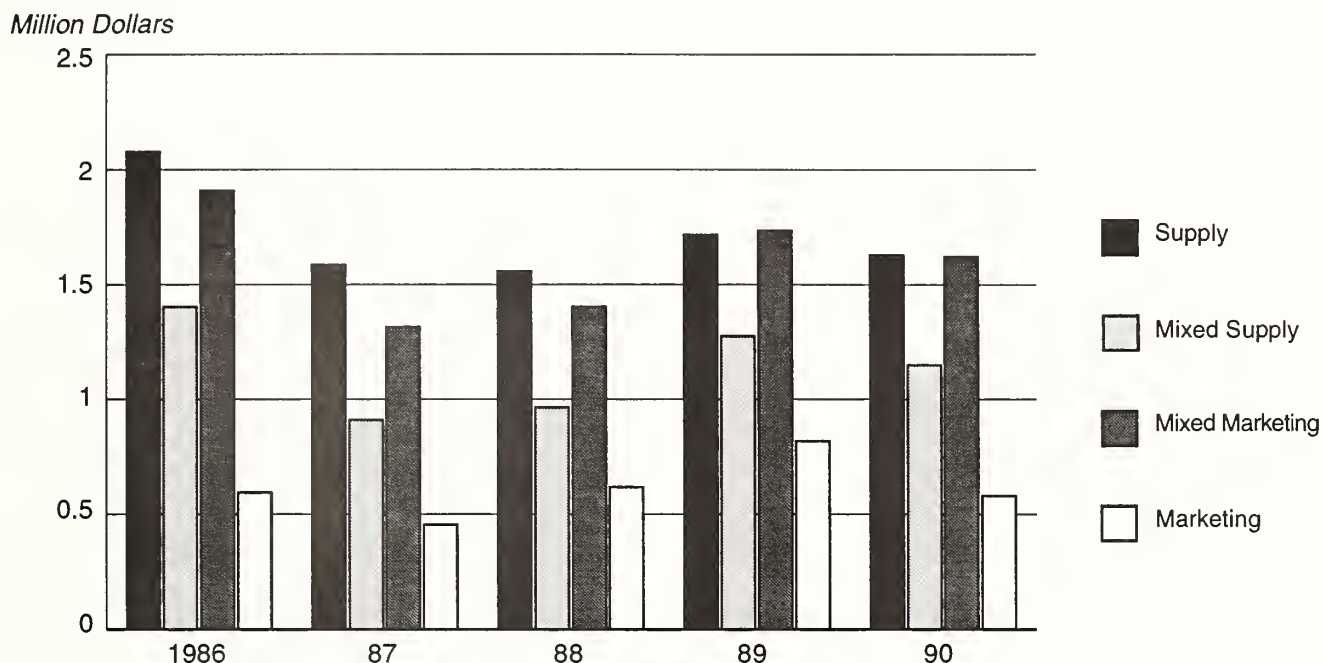
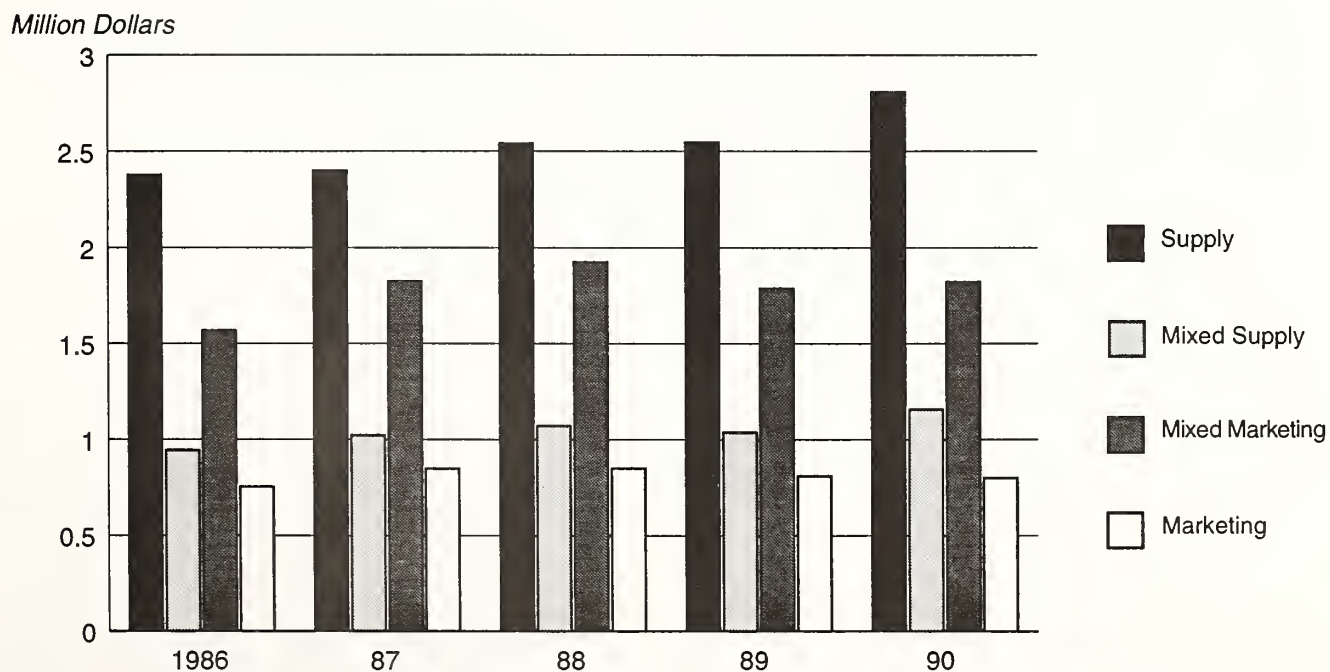


Figure 25—Distribution of VA to Government by Co-op Type



highest average taxes to Government at about \$2.5 million, followed by mixed marketing type cooperatives at about \$1.75 million and mixed supply and marketing cooperatives at about \$0.75 to \$1 million each.

Distribution of VA to Recipients on an Average Basis

Distribution of VA was averaged by the number of cooperatives (figure 26). Employees received the largest share of average deflated VA, at about \$700,000. Members received about \$200,000 and Government and lenders each received about \$500,000. The pattern for all stakeholders was consistent across the years and resembled the same relationship as total deflated VA in figure 21.

Mixed supply generated the greatest amount of VA, about \$1.4 million, to employees (figure 27). Mixed marketing cooperatives generated the next highest at about \$800,000; supply cooperatives, \$600,000 and marketing cooperatives, \$400,000.

Figure 28 shows VA generated to members increased during the period for farm supply cooperatives. In 1987, decreasing amounts of average VA went to members in mixed supply and mixed marketing cooperatives. Conversely, supply cooperatives jumped from \$50,000 to \$120,000 by 1990. Mixed supply cooperatives increased on a larger scale starting at about \$200,000 in 1986 and then declining to about \$150,000 in 1990. Mixed marketing cooperatives also fell from \$450,000 in 1986 to \$275,000 in 1990.

Figure 29 shows the portion of deflated average VA received by lenders decreasing over the 5-year study period. These amounts remained relatively stable, with a dip from 1986-87. Supply cooperatives averaged about \$30,000 to lenders. Average deflated VA for mixed supply cooperatives decreased from \$130,000 in 1986 to \$80,000 in 1987, and then rose to about \$100,000 in 1990. Mixed marketing cooperatives followed this same pattern, ending around the \$60,000 mark. Marketing cooperatives displayed less intense movement, finishing at the \$35,000 level.

Average deflated VA portions received by Government increased for all types of cooperatives

(figure 30). Average VA distributed to Government was very stable throughout the study period. Supply and marketing cooperative VA figures were about \$40,000, with mixed supply at \$75,000, and mixed marketing at \$65,000.

VA Distribution by Percentage

Figure 31 shows total VA for each year as percentages distributed to the various stakeholders. Employees received the largest share of at least 50 percent or more. This is not unusual. Customer service is a large function of many cooperatives and usually requires a large staff, especially for cooperatives that function in both supply and marketing. Members received the next largest share, nearly 20 percent. Lenders and the Government received about the same share percentage.

Farm supply member share grows as cooperative employee share drops. Distribution changed little among stakeholders of mixed supply cooperatives. The story is much different for mixed marketing and marketing cooperatives. Figure 31 shows the percentage of total deflated VA going to members decreases by more than 10 percent. Employees received this share. Nearly 20 percent of total VA changes from members to employees in marketing cooperatives. Throughout the study, percentage for lenders and the Government remained relatively stable.

VA on Per-Member Basis

Total deflated VA for each cooperative was divided by the number of its members to compute the average VA per member. figure 32 shows VA per member by type using these figures. Mixed supply cooperatives consistently showed the largest VA, about \$5,500 per member, followed by marketing cooperatives at about \$3,500. Supply cooperatives showed the lowest, about \$2,500, possibly due to the competitive environment provided by large chain-investor-owned supply stores.

Figure 33 shows average deflated VA per member, about \$10,000, for all types of small-size cooperatives. This was greatest for marketing cooperatives in 1986, but dropped considerably in 1987

Figure 26—Distribution of Average Deflated VA to Stakeholders

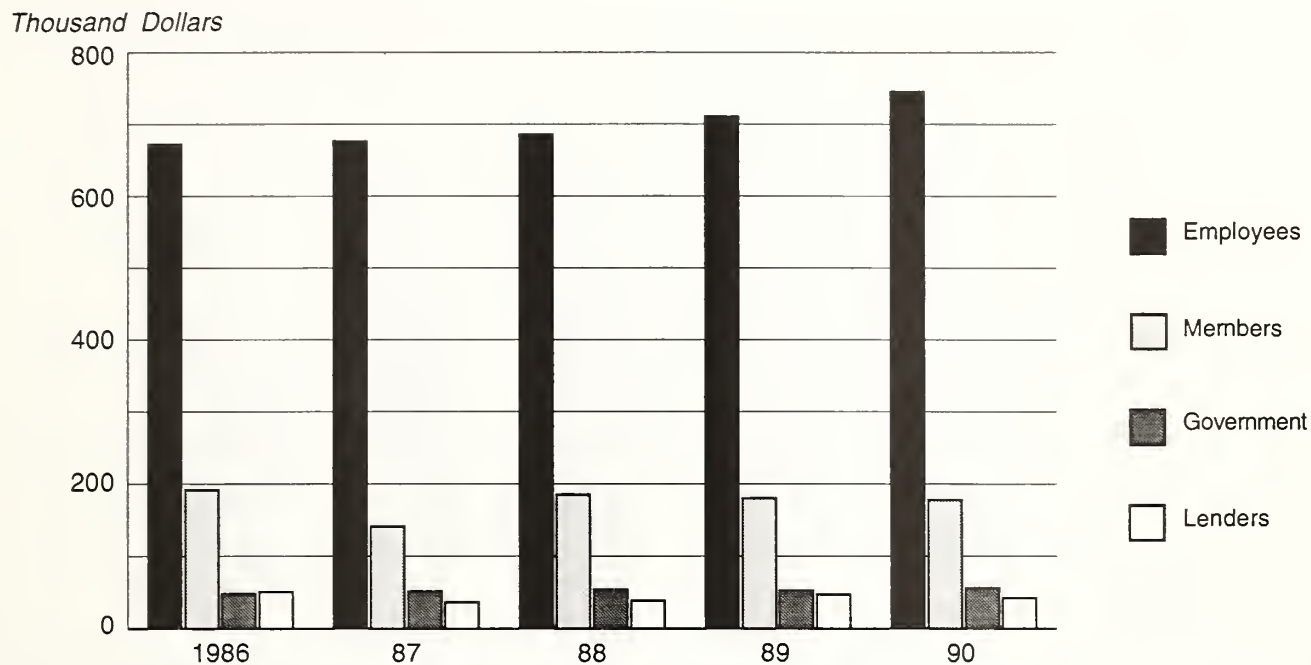


Figure 27—Distribution of Average Deflated VA to Employees by Co-op Type

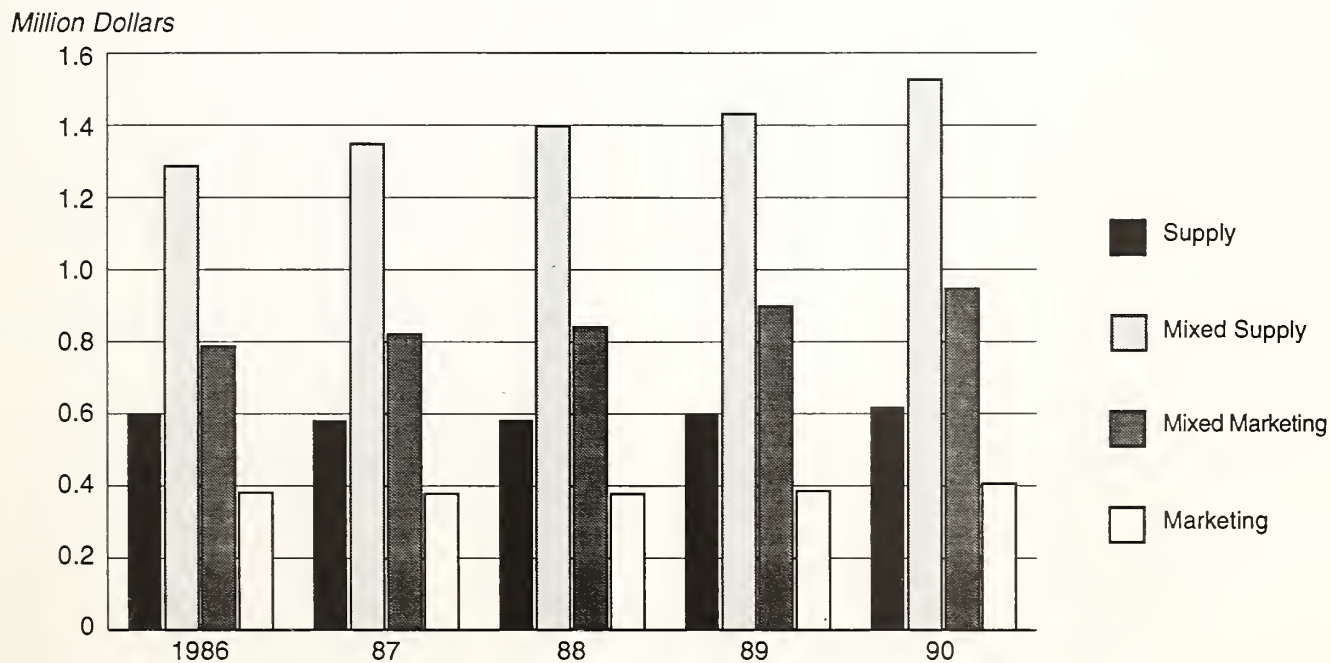


Figure 28—Distribution of Average Deflated VA to Members by Co-op Type

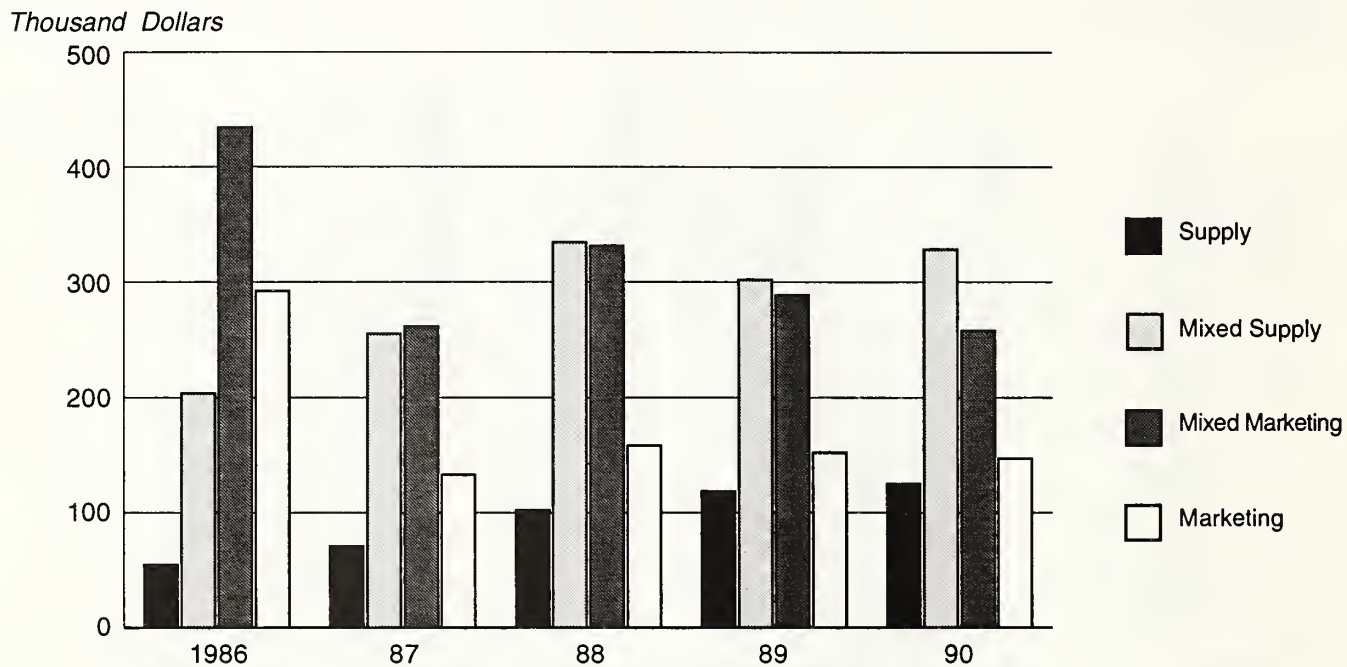


Figure 29—Distribution of Average Deflated VA to Lenders by Co-op Type

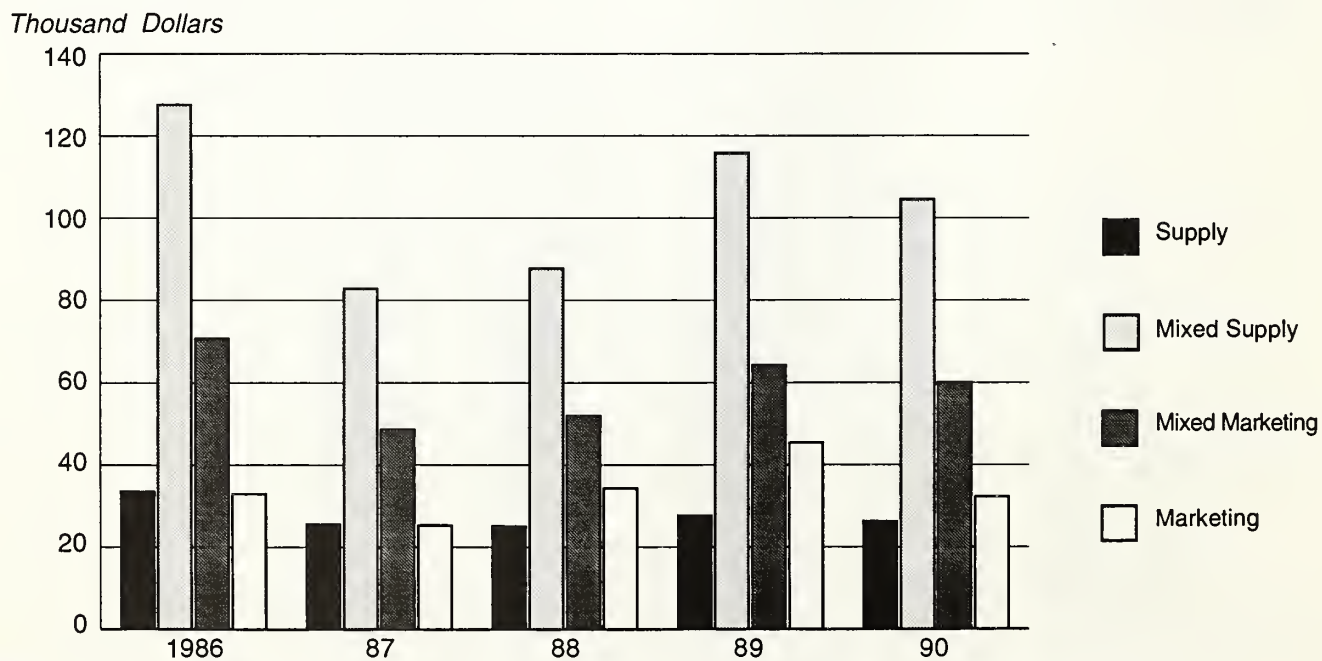
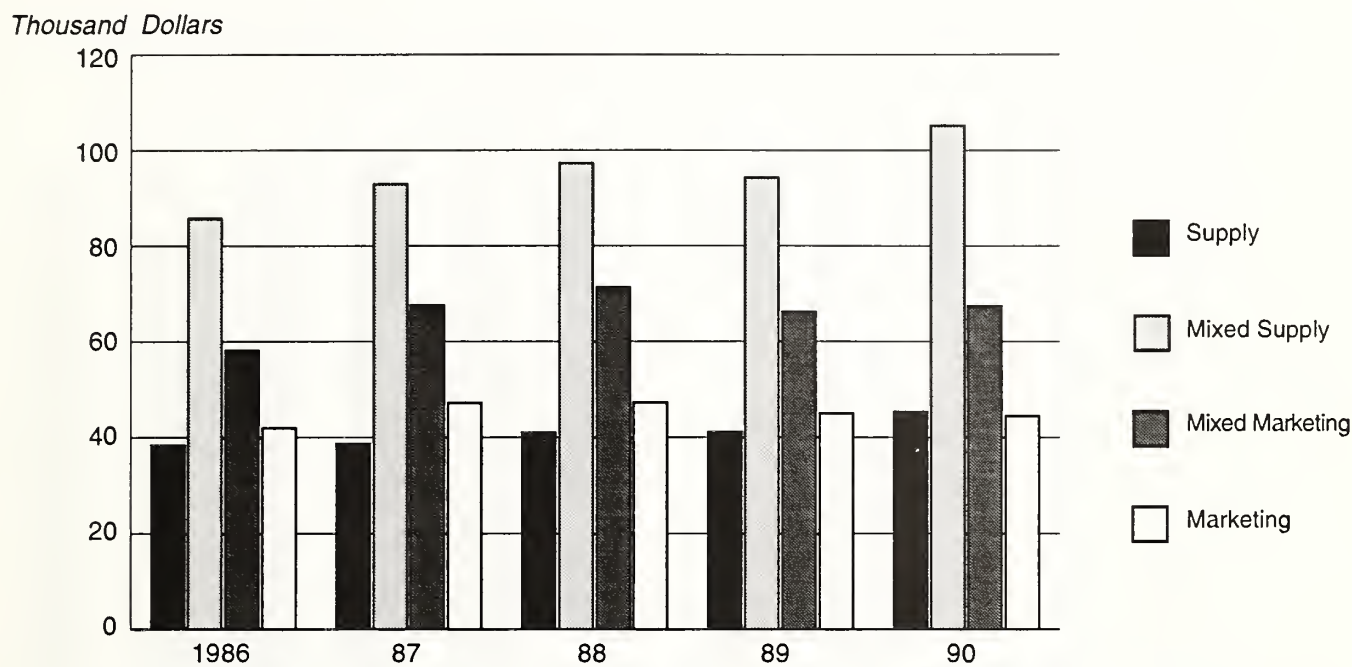


Figure 30—Distribution of Average Deflated VA to Government by Co-op Type



to less than \$6,000. Mixed supply showed the greatest improvement, from \$4,000 to \$6,000, with supply and mixed marketing cooperatives increasing only slightly.

Medium-size mixed supply cooperatives had the greatest average deflated VA, about \$4,000 per member, compared with other types of cooperatives, followed by mixed marketing at \$2,500 and marketing cooperatives at \$1,500 (figure 34). Again, supply cooperatives showed the lowest VA per member, \$1,000. In all cases, VA per member increased.

VA Per Member by Type and Size of Co-op

Information on the number of members in each cooperative was taken from past annual survey data by USDA's RDA-Cooperative Service. This data reported the number of members entitled to vote on cooperative business. Member numbers were averaged for each cooperative for the 5-year period. The cooperatives were then sorted and

membership numbers were averaged by size within type (table 5).

Typically, the number of members in small supply and small mixed marketing cooperatives grew during the study period. All others decreased. Both sizes of mixed marketing and marketing cooperatives had relatively fewer members compared with the supply and mixed supply cooperatives. This reflects that many marketing cooperatives have members who tend to market a particular crop, while farm supply cooperative members raise a variety of crops or livestock.

Total deflated VA and member numbers were averaged across years for each cooperative in the study and used to compute the average value-added per member. Value-added per member was chosen as a basis for reporting, instead of other ratios such as value-added per dollar of sales, because cooperatives exist to benefit members with services and low cost, and indirectly, local economies, rather than as simple profit-maximizing firms.

Figure 31—Percentage of Total VA Distributed to Stakeholders

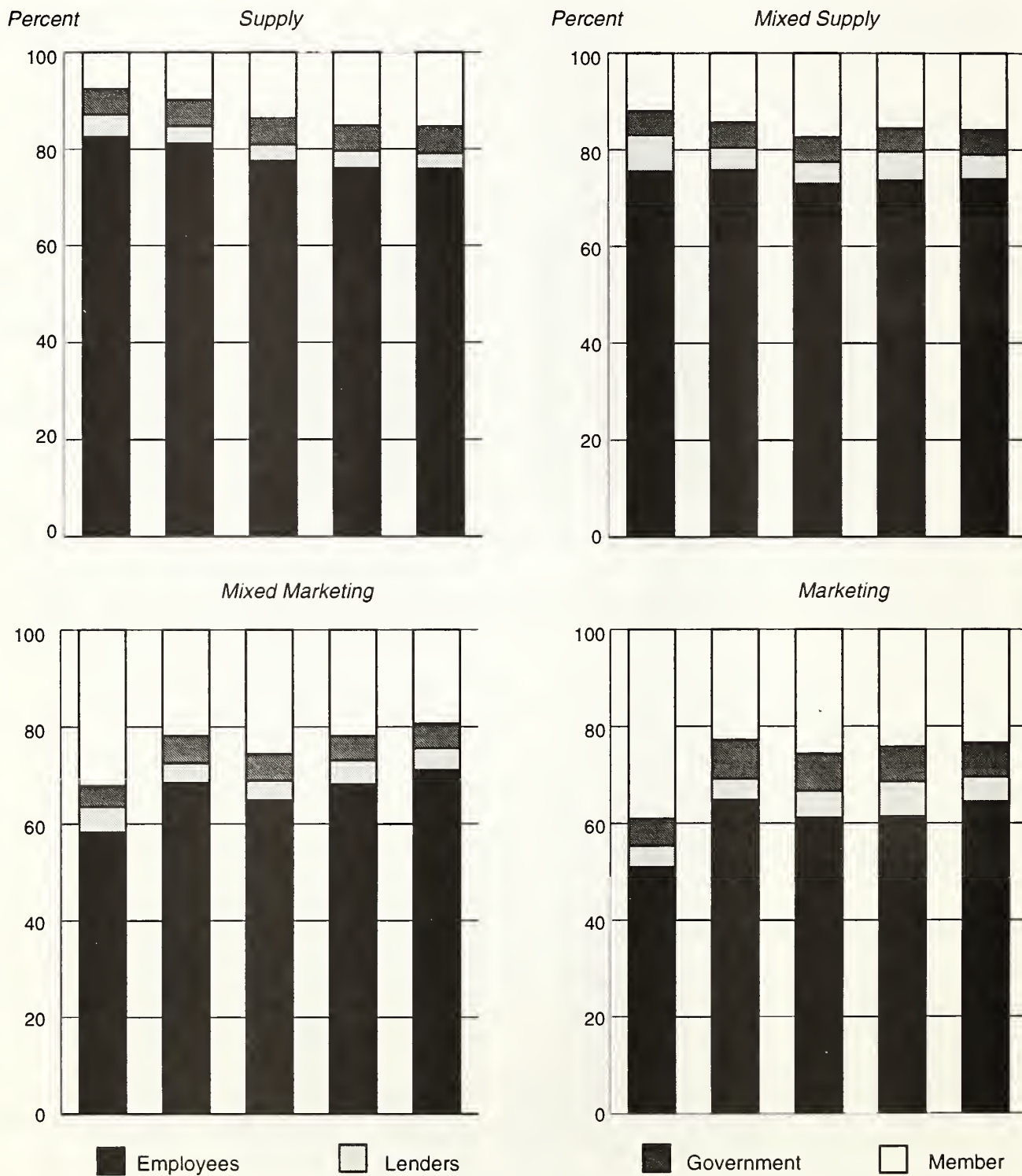


Figure 32—Average Deflated VA per Member by Co-op Type

Thousand Dollars

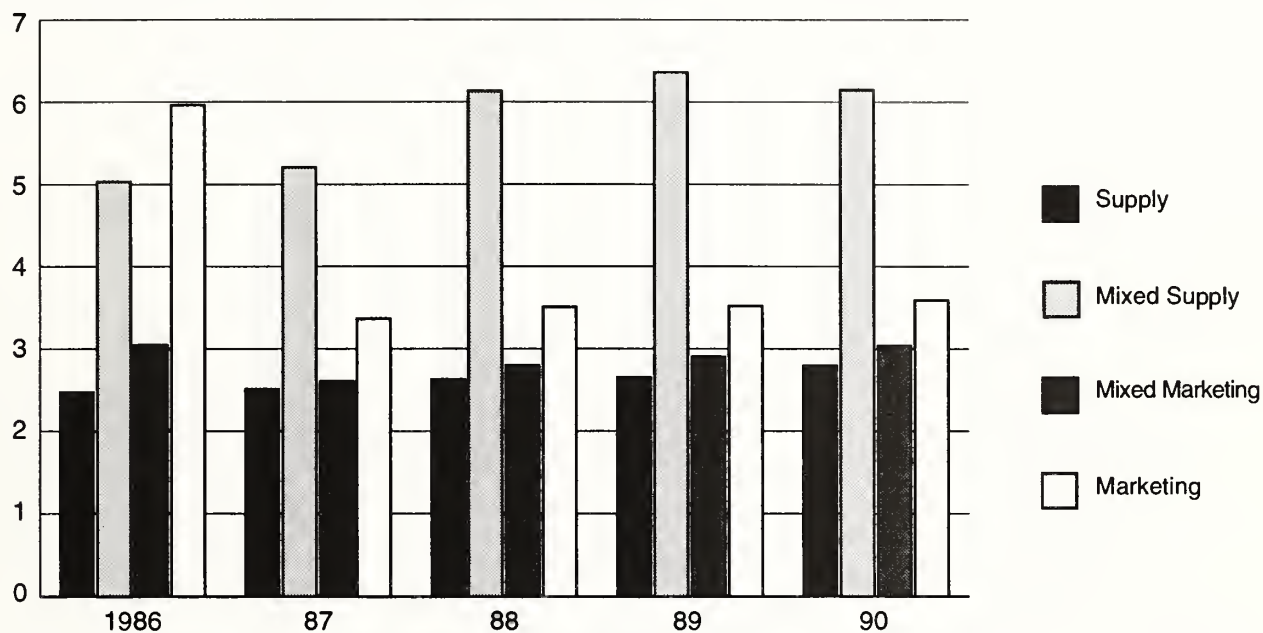


Figure 33—Average Deflated VA per Member by Small Size Co-op

Thousand Dollars

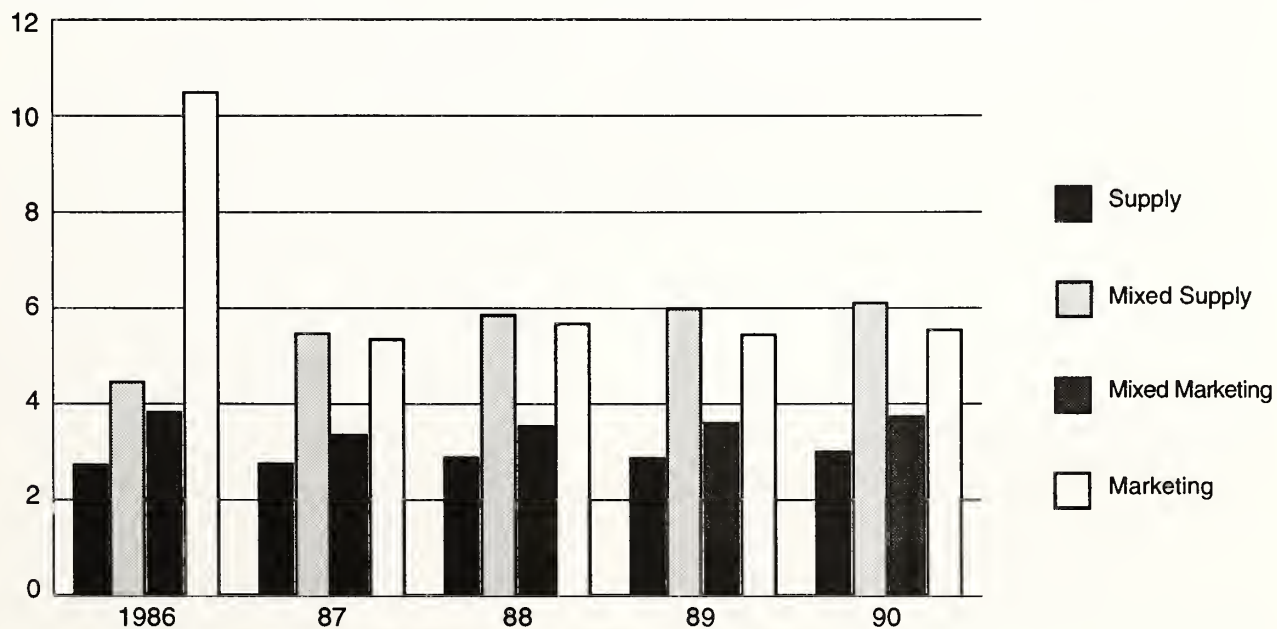
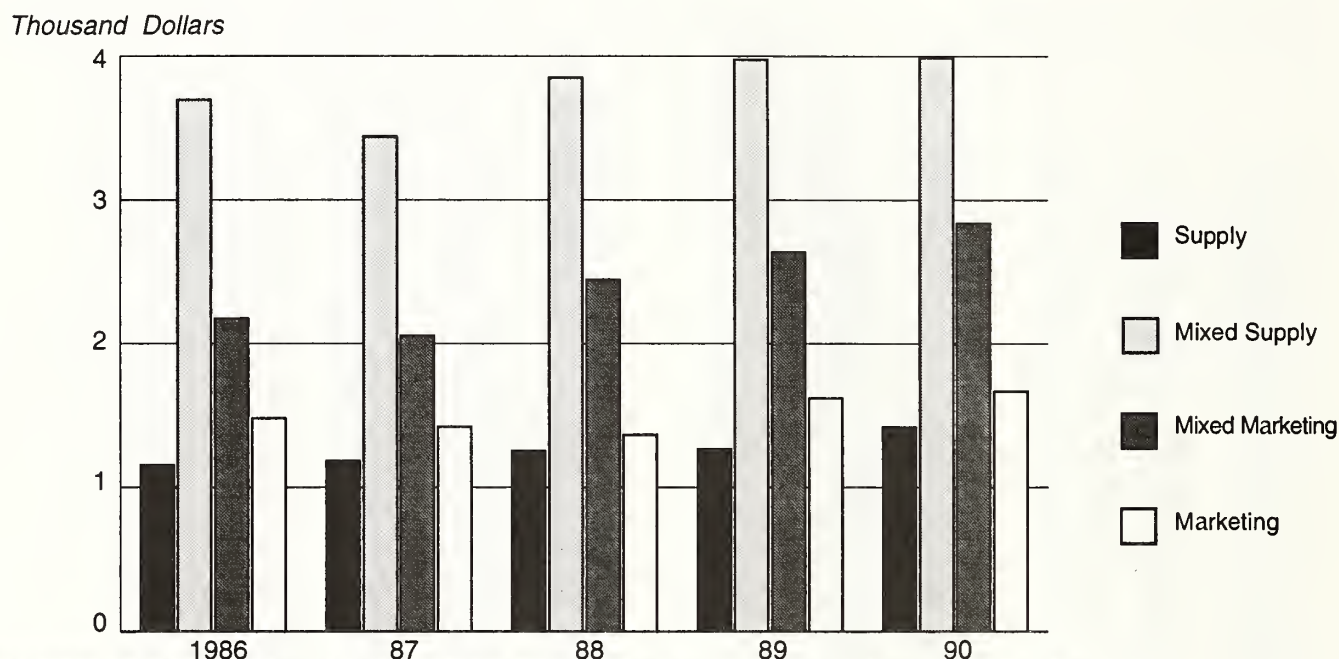


Figure 34—Average Deflated VA per Member by Type



Neither marketing or farm supply sales dominated value-added creation (figure 35). In each year except 1986, small mixed supply cooperatives generated the most value-added per member, at least \$5,000. Among medium size cooperatives, mixed supply cooperatives created the most value-added per member every year, about \$3,500 to \$4,000.

During the study period, cooperatives tended to grow in terms of gross sales (Table 1). The classification range of gross sales for small cooperatives was \$0 to \$5 million and \$5 to \$10 million for the medium-size cooperatives. Table 5 presents yearly changes in average membership numbers as well as comparing average membership numbers between sizes. Figure 35 shows that medium size cooperatives in this study created less value-added per member than small cooperatives.

This relationship was especially marked for small marketing cooperatives, which created twice as much value-added per member as their medium-size counterparts. This reinforces the argument that cooperative performance can be distorted if

described in terms of gross sales. Larger cooperatives do not create proportionally more wealth per member.

Per-Member Distribution Of VA

Value-added generated by cooperatives is wealth available to be distributed to the groups that make operation of the cooperative possible. Analysis of the shares of value-added going to each group provides further understanding of the economic contribution by cooperatives. Shifts in shares can signal financial or managerial problems for the cooperative. A large increase in the employee share with a corresponding decrease in the share distributed to members, for example, might point to inefficiencies in cooperative operation.

The most striking pattern to emerge in the distribution of value-added is the dominant role of employees. In each year, for every type and size of cooperative, employees received at least half of value-added (figure 36). The distribution of value-

Table 5—Average number of cooperative members by type and size, 1986 to 1990

Year	Supply		Mixed Supply		Mixed Marketing		Marketing	
	Small	Medium	Small	Medium	Small	Medium	Small	Medium
1986	612	1100	443	1208	414	380	256	496
1987	649	1027	828	242	435	385	281	494
1988	648	950	491	1238	475	380	278	419
1989	653	893	374	1169	526	349	253	469
1990	662	818	337	1196	526	334	257	462

added to employees was particularly high in supply cooperatives and in small and medium mixed supply cooperatives. Employees annually garnered close to 80 percent of value-added.

CONCLUSIONS AND RECOMMENDATIONS

Estimating VA provides additional insight into the economics of cooperative organization, structure, and performance and to the impact of cooperatives on the agricultural sector. Its use helps in understanding and tracking the changing structure of cooperative agriculture. VA measures the net additions to final output rather than yearly gross sales. The exact accounting definition of VA changes with its use, although the accounting concept remains the same: VA is equal to revenue from production minus the amounts paid for goods and services purchased from other firms.

VA represents profits and factor payments associated with those intermediate goods, such as land, labor, capital, and management, that were used up in the production process. VA measures both productivity and profitability. VA increases when employment is generated, capital is used efficiently, and returns to management are recorded.

This research employed a value-added measure to analyze the economic contribution of agricultural cooperatives. Results showed that employees received the largest share of the new wealth

agriculture cooperatives created while members received the second largest.

Smaller cooperatives created more value-added per member than medium size cooperatives. Economies of scale, particularly in the use of employees, might explain the lower per-member value-added of medium size cooperatives. Future analyses including ratios of value-added per employee could show if medium size agricultural cooperatives indeed operate more efficiently.

No clear pattern emerged of either supply activities or marketing activities dominating value-added creation among agricultural cooperatives. The most notable differences between types of cooperatives was in the distribution of value-added. As marketing activity increased, the percentage of value-added going to members tended to increase because marketing cooperatives engage in less labor-intensive supply delivery than supply cooperatives. Further analysis is needed to distinguish value-added creation differences among diverse kinds of marketing cooperatives such as vegetables and grain.

Value-added provides a good measure of the size and importance of the economic contribution by a cooperative. It is a better measurement in that regard than gross sales, because it does not include expenses passed on to members. It is also appropriate for comparing capital-intensive types of cooperatives to labor-intensive cooperatives.

Figure 35—Average VA per Member by Size and Type of Cooperative

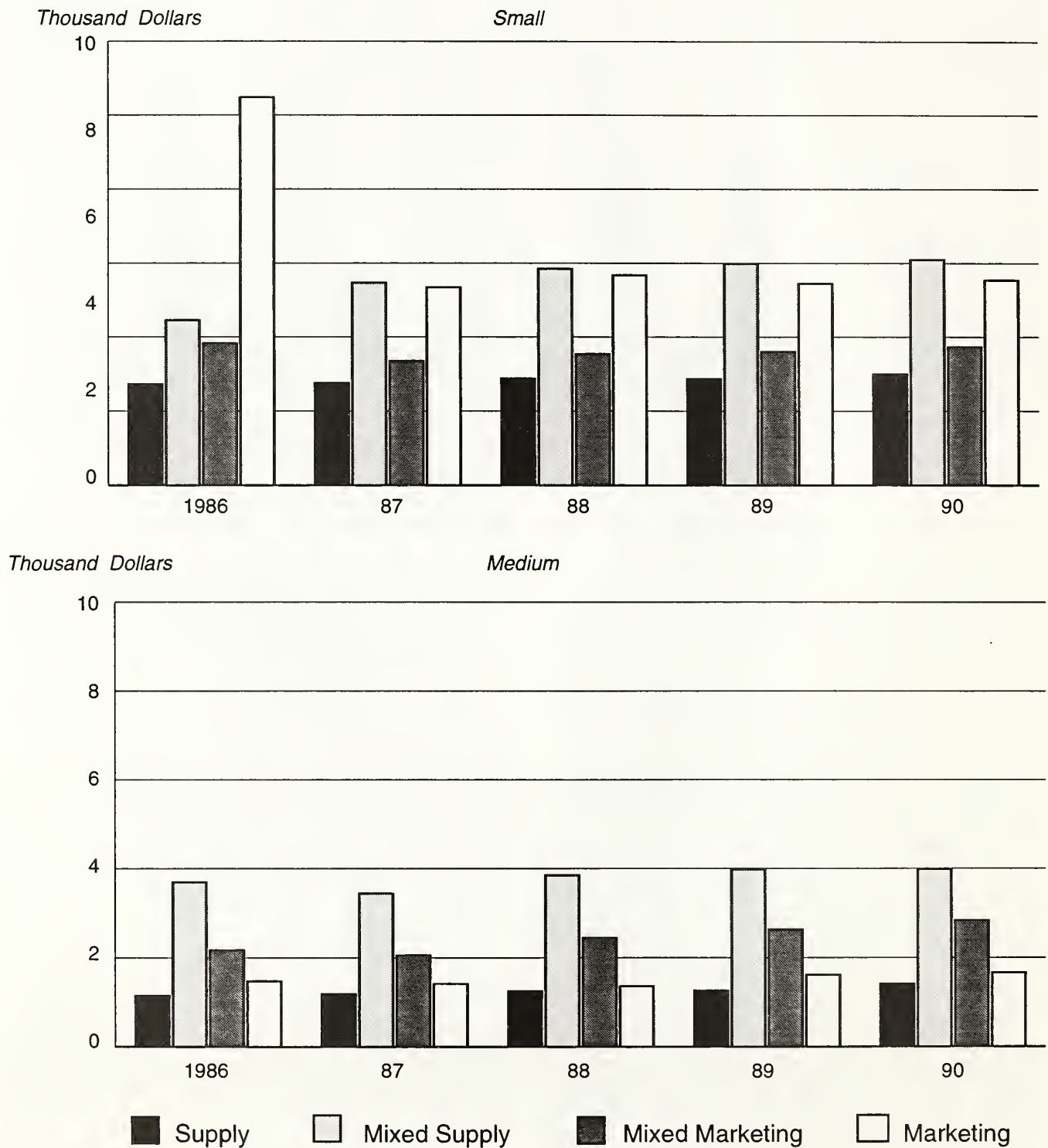
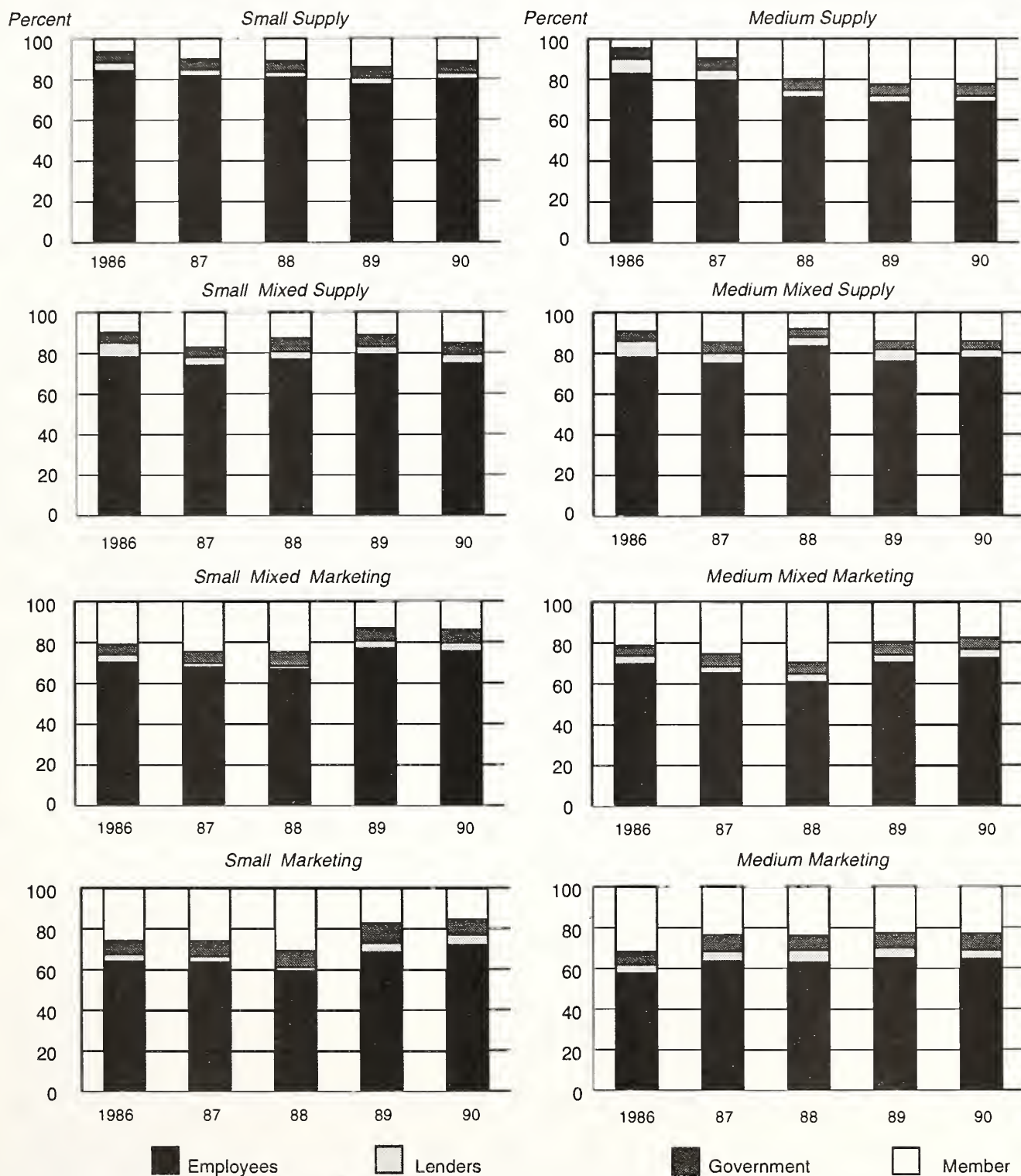


Figure 36—Percentage Distribution of VA by Type and Size of Co-op



The data used in this study was based on annual reports collected from cooperatives. The arbitrary typing and sizing of cooperatives was based on gross sales. This method of classifying cooperatives can lend itself to artificial biases of cooperative performance and size within a class.

To fully evaluate VA by cooperatives, a scientific database is needed. The annual survey of farmer cooperatives contains some, but not all of the information needed to determine VA by cooperatives. Not included in the annual survey, but needed to calculate VA, are changes-in-inventory, interest, taxes, wages and benefits, non-cash perquisites and depreciation for each cooperative.

Ideally, a VA database for cooperatives would contain information reflecting all three types of cooperatives: supply, marketing, and service. Sourcing of sales, income, and receipts should be included as well as costs and expenses related to services, inputs, materials, supplies, and equipment. Non-financial data such as regionality, numbers of total, active, non-active, and retired members would enable evaluation of VA on a per-member basis. This is the most suitable form for comparison and evaluation.

Such a database would have several uses. First, comparisons of regionality, returns to membership, and performance by type and size could be reported. Such information is useful for locating apparent disparities between cooperative types, sizes, and localities.

Second, as a separate issue, evaluations of optimal income and expenses could be made. Optimal information is useful in making management decisions and establishing standards of performance.

Third, information in the database could be used to estimate coefficients of performance for use in a mathematical model of a cooperative. Such a model has value for analyzing the effects of various policy proposals, decisions, and changes regarding not only where VA comes from, but where it is distributed.

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APPENDIX

Total revenue was derived by summing all income, including

- other income,
- total patronage,
- interest income,
- and total income from operations which

includes:

- total marketing which includes:

- grain,
- rice,
- cotton and cotton seed,
- nuts,
- sugar,
- dried beans,
- fresh fruit and vegetables,
- packaged fruit and vegetables,
- dairy,
- milk net sales,
- poultry,
- livestock,
- tobacco,
- wool,
- and other goods,

- total services income,

- total sales income which includes sales

from:

- feed,
- seed,
- fertilizer,
- chemicals,
- petroleum,
- tires, batteries, and automobile acces-

sories,

- machinery,
- building materials,
- containers and packing supplies,
- food,
- and other.

Total expenses included:

- advertising,
- depreciation,
- donations,
- dues and subscriptions,
- interest expense,
- bad debt expense,

- rent lease,
- insurance,
- miscellaneous,
- office supply and postage,
- payroll tax,
- income tax,
- property tax,
- other taxes and licenses,
- repairs and maintenance,
- station and store supplies,
- telephone and market information,
- travel and meetings,
- truck and auto expense,
- pension,
- patronage refunds (if expensed),
- compensation salary,
- compensation benefits,
- wages,
- utilities,
- annual meetings,
- board of directors,
- other expenses,
- professional fees,
- fixed facilities expense,
- and other operating expense,

Factor payments included:

- interest expense,
- payroll tax,
- income tax,
- property tax,
- other taxes, licenses,
- pension,
- patronage refunds (if expensed),
- compensation salary,
- compensation benefits,
- benefits,
- wages, and
- board of directors expense.

U.S. Department of Agriculture
Rural Business and Cooperative Development Service
Ag Box 3255
Washington, D.C. 20250-3255

Rural Business and Cooperative Development Service (RBCDS) provides research, management, and educational assistance to cooperatives to strengthen the economic position of farmers and other rural residents. It works directly with cooperative leaders and Federal and State agencies to improve organization, leadership, and operation of cooperatives and to give guidance to further development.

The cooperative segment of RBCDS (1) helps farmers and other rural residents develop cooperatives to obtain supplies and services at lower cost and to get better prices for products they sell; (2) advises rural residents on developing existing resources through cooperative action to enhance rural living; (3) helps cooperatives improve services and operating efficiency; (4) informs members, directors, employees, and the public on how cooperatives work and benefit their members and their communities; and (5) encourages international cooperative programs.

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