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FINANCING OF GROWTH IN AGRICULTURAL COOPERATIVES

ABSTRACT

Sources and uses of funds in agricultural cooperatives are examined and compared to the aggregate of nonfinancial corporations for the period 1973-1987. Cooperatives are observed to finance nearly half their growth with equity. The equity financing proportion of cooperatives is statistically indistinguishable from the national average of nonfinancial corporations in the years 1973-1983 and is consistently higher than the national average since 1984. This finding contradicts the hypothesis of equity shortage in cooperatives.

INTRODUCTION

Increasing complexity and sophistication of markets and technology has stimulated a trend toward growth, conglomeration, and geographical expansion of investor-owned agribusinesses (van Dijk and Veerman). The percentage of US food processors with over 1000 employees increased from 0.38% in 1977 to 0.60% in 1988 - a relative growth rate of nearly 60% over the period (U.S. Department of Commerce). There is evidence that higher market share achieved through growth is positively correlated with higher profitability (Buzzell and Wiersema) - an objective pursued by both shareholders and managers in investor-owned firms.

The growth and conglomeration of investor-owned agribusinesses has placed similar pressures on user-owned agricultural cooperatives: cooperatives feel they must grow if they are to maintain their competitive posture and to continue providing services to their members. Schrader found that management felt growth was essential for their cooperatives to remain viable, and Koller suggests that "cooperatives need to grow to take advantage of a continuum of new technologies, new opportunities for economies of size, and increased efficiency...". In line with this philosophy and spurred by competitive pressures from investor-owned agribusinesses, agricultural cooperatives in the US have shown a high frequency of consolidations, increasing the average sales volume per cooperative. The number of farm supply and marketing cooperatives declined by more than one third over the decade 1976-1985, while the cooperatives' share of farm supply purchases increased from 18% to 26% and the share of farm products marketed remained near 28% (U.S. Department of Agriculture).

Growth requires financing, which can be raised in the form of new stock issues (externally raised equity), retained earnings (internally generated equity), or increase in debt. Cooperatives, because of their unique form of organization, are usually viewed as "equity bound": they are believed to suffer from restrictions on the availability of the first two sources of funds and as a result are thought to rely more heavily on debt financing than comparable investor-owned firms. The present study

examines how a sample of U.S. agricultural cooperatives finance their growth and compares their equity and debt financing proportions to the financing mix in investor-owned corporations. The objective is to test the hypothesis that cooperatives are equity bound.

EQUITY CAPITAL IN COOPERATIVES AND INVESTOR-OWNED FIRMS

Cooperatives are user-owned firms in which the owners are at the same time the patrons. The ownership structure of cooperatives is thus different from that of the conventional firm, which transacts business with clienteles that are typically separated from the investors who own the firm. Investors in conventional firms (referred to as investor-owned firms, or IOFs) receive a return proportional to their investment, and IOFs are therefore driven to maximize earnings adjusted for risk in the interest of the owners. Investors in cooperatives, on the other hand, expect to receive direct benefits through doing business with the cooperative rather than earn a return on their invested capital. It can be argued that members' interests are not necessarily best served by maximizing the earnings of the cooperative: better results for the member-owners may be achieved by reducing the charges they pay for the services provided by the cooperative or increasing the prices they receive for the products marketed through the cooperative, although both strategies inevitably reduce cooperative earnings.

The difference in objectives between cooperatives and IOFs stemming from the dissimilarity in ownership structure suggests a number of distinctions in business and financial strategy of cooperatives (Condon; Cotterill; LeVay; Parliament, Lerman, and Fulton; Staatz, 1987). One of the main differences is that cooperative equity, unlike IOF stock, is not marketable. Nonpatrons have no motivation to invest in a cooperative, because the distribution of cooperative earnings is based on patronage and not investment. As a result, there are no secondary markets for cooperative stock, and cooperatives are restricted to raising equity from member-producers who use the services of the cooperative (Condon and Vitaliano; Staatz, 1989).

Nonmarketability of cooperative equity implies differences in attitudes toward growth between cooperatives and IOFs. The growth of an IOF results in appreciation of equity, which can be realized by investors through selling their shares in the secondary market. The nonmarketability of cooperative equity, on the other hand, prevents members from realizing the appreciated value of their investment, except through sale or dissolution of the cooperative (LeVay; Schrader). As a result, members may be less supportive of a growth strategy than IOF shareholders. Yet, as noted above, cooperatives do grow and expand. Indeed, cooperatives have been found to grow at rates not lower than IOFs in comparable industries (Chen, Babb, and Schrader; Lerman and Parliament).

To sustain growth, financing must be raised for both capital assets and additional working capital. Because of the nonmarketability of cooperative stock discussed above, members may be reluctant to increase their equity stake in the cooperative. Members may also be reluctant to increase the cooperative's equity base through alternative or retained earnings, because retained earnings translate into lower effective prices for marketed products or higher effective costs of farm inputs. In contrast, shareholders in IOFs are indifferent, at least in theory, between cash distributions and retained earnings, because the latter translate into market appreciation of equity.

Alongside the nonmarketability obstacles to raising equity through direct infusion of new capital or retained earnings, three additional factors affect members reluctance to provide equity capital to a cooperative. These are the horizon problem, the free-rider syndrome, and the diversification motive (Staatz, 1989). An individual members' time horizon may differ from that of the cooperative. As a result, individual members may prefer to invest in their farm rather than provide funds for longer term growth of the cooperative, reasoning that the present value of future receipts from the cooperative is lower. The free-riding syndrome suggests that few will contribute more than what is required for membership. Because the benefits of cooperative growth will be shared by all regardless of contribution, a free rider ignores the personal commitment and expects others to contribute capital to the cooperative. A third obstacle to raising equity by cooperatives is associated with the highly nondiversified asset portfolios held by farmers. Members may prefer to invest their marginal funds in nonagricultural sectors rather than increase their investment in an agricultural cooperative.

To alleviate the members' liquidity constraints due to nonmarketability of cooperative stock without overly restricting internally generated financing, many cooperatives have developed a system whereby part of the earnings are retained in the form of allocated patronage refunds. The allocated refunds are posted to members' accounts and are redeemed, i.e., paid out in cash to members, with a lag of several years (Cobia et al.). The cooperative thus has access to a pool of equity capital which, unlike traditional equity, is not permanent, but is in the nature of "deferred dividends". This technique creates a characteristic "equity time bomb". The cooperative is under an obligation to redeem periodically part of its equity and is thus forced to generate enough earnings to finance both its growth and equity redemption. These "deferred dividends" or "interest free loans" (depending on the bias of the financial analyst) may not be a trivial portion of a cooperative's equity: the top 100 cooperatives have on average 50% of their equity in the form of allocated retained earnings (Kane).

The factors discussed above virtually eliminate the ability of cooperatives to raise equity from nonmembers and severely curtail the inflow of equity from members. These arguments suggest that

cooperatives may find it more difficult to raise equity capital than comparable IOFs and thus may be forced to finance a larger portion of their growth with debt. The anticipated shortage of equity is expected to influence cooperative growth and financing decisions (Schrader). This study examines what proportions of equity and debt are used by cooperatives to finance their growth, how these proportions compare to the financing mix used by IOFs, and whether there is evidence to support the hypothesis that cooperatives are equity bound.

DATA AND METHODOLOGY

The data for this analysis were collected by writing to the nonbargaining cooperatives listed in the *Directory of Farmer Cooperatives* published by the USDA Agricultural Cooperative Service (Jermolowicz and Kennedy). The resulting database consists of the audited financial reports of 60 U.S. regional agricultural cooperatives with complete observations for the 15-year period 1973-1987. The sample includes dairy, food, grain, and farm supply cooperatives. These are regional cooperatives similar in their sales volume characteristics to the top 100 U.S. cooperatives regularly surveyed by the Agricultural Cooperative Service.

The comparative data for IOFs are represented by the summary statements of savings and investment of U.S. nonfinancial corporations published regularly in the Federal Reserve System's *Flow of Funds Accounts* (Board of Governors). These are aggregated data for nonfinancial corporate businesses in manufacturing, trade, and service industries. Farms (both corporate and noncorporate) are excluded from this category.

For this study, growth is defined as the increase in the total assets in a particular year. For cooperatives, by the basic balance-sheet equation,

$$dTA_{it} = dTL_{it} + dEQ_{it} \quad (1)$$

where dTA_{it} is the change in total assets, dTL_{it} is the change in total liabilities (debt), and dEQ_{it} is the change in equity. The subscripts "it" denote cooperative i in year t . The left-hand side of Eq. (1) represents the uses of funds or the total investment; the right-hand side represents the sources of funds - increase in debt and increase in equity net of redemption. The growth measures calculated in Eq. (1) are based on current-year changes and are therefore relatively unbiased by historical accounting conventions.

Eq. (1) can be broken down into more detailed components of sources and uses of funds, thus:

$$dFA_{it} + dCA_{it} = dCL_{it} + dLT_{it} + dEQ_{it} \quad (2)$$

Among the uses of funds, in the left-hand side, dFA_{it} is the change in net fixed assets (capital expenditure net of depreciation) and dCA_{it} is the change in current assets (related to investment in working capital). Among the sources of funds, dCL_{it} is the change in current liabilities (short-term debt and suppliers' credit) and dLT_{it} is the change in long-term debt. The change in equity dEQ_{it} is made up of additions to retained earnings in all forms (both unallocated and allocated) plus new equity contributed by members, less any redemption of equity. Depreciation is not included among the sources, because the change in equity is based on reported retained earnings, which are calculated after depreciation expense. The sources and uses for cooperatives are thus calculated on the basis of book values, and not cash flows.

The sources and uses components are expressed in proportion of total investment by dividing both sides in Eqs. (1) and (2) by dTA_{it} . The sources of funds in the right-hand side of Eqs. (1) or (2) divided by dTA_{it} indicate the proportions of growth financed by debt and equity. The sources and uses proportions for each year were averaged over all cooperatives with positive growth in that year. Annual observations with negative growth were omitted, because the sources proportions calculated with a negative change of total assets in the denominator are difficult to interpret. This analysis therefore focuses on growth and ignores contraction.

The data for nonfinancial corporations in *Flow of Funds Accounts* are published on cash flow basis. Adjustment to book values was made by subtracting the depreciation charges and the inventory valuation adjustment from the published figures for total internal funds on the sources side and from the changes in fixed assets and inventory on the uses side. The sources and uses proportions calculated after this adjustment were definitionally comparable to the proportions calculated from the annual reports of the cooperatives.

RESULTS

Sources and Uses Components of Cooperatives

Table 1 presents the sources and uses proportions averaged over the cooperatives for each year during the period 1973-1987. It is apparent that the equity component in the financing of cooperative annual investments is by no means negligible: the annual increase in assets financed with equity ranges from a low of 21 percent to a high of over 69 percent. The mean equity financing proportion over the entire 15-year period is 45.4 percent of total investment (with standard deviation of 14.7 percent). Cooperatives in this study thus finance nearly half of their growth with equity. Figure 1 illustrates the equity and debt proportions in the financing of cooperative growth.

In addition to financing a major portion of growth with equity, the cooperatives in this study were found to raise new debt mainly in the form of current liabilities. As indicated in Figure 1 and Table 1, most of the increase in debt financing is short-term, while the long-term debt component is relatively small for these cooperatives. In three of the 15 years (1983, 1986, and 1987) there was a decrease in long-term debt. In these years, current liabilities increased not only to finance the investment but also to adjust the debt structure to more short-term loans.

Cooperatives in this study apparently use permanent equity funds rather than debt to finance the increase in their long-lived capital assets. The close match between the equity financing component and the capital expenditure component of total investment is illustrated in Figure 2, where the time series indicating the proportions of equity and capital expenditure are seen to be intertwined. The difference between the equity financing proportions and the capital expenditure proportions in the sources and uses accounts of cooperatives is not statistically significant at 10% level, both by the standard t-test and by the Wilcoxon nonparametric test.

Comparison of Cooperatives and IOFs

Table 2 presents the mean proportions of sources and uses of funds for the US nonfinancial corporations, based on Federal Reserve System aggregated data. Most corporate businesses in this national average are IOFs and these data therefore provide a reference or benchmark against which the behavior of cooperatives may be judged.

Equity Financing. Figure 3 plots the proportion of equity financing for both nonfinancial corporations and cooperatives. The two series are statistically indistinguishable during the period 1973-1983: the average equity financing proportion for this period are 46.8% of total investment for cooperatives and 45.7% for nonfinancial corporations, with standard deviations of 14.8% and 10.4%, respectively. From 1984, however, the equity financing component of nonfinancial corporations drops dramatically to negative values, while that of cooperatives continues at the same level as in prior years.

As a result of the dramatic change in equity financing patterns of IOFs from 1984, there is a statistically significant difference at the 10% level between the equity proportions of cooperatives and nonfinancial corporations over the full 15-year period 1973-1987, both by the t-test and the Wilcoxon test. Contrary to the initial expectation, however, it is the cooperatives that

TABLE 1. Source and Uses of Funds: Means of 60 Agricultural Cooperatives (percent of total investment)^a

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
1. USES															
Net capital expenditure ^b	10.4	30.9	58.6	55.7	44.8	45.3	54.4	35.2	38.8	108.0	-4.1	32.2	24.4	23.1	25.7
Investment in current assets ^c	89.6	69.1	41.4	44.3	55.2	54.7	45.6	64.8	61.2	-8.0	104.1	67.8	75.6	76.9	74.3
Total uses	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2. SOURCES															
Increase in short-term debt ^d	71.0	44.1	24.1	25.9	20.5	36.7	58.0	49.4	58.5	10.7	78.1	20.7	34.3	109.1	79.2
Increase in long-term debt	3.8	11.8	8.2	15.6	28.4	7.4	1.4	19.4	6.7	19.9	-14.5	41.1	10.9	-30.1	-32.3
Increase in debt	74.9	55.9	32.3	41.4	48.9	44.1	59.4	68.9	65.2	30.6	63.6	61.8	45.2	79.0	46.9
Increase in equity ^e	25.1	44.1	67.7	58.6	51.1	55.9	40.6	31.1	34.8	69.4	36.4	38.2	54.8	21.0	53.1
Total sources	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^a Columns may not add up exactly due to rounding.

^b Increase in net fixed assets, after depreciation charges.

^c Includes increase in inventories at book value.

^d Includes increase in accounts payable.

^e New contributions from members plus retained earnings (allocated and unallocated) less equity redemption.

Source: Audited financial statements of participating cooperatives.

Fig. 1. Mean Sources of Cooperatives

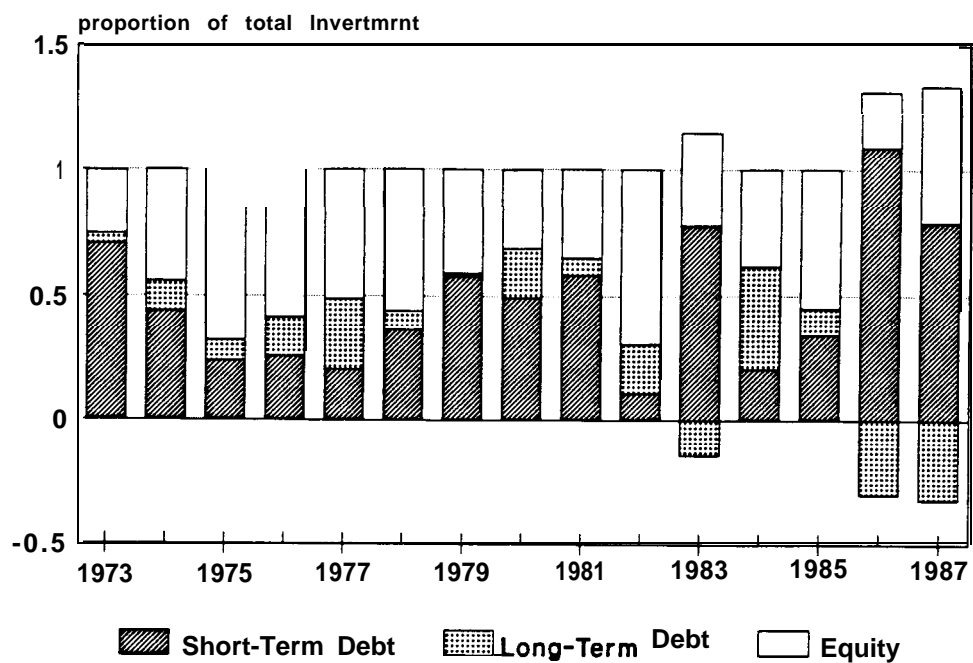


Fig. 2. Capital Expenditure and Equity

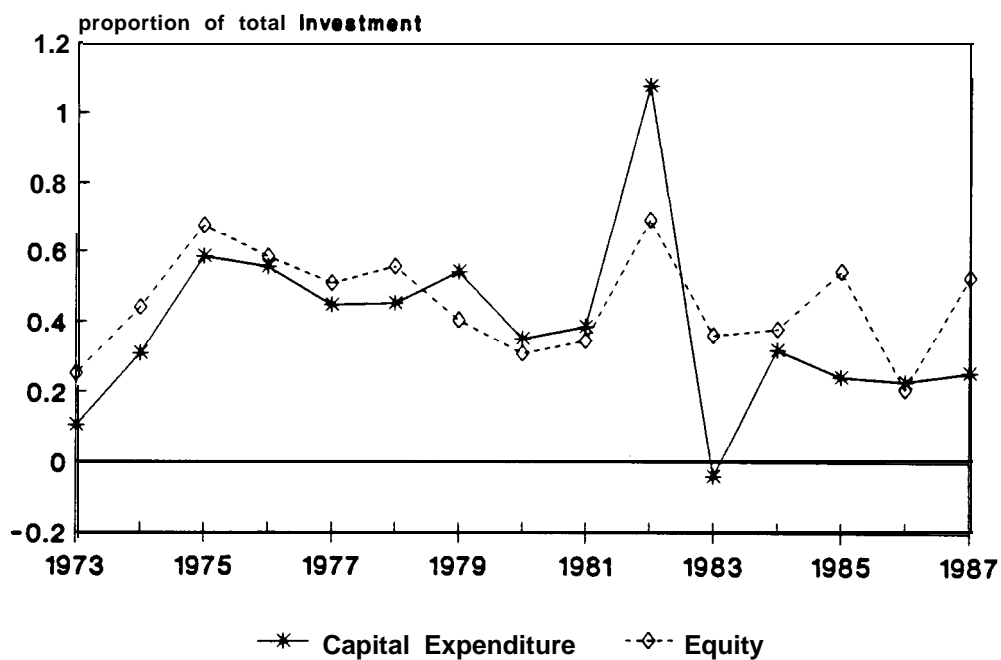


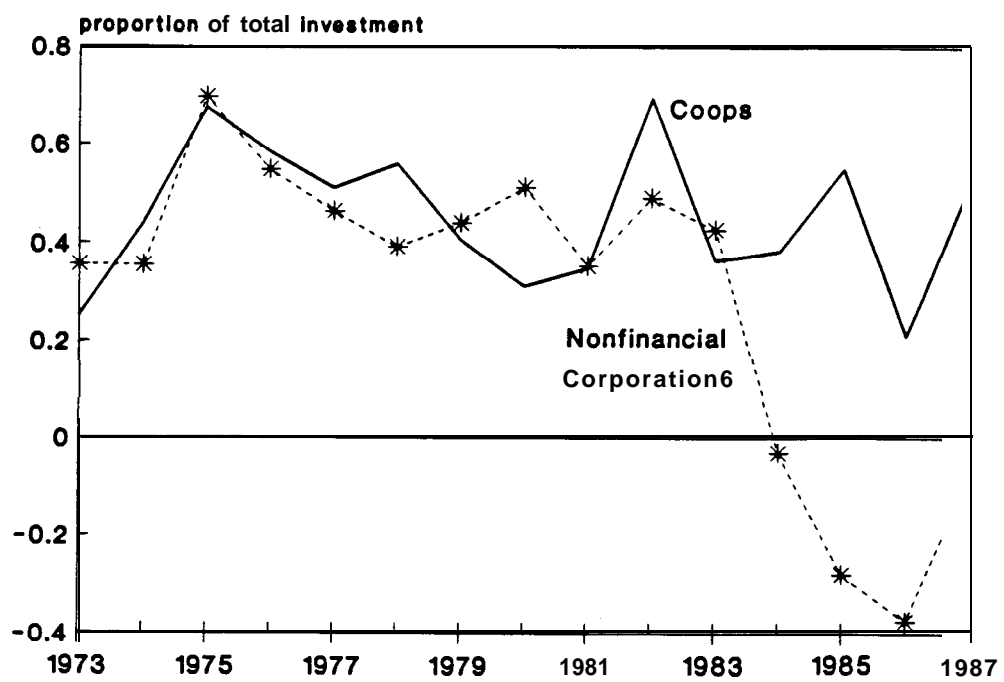
TABLE 2. Sources and Uses of Funds: Nonfinancial Corporations (percent of total investment)^a

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
1. USES															
Net capital expenditure ^b	27.3	30.3	47.9	39.2	42.0	39.0	29.6	38.2	44.5	74.0	25.7	30.5	40.9	25.0	12.6
Investment in current assets ^c	72.7	69.7	52.1	60.8	58.0	61.0	70.4	61.8	55.5	26.0	74.3	69.5	59.1	75.0	87.4
Total uses	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2. SOURCES															
Increase in short-term debt ^d	55.2	49.6	-4.8	24.7	33.9	46.3	48.5	38.0	45.5	60.5	45.4	70.8	67.9	50.1	39.8
Increase in long-term debt	9.2	15.0	35.1	20.5	19.8	14.7	7.6	10.9	19.3	-9.6	12.0	32.3	60.1	87.4	67.3
Increase in debt	64.4	64.5	30.3	45.1	53.7	61.0	56.1	48.9	64.9	50.9	57.4	103.1	128.0	137.4	107.1
Increase in equity ^e	35.6	35.5	69.7	54.9	46.3	39.1	43.9	51.1	35.1	49.1	42.6	-3.1	-28.0	-37.4	-7.1
Total sources	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^a Columns may not add up exactly due to rounding.^b Increase in net fixed assets, after depreciation charges.^c Includes increase in inventories at book value, without Inventory Valuation Adjustment.^d Includes increase in accounts payable.^e Net equity issues plus retained earnings.

Source: "Sector Statements of Saving and Investment: Nonfinancial Corporate Business, Excluding Farms," *Flow of Funds Accounts*, Board of Governors of the Federal Reserve System, Division of Research and Statistics, various quarterly issues, pp. 10-11.

Fig. 3. Equity Financing Proportions



show a higher proportion of equity in their sources: while the 15-year average for cooperatives is 45.4% of total investment (with standard deviation of 14.7%), the average for nonfinancial corporations is only 28.5% (with standard deviation of 31.8%). For cooperatives the equity proportions remained "stationary": the average and the standard deviation are virtually the same for the 11-year period 1973-1983 as for the 15-year period 1973-1987.

Closer examination of the data in *Flow of Funds Accounts* indicates that the negative equity financing proportions of nonfinancial corporations are attributable to persistently negative amounts of new stock issues since 1984. Although the nonfinancial corporations in aggregate continued to report profits and the retained earnings remained positive, no new equity was issued on average: instead, the IOFs engaged in extensive stock repurchases, adjusting their capital structure toward higher leverage (for a discussion of this development, see Brealey and Myers).

Debt Financing. The reduction of equity financing of nonfinancial corporations since 1984 has been accompanied by an increase in long-term debt financing without noticeable changes in the component of short-term loans. Nonfinancial corporations are evidently adjusting their capital structure shifting toward higher permanent debt levels, and the negative equity financing proportions are an indication of a long-term strategy.

The differences between long-term debt proportions of cooperatives and nonfinancial corporations, while statistically insignificant up to 1983, again become statistically significant at 10% when the years 1984-1987 are added to the time series. Nonfinancial corporations use significantly more long-term debt financing than cooperatives. The differences between short-term debt proportions of cooperatives and nonfinancial corporations, on the other hand, are not statistically significant over the entire period. It has been argued that cooperatives may have a greater difficulty than IOFs borrowing long-term, because commercial banks are uncomfortable with the dynamic nature of cooperative equity associated with various retention and redemption plans (Cobia and Brewer). There are no such difficulties in obtaining short-term credit for cooperatives, because it is normally backed by familiar liquid assets, such as inventories and receivables. This argument is consistent with a previous finding

of generally very low levels of long-term debt among dairy cooperatives (Parliament, Lerman, and Fulton).

Table 3 presents a summary of the sources and uses proportions of cooperatives and nonfinancial corporations, averaged over the 15-year period 1973-1987. The averages for the 11-year subperiod 1973-1983 are also presented, because of the dramatic change in IOF financing patterns since 1984.

TABLE 3. Sources and Uses Components for Cooperatives and Nonfinancial Corporations: Averages for 1973-1983 and 1973-1987 (percent of total investment; standard deviations in parentheses)

	1973-1983		1973-1987	
	Coops	Nonfin. Corp.	Coops	Nonfin. Corp.
1. USES				
Capital expenditure	43.4 (28.7)	39.8 (13.5)	38.9 (25.6)	36.5 (13.9)
Investment in current assets	56.6 (28.8)	60.2 (13.5)	61.1 (25.6)	63.5 (13.9)
2. SOURCES				
Increase of equity	46.8 (14.8)	45.7 (10.4)	45.4* (14.7)	28.5* (31.8)
Increase of short-term debt	43.4 (21.8)	40.3 (17.9)	48.0 (27.6)	44.8 (18.3)
Increase of long-term debt	9.8 (11.4)	14.1 (10.9)	6.5* (19.8)	26.8* (25.9)
Increase of total debt	53.2 (14.8)	54.3 (10.4)	54.6* (14.7)	71.5* (31.8)

* Difference between cooperatives and nonfinancial corporations significant at 10% level.

CONCLUSION

Theoretical considerations suggest that cooperatives are liable to suffer from a shortage of equity capital and are thus considered to be more "equity bound" than comparable IOFs. Yet the agricultural cooperatives in this study were found to finance on average almost half of their total investment with equity - not exactly a sign of equity starvation. Furthermore, during the period 1973-1983, the proportion of total investment financed with equity in cooperatives was found to be statistically indistinguishable from the benchmark used to represent IOFs. Since 1984, the nonfinancial corporations have followed a strategy of stock repurchases, which has resulted in a dramatic reduction in the financing of growth with equity, while the cooperatives have continued to finance growth with the same equity proportions as in prior years. As a result, the 15-year average proportion of growth financed with equity is significantly *higher* for cooperatives than for nonfinancial corporations. Perhaps, as suggested by Caves and Petersen, differences in tax treatment between cooperatives and IOFs enlarge a cooperative's stream of internal finance per dollar of net margin and account for the relatively high equity financing proportions observed in these cooperatives.

It might be argued that these comparisons between cooperatives and nonfinancial corporations are flawed because of an insufficiently fine-tuned benchmark of IOF performance. Yet a previous study comparing a subset of these cooperatives to a different benchmark of IOF performance more finely tuned by both industry and size (Robert Morris Associates' *Annual Statement Studies*) found that, contrary to expectations, the debt-to-assets ratios for cooperatives were not higher than for comparable IOFs (Lerman and Parliament). The previous results are consistent with the present study, because high proportions of equity financing inevitably lead to low debt-to-assets ratios. This consistency suggests that the findings are robust to the particular benchmark used.

It also could be argued that the unexpectedly high proportion of equity financing among the cooperatives is attributable to lower investment levels or lower rates of growth than for IOFs. Yet a subsample of cooperatives in two industries - dairy and food processing - were found to grow at the same rate as the comparable IOFs (Lerman and Parliament). In another study, cooperatives in the food sector were found to have higher growth rates than comparable IOFs (Chen, Babb, and Schrader).

The observation of higher equity financing proportions, however, does not resolve unambiguously the hypothesis of equity constraints in cooperatives. Because of equity redemption schemes, some cooperative equity may be regarded as loans from members and it is left to future research to examine more closely the composition of cooperative equity with regard to new capital infusion, allocated earnings, and the actual redemption outflows.

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