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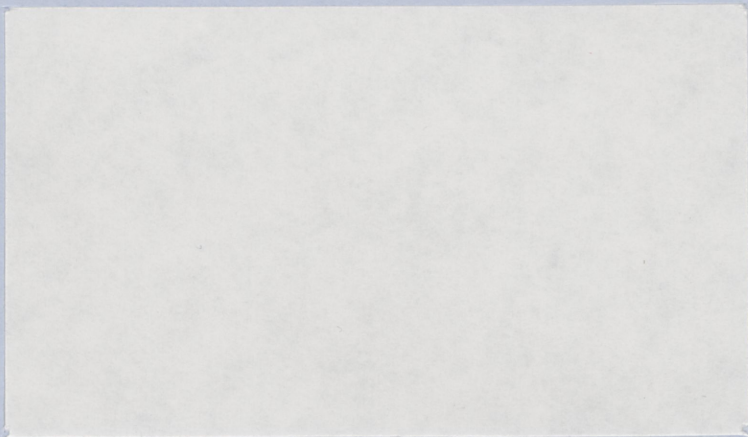
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**FINANCING OF GROWTH IN  
AGRICULTURAL COOPERATIVES**

by

**Zvi Lerman and Claudia Parliament**

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מאמרי המחקר בסידרה זו הם דווח ראשוני לדין וקבלת הערות. הדעות המובעות בהם אינן משקפות את דעות המרכז למחקר בכלכלה חקלאית.

## FINANCING OF GROWTH IN AGRICULTURAL COOPERATIVES

Zvi Lerman and Claudia Parliament

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# FINANCING OF GROWTH IN AGRICULTURAL COOPERATIVES

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## Abstract

This study examines the hypothesis that cooperatives suffer from a shortage of equity capital because of ownership structure and nonmarketability of cooperative equity. The empirical findings indicate that agricultural cooperatives finance nearly half their growth with equity. Contrary to theoretical expectations, the equity financing proportion of cooperatives is found to be statistically indistinguishable from the national average of nonfinancial corporations for 1973-1983 and is higher than the national average since 1984. Cooperatives are observed to raise new debt mainly through short-term borrowing. This indicates that banks may be reluctant to lend long-term to cooperatives because of their "unorthodox" ownership structure.

## 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). 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.

Cooperatives also must grow if they are to maintain their competitive posture and to continue providing services to their members. In fact 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 U.S. 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, for investor-owned firms, can be raised in the form of new stock issues (externally raised equity), retained earnings (internally generated equity), or increases in debt. Cooperatives, because of their unique user-based ownership and the resulting nonmarketability of their stock, are believed to suffer from restrictions on the availability of the two equity sources of capital. Cooperatives are thus viewed as "equity bound" and are thought to rely more heavily on debt financing than comparable investor-owned firms (IOFs).

A previous study comparing financial performance of cooperatives to IOFs found that, contrary to expectations, the debt-to-assets ratios for cooperatives were not higher than for comparable IOFs (Lerman and Parliament). This unexpected behavior of debt levels in cooperatives may be attributable to two factors: (a) cooperatives face difficulties borrowing all they need, because commercial banks are uncomfortable with their "unorthodox" ownership structure; (b) cooperatives have lower investment needs than IOFs because they maintain lower rates of growth. Yet cooperatives in two industries - dairy and food processing - were found to grow at the same rate as comparable IOFs: around 10% per annum based on fixed assets (Lerman and Parliament). In another study, cooperatives in the food sector were actually found to have higher growth rates than comparable IOFs (Chen, Babb, and Schrader).

Already the evidence of these previous studies questions the validity of the hypothesis of "equity starvation" in cooperatives. Yet these studies have looked at total debt and equity levels of cooperatives in only two industries, without examining the year-by-year sources of growth

financing. The present study uses a substantially larger sample of U.S. agricultural cooperatives drawn from a wider range of industries to examine how cooperatives finance their growth. The cooperative sources of growth financing are then compared to the financing mix of investor-owned corporations as represented by the nonfinancial business sector of the U.S. economy.

### **Equity Capital in Cooperatives**

Cooperatives are user-owned firms: 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 clientele 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).

Because of the nonmarketability of cooperative stock, members may be reluctant to increase their illiquid equity stake in the cooperative. Members may also be reluctant to allow the cooperative to increase its equity base through 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, which can be realized by investors through selling their shares in the secondary market.

Faced with such fundamental restrictions on accumulation of equity capital, many cooperatives have developed a system whereby part of the earnings are retained in the form of allocated patronage refunds, which are redeemed, i.e., paid out in cash to members, with a lag of several years (Cobia et al.). This system partly alleviates the members' liquidity constraints caused by nonmarketability of cooperative stock and at the same time provides the cooperative with an important source of equity capital for growth: the top 100 cooperatives have on average 50% of their equity in the form of allocated retained earnings (Kane). Unlike the traditional permanent equity, however, the allocated patronage refunds are in the nature of "deferred dividends" or "interest free loans" (depending on the bias of the financial analyst), and the cooperative is forced to generate enough earnings to finance periodic equity redemption in addition to financing its growth.

However, these equity retention systems in cooperatives are basically an analog of accumulation of equity from retained earnings in IOFs: they cannot replace the other source of



equity available to IOFs, namely raising equity through new stock issues. Despite the promise of ultimate redemption of allocated patronage refunds, cooperatives probably cannot abuse this mechanism by relying on it to satisfy all their equity needs. The potential danger of "equity starvation" in a cooperative thus remains.

The anticipated shortage of equity in cooperatives is expected to influence their growth and financing decisions (Schrader). Cooperatives may compensate for the theoretically expected shortage of equity capital by financing a relatively high portion of their growth with debt. The present study determines the proportions of equity and debt used by cooperatives to finance their growth and examines more carefully than before the evidence to support or refute the hypothesis of "equity starvation" in cooperatives.

### Methodology

For this study, growth is defined as the increase in the total assets in a particular year. 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. These sources and uses components are therefore relatively unbiased by the historical accounting conventions that unavoidably affect the debt to equity ratios used in previous studies.

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,  $dFA_{it}$  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, 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 the analysis of cooperatives 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 with 1987 average sales of around \$400 million which is similar in to the sales volume of the top 100 U.S. cooperatives regularly surveyed by the Agricultural Cooperative Service (Kane).

## Results

### Sources of Growth for 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 a standard deviation of 14.7 percent. Cooperatives in this study thus finance nearly half of their growth with equity, even after taking care of all redemption outflows. Figure 1 illustrates the equity and debt proportions in the financing of cooperative growth.

New debt was raised by the cooperatives in this study 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. 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 new investment but also to adjust the debt structure to more short-term loans.

TABLE 1. Sources and Uses of Funds: Means of 60 Agricultural Cooperatives, 1973-1987 (percent of total investment)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>1. USES</b>															
Capital expenditure	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	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
<b>2. SOURCES</b>															
Increase in short-term debt	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	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

Source: Audited financial statements of participating cooperatives.

Fig. 1. Mean Sources of Cooperatives

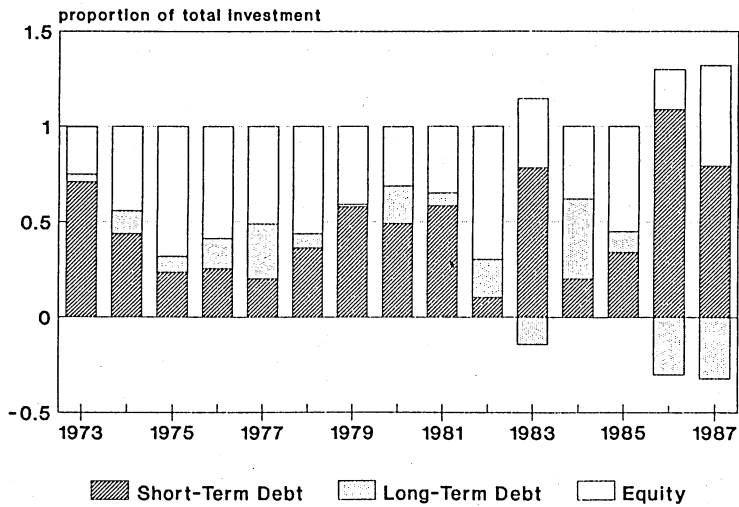
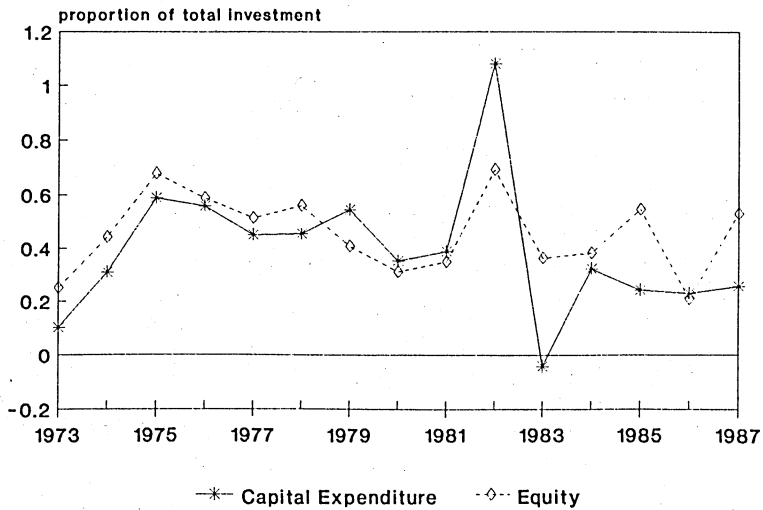


Fig. 2. Capital Expenditure and Equity



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 in the source accounts and the capital expenditure proportions in the 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 Cooperative and IOF Financing of Growth**

The financing proportions of cooperatives are compared to the sources and uses data from the summary statements of savings and investment of U.S. nonfinancial corporations published 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. The Federal Reserve System's sample is sufficiently large and general to be used as a proxy for the nonfinancial corporate sector of the U.S. economy. Insofar as most corporate businesses in this sample are IOFs, these flow of funds data provide a relevant reference or benchmark against which the behavior of cooperatives may be judged.

Table 2 presents the mean proportions of sources and uses of funds for the U.S. nonfinancial corporations, based on Federal Reserve System aggregated data. The *Flow of Funds Accounts* data are published on a cash flow basis. Adjustment to book values is made by subtracting the depreciation charges and the inventory valuation adjustment from the published

TABLE 2. Sources and Uses of Funds: Nonfinancial Corporations (percent of total)<sup>a</sup>

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>1. USES</b>															
Net capital expenditure <sup>b</sup>	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 <sup>c</sup>	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
<b>2. SOURCES</b>															
Increase in short-term debt <sup>d</sup>	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 long-term debt	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 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 <sup>e</sup>	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

<sup>a</sup> Columns may not add up exactly due to rounding.

<sup>b</sup> Increase in net fixed assets, after depreciation charges.

<sup>c</sup> Includes increase in inventories at book value, without Inventory Valuation Adjustment.

<sup>d</sup> Includes increase in accounts payable.

<sup>e</sup> 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.

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 (Table 2) are definitionally comparable to the proportions calculated from the annual reports of the cooperatives (Table 1).

*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.

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 (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.



Fig. 3. Equity Financing Proportions

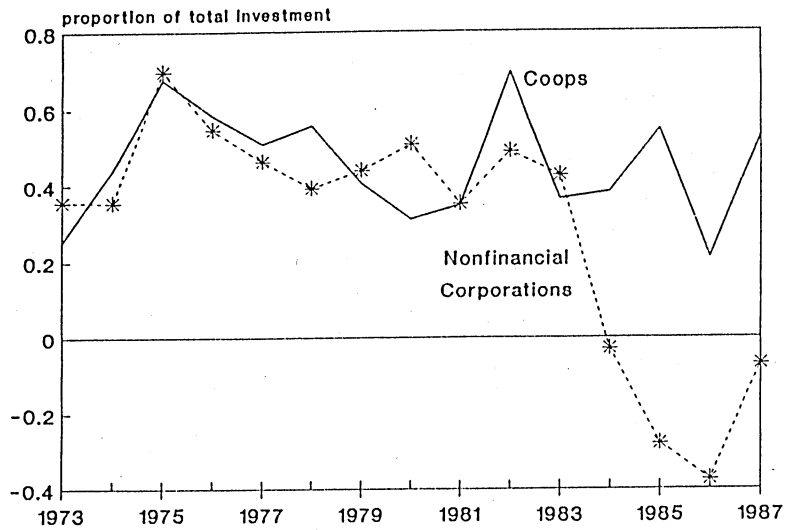


TABLE 3. Sources and Uses Components: Averages for 1973-1983 and 1973-87 (percent of total investment; standard deviations in parentheses)

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

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

The differences between short-term debt proportions of cooperatives and nonfinancial corporations are not statistically significant over the entire period. The differences between long-term debt proportions of cooperatives and nonfinancial corporations, while statistically insignificant up to 1983, become statistically significant at 10% when the years 1984-1987 are added to the time series. Nonfinancial corporations have been using significantly more long-term debt financing than cooperatives since 1984.

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.

### Conclusion

Theoretical considerations suggest that cooperatives are liable to suffer from a shortage of equity capital. 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. Perhaps this is due to the special mechanisms of per-unit retains and allocated patronage refunds that successful cooperatives implement to broaden their equity retention opportunities and thus sustain their growth in a competitive environment. Or, perhaps, as suggested by Caves and Petersen, the high equity financing proportions observed in these cooperatives are the result of the specific tax treatment of cooperatives that enlarges the stream of internal financing per dollar of net margin. In any event, the empirical evidence presented here, does not support the theoretical hypothesis that cooperatives are "equity bound".

Cooperatives were found to raise new debt mainly in the form of short-term borrowing. It has been argued that cooperatives may have difficulties borrowing long-term, because commercial banks are uncomfortable with the "unorthodox" ownership structure and 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 low levels of long-term debt among dairy cooperatives (Parliament, Lerman, and Fulton).

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. This is again contrary to theoretical expectations, which claim that cooperatives will resort to more debt financing than 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. This trend for the nonfinancial corporations is probably a manifestation of the leveraged buyout phenomenon that enjoyed popularity in mid-1980s. Cooperatives, as suggested by an anonymous reviewer, are protected by their structure and the nonmarketability of their equities, from the huge accumulation of debt that accompanies leveraged buyouts. Perhaps in addition to acting as a competitive yardstick (Nourse) cooperatives perform another public-policy function by counteracting the borrowing excesses associated with leveraged buyouts.

The observation of high equity financing proportions among the sample of cooperatives does not, however, 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. Also a more detailed study is needed of the comparative growth rates of cooperatives and IOFs in a wider range of industries than previously attempted. This analysis of growth should link the financing patterns of cooperatives with financing *needs* and shed further light on the hypothesis of capital starvation in cooperatives.

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