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## SELECTING ALTERNATIVE FEDERAL INCOME TAX STRUCTURES FOR FARM SUPPLY COOPERATIVES

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Farm supply cooperatives provide farm inputs that are used by producers and nonproducers. The development and urbanization of many rural areas have caused farm supply cooperatives to be faced with more and more potential patrons who are not producers. The use of farm inputs by nonproducers has thus expanded the farm supply cooperatives' market potential, while threatening to force them out of what may be preferred tax status.

Exempt cooperatives that face substantial nonproducer business, must either merchandise in an attempt to limit nonproducer business, or actively recruit producers to maintain acceptable producer/nonproducer ratios. Once nonproducer business exceeds legal limits, a cooperative loses its exempt status. Nonexempt cooperatives face a similar, but less pressing, problem in maintaining their cooperative status in the face of nonmember business. This paper reports research that examined the amounts of nonmember, nonproducer business potential that would be necessary in order to economically justify a tax status change.

Section 521 and Subchapter T of the Internal Revenue Code recognizes that savings resulting from business done on a cooperative basis belong to the patron and need not be included in a cooperative's taxable income. Therefore, savings returned to patrons are taxed only at the individual level.

Subchapter T specifies the tax treatment of cooperative savings, including how patronage refunds can be excluded from taxable income. Treatment under Section 521, the "exempt" status, allows cooperatives deductions for dividends paid on capital stock and nonpatronage income distributed to patrons on a patronage basis. However, to receive such treatment, cooperatives must handle member and nonmember patrons alike. Cooperatives that wish to pay patronage refunds to members only must adopt the "nonexempt" status. A cooperative's leadership may choose to limit nonmember nonproducer

business to 15 percent or less and nonmember business to less than 50 percent and maintain a 521 tax exemption. These cooperative leaders must also insure that "substantially all" of their voting stock is owned by producers who conduct business with their organization.<sup>1</sup> Conversely, members of a cooperative located near a metropolitan area may choose to give up the 521 tax status by allowing relatively more nonproducer nonmember sales and remain subject only to the Subchapter T limitations of less than 50 percent nonmember business.<sup>2</sup> On the other hand, leaders of a nonexempt cooperative—one subject only to Subchapter T—may choose to give up that status by accepting even more nonmember business and operate simply under the corporate tax status. This paper presents general guidelines for making these tax status decisions, specific examples of the financial impact of such decisions, and some key components of the model that were used to evaluate the cooperative tax statuses. The analysis is of optimal cooperative tax statuses from the members' viewpoint, given varying (1) potential for nonmember business, (2) mixes of patron marginal tax rates, (3) cooperative efficiencies represented by varying returns on assets, and (4) cooperative sizes in terms of total assets.

The evaluation emphasizes member benefits. Because cooperatives are developed for member-patrons, managers and leaders should select, as the cooperative's favored status, the tax status that maximizes the after-tax present value for their member-patrons.

### Methods of Analysis

A modification of the deterministic simulator of cooperative and patron cash flows initially constructed by Beierlein was utilized. The Beierlein simulator evaluates the impact of changes in cooperative capital structure on the level of patron benefits. It was selected as the basic model because it emphasized patron benefits, and be-

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<sup>1</sup> Revenue Ruling 73-248, 1973-1 Cum. Bul. 295. This ruling holds that the "substantially all" test is satisfied if at least 85 percent of the total shares of capital stock of a farmers' cooperative (other than non-voting preferred stock for which the owners participation in the profits is limited to no more than the fixed dividends) is held by producers.

<sup>2</sup> Revenue Ruling 72-602, 1972-2 Cum. Bul. 510 contained the rule that a cooperative with more than 50-percent nonmember business was ineligible for Subchapter T treatment. With but few exceptions, this ruling has been followed generally. Eligibility for bank for cooperative loans also includes a requirement of no more than 50-percent nonmember business.

cause, as a simulator, it has excellent capacity as a data management tool. Accurate status decisions are difficult to make, not only because the concepts are complex, but because of the large quantities of data that, when analyzed, are subject to many combinations and permutations.

The Beierlein model was modified so that it would have the capability to evaluate exempt cooperatives and what will be referred to as corporate cooperatives<sup>3</sup> (to be more fully explained throughout the remainder of the paper), as well as nonexempt cooperatives. As modified, the simulator is capable of determining the favored tax status (exempt, nonexempt, or corporate) from the members point of view.

The exempt cooperative component of the simulator treats all patrons equally, as required by law, by assigning patronage refunds to members and nonmembers. Because exempt cooperatives must treat all patrons alike, it distributes the entire amount of its net savings (and the related investment credit) and consequently it is tax free; the patron receives the investment credit, the cooperative does not.

The nonexempt cooperative component of the simulator, on the other hand, discriminates between patrons by operating with nonmembers for the benefit of its members by restricting the distribution of patronage refunds to its members. Consequently, taxes are paid on—and investment credit received for—the portion of the investments represented by nonmember business. The taxed nonmember margins are distributed to members as further taxable patronage refunds.

Last, the corporate component operates for the benefit of its member patrons by returning savings through dividends, according to patronage, to member stockholders. Stockholders are defined as those individuals who were cooperative members prior to a change to the corporate status. Taxes are paid on all net income, and investment credits are fully applicable.

For each status patron, benefits are measured as the after-tax present value of revenue from debt, qualified revolving funds, nonqualified revolving funds, stock and cash refunds. The patron benefits are discounted by the patron's marginal personal tax rates and their opportunity cost of capital measured as returns from farming.

The model includes two objective functions. The main objective function maximizes the net present value of returns to member patrons for each status, given an existing capital structure and the potential to capture nonproducer business.<sup>4</sup> The required 20 percent cash refund is distributed, along with any excess of cooperative

savings above operating costs and the investment required to maintain exogenously determined growth rates. The cash refund is included as revenues, to patrons for the year in which they are actually returned. The residual or revolving fund money for that year (80% or less) is similarly included 10 years hence, when it will be revolved to the patron. Nonproducer business is expanded, through simulation, until the "best" status changes. Cooperative managers can then determine whether the potential for nonproducer business in their market is sufficient to reach the level indicated by the simulator.

Because an actual firm may not have sufficient information on its membership for use at its discretion, funds available for investment were selected as a secondary and comparative objective function. Funds available for firm investment are the cooperative's savings (including savings due to investment credits) after dividends and required cash refunds. Required investment is determined according to prespecified maintenance, replacement, and growth rates. Residual savings are distributed as additional cash refunds.

The model uses data from a firm's financial records and calculates its federal income taxes, firm investment and growth, and member benefits for each of the three statuses. Patron benefits and firm benefits are summarized on a yearly basis over a 20-year horizon for each of the tax statuses. The simulator also checks to see if the firm meets the requirement for the exempt or nonexempt status.

## MODEL ACCURACY

The accuracy of the model was verified not only by insisting that it conform to economic theory, cooperative practice, and federal income tax law, but also by utilizing it to evaluate cooperatives that had recently changed their tax status. The latter evaluation compared actual results of tax status decisions to the results from the decisions indicated by the simulator. Total funds available for investment in the firm were used as the comparison factor. Actual cooperative data were used.

As an example, one cooperative utilized for verification purposes was selected because its leaders had changed from the exempt status to the non-exempt status because of increasing nonproducer business. Nonproducer business increased from 12 to 14 percent of the cooperative's business between 1974–77. The status was changed in 1976. Although the restriction on

<sup>3</sup> In the research, the corporate cooperative or firm is treated as a corporation for tax purposes, but operates on a cooperative basis, distributing savings to members according to patronage.

<sup>4</sup> Although not the intent of the research, the model is also capable of identifying "better" capital structures through parametrics—the original purpose of the Beierlein model.

For ease of analysis, it was assumed that nonproducer business would increase net earnings proportional to sales. Because metropolitan nonproducer purchases are typically from the "front-end," where net returns per transaction are higher, but transaction size is smaller, the assumption is more likely to bias the results by understating rather than overstating nonproducer net returns. The model is capable of including, and therefore analyzing, nonproducer business that provides net returns either more than or less than proportionally.

nonproducer business was not reached, cooperative leaders decided that they should change for "financial" reasons. The simulation used 1975 data as the base year.

The computer analysis indicated that a corporate status would be optimal from both the patron and firm point of view for the entire time horizon. However, cooperative leaders did not consider a change directly to the corporate status.<sup>5</sup> Thus, the change from exempt to nonexempt status became the more relevant verification issue. When comparing the exempt and nonexempt statuses, the simulator's firm-oriented objective function favored the nonexempt status for years 7 through 20 and the exempt status for the first 6 years. The patron objective function favored the exempt status for the entire time horizon.

The cooperative actually had a reduced after-tax net savings in the years following its change from the exempt to the nonexempt status as predicted by the simulator. Using the records available to management (and the simulated firm-oriented objective function), the simulation indicated that the cooperative should have retained the exempt status until 1981. The cooperative's directors and management improperly timed their change to the nonexempt status. If the cooperative's management had waited a few years, the transition from the exempt to the nonexempt status could have been made without causing the cooperative's after-tax earnings to decline. If management had used patron information, the change would not have been made!

## ASSUMPTIONS, ANALYSIS, AND RESULTS

This analysis assumes that a cooperative has realized nearly all of its producer business as an exempt cooperative and therefore must look to nonmember business for additional income. Consequently, potential nonmember business will be almost entirely nonproducer business (hereafter, all references to nonmember business refer to nonmember business that consists of 95 percent or more nonproducer business). For the purpose of analysis, nonmember business is increased in order to determine the optimal tax strategy, given varying amounts of nonmember business potential. That is, if legal barriers are not yet a problem, how large can nonmember business potential become before a tax status change is advisable.

Without presupposing a favored status, the analysis begins with the exempt status at 100-percent member business (zero percent nonmember business). It proceeds by allowing the firm to accommodate more nonmember business and increase its returns. The use of farm supplies

by nonproducers forces the farm supply cooperative to consider expanding its market. As the analysis continues, the percentage of nonmember business increases, the exempt status limitations are reached, increases in nonmember business are not compatible with the exempt status and the exempt cooperative's income plateaus. Increases in nonmember business are then allowed only if the cooperative elects the nonexempt or corporate status. Potential nonmember business is accommodated by the nonexempt cooperative analysis until the nonexempt status limitations are reached, increases in nonmember business by the nonexempt cooperative can no longer occur, and the nonexempt cooperative's income plateaus.<sup>6</sup> The corporate status can continue to allow increases in nonmember business. The analysis continues to increase nonmember business until corporate benefits exceed cooperative benefits and the evaluation ends. Consequently, the evaluation identifies the amount of nonmember business potential that is needed to cause a cooperative's management to prefer one status over another.

In order to make these results most generalizable to the cooperative community as a whole, the synthetic firm approach was utilized. A synthetic firm was designed to reflect an average or "typical" cooperative, its financial plans, and its member patrons, except for nonmember business which was varied (Griffin, pp. 4-8). Two patron groups were evaluated over a 20-year time horizon to allow for revolving fund retirements.

The synthetic firm was initially designed to be typical of exempt cooperatives. The synthetic exempt cooperative has \$3 million dollars of total assets, with an initial 8-percent return on assets comprised entirely of member business. Thus, member business was assumed to return \$240,000 to the \$3 million dollars of total assets. From this initial point, the cooperative could expand its nonmember business until it reached the 15-percent limit. By expanding through nonmember business, the synthetic exempt cooperative could expand to a 10-percent return on assets volume (\$300,000) and maintain the exempt status. Returns from member business would be at \$240,000 (80 percent), returns from nonmember nonproducer business at \$45,000 (15 percent), and from nonmember producer business at \$15,000 (5 percent).

Generally, this research assumes that the added nonmember business can be achieved with existing excess capacity at a minimum, and at the maximum, only the added investment that would be required if the growth were to come totally from member business. The Beierlien model calculates investment required for this kind of

<sup>5</sup> It is not the goal of this study to measure the ease or difficulty of converting a cooperative to the corporate tax status and operating cooperatively under that status. These implied costs could diminish or offset any direct financial advantage that might accrue to a corporate status.

<sup>6</sup> It is assumed that none of the nonmembers, who under the exempt status received patronage refunds, take their business elsewhere when the cooperative changes to the nonexempt status because they no longer receive patronage refunds. The degree to which such losses might occur requires research beyond the scope of this study.

growth. Investment that might be required to make major changes in the physical plant or in the merchandising program to attract non-member business is not included. Beierlein's model and the modified model calculate investment requirements as a simple proportion of sales increase plus obligations for retiring debt.

## Results

In the "typical" cooperative analysis, the nonexempt status was favored to the exempt status with 100-percent member-patron business. A favored tax status is one that has the largest accumulated net present value for members at the end of the specified 20-year time horizon. Investment credits and retained savings available to the nonexempt status cooperative allowed initial firm growth and investment for the nonexempt alternative that were not available to the exempt status. As nonmember business was increased, the tax savings from the exempt cooperative allowed the exempt cooperative to approach, but not attain, the level of patron benefits gained by the nonexempt cooperative. Tax savings and cash refunds were not sufficient to overcome the firm growth and investment achieved through retained earnings and investment credit. All circumstances clearly favored the nonexempt status.

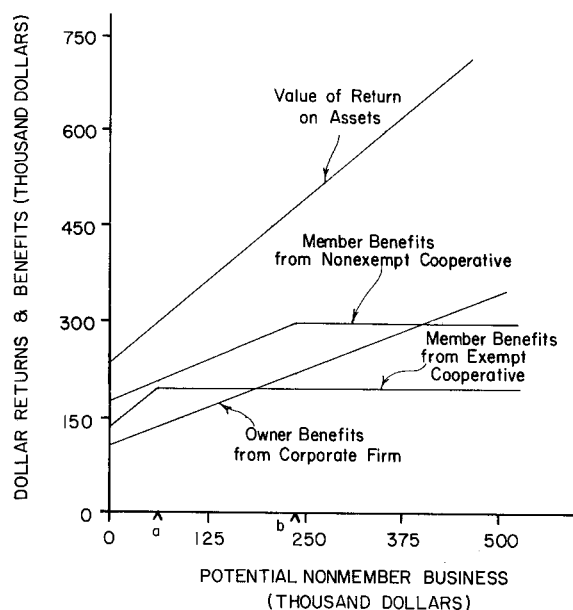
The corporate status was the least desirable initially but was favored to the exempt status prior to reaching the upper limits of the nonexempt status. The corporate status was preferred to the nonexempt status, however, only after nonexempt cooperative limitations on nonmember business were exceeded. Returns from nonmember business potential had to increase to \$420,000 (63 percent of the firm's business) before a change to the corporate status was warranted (Figure 1).

## Increased ROA

The synthetic firm was then changed to reflect a cooperative of average size with above average returns or, presumably, a more efficient cooperative with 15- as opposed to 10-percent return on assets.

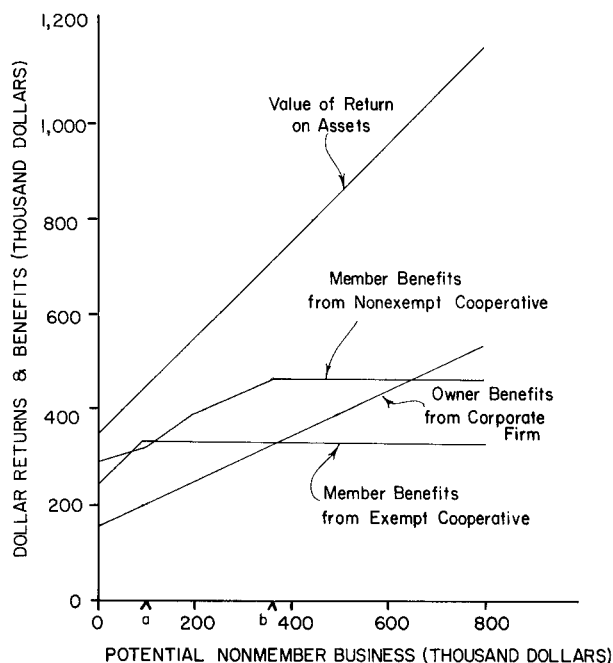
Again, as with the firms exhibiting returns on assets of 10 percent, the nonexempt status was initially optimal. The nonexempt status allowed increased returns through dividends and increased interest on member-held debt (Figure 2).<sup>7</sup>

As nonmember business potential was increased, the income tax advantage of the exempt status allowed more cash refunds and revolving funds to be returned than did the nonexempt status, while requiring less member-held debt.



**FIGURE 1.** Synthetic Cooperative—\$3,000,000 cooperative with a 10 percent return on assets evaluation—member benefits from increasing nonmember business

<sup>a</sup> Limit for exempt Cooperative nonmember business.  
<sup>b</sup> Limit for nonexempt Cooperative nonmember business.



**FIGURE 2.** Synthetic Cooperative—\$3,000,000 cooperative with a 15 percent return on assets evaluation—member benefits from increasing nonmember business

<sup>a</sup> Limit for exempt Cooperative nonmember business.  
<sup>b</sup> Limit for nonexempt Cooperative nonmember business.

<sup>7</sup> The percent of member-held debt desired is determined external to the model. If that predetermined amount, along with all other sources of financing, is insufficient, then member-held debt is increased—the situation that exists in this particular component of the synthetic firm analysis.

These advantages are sufficient only to offset the increased investment and the higher dividend payments returned by the nonexempt status. The exempt status became marginally preferable to the nonexempt status for a short interval of nonmember business potential prior to the point where nonmember business exceeded the exempt limitations. Specifically, for less than \$60,000 of returns from nonmember business (14-percent nonmember business), the nonexempt status was preferred.

The cooperative status was better than the corporate status until the 50-percent nonmember business limitation was exceeded. The nonmember business would have to increase to approximately 65 percent of the firm's business (represented by returns of \$660,000) before a change to the corporate status would be warranted.

### Size Variants

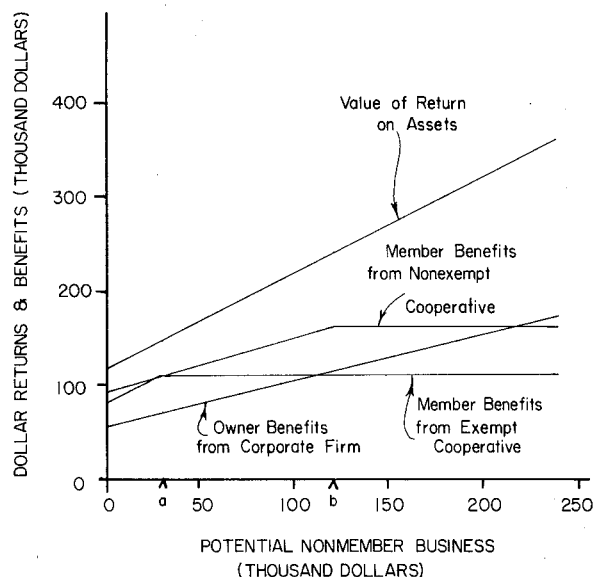
Ingraham et al. suggested a relationship between a cooperative's size and its desired tax status: "The size of a cooperative's net income also affects the decision on tax status since the tax rate is progressive. . . . Therefore, exempt status becomes relatively more advantageous as corporate tax rates are increased." Consequently, the synthetic firm was changed to reflect an efficient, but small, cooperative (15-percent return on assets and \$1 million of total assets).

The analysis of the small cooperative was very similar to that for the \$3-million, 15-percent ROA cooperative. Again, the nonexempt status was initially favored. Returns were enhanced through dividends and cash refunds, as well as through member-held debt (Figure 3).

As nonmember business was increased, the exempt status became favored. The exempt status allowed more cash refunds and revolving funds to be returned to the patrons than did the nonexempt status, and it required less member-held debt. These advantages just barely compensated for the increased investment and the higher dividends returned by the nonexempt status. The advantage of the exempt cooperative was not substantial. With another slight increase in nonmember business, the nonexempt status was again preferred.

At the upper cooperative limitation for nonmember business (50 percent), there was essentially no difference between the exempt and corporate status. The corporate status was preferred to the exempt status for above 50-percent nonmember business. Returns from nonmember business must increase to approximately 65 percent of the firm's business (\$230,000) before a change to the corporate status would be warranted (Figure 3).

In summary, a small cooperative's management would be virtually the same for the exempt



**FIGURE 3.** Synthetic Cooperative—\$1,000,000 cooperative with a 15 percent return on assets evaluation—member benefits from increasing nonmember business

<sup>a</sup> Limit for exempt Cooperative nonmember business.

<sup>b</sup> Limit for nonexempt Cooperative nonmember business.

and nonexempt statuses with a small percentage of nonmember business potential (represented by returns under \$20,000). If more nonmember business potential became available to the cooperative, it would be advantageous to change to the nonexempt status. However, a great deal of nonmember business (more than \$230,000 of returns) must be captured before the cooperative would change to corporate status.

Firm size was further analyzed over the range from \$1,000,000 to \$9,000,000 total assets in \$100,000 increments, using 10- and 15-percent return on asset firms. Similar results to those reported previously were shown for each case.

### Marginal Personal Tax Rates

Schrader and Goldberg also discussed the role of the patron's marginal personal tax rate on the optimal cooperative tax strategy. To analyze the impact of marginal personal tax rates, the critical points from the synthetic firm analysis were used in conjunction with a high (70 percent), average (20 and 25 percent as used in the previous analyses), and a low marginal personal tax rate (15 percent). The typical \$3 million, 10-percent return on assets cooperative was used.

The 15-percent marginal personal tax rate patron group would favor the nonexempt cooperative status throughout. Again, initial investments and investment credits stimulated firm investment, and the patrons received benefits through

dividends and cash refunds. The tax advantage of the exempt status approached the benefits of the nonexempt status through cash refunds and tax savings, but did not reach the nonexempt status benefits. The nonmember business potential would have to increase to 63 percent of the firm's returns from business (\$420,000) before the corporate status would be warranted.

The 70-percent marginal personal tax rate patron group would initially prefer the exempt status. This preference results from the cash refunds and the tax savings of the exempt cooperative. The patron group would continue to favor the exempt status until nonmember business exceeded the limitation for the tax-free status. The nonmember business potential must increase to \$90,000 of returns (approximately 25 percent of the firm's business) for a change to the nonexempt status to benefit the patron, and to \$420,000 of returns (approximately 65 percent of the firm's business) for a change to the corporate status to benefit the patron (Figure 4).

The 20- and 25-percent marginal personal tax rate patron groups favored the nonexempt cooperative status throughout the analysis. Again, initial investments and investment credits stimulated firm investment, and the patrons received benefits through dividends and cash refunds. The tax advantage of the exempt status

approached the benefits of the nonexempt status through cash refunds and tax savings, but did not reach the nonexempt status benefits. The nonmember business would have to increase to 63 percent of the firm's business (\$420,000 of returns) before the corporate status would be warranted.

Overall, cooperative patrons with low and average marginal personal tax rates favor the nonexempt status because both the before- and after-tax savings are higher. However, high tax bracket patrons favor the exempt status, even though the before-tax savings are lower, simply because the after-tax returns are higher.

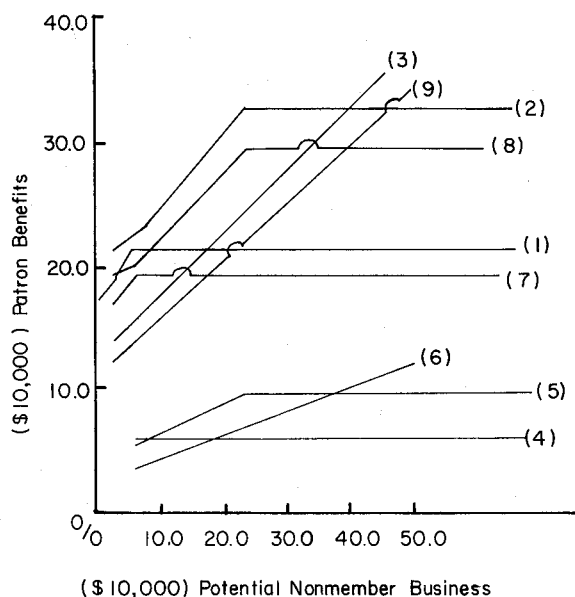
## SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The total after-tax-present-value of patron benefits was selected as the primary criterion for evaluating three cooperative tax statuses. Patron funds available for firm investment was selected as a comparative firm-oriented criterion.

A simulation analysis of a "typical" farm supply cooperative showed that members would be better off if they would elect the nonexempt cooperative status. The simulation analysis evaluated a range for potential nonproducer business from zero to nearly 70 percent of the cooperative's total business. The nonexempt status was found to be more desirable than the exempt status throughout the analysis because of benefits gained from rapidly growing investments that were allowed through retained earnings and investment credits.

The basic nonmember business potential analysis immediately raises questions and should likely raise concern about typical cooperative practices. The usual cooperative tax status assumption with respect to increasing pressure from nonmember business appears to be that it is best to maintain the exempt structure as long as possible. The current assumption must be that a double tax on nonexempt cooperative profits in the nonexempt cooperative case must be more costly than one tax on patrons in the exempt case. Further analyses were performed over the same range of nonmember business potential to determine the sensitivity of cooperative efficiency, cooperative size, and members' marginal personal tax rates. These sensitivity analyses raise additional concern over current cooperative practices that relate to tax status decisions.

The research did indicate that the firm's return on assets (ROA)—an efficiency indicator—is tax-status sensitive. The average patron in a typical cooperative would favor the nonexempt status. Similarly, the moderately efficient firm favors the nonexempt status, even without nonmember business potential. With increased nonmember business potential, the moderately effi-



### KEY:

(1) Exempt Cooperative for Patron 15% MPT (2) Nonexempt Cooperative for Patron 15% MPT (3) Corporate for Patron 15% MPT (4) Exempt Cooperative for Patron 70% MPT (5) Nonexempt Cooperative for Patron 70% MPT (6) Corporate for Patron 70% MPT (7) Exempt Cooperative for Patron 20/25% MPT (8) Nonexempt Cooperative for Patron 20/25% MPT (9) Corporate for Patron 20/25% MPT

**FIGURE 4.** \$3,000,000.00 cooperative with a ten percent return on assets and variable patron group tax rates evaluated at critical points

cient firm favors the exempt status because a lower tax bill, larger revolving funds, and more cash refunds would offset investment gains. Over the range of nonmember business potential a small increase in efficiency, from 10- to 15-percent return on assets, removed the nonexempt statuses' complete advantage for a cooperative that was otherwise typical. Larger efficiency increases are expected to provide an earlier advantage in terms of nonmember business potential to the exempt status. The tax status decision is apparently quite sensitive to a cooperative's efficiency. A board's decision to maintain the nonexempt status because of historic returns on assets of 10 percent, for example, could prove to be incorrect if in fact the cooperative is able to achieve 15 percent. The tax status decision, which is difficult enough because of data requirements and the problems of manipulating it, becomes even more of a problem in view of the need for an accurate efficiency (ROA) prediction.

High tax bracket patrons have less preference between benefits gained through the various tax statuses than do lower bracket patrons. The lower and average tax bracket patrons would generally favor maximum before tax cash refunds or dividends—the nonexempt status. Conversely, the high tax bracket patrons favor less before-tax cash refunds, deferred payments, and, therefore, the exempt status. Applying the simulation analysis to assist in tax status decisions for an actual cooperative would not be difficult when considering members' marginal personal tax rates, if those rates were similar. Problems would arise when there were a substantial number of members in both the high and the low marginal personal tax rate categories. In such circumstances, the firm-oriented criterion, funds available for investment, may be helpful. Although funds available is a non Pareto criterion, it may help resolve the impasse when patron groups disagree as to the best tax status.

Cooperative size, represented by total assets, was varied for an otherwise typical cooperative, and over the previously analyzed levels of efficiency and member marginal personal tax rate.

The analysis did not show that cooperative size influenced the preferred tax status. At each level of nonmember business potential, the favored status was the same, both in rank and relative magnitude, whether the cooperative analyzed was large, medium, or small.

The synthetic cooperative analyses revealed that the exempt status may not always be preferable, even when it is attainable. The study further revealed that cooperative organizations may not always want to maintain a cooperative tax status. Through all of the analyses—typical cooperative, less and more efficient cooperative, large and small cooperatives, and those whose members have high and low marginal personal tax rates—the corporate status provided the most advantage to members when potential nonmember business reached 63 to 65 percent. Given that nonexempt cooperatives can maintain their status with as much as 50 percent nonmember business, as little as 15 percent additional nonmember business is all that would be required to justify changing to the corporate status. Further research is necessary to verify whether this apparently straight-forward heuristic is as dependable as this study implies. Should subsequent research reinforce these results, it is likely that many exempt cooperatives are incorrectly investing resources to maintain an inferior status.

The lack of an instrument such as the simulator used in this research that can evaluate all the many elements of the tax status decision may be costly indeed. It appears as if there are exempt cooperatives whose members could benefit from a change to the nonexempt status if the typical cooperative analyzed in this study is truly typical. Similarly, nonexempt cooperatives may enhance their patrons' returns by going to the corporate status. At least, members of cooperative organizations should begin to see the need to concisely and quantitatively analyze the tax status within which they operate, rather than blindly accept the superiority of the exempt over nonexempt cooperative status and the nonexempt cooperative over the corporate status.

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