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An Agricultural Law Research Article

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Originally published in JOURNAL OF AGRICULTURAL COOPERATION
4 J. AGRIC. COOPERATION 54 (1989)

www.NationalAgLawCenter.org

Alternatives for Handling Losses in Cooperatives

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Cooperatives can handle a loss in several ways. This paper evaluates two primary alternatives: retain in the cooperative or allocate to patrons. The cooperative's and patrons' preferences are based on choosing either a tax reduction or redemption reduction. Present value of cash flow is used as the criterion for evaluating choices. The cooperative's and patrons' preferences may be in harmony or conflict depending on the marginal income tax rates and pattern of equity redemption. A simple procedure is presented to determine a cooperative or patron preference.

The size and frequency of cooperative losses at both the regional and local levels have been increasing during the 1980s. Losses are expected to be a common occurrence in both regional and local operations through the remainder of this century because of the current financial condition of cooperatives, the competitive environment in which they operate, and the projected economic climate of agriculture. More specifically these losses will be the result of factors such as: (1) a weak financial condition (high leverage), (2) small gross margins and net income due to a competitive selling environment, relatively high cost of sales, and relatively high cost of production (operating costs), and (3) a very turbulent economic environment including financial stress on production agriculture customers and occasional unexpected events such as the substantial rise or decline in the price or volume of oil or fertilizer.

Cooperatives who incur losses need to determine the best alternatives available to handle the problem. The evaluation can be difficult and the results will vary among cooperatives because of different situations. Both economic and political criteria and conditions are important.

Objectives and Assumptions

This paper evaluates two primary alternatives cooperatives have for handling losses: Retain in the cooperative or distribute to patrons by cancelling allocated equity. The key issue is whether a loss should be retained by the cooperative by distributing it to retained earnings or whether a loss should be allocated to patrons by distributing it to the allocated equity accounts (retained patronage refunds) of individual patron-owners. In either case there is a reduction in or a cancellation of equity.

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This evaluation focuses on the direct economic impacts given generally accepted legal and accounting practices. No attempt is made to measure the political impact of each alternative, which in turn may have a secondary economic impact. For example, cancelling allocated patron equity often upsets patrons and may result in loss of business to cooperative and non-cooperative competitors.

The initial analysis was performed in response to the writedown of local cooperative investment in regional cooperatives and therefore emphasizes that situation. However, the problem of how local cooperatives can best handle regional investment writedowns or, more generally, allocated regional losses is just one aspect of handling losses. Losses from any source that result in an overall net loss can be evaluated in a similar way. Although the analysis focuses on the local cooperative the results are directly applicable to any centralized cooperative, local or regional, since the key relationship is the one between the cooperative and the producer-patron. The general approach applies to any cooperative-patron relationship including a federated regional-local relationship.

Only some very basic cases are investigated. First, only cases where the local experiences a net loss from the combination of all operations, including regional and local, are covered. The net loss is assumed to be an ordinary net operating loss including losses caused by cancellation of a local's investment in a regional when the regional distributes losses to patrons. Second, only participating patron business is considered.[1] Third, retained patronage refunds are assumed to be distributed in qualified form.[2] Fourth, only one patronage pool and one allocated equity pool are used for income distribution. Separate pools based on business source (regional or local) and product line source (such as grain, fertilizer, or petroleum) are not analyzed. This assumption is compatible with a cooperative that maintains multiple patronage pools but combines them for purposes of allocated income distributions and related equity distributions. Fifth, equity is managed as follows. Investment by patrons is obtained from retained patronage refunds or per unit retains. The cash patronage refund rate and the per unit retain rate are not functions of the loss-handling alternative chosen. The equity redemption plan uses estate settlement or age of patron, the most common methods, resulting in lump sum distributions at specific points in time for each patron based on the patron's life cycle.[3] The schedule of redemptions is not a function of the loss-handling alternative chosen. These assumptions imply the cooperative does not adjust the investment or redemption plan differently for each loss handling alternative to maintain working capital and equity capital targets. Sixth, in the event the cooperative prefers to retain the loss, it is assumed that retained earnings is of sufficient size and composition to absorb the loss. If not this will generally require the loss distribution be to allocated equity (i.e., a cancellation of individual patron equity). Seventh, when the cooperative retains the loss it is assumed the loss is carried forward (to be in compliance with current Internal Revenue Service regulations regarding application of Section 277 to non-Section 521 cooperatives) and is utilized as soon as possible. The illustrative examples assume utilization in one year.

Research done at Iowa State University by Junge; Ginder; Brase; and Brase and Ginder showed that individual producer-patrons, as a group,

are substantially better off, in terms of cash flow, if the losses are allocated to them in almost all situations. The research also showed cooperatives are seldom much worse off. They conclude that in most situations allocation is preferable on strictly financial grounds. Their analysis is based on actual financial data of local cooperatives and patrons in Iowa.

This paper extends and clarifies the analytical approach necessary to evaluate loss-handling alternatives. A broader range of situations is considered resulting in a variety of conclusions for cooperatives and patrons depending on the situation.

Net Income Distribution Alternatives

The four basic ways to distribute cooperative profits are: (1) a distribution to, and therefore increase in, retained earnings (an unallocated, or undivided account since no equity holders have individual stocks or certificates representing a specific claim on this equity); (2) a distribution to the retained patronage refund accounts of participating patrons (an allocated or divided account); (3) a distribution in the form of cash patronage refunds to participating patrons; and (4) a distribution in the form of cash dividends to equity holders. The first two are noncash distributions that create equity on the balance sheet of the cooperative. The third and fourth are cash distributions.

The loss distribution alternatives are virtually identical from a conceptual point of view except a negative quantity is distributed. Cooperatives are less familiar with the loss distribution alternatives.

The four basic ways to distribute losses are: (1) a distribution to, and therefore decrease in, retained earnings; (2) a distribution to, and therefore a decrease in, the retained patronage refund accounts of participating patrons, which is a writedown or cancellation of these equities; (3) a direct billing for cash payment from participating patrons based on patronage, equivalent to a negative cash patronage refund; and (4) a direct billing for cash payment from owners based on level of equity investment, equivalent to a negative dividend. Laws, regulations, and cooperative bylaws may restrict the use of these alternatives. Cooperatives operating under Subchapter T of the tax code are unlikely to be able to use direct billings based on equity investment since distributions to patrons are based on patronage. Therefore, the fourth loss-handling method is conceptually possible but infeasible.

Cooperatives have two practical alternatives in a loss situation: (1) retain the loss at the cooperative level or (2) allocate or pass the loss to patrons. In both cases the loss is an ordinary net operating loss to the cooperative or the patron as long as the cancelled equity of patrons is in qualified form. Direct billings to patrons to cover losses are not practical in most cases and are seldom used. However, from the standpoint of accounting principles and tax regulations, they are permissible.

Decision Criteria

The cooperative management team, executives and board of directors, is expected to determine which alternative is better. Is it better to retain the

loss or allocate the loss? They must look at all the advantages and disadvantages of each alternative and come to a decision. This is especially difficult because determining which alternative to choose has two important and often conflicting aspects: (1) What is best for the cooperative business? and (2) What is best for the cooperative's patrons?

Whatever preference measures are used, such as cash flow, liquidity, solvency, or profitability, the cooperative's short-run interests as a business entity and the patrons' interests may be opposite. For example, allocating the loss may be best for the patrons but retaining the loss may be best for the cooperative.

In addition, it is difficult to determine the best choice for patrons because all patrons are not identical. Their individual tax, redemption, and opportunity cost factors differ in ways that cause their preferences to differ. Some patrons may be better off if the cooperative retains the loss and others better off if the cooperative allocates the loss.

Present value of the cash flow is the primary decision criterion used in this evaluation. An evaluation is made of the cooperative and the patron cash flow. Their preferences are then compared to see if they are in harmony or conflict. No attempt is made to reconcile conflict situations by using a numerical analysis.

Cash-Flow Tradeoff

A fundamental cash-flow tradeoff exists between the retain and allocate alternatives for both the cooperative and the patrons. If the cooperative retains the loss: (1) the cooperative acquires the opportunity to reduce taxable income and cash outflow for taxes (but simultaneously gives up the opportunity to reduce allocated, revolving equity and the resulting cash outflow for equity redemption) and (2) the patron keeps the opportunity to receive all allocated, revolving equity as a cash inflow through equity redemption (but simultaneously gives up the opportunity to reduce taxable income and cash outflow for taxes). If the cooperative allocates the loss just the opposite occurs.

A simple example will illustrate the tradeoffs and possible conflicts. We make the following assumptions. A local cooperative has $200 in ordinary net operating losses of which $100 is attributed to the patronage business of each of two farmer-patrons, A and B. Equity redemptions are made to patrons when they turn age 65. Patron A is age 60 and is scheduled to receive an equity redemption of all equity in 5 years. Patron B is age 40 and is scheduled to receive an equity redemption of all equity in 25 years. The weighted average redemption period for the cooperative is 15 years. If the loss is retained we assume the cooperative can gain a tax reduction within one year by using a carryforward.[4] The cooperative's marginal tax rate is assumed to be 20 percent on the carryforward, (15 percent federal and 5 percent state rate) and the appropriate discount rate is 10 percent.

The present value to the cooperative of retaining the loss is the value of the tax reduction received by a carryforward of one year, $36.36 ($200 times 20 percent times .9091). The present value of allocating the loss by cancelling allocated equity is $71.32, the sum of the value of cancelling (not

redeeming) Patron A's equity due to be redeemed in 5 years, $62.09, and Patron B's equity due to be redeemed in 25 years, $9.23. In this situation the cooperative would prefer allocation. However, the longer the redemption periods of each patron the more likely it is the cooperative would prefer retention. For example, an average redemption period of 20 years results in a present value of $29.73 for the allocation alternative. The point at which the present values of the two alternatives are equal and the cooperative is indifferent is an average redemption period of 16.89 years.

Using an average redemption period is an accurate measure only in situations where there is a large number of patrons and redemptions are uniformly distributed across patrons and years. It is not an accurate measure in our simple example. The average of 15 years gives a present value of $47.88 instead of the true value, $71.32, which is based on the actual pattern or distribution of redemptions.

Assume further that Patron A and Patron B have an appropriate discount rate of 12 percent and that a cancellation of patron equity is treated as a net operating loss. Also assume Patron A had a loss year overall, cannot utilize a carryback because of previous loss years, and is not expected to earn sufficient profits in the future to use a loss carryforward. Therefore, Patron A's marginal tax rate is zero. Assume Patron B is in a relatively high marginal tax bracket of 34 percent and can utilize the loss immediately.

The present value to Patron A of the cooperative choosing to retain the loss and therefore making a corresponding future redemption of $100 is $56.74. To Patron B it is $5.88. Patron A can't use the ordinary loss of the allocation to reduce taxes. The marginal tax rate is zero and the present value of a tax reduction due to a loss is zero. Therefore, Patron A prefers the cooperative retain the loss since it will mean $100 is redeemed in 5 years at a present value of $56.74 versus a zero value if the loss is allocated.

Patron B prefers the cooperative allocate the loss by cancelling equity since the tax benefit of the resulting loss in the present year of $34 ($100 times 34 percent) is greater than the present value of the equity that would otherwise be redeemed in 25 years of $5.88. This implies a preference for the cooperative to allocate if the marginal tax rate is greater than 5.88 percent. By comparison, a marginal tax rate lower than 30 percent would be very unusual for most individuals. The minimum federal income tax rate is 15 percent for individuals and corporations. If a modest state income tax of 4 percent and the 1989 FICA self-employment tax of 13.02 percent is applied, the marginal tax rate for the lowest bracket of taxable income equals at least 32 percent. Although the FICA tax applies only up to a maximum of $48,000 of income in 1989 dollars, it will generally be offset by the next higher federal income tax bracket, which adds 13 percent for individuals (at over $29,750 for married, filing jointly) and 10 percent for corporations (at over $50,000). Even a lower discount rate will not change Patron B's preferences until the discount rate is lower than 4.41 percent, causing the present value of the $100 redemption to be greater than $34, the value of the tax benefit.

A cooperative will have a difficult time determining the preferences of its patrons, especially those who are farmers. Estimating the marginal tax rates and appropriate discount rates of patrons and the overall cash-flow effects on patrons, individually and as a group, is a demanding task.

As the example demonstrated, patrons' preferences will tend to be split. The higher income patrons and patrons expecting a long period until redemption are likely to prefer allocation, and the lower income patrons and patrons expecting a redemption in the near future are likely to prefer retention. The policy choice for the cooperative could easily be between money and people. If a "vote" were taken, does the cooperative count dollars or people in measuring the preferences of patrons?

As the example also demonstrated, the preference of the cooperative and at least some of its patrons will likely be in conflict. The cooperative preferred allocation while Patron A preferred retention.

The primary method of equity redemption used by the cooperative has a major impact on the analysis. If the primary method of redemption is age of patron or estate settlement, each patron's expected time of redemption will depend on the age of the patron. A wide distribution of times and quantities will exist. A study of U.S. cooperatives by Brown and Volkin, based on 1974 conditions, found that 68 percent of cooperatives have no plan (29 percent) or redeem using special methods including estate settlement and age of patron (39 percent). A recent study of Kansas cooperatives by Barton, based on 1987 conditions, determined that 81 percent of those cooperatives don't redeem equity (3 percent) or redeem based on estate settlements (27 percent) or age of patron (51 percent).

The example just described and the general process outlined in the next section assume the redemptions are special lump-sum distributions with the time of redemption generally tied to the age of the patron (including expected age of death for estate settlements). The less common but generally more desirable systematic redemption methods—revolving fund, percentage pool, and base capital—are not evaluated. The principles of evaluation are the same but the impact on the pattern of redemptions varies, depending on the assumptions made about equity management.

Process: Analytical and Empirical

Cooperatives need an analytically accurate but empirically efficient procedure to evaluate the impact of the alternatives on the business and the patrons. A four-step process is recommended.

First step. The first step is to determine what happens to the cooperative business's immediate financial condition when it retains the loss as compared with when it allocates the loss. The key financial statements of interest are the operating statement, balance sheet, and changes in financial position. A *pro forma* financial analysis shows the initial impact on the financial structure of the cooperative is identical regardless of which alternative is chosen (Brase). This conclusion holds true for any situation where there is a total net loss.

This suggests the financial impact of most importance in these situations is not the immediate impact on the balance sheet and operating statement but the cash-flow impacts on taxes versus equity redemption. These impacts occur over one or more years for taxes, depending on how carryover is used, and over one or more years for equity redemption, depending on the expected redemption program and the equity selected for cancellation.

Table 1.—Comparison of Present Values of Tax Reduction and Redemption Reduction for Selected Marginal Tax, Redemption Period, and Discount Rate Parameters per $100 Loss for Cooperatives Able to Utilize Carryforward One Year Later

Present Value of $100 Loss		Present Value of $100 Redemption: Selected Years					
Marginal Tax Rate	PVTR[a]	Years:	5	10	15	20	25	30
		PVRR[b]($):	62.09	38.55	23.94	14.86	9.23	5.73
Percent	*Dollars*	---------- *Comparison: PVTR minus PVRR* ----------						
15	*13.64*		−	−	−	−	+	+
20	*18.18*		−	−	−	+	+	+
25	*22.73*		−	−	−	+	+	+
30	*27.27*		−	−	+	+	+	+
35	*31.82*		−	−	+	+	+	+
40	*36.36*		−	−	+	+	+	+
45	*40.91*		−	+	+	+	+	+
50	*45.45*		−	+	+	+	+	+

[a]*PVTR: Present value of tax reduction assuming n = 1 and FV = $100 times marginal tax rate.*
[b]*PVRR: Present value of redemption reduction assuming n = years, i = 10%, and FV = $100.*

Second step. The second step is to determine whether the cooperative is better off to retain or allocate the loss. This is accomplished by estimating the cash-flow impact on the cooperative for the two alternatives. The cash flows must be converted to a net present value (given the amounts, timing, and discount rate) to make comparisons between alternatives. A discount rate equal to the opportunity cost of capital should be used in these calculations.

The cooperative is better off to retain the loss if the present value of the reduction in taxes caused by the corresponding ordinary loss exceeds the present value of the reduction in equity redemption payments caused by the corresponding cancellation of equity due to allocating the loss to patrons. If the present value of the reduction in taxes is less than the present value of the reduction in equity redemption payments, the cooperative is better off to allocate the loss.

Four factors are required to calculate these present values: (1) the cooperative's expected marginal tax rate, (2) the expected pattern of applying losses to past and future income to achieve the tax reduction benefit, (3) the expected pattern (quantities and timing) of applying losses to cancel allocated equity to achieve the equity redemption reduction benefit, and (4) the discount rate. The present values of a tax reduction for selected marginal tax rates are compared with the present values of an equity redemption reduction for selected timings of redemption reductions given the pattern of applying losses to reduce income and the discount rate (table 1). An ordinary loss of $100 is used for illustrative purposes.

If a cooperative's marginal tax rate is 15 percent, as shown in table 1, the present value of the tax reduction is less than the present value of the equity redemption reduction for selected redemption periods of 5, 10, 15, and 20

Table 2.—Loss Retention and Loss Allocation Preference of Cooperative and Patron for Selected Parameters[a]

Marginal Tax Rate	Preference: Retain (R) or Allocate (A)											
	Cooperative: i = 10%						Patron: i = 10%					
	n = 5	10	15	20	25	30	n = 5	10	15	20	25	30
15	A	A	A	A	R	R	R	R	R	A	A	A
20	A	A	A	R	R	R	R	R	R	A	A	A
25	A	A	A	R	R	R	R	R	A	A	A	A
30	A	A	R	R	R	R	R	R	A	A	A	A
35	A	A	R	R	R	R	R	R	A	A	A	A
40	A	A	R	R	R	R	R	A	A	A	A	A
45	A	R	R	R	R	R	R	A	A	A	A	A
50	A	R	R	R	R	R	R	A	A	A	A	A

[a]Based on parameters used in table 1 and table 2.

years. Therefore, for the cooperative in a 15-percent bracket, the decision to allocate gives the highest cash-flow value for these redemption periods. A decision to retain gives the highest cash-flow value if the redemption period is 25 or 30 years or higher.

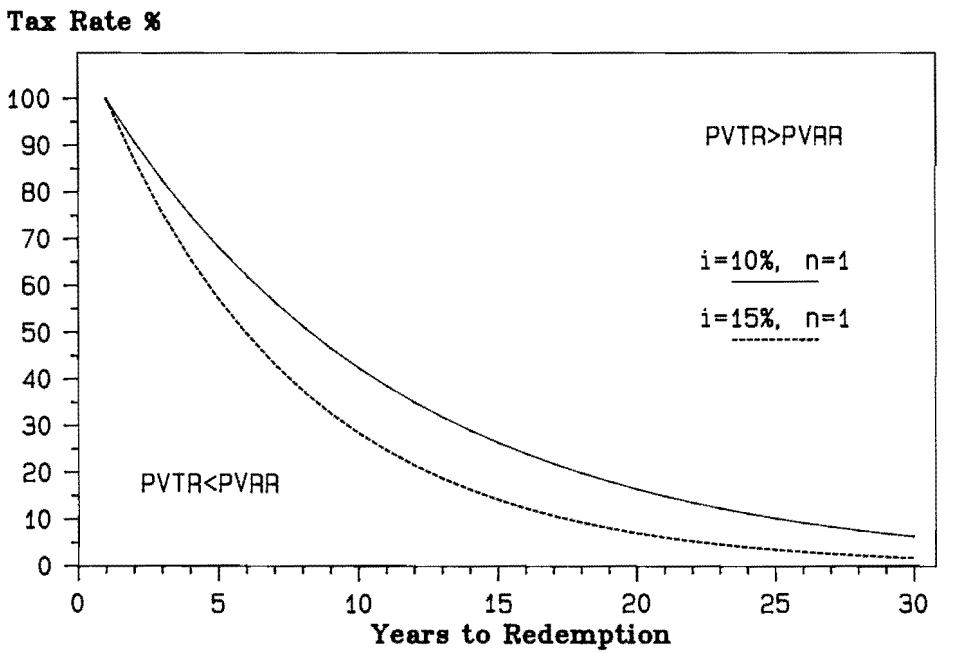
The preferences for the cooperative can be determined for any combination of marginal tax rate and redemption period, given the appropriate discount rate and pattern of utilizing a loss carryforward. If the present value of the tax reduction (PVTR) achieved by retaining the loss is greater than the present value of the redemption reduction (PVRR) achieved by allocating the loss (and cancelling allocated, revolving equity) then retaining is preferred to allocating. Table 2 summarizes the cooperative's preferences for the selected combinations given in table 1.

A more nearly exact calculation can be made to determine the redemption period for which PVTR equals PVRR for any given marginal tax rate and pattern of utilizing a loss carryforward. For example, if the tax rate is 15 percent, if a loss can be completely utilized with a one-year carryforward (n = 1), and the discount rate is 10 percent, then the PVTR is $13.64 per $100 of loss. A PVRR equal to $13.64 would be achieved for a redemption period of 20.9 years. In other words, if i = 10%, FV = $100, and PVRR = $13.64, then n = 20.9 years.

A knowledge of when PVTR equals PVRR makes it possible to determine when PVTR is greater than PVRR, and retention is preferred by the cooperative, and when PVTR is less than PVRR, and allocation is preferred by the cooperative. Figure 1 illustrates two indifference curves where PVTR = PVRR for two selected discount rates, i = 10 percent and i = 15 percent, and the ordinary loss is carried forward one year.

It is difficult to generalize about what is best for all cooperatives showing a loss. Each cooperative will have to consider the facts in its own situation. Historically, most cooperatives have had very little taxable income because almost all income was patronage income and it was allocated in a qualified manner. This implies the marginal tax rate for cooperatives is low. The

Figure 1.—Cooperative Retain or Allocate Indifference Curves: PVTR = PVRR



federal rate is 15 percent for all corporate taxable income of $50,000 or less. If the state rate is around 5 percent, the lowest overall rate will continue to be around 20 percent. Also, if taxable income has been and will be low, several years may be required to utilize a large current loss using carryforwards. Low future incomes and low effective marginal tax rates and high losses tend to make allocation more beneficial to cooperatives than retention.

However, long average redemption periods favor retention. They are relatively long in cooperatives using no plan, estate settlement, and age of patron redemption methods. For example, the average redemption period in Kansas local cooperatives in 1987 was about 28 years, and 81 percent of these cooperatives were using these methods (Barton). Among U.S. cooperatives in 1974, 68 percent were using these methods (Brown and Volkin). A cooperative will favor retention at even a low marginal tax rate of 20 percent for any redemption period exceeding 17.89 years (assuming a tax reduction is achieved with a one-year carryforward and PVTR equals $18.18 per $100 ordinary loss for n = 1 and i = 10%). Most cooperatives probably fall into this category.

Third Step. The third step is to determine whether the patrons are better off if the cooperative retains or allocates the loss. The analytical approach parallels that used to evaluate a cooperative's preferences. The patron is

Table 3.—Comparison of Present Values of Tax Reduction and Redemption Reduction for Selected Marginal Tax, Redemption Period, and Discount Rate Parameters per $100 Loss for Patrons Able to Utilize Tax Benefits in Current Year

Present Value of $100 Loss		Present Value of $100 Redemption: Selected Years					
Marginal Tax Rate	PVTR[a]	Years:	5	10	15	20	25	30
		PVRR[b]($):	62.09	38.55	23.94	14.86	9.23	5.73
Percent	*Dollars*	*Comparison: PVTR minus PVRR*						
15	*15*		−	−	−	+	+	+
20	*20*		−	−	−	+	+	+
25	*25*		−	−	+	+	+	+
30	*30*		−	−	+	+	+	+
35	*35*		−	−	+	+	+	+
40	*40*		−	+	+	+	+	+
45	*45*		−	+	+	+	+	+
50	*50*		−	+	+	+	+	+

[a]*PVTR: Present value of tax reduction assuming n = 0 (no carryforward delay), i = 10%, and FV = $100 times marginal tax rate.*
[b]*PVRR: Present value of redemption reduction assuming n = years, i = 10%, and FV = $100.*

concerned about the tradeoff between a tax reduction and a redemption reduction. The patron is better off to have the cooperative retain the loss if the present value of equity redemption payments not being cancelled exceeds the present value of the reduction in taxes caused by the loss incurred if the cooperative allocates and therefore cancels equity. The patron is better off to have the cooperative allocate the loss if the opposite is true.

However, the patron gains a tax reduction only if the cooperative gives up a tax reduction, and the patron gains a redemption only if the cooperative gives up not making a redemption. If the cooperative retains the loss, the cooperative gains a tax reduction and the patron simultaneously retains a redemption. If the cooperative allocates the loss, the cooperative gains a redemption reduction and the patron gains a tax reduction (but gives up a redemption because revolving equity is cancelled).

As noted earlier, some patrons will prefer the cooperative retain the loss and other patrons will prefer the cooperative allocate the loss. One approach to resolving the conflicts among patrons is to determine which alternative provides the greatest cash-flow benefits to patrons as a group. Total dollars are the votes. Another approach is to determine how many patrons are better off under each alternative and chose the alternative that benefits the most patrons. Individual patrons or people are the votes. A third approach is to allow the patrons to choose individually how their share of the loss is to be handled.

Allocating a loss to patrons has an impact on their liquidity, solvency, and profitability. However, the overall impact is usually relatively small because the dollars involved are relatively small. The key measure of interest to patrons is expected to be the cash flow. The tradeoff relationship between the marginal tax rate and redemption period expressed in table 3 can be

used to measure and compare the cash flows of each alternative. A preference can be determined as shown in table 2.

The impact of the timing of the tax reduction should be considered for patrons as it was for the cooperative. For example, if a patron must choose between having $100 of allocated, qualified equity cancelled, causing a corresponding $100 loss, or having the $100 redeemed at some future time, which would the patron choose if the loss could be utilized immediately as compared with sometime later by using a carryforward? A specific problem illustrates the impact. Assume: (1) a discount rate of 10 percent is used in present value calculations, (2) the patron is a farmer whose marginal tax rate is 32 percent (15% federal, 4% state and 13% FICA), and (3) the expected redemption period is 30 years. Then the present values for each alternative are: (1) if the cooperative retains the loss and redeems $100 of equity in 30 years, PVRR = $5.73; (2) if the cooperative allocates the loss and cancels equity and the patron counts this as an ordinary loss, PVTR = $32 if the tax reduction of $32 can be achieved immediately. Clearly, the farmer-patron is better off if the cooperative allocates the loss in this case. Even if the patron must use a loss carryforward, waiting as long as the maximum of 15 years to utilize it, the present value of the tax reduction is $7.66. Therefore, the patron prefers the cooperative allocate rather than retain the loss. An indifference curve for the patron similar to figure 1 can be constructed to determine the patron's preference.

The impact of different discount rates due to different opportunity costs should also be considered. Assume individual farmer-patrons have marginal tax rates of at least 28 percent (15% federal and 13% FICA) not including state taxes for all incomes less than the FICA maximum of $48,000. This would require redemption periods of less than 13.36 years if the discount rate is 10 percent, or less than 9.11 years if the discount rate is 15 percent before they would prefer the cooperative retain the loss. Most cooperatives (and therefore patrons) do not have average redemption periods this short.

It appears farmer-patrons, as a group, would be better off if the loss is allocated, given typical carryback and carryforward patterns, marginal tax rates, and redemption patterns. As noted earlier, extensive research on actual farmer records by Ginder and others at Iowa State University came to this same conclusion. Even a carryforward as long as 15 years does not change this conclusion as just shown.

Fourth step. The fourth step is to compare the preferences of the cooperative and the patron. The examples just cited suggest a preference conflict will generally exist. Most cooperatives will prefer retention and most patrons will prefer allocation. Boards will have to weigh the advantages and disadvantages of each alternative when conflicts exist and make a decision based on facts, their objectives and philosophies. Although a cash-flow analysis is important, its results will not be the determining factor.

In general, harmony can occur only when one party, cooperative or patron, prefers the tax reduction and the other party prefers the redemption reduction. This is represented graphically in figure 1 when the two parties are on opposite sides of their own indifference curve. Note that the cooperative and patron may have different indifference curves due to different discount rates and patterns of applying losses to achieve a tax reduction.

Diagrams like figure 1, showing retain or allocate indifference curves, serve as the basis for a simple procedure to determine the decision preference (retain or allocate) of a cooperative and a patron or a group of patrons. First, for each party plot the indifference curves for the relevant discount rates and pattern of applying losses to achieve a tax reduction. Then, locate the parties of interest on the graph based on their marginal tax rate and years before the allocated equity (selected for possible cancellation) would be redeemed. Note whether the location is a preference for the cooperative to retain or allocate the loss. A location above and to the right of their respective indifference curves, where PVTR>PVRR, implies a preference by the cooperative for retention and a preference by the patron for allocation. A location on the opposite side, where PVTR<PVRR, implies the opposite preference.

Conclusion

The question of how cooperatives should handle the losses is difficult for cooperative management to analyze and to answer. The basic decision alternatives are for the cooperative to retain the loss or allocate the loss to patrons. There are many criteria that must be taken into consideration. Some are economic but many are political and managerial. Some criteria may favor retention while other criteria may favor allocation. An analysis based on the cash-flow criterion may lead to conflicting preferences between the cooperative and the patron.

The most difficult aspect of the loss-handling decision is the preference conflict between the typical cooperative and patron. Based on the analysis of this paper, most farmer-patrons have a larger cash flow if the cooperative allocates its loss by cancelling patron equities rather than by retaining the loss. The cash-flow value of the reduction in taxes is greater than the value of the reduction in the equity redemption. This agrees with the conclusions reached by Ginder and others. On the other hand, most cooperatives in a net loss situation have a better cash flow if they retain the loss, given typical marginal tax rates and redemption periods. The value of the tax reduction if a cooperative retains the loss exceeds the value of the reduction in the equity redemption if a cooperative allocates the loss by cancelling allocated equity, due for future redemption. This generally disagrees with the conclusions reached by Ginder but may be due to the occurrence of relatively short redemption periods in Iowa.

Since a universal rule of thumb or policy cannot be determined using an analytical and empirical review, each cooperative that suffers a loss should analyze the cash-flow impacts of the retain and allocate alternatives on the cooperative and patrons, given the conditions that exist. Economic factors to consider include the marginal tax rates, type of redemption program including the amount and timing of redemption reductions should allocated equity be cancelled, the appropriate discount rates, and the transaction costs. A four-step process is recommended. First, determine the immediate impact of each alternative on the cooperative's financial condition (i.e., on the operating statement, balance sheet, and changes in financial position statement). Second, determine which alternative provides the

highest cash flow to the cooperative. Third, determine which alternative provides the highest cash flow to patrons, ideally as a group and for segments within the group (such as age groups). Fourth, compare the preferences of the cooperative and patrons to determine if a conflict in preferences exists. A diagram showing the retain or allocate indifference curves for each party of interest can serve as the basis for making the determinations for steps two, three, and four.

Research is needed to determine the evaluation process and likely preferences for cooperatives using the more highly recommended systematic, but less popular, equity redemption methods. These include revolving fund, percentage pool, and base capital and combinations of methods such as age of patron and percentage pool.

Notes

1. In general, income in a non-Section 521 cooperative is attributable to either patronage or nonpatronage sources. Patronage income is primarily derived from business conducted with or in behalf of participating patrons (members and participating nonmembers or associate members). Nonpatronage income is derived from business conducted with or in behalf of nonparticipating patrons and from other nonpatronage sources. Income (and loss) attributable to nonparticipating patrons (often called nonmembers) and to other nonpatronage sources must be distributed to retained earnings and therefore is not of direct interest in this analysis.

2. The noncash, retained patronage refund may be "qualified" as deductible from the cooperative's taxable income (and therefore taxable to the patron) or "nonqualified." This paper assumes refunds are qualified. This is an important choice; some cooperatives may want to choose a nonqualified allocation in certain situations.

3. See Barton and Schmidt for a description of alternative equity redemption methods in the context of a life cycle for natural persons. They include estate settlement, age of patron, revolving fund, percentage pool, and base capital. Brown and Volkin reported 39% using special redemptions (includes both estate settlement and age of patron) for all types of cooperatives in the United States in 1974 compared with 29% using no plan (i.e., no redemptions), 29% using revolving fund, 2% using percentage pool, and 1% using base capital.

4. We assume the cooperative can only carryforward on the premise that Section 277 applies to non-Section 521 cooperatives as the Internal Revenue Service claims. Carrybacks cannot be used by the cooperative.

References

Barton, David G. "Equity Management Alternatives: Investment and Redemption." In *Equity Management: Investment and Redemption Strategies*, ed. David G. Barton, pp. 20-74. 1988 Symposium on Cooperative Issues Proceedings, Arthur Capper Cooperative Center, Department of Agricultural Economics, Kansas State University, Jan. 1988.

Barton, David G., and Royce L. Schmidt. "An Evaluation of Equity Redemption Alternatives in Centralized Cooperatives." *Journal of Agricultural Cooperation* 3(1988):39-58.

Brase, Brian T. "Agricultural Cooperative Losses: Their Influence on Earnings Allocation." M.S. thesis, Iowa State University, 1985.

Brase, Brian T., and Roger G. Ginder. "Financial Effects of Net Savings and Loss Distribution in Federated Local Cooperatives," Unpublished paper, Department of Economics, Iowa State University, Jan. 1986.

Brown, Phillip F., and David Volkin. *Equity Redemption Practices of Agricultural Cooperatives*. Washington, D.C.: USDA FCS Res. Rep. 41, Apr. 1977.

Ginder, Roger G. "Passing Losses in Agricultural Cooperatives." Unpublished paper, Department of Economics, Iowa State University, Aug. 1984.

Junge, C. A. "Agricultural Cooperative Policy Issues Concerning Earnings Distribution Under Conditions of Net Earnings and Losses." M.S. thesis, Iowa State University, 1983.