

# Should I Join a New Processing Cooperative?

EB-67, July 1996

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A renewed interest in cooperative agri-businesses is sweeping across the Northern Plains. These new cooperatives are structured differently than traditional farm supply and elevator cooperatives.

The new venture cooperatives are focused on processing and marketing processed products rather than supplying production inputs or marketing raw agricultural commodities. They require producer members to supply raw commodities for processing through marketing contracts, and tie the amount of commodity supplied to the purchase of equity stock in the cooperative. The new cooperatives are selling enough equity stock shares, and related delivery rights, to meet the cooperatives' financial needs and ensure peak use of processing facilities.

A combination of factors make the decision about becoming a member in a new venture cooperative unique and complex. This publication is designed to identify the key aspects of that decision by asking five questions. They are:

1. What are the potential returns from membership in the cooperative?
2. What risks are the cooperative business exposed to?
3. How will cooperative membership influence the farm/ranch operation?
4. How will my lender view my involvement in the cooperative?
5. How will cooperative membership impact my personal and business goals?

Questions 1 and 2 focus on the new venture cooperative and the industry it will be involved in. These questions are asked to determine if the expected returns from cooperative membership are great enough to justify the risks surrounding the cooperative's operations and your equity stock investment. These questions are often difficult for farm/ranch managers to answer because they go beyond the more familiar market factors which affect raw agricultural commodities.

Questions 3 and 4 are intended to identify the short-term and long-term impacts the cooperative's marketing contract and equity stock investment have on your farm/ranch operation and finances.

Question 5 deals with your unique personal and business goals and how those goals may influence a decision about cooperative membership.

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## What are the Potential Returns from Membership in the Cooperative

Accurately estimating the financial returns of cooperative membership is not as easy as it may seem, because returns appear in several forms and are received at different times. Cooperatives can return financial benefits to members in the form of favorable prices, net returns from operations (both cash and retained), and appreciation in equity stock. Most new venture cooperatives choose to offer competitive, rather than favorable, prices to members and pass on benefits in the form of operating net returns and equity stock appreciation. Therefore, we will focus on these two forms of benefit.

Cooperatives distribute net returns to members based on patronage, or use. A portion of the net returns are distributed in cash, while the remainder is retained by the cooperative to be used in continuing business operations. This retained portion is returned to the member, but at some time in the future. Also, because there is a limited supply, equity stock typically appreciates in value if the cooperative is successful. However, equity stock appreciation is not realized until it is sold at a future date.

The time between the purchase of equity stock and when all financial benefits are received in the future is typically overlooked when analyzing potential returns. This oversight can have considerable impact on a cooperative investment evaluation and final membership decision.

A process called net present value is used to compare the outflow of money today with the inflow of money in the future. The basic concept is that income received today is worth more than income received in the future. This is because the income received today could be invested now, earn interest, and be worth more in the future. So, to compare the flow of money that occurs at different times on an equal basis, you **MUST** adjust the future cash flows downward to correct for the fact they are not available for use today.

A brief example should demonstrate this important concept. Several references which provide a more detailed explanation and discussion of the net present value process are listed in the back of this publication.

### An Example

A new venture processing cooperative is requesting a \$200 common stock, or membership, fee plus a minimum purchase of 500 shares of preferred stock at \$20 per share. This results in a minimum total investment of \$10,200. Each share of preferred stock requires the member to deliver one unit of commodity to the cooperative for processing. In this example, the member plans to sell the equity stock in 20 years for an estimated value of \$32,500. A 30% marginal income tax rate was also used.

Table 1 shows the annual after-tax net cash flow without considering the influence of time on the inflow and outflow of money. The false impression is that cooperative membership will result in a net benefit of \$34,414.00 (Column E, Table 1) after 20 years. However, this is not the number which should be used to make a membership decision.

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**Table 1. Net after-tax cash flow for a cooperative investment, without time value.**

Year	Total Patronage Refund (A)	Cash Patronage Refund (B)	Estimated Tax (30%) (C)	Redeemed Retained Net Cash Flow (D)	Net Cash Flow (E)
Present					\$-10,200.00
1	\$0.00				\$0.00
2	\$0.00				\$0.00
3	\$500.00	\$100.00	\$-150.00		\$-50.00
4	\$1,000.00	\$400.00	\$-300.00		\$100.00
5	\$1,625.00	\$975.00	\$-487.50		\$487.50
6	\$1,625.00	\$975.00	\$-487.50		\$487.50

7	\$1,625.00	\$975.00	\$-487.50		\$487.50
8	\$1,625.00	\$975.00	\$-487.50		\$487.50
9	\$1,625.00	\$975.00	\$-487.50		\$487.50
10	\$1,625.00	\$975.00	\$-487.50		\$487.50
11	\$1,625.00	\$975.00	\$-487.50	\$0.00	\$487.50
12	\$1,625.00	\$975.00	\$-487.50	\$0.00	\$487.50
13	\$1,625.00	\$975.00	\$-487.50	\$400.00	\$887.50
14	\$1,625.00	\$975.00	\$-487.50	\$600.00	\$1,087.50
15	\$1,625.00	\$975.00	\$-487.50	\$650.00	\$1,137.50
16	\$1,625.00	\$975.00	\$-487.50	\$650.00	\$1,137.50
17	\$1,625.00	\$975.00	\$-487.50	\$650.00	\$1,137.50
18	\$1,625.00	\$975.00	\$-487.50	\$650.00	\$1,137.50
19	\$1,625.00	\$975.00	\$-487.50	\$650.00	\$1,137.50
20	\$1,625.00	\$975.00	\$-487.50	\$650.00	\$1,137.50

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 Stock Sale \$32,500.00    \$-7,136.00\*    \$6,500.00    \$31,864.00  
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Net After-Tax Cash Flow    \$34,414.00  
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\*Capital Gains taxed at 28%

The annual after-tax net cash flow including the influence of time is shown in Table 2. This example uses an 8% discount factor, which will be discussed in more detail shortly. The correct analysis shows a positive \$1,214.67 net present value. This means that the money invested in the cooperative will generate at least an 8% after-tax return.

If the net present value had been negative, the cooperative would provide something less than an 8% after-tax return, and your money may generate a higher return within your current farm/ranch operation or in other ways. A negative net present value does not mean that you should not become a member in the cooperative, only that the cooperative will not generate the selected rate of return. Your personal and business goals, as well as the potential impacts on the farm/ranch, should also be considered.

As you can see, the impact of time on the outflow and inflow of money can be dramatic. It is critical that the influence of time be included in your analysis, and that a net present value process be used.

Appendix A provides a more complete explanation of this example and the calculations involved in Table 2. It includes a detailed discussion of the assumptions, an explanation of the calculation of each column, and how to calculate the marginal income tax rate.

**Table 2. After-tax net present value calculation for new venture cooperative investment.**

Year	Per-Unit Patronage Refund (A)	Total Patronage Refund (B)	Percent Cash Refund (C)	Cash Patronage Refund (D)	Estimated Tax (30%) (E)
Present		Initial Investment			
1	\$0.00	\$0.00			
2	\$0.00	\$0.00			
3	\$1.00	\$500.00	20	\$100.00	\$-150.00
4	\$2.00	\$1,000.00	40	\$400.00	\$-300.00
5	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
6	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
7	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
8	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
9	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
10	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
11	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
12	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
13	\$3.25	\$1,625.00	60	\$975.00	\$-487.50

14	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
15	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
16	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
17	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
18	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
19	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
20	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
20		Stock Sale		\$32,500.00	\$-7,136.00*

Year	Redeemed Retained Refunds (F)	Net Cash Flow (G)	Discount Factor (8%) (H)	Present Value (I)
Present	Initial			
	Investment	\$-10,200.00	1.0000	\$-10,200.00
1		\$0.00	0.9259	\$0.00
2		\$0.00	0.8573	\$0.00
3		\$-50.00	0.7938	\$-39.69
4		\$100.00	0.7350	\$73.50
5		\$487.50	0.6806	\$331.79
6		\$487.50	0.6302	\$307.22
7		\$487.50	0.5835	\$284.46
8		\$487.50	0.5403	\$263.40
9		\$487.50	0.5002	\$243.85
10		\$487.50	0.4632	\$225.81
11	\$0.00	\$487.50	0.4289	\$209.09
12	\$0.00	\$487.50	0.3971	\$193.59
13	\$400.00	\$887.50	0.3677	\$326.33
14	\$600.00	\$1,087.50	0.3405	\$370.29
15	\$650.00	\$1,137.50	0.3152	\$358.54
16	\$650.00	\$1,137.50	0.2919	\$332.04
17	\$650.00	\$1,137.50	0.2703	\$307.47
18	\$650.00	\$1,137.50	0.2502	\$284.60
19	\$650.00	\$1,137.50	0.2317	\$263.56
20	\$650.00	\$1,137.50	0.2145	\$243.99
20	\$6,500.00	\$31,864.00	0.2145	\$6,834.83
Net Present Value				\$1,214.67

\*Capital gains taxed at 28%

## The Sources of Information

The cooperative's business plan is the source of information we will use to evaluate both its risks and returns. A business plan is a group of documents which help define how a business is organized, operated, managed, and financed. For a new venture cooperative, the business plan typically includes an economic feasibility study, articles of incorporation, proposed by-laws, a marketing plan and/or marketing agreement, and projected (pro forma) financial statements.

This information is summarized and published in a prospectus, or offering circular, which is provided to potential members during equity drive meetings. The prospectus is usually the only document available to make a membership decision, unless more information is obtained from the interim board of directors or steering committee.

The cooperative's prospectus will provide most of the information needed for a net present value calculation. It will include the amount of the initial membership fee, the value of each share of stock, and any minimum stock requirements. The economic feasibility study should include projected per-unit net return for several years of operation into the future. And, the cooperative's by-laws should explain how the net returns will be distributed and how retained patronage earnings will be refunded.

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The decision about the division of net returns between cash refunds and retained refunds is left to the cooperative's board of directors. The percentage of cash versus retained refunds normally changes from year to year depending on the cooperative's net returns and strategic business plan. This makes the net present value analysis more difficult because estimates of this division need to be made for each year of membership.

Typically, cooperatives return net income to members based on patronage. These cooperatives must distribute at least 20% of their net income in cash, unless the cooperative is paying the income tax. Many new venture processing cooperatives attempt to distribute larger cash patronage refunds because of the initial membership investment. Therefore, a 20% cash patronage refund should be considered a minimum, and a larger percentage is reasonable to expect.

Other cooperatives distribute net income on a per-unit basis. Net income is distributed periodically in cash with a portion, called a per-unit capital retain, being withheld for use by the cooperative. The amount of cash payments and capital retains will change from one year to the next depending on the cooperative's operations and long-term business goals.

Another important fact to include is that the cooperative's allocated net returns are considered taxable income to the member. This includes both the cash and retained portions. This element can have significant impacts on short-term cash flow, as well as the final net present value. In some cases, cooperatives have not returned a large enough cash refund to cover all of the member's current income tax liability.

### **Selecting a Discount Factor**

Selecting an appropriate discount factor is important because it has considerable impact on the results of the analysis. For instance, if the discount rate in our example was increased from 8% to 9%, the net present value would decrease from \$1,214.67 to -\$429.93.

There are two common approaches to selecting an appropriate discount rate. One approach is to choose a discount rate which is equal to the highest interest rate paid on debt capital. This approach emphasizes the fact that there are alternative uses of money. It assumes that the cooperative membership investment funds would be used to pay farm/ranch debt if it were not used within the cooperative. Therefore, the cooperative should generate at least the same rate of return as the next best use of the funds.

An alternative approach is to choose a discount rate which reflects your desired rate of return on investment. This allows you to incorporate all of the risk factors surrounding the cooperative business into the analysis; the higher the risk, the larger the discount factor. This approach is more subjective but allows you to compare the cooperative membership investment to other investments with similar risks. This leads to the next question.

## **What Risks are the Cooperatives Exposed to?**

Determining the risks surrounding a new venture cooperative is one of the most difficult questions to answer. This is because there are many sources of risk, and each is hard to measure. To make things easier, the sources of risk can be grouped into two broad categories: business risks and financial risks.

Business risks are those associated with conducting business operations, without considering the financial structure. The five sources of business risk are:

1. Production (including both construction and operation)
2. Market or price
3. Technological
4. Legal and social
5. Human

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Financial risk is the magnification of business risks caused by debt financing. This includes the uncertainties surrounding the availability of borrowed capital, credit terms, and changing interest rates.

## **The Cooperative's Business Risk**

Each of the five sources of business risk should play a role in your analysis of the new venture cooperative.

Production risk refers to the unforeseen events that can change the projected construction, startup, and operating costs and efficiencies. These events can influence both product quantity and quality. A realistic and thorough economic feasibility analysis will provide information about projected construction and startup costs, typical operating costs and efficiencies, and operating margins. The projected operating margins should be based on realistic forecasts and be sufficient to cover unforeseen cost overruns and operating problems. Typically, the cost projections for the first several years of operation are larger than average to compensate for these risks. Be sure to carefully review the major assumptions of the feasibility study, and feel comfortable with the results.

Market or price risk refers to both sales volume and product price. The fundamental information needed to analyze price or market risk is included in the marketing plan. The marketing plan should discuss the size of the current market, the market growth factors, the major competitors, the cooperative's market advantage, how market share will be established, and how co-products from processing will be marketed. Once again, it is not unusual to see lower than normal price projections for the first several years. This allows the cooperative to establish market share and customer loyalty, and compensate for unforeseen reactions by competitors.

Another aspect of market risk is the ability of the cooperative to adjust its product, or product line, to meet changing customer preferences. The ability to profitably adjust products is directly tied to the technology used, which leads to technological risk.

Technological risk is the potential for current efficiencies to be offset by improvements in future technology. The cooperative must consider the tradeoffs between adopting the most current technology to gain possible efficiencies with the increased cost of that technology and the risk that the new technology is not completely tested and proven.

Legal and social risks are those which refer to changes in local, state, and federal laws and regulations governing the cooperative business and its industry. These include changes in tax law, environmental regulations, interstate commerce, import/export regulations, or industry subsidies. The key is to look at how sensitive the cooperative's business plan, and resulting net return, is to changes in relevant laws and regulations. The cooperative's business plan should be flexible enough to adjust to changing legal and regulatory conditions.

The final source of business risk is human risk. Human risk is associated with the availability and quality of labor, management, and board of directors. The first human risk is the selection of high quality personnel. The second human risk is the impact on the cooperative if one, or several, of the key people leave the business.

Human business risks are frequently underestimated. One of the most commonly cited reasons for a successful business is the abilities of the people on the management team. The management team of a cooperative, both hired managers and the elected board of directors, is especially critical. The cooperative management team must not only be concerned with the efficient operation of the business, but also with the sometimes conflicting needs of the member/patrons. Always remember, it's the people who make the plan work.

## **The Cooperative's Financial Risks**

Financial risk is the second category of risks and is defined as the increase in business risk caused by debt financing. The lowest risk situation for the cooperative is to be completely equity financed and not borrow any money. However, this is difficult to accomplish, especially for large projects, and may put unwanted restrictions on the cooperative's business plan.

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From a member's point of view, financial risk may not seem large, relative to the business risks discussed earlier. However, financial risk and the ability of the cooperative to adjust to business risks using borrowed capital can have a substantial impact on the cooperative's performance and ability to succeed.

It is important that the cooperative have a lender, or lenders, that has experience with the unique aspects of financing cooperatives. It is also important that the total financing package, both debt and equity, meet the needs of the cooperative and leave it flexible enough to adjust to changing business conditions. This usually means that the business plan needs to have solid member investment capital and sufficient operating funds, or working capital.

## **How Will Cooperative Membership Influence the Farm/Ranch Operation?**

The impacts of new venture cooperative membership on the farm/ranch operation can range from minor to far-reaching, depending on your current farm/ranch operation and the structure of the cooperative and its membership agreement. To capture all of the potential consequences, we evaluate the impacts on farm/ranch production, marketing, and finance individually.

### **The Cooperative's Impact on Farm/Ranch Production**

In most cases, a new venture processing cooperative requires its members to deliver consistent, high quality commodities. High quality products allow the cooperative to capture and maintain market share. Because of this, the cooperative may develop recommended production practices to increase overall quality and quantity and to reduce quality variation among members.

It is important to determine if these production practices are voluntary or mandatory. You must gauge how easy it is to incorporate proposed changes into your current operation, and estimate changes in the commodity's per-unit cost of production.

Changes in production practices could be as simple and low cost as changing seed varieties or animal vaccinations, or as complex and expensive as altering machinery complements or building and facility configurations.

The spinoff impact on the production and cost efficiencies of other enterprises on the farm/ranch is typically underestimated or even overlooked. A common example is an increase on the demands of the farm/ranch's labor and management. If changes in production practices increase the demands on labor and management at the expense of another enterprise, the net result may not be positive.

The timing of delivery and final point of delivery for the commodity can also have significant impacts on the cost of production. If the commodity must be stored from the time of production until delivery, the added costs of storage, handling, interest, and the risk of reduced quality should be included. The cost of transporting the commodity from the point of production to the point of delivery should be adjusted if delivery is required outside your normal trade area.

Some farmers have found that the cooperative's recommended production practices have improved enterprise and whole-farm efficiencies.

### **The Cooperative's Impact on Farm/Ranch Marketing**

It is important that the terms and conditions of any marketing agreement are completely understood. In most cases, the responsibility for profitably marketing the commodity is turned over to the cooperative, through its processing activities. This allows the farm/ranch to diversify its commodity marketing activities.

It is not unusual for the cooperative's business plan to provide partial payment for the commodity at the time of delivery, with the remainder received as cash and retained patronage at some time in the future. The timing and level

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of these payments can have a significant impact on the farm/ranch cash flow. It may be necessary to alter the normal marketing plan of other commodities or change short-term borrowing needs to adjust to the cooperative's payment schedule.

Another important issue is what happens if you are unable to deliver the specified quantity or quality of product listed in the marketing contract. Some cooperatives have established a member marketing pool which can be used to fill shortfalls in quantity or quality. In this case, the cooperative buys the commodity from the pool, in your name, and reduces your payments by that amount, plus a handling fee. Other cooperatives require the delivery of the commodity, and you are responsible to purchase and deliver any shortfalls.

## **The Cooperative's Impact on Farm/Ranch Finances**

There are both long-term and short-term impacts on farm/ranch finances. The extent of these impacts will vary greatly from one farm/ranch operation to the next.

The best way to capture all of the long-term financial impacts is to use whole farm/ranch budgeting. This process provides estimates of the long-term profitability of the operation and gives an indication of its financial progress and staying power.

Two long-term budgets should be prepared. The first reflects business as usual and includes normal farm/ranch operating practices, machinery replacement, and building or facilities renovation. The second will add the new cooperative investment, with all of the adjustments to production and marketing for each enterprise on the farm/ranch. These two estimates should be prepared assuming that changes are fully implemented. This means that the cooperative is in operation, and generating and distributing returns as projected. We are trying to assess what the farm/ranch business may look like in the future.

The main objective of this process is to estimate the net effect of cooperative membership on the long-term financial health of the farm/ranch. By comparing the results of the two budgets, we see the influence the cooperative has on net farm income, change in net worth, and long-term cash flow. It is the combination of these three measures that provide an indication of long-term financial health. If the long-term benefits are positive, we need to make sure that the farm/ranch can meet all of its short-term cash flow needs.

It is not unusual for a new venture cooperative to need several years of start-up and operation before its net returns are positive. Because of this, members typically will not receive returns from the cooperative until several years after the initial investment has been made. It is critical that the farm/ranch operation be able to meet all of its financial obligations on time during this period. A short-term cash flow projection will show if this is possible.

Every farm/ranch operation has some level of short-term borrowing and cash flow limitations. Because of this, the cooperative membership investment must compete with other uses for limited short-term capital. If a conservatively prepared short-term cash flow is positive, the chance of major cash flow problems is small. However, if the cash flow is slightly positive or negative, decisions must be made between the alternative uses of money.

Preparing whole farm budgets and cash flows is not a small process and will take some time and effort. However, these statements will ensure that all direct and indirect impacts of changes in production, marketing and financing are included. Time spent now, with a sharp pencil, could prevent problems in the future.

Your lender can play a key role in meeting both long-term and short-term financial needs of a cooperative membership investment. This leads to the next question.



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## How Will My Lender View the Cooperative Investment?

It is important to discuss the new venture cooperative investment with your lender. This should be done regardless of whether the investment is self-financed or debt-financed. The investment in a new venture cooperative typically results in a notable change in your financial condition and should be reviewed with your lender to maintain good working relations.

Your lender will have many of the same questions about the cooperative, and its impact on the farm/ranch, which have already been discussed. In some cases, the cooperative has held special meetings for lenders in its membership area to review its business plan. In other cases, your lender may have only heard about the cooperative's plans, and have very few details. In either case, it is usually helpful to review the cooperative's business plan with your lender. In addition, be sure to take time to review the long-term budgets and short-term cash flow you have prepared. These statements will provide a condensed view of the impacts on your farm/ranch operation.

There are two additional questions the lender may have which are important to you, and may influence a loan decision and credit terms. The first is, "How will possible losses from the cooperative be distributed?"; and second, "How easy, or difficult, is it to transfer membership stock?"

The first question, concerning distribution of losses, is important because it helps define the maximum loss potential. In some cases, the method for distributing cooperative losses is defined in the cooperative's by-laws. In other cases, this decision is the responsibility of the board of directors. In either situation, it is important to understand what may happen to your initial investment, and any retained earnings, if the cooperative sustains losses.

The second question, concerning stock transfer, is important because your lender is trying to determine the liquidity of the stock. If the cooperative stock is easily transferred from one producer to another, with few restrictions, the lender views it as more liquid and lower risk. This is because the stock could be sold quickly and easily if it is necessary to limit losses. However, if there are restrictions or a complex process for stock transfer, it is considered less liquid and a greater risk.

Every lending institution, or system, treats a loan for cooperative membership investment differently. Some lenders have even developed special loan terms which meet the unique cash flow needs of a membership investment.

If you are requesting a loan, there are four key issues which need to be discussed; they are:

1. The annual interest rate of the loan and whether it is fixed or variable.
2. The length of the loan.
3. The number and timing of payments.
4. The source(s) and amount of collateral.

The first issues will determine the annual loan payment, and influence the farm/ranch cash flow. The final issue, concerning collateral, will influence the farm/ranch's solvency and future borrowing capacity. Some lenders use only the cooperative stock as security for a loan. However, most lenders require that additional farm/ranch assets be pledged. The amount of collateral needed for a loan will depend on the current financial strength of the farm/ranch, your credit history, and the risks surrounding the cooperative business.

## How Will Cooperative Membership Impact My Personal and Business Goals?

Up to this point we have focused primarily on the financial aspects of cooperative membership. However, there are several other non-financial factors which may play a role in your final decision.

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One of the most commonly cited personal benefits of cooperative membership is the ability to have a voice in the operation of the business. The ability to express opinions and exert some control over the operation of a cooperative is considered important to many of its members.

Many local communities, regions, and even states are actively involved in the development and promotion of new venture processing cooperatives. Their goal is to bring economic development and more jobs into their area. In some situations, the cooperative has already selected a specific site to locate facilities and headquarters. In other situations, the site has not yet been decided.

Many cooperative members list community economic benefits and increased job prospects as factors which went into their membership decision. However, it is also important to realize that the cooperative may not locate in your area, and that not all of the community impacts are positive.

It is true that a new business creates more jobs, more people living within the community, and increased retail business volume. However, some communities have found that increased business activity and larger populations strain the community infrastructure, such as water, sewage, fire fighting, police, medical services and schools. An expanded job market can also increase the competition for labor and put additional financial pressure on existing businesses.

Because of the long term nature of agri-business development and growth, some farmers and ranchers will not enjoy the complete benefit of cooperative membership during their farming/ranching career. Yet, they are active participants in the process. The desire to improve their communities and assist the next farming/ranching generation are factors which influence their membership decision.

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## Summary

The goal of this publication was to help you make an informed decision about becoming a member of a new venture processing cooperative by focusing on key questions which need to be addressed. Unfortunately, there are no easy answers to many of these questions. This type of long-term investment decision is complex, and can have far-reaching impacts. Ultimately, it is up to each individual to decide if membership in a new venture processing cooperative is right for them.

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## **Selected Computer Software**

### **Net Present Value:**

Financial Analysis of Investments in Agricultural Capital Assets. Department of Agricultural Economics and Department of Information, Cooperative Extension, Washington State University. Willett, Gayle S. and Herb R. Hinmam.

### **Long-Term and Short-Term Budgeting and Cash Flow:**

FINPACK. Center For Farm Financial Management, Department of Agricultural and Applied Economics, Minnesota Extension Service, University of Minnesota. Hawkins, Richard O.

K-Farm Ver. 4.0 Kansas Extension Service, Kansas State University. Art Barnaby.

Cash Flow Projection, Transition Planning. IlliNet Software, University of Illinois. Betty Burton.

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## **Appendix**

This appendix presents an example of a net present value calculation for a new venture processing cooperative. Appendix Table 2 illustrates a summary of the calculation process for each year of the investment.

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## Background Information

The new venture processing cooperative in this example is requesting a \$200 common stock, or membership, fee plus a minimum purchase of 500 shares of preferred stock, at \$20 per share. Each share allows for the delivery of one unit of commodity to the cooperative for processing. This results in a minimum total investment of \$10,200.

Appendix Table 1 lists the projected per-unit net returns for the first five years of the cooperative's operation. This information was supplied in the cooperative's prospectus.

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**Appendix Table 1. Projected per-unit cooperative net returns.**

	Year 1	Year 2	Year 3	Year 4	Year 5
Per-unit net returns	\$ -1.50	\$ -0.50	\$ 1.00	\$ 2.00	\$ 3.25

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The cooperatives's prospectus does not include any discussion of the division of cash versus retained patronage earnings. However, a discussion with one of the members of the cooperative's interim board of directors reveals that the plan is to return a 20% cash patronage in year three, 40% cash patronage in year four, and 60% cash patronage in the following years. The interim board member stresses that these numbers are tentative and may need to be changed based on actual business conditions.

The discussion with the interim board member also reveals that the cooperative plans to redeem retained refunds on a 10 year revolving basis. And, that all accumulated retained refunds will be redeemed when membership ends, either at death or when the stock is transferred to another producer. (NOTE: Redeeming accumulated retained refunds at the time of sale is not commonly used by cooperatives, but was included in this example because of its simplicity.)

## Key Assumptions

**Planned length of investment:** 20 years.

**Estimated sales value of stock:** \$32,500

### Marginal income tax rate:

We assumed a 15% marginal federal income tax (MFIT) rate, 15.3% self employment tax (SET) rate (of which 50% can be claimed as a reduction in federal taxable income), and that the state income tax (SIT) rate is 14% of the federal income tax due. This results in a 30% marginal tax rate (see example below).

#### Example: Assume \$100.00 Net Farm Income (NFI)

(\$100.00 NFI X 0.9235 SET Adjustment) X 15.3% SET	= \$14.13
(\$100.00 NFI - (\$14.13 SET)/2) X 15% MFIT	= \$13.94
\$13.94 MFIT X 14% SIT	= \$ 1.95
	=====
	\$30.02

Resulting tax on additional income = \$30.02/\$100.00  
= 0.3002%

OR, approximately a 30% marginal income tax rate.

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**Choosing a Discount Rate:**

Choosing an appropriate discount rate is a critical task because it can have a relatively large impact on the analysis. You want to choose a rate which is large enough to provide an appropriate return to risk and be competitive with other uses of your money, but not so great that it is overstated and distorts the analysis.

One method for choosing a discount rate is to select a desired minimum rate of return. Another alternative is to use the same rate as the highest interest rate paid on debt. In either case, the selected rate must reflect an after-tax value to be used properly in this example.

This example will use an 8% discount rate. This rate was calculated by adjusting the highest interest paid on debt capital, 11% in this example, by the 30% marginal income tax rate [(11.0 X (1- 0.30)) = 7.7] and rounding up.

Once a discount rate has been chosen, the discount factor for each year must be calculated. This can be done by looking at a discount rate table, or using the following formula:

**Annual Discount Factor = 1/(1+i)<sup>n</sup>**

Where: i = the discount rate (8% in this example).  
 n = the number of years in the future. (1 to 20)

Example: Annual Discount Factor for year 3 =  
 $1/(1+0.08)^3 = 1/(1.08)^3 = 1/1.2597 = 0.7938$

**Appendix Table 2**

**Appendix Table 2. After-tax net present value calculation for new venture cooperative investment.**

Year	Per-Unit Patronage Refund (A)	Total Patronage Refund (B)	Percent Cash Refund (C)	Cash Patronage Refund (D)	Estimated Tax (30%) (E)
Present	Initial Investment				
1	\$0.00	\$0.00			
2	\$0.00	\$0.00			
3	\$1.00	\$500.00	20	\$100.00	\$-150.00
4	\$2.00	\$1,000.00	40	\$400.00	\$-300.00
5	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
6	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
7	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
8	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
9	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
10	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
11	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
12	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
13	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
14	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
15	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
16	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
17	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
18	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
19	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
20	\$3.25	\$1,625.00	60	\$975.00	\$-487.50
20		Stock Sale		\$32,500.00	\$-7,136.00*

Year	Redeemed Retained Refunds (F)	Net Cash Flow (G)	Discount Factor (8%) (H)	Present Value (I)
Present	Initial			
	Investment	\$-10,200.00	1.0000	\$-10,200.00
1		\$0.00	0.9259	\$0.00
2		\$0.00	0.8573	\$0.00
3		\$-50.00	0.7938	\$-39.69
4		\$100.00	0.7350	\$73.50
5		\$487.50	0.6806	\$331.79
6		\$487.50	0.6302	\$307.22
7		\$487.50	0.5835	\$284.46
8		\$487.50	0.5403	\$263.40
9		\$487.50	0.5002	\$243.85
10		\$487.50	0.4632	\$225.81
11	\$0.00	\$487.50	0.4289	\$209.09
12	\$0.00	\$487.50	0.3971	\$193.59
13	\$400.00	\$887.50	0.3677	\$326.33
14	\$600.00	\$1,087.50	0.3405	\$370.29
15	\$650.00	\$1,137.50	0.3152	\$358.54
16	\$650.00	\$1,137.50	0.2919	\$332.04
17	\$650.00	\$1,137.50	0.2703	\$307.47
18	\$650.00	\$1,137.50	0.2502	\$284.60
19	\$650.00	\$1,137.50	0.2317	\$263.56
20	\$650.00	\$1,137.50	0.2145	\$243.99
20	\$6,500.00	\$31,864.00	0.2145	\$6,834.83
Net Present Value				\$1,214.67

\*Capital gains taxed at 28%

## Appendix Table 2 Discussion

### Per-unit patronage refund(Column A):

Column A lists the projected annual per-unit patronage refund from the cooperative's operations. Please note that the first two years have no patronage refund because of projected losses. This is not uncommon for new, start up companies. Also note that we assumed the per-unit patronage refund for years six through 20 are the same as year five.

### Total patronage refund(Column B):

Column B is the per-unit refund from Column A multiplied by the 500 shares of preferred stock which are to be purchased.

### Percent cash refund(Column C):

Column C is the assumed annual percentage of cash patronage refunded. The remaining amount is retained by the cooperative and returned 10 years later.

### Cash patronage refund(Column D):

Column D lists the annual patronage refund that was paid in cash. It is calculated by multiplying Column B and Column C together.

### Estimated tax(Column E):

Column E is the estimated annual tax liability. This is calculated by multiplying Column B by the 30% marginal income tax rate. We must use the total patronage (column B) to calculate the estimated tax because most cooperatives use qualified refunds, allowing for taxable income to be passed through to the member/patrons. Therefore, the total amount must be claimed as taxable income, even though only a percentage is received in cash. Note that the estimated tax is greater than the cash patronage refund in year three.

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**Redeemed retained refunds(Column F):**

Column F lists the annual retained refund. The amount of annual retained refund is calculated by subtracting the cash refund (column D) from the total refund (column B).

In this example, the retained refunds are redeemed on a 10 year revolving basis. This means that the retained refunds earned in year three will be returned in year 13. This example also assumes that all remaining retained refunds will be redeemed when the stock is transferred, in this case when it is sold in year 20. This assumption was made to reduce complexity, and is not commonly used by cooperatives.

**Net cash flow(Column G):**

Column G is the annual net cash flow. This column is calculated by subtracting the estimated tax (column E) from the cash patronage (column D) and then adding the redeemed patronage (column F).

**Discount factor(Column H):**

Column H lists the annual discount factor. Once again, this can either be calculated by using the formula listed previously or obtained from a table of discount factors.

**Present value(Column I):**

Column I is the annual present value of the net cash flow. This is calculated by multiplying the net cash flow (column G) by the discount factor (column H).

**The stock sale(LAST ROW):**

There are some special considerations encountered in calculating the present value of the stock sale. The estimated tax is calculated by subtracting the initial investment (\$10,200) from the sale amount (\$32,500) and multiplying the difference (capital gains of \$22,300) by the marginal tax rate (32%). This assumes that the capital gain (\$22,300) will be taxed at the same rate as ordinary income (self employment taxes do not apply), but that the additional income in that year will move you from the 15% to the 28% marginal federal income tax rate. Also note that the remaining retained patronage, of \$6,500, is redeemed at the time of the sale.

Therefore, the net cash flow at the time of the stock sale (\$31,864) is the sale amount (\$32,500) less the estimated tax (\$7,136) plus the remaining retained patronage (\$6,500).

**The Answer=The Net Present Value:**

The net present value is the sum of all of the annual present values. In this example, the net present value is a positive \$1,214.67. Because the net present value is positive, this cooperative stock investment will return more than the minimum 8% after-tax return and should be considered. However, if the net present value was negative, the investment would return something less than the desired 8% after-tax return, and your money may generate a higher return in other uses. A negative net present value does not mean that you should not become a member in the cooperative, only that the cooperative will not generate the selected rate of return. Your personal and business goals, as well as the potential impacts on the farm/ranch, should also be considered.

**EB-67**, July 1996

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