

**FINANCIAL PERFORMANCE PROFILE AND  
EVALUATION OF ALTERNATIVE EQUITY  
MANAGEMENT PROGRAMS FOR FARMERS  
COOPERATIVE EQUITY COMPANY**

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## **ABSTRACT**

The goal of this thesis was to help Farmers Cooperative Equity Company (FCE) remain a firm, stable cooperative while increasing wealth of their patron owners. This thesis evaluated alternative equity redemption strategies to help FCE decide what decisions need to be made for proper use of equity for financing assets and increasing patronage returns.

To develop an understanding of FCE and their current financial structures, we looked at the history of FCE and cooperatives in general. Then we gave a brief background of financial performance measures that were used to evaluate the profitability, solvency, liquidity, and efficiency of FCE. A cooperative performance profile was then run on FCE, by using a financial analysis program called PERFORM, to compare it to other agriculture cooperatives. The results for FCE were very strong in that they were performing at or above the 50<sup>th</sup> percentile range for many of the measures examined. FCE appears to be a very profitable, liquid, solvent, and efficient cooperative.

We then used the results provided by the financial analysis program called PERFORM to make financial projections for the future to evaluate alternative equity redemption strategies for FCE. A computer program called FINPLAN was used to make the financial projections and evaluate the alternative equity redemption strategies. Five different strategies were evaluated and compared to the status quo, "strategy S0," business as usual.

The results showed that if the projections made for the future are correct, FCE would be able to return larger redemptions to patron owners by implementing an alternative equity redemption strategy that adheres to strict balance sheet management. Balance sheet management requires a cooperative to meet predetermined solvency and liquidity goals and

then distributes the residual equity over and above that needed to finance assets, in combination with debt, as the equity redemption budget for that year. FCE could return larger redemptions while financing their operations through the use of patron equity and then return excess equity to patrons based upon cooperative usage.

FCE's general manager and board of directors have been provided with this thesis and the full project report. This thesis and project provide FCE with valuable information for them to make critical decisions on cooperative finance, including income distribution and equity management decisions.

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## **CHAPTER 1: INTRODUCTION**

### **1.1 History of Cooperatives**

Throughout history there have been many cooperative efforts. Since early times man has cooperated with others to help with survival tactics, people have been cooperating to help achieve objectives that they could not reach if they acted individually, thus many cooperatives have been formed. Regardless of the industry or the task at hand, cooperatives have proven to be very successful entities. However, a cooperative uses a unique business model that most experts agree has significant disadvantages in equity capitalization or financing of assets compared to businesses using the investor-oriented business model.

### **1.2 History of Farmer's Cooperative Equity Co. (FCE)**

Farmers Cooperative Equity Co. was organized and began business in 1919. FCE then had only 54 charter members with a board of directors of five members including a president, vice president, and secretary. The manager's salary when FCE began operations was \$125 per month. FCE had many good but also difficult years in its early history. They continued to grow and build assets. It wasn't until 1952 that the manager of FCE was granted a ten day vacation period per working year. In February of 1958, the first dinner annual meeting was held in Isabel, Kansas and since has become an annual tradition.

Major acquisitions for FCE began in 1953 when at the annual meeting; stockholders of FCE voted and approved a resolution to allow the co-op to retain their proration so that a

new warehouse could be built. The year following, the stockholders voted and approved for the co-op to build a new concrete elevator which is still in operation today. The cost of the concrete elevator was \$137,000. FCE continued to have good years throughout the fifties and felt the need for additional grain storage. In 1958, the board and stockholders approved that FCE could build an elevator annex for additional storage. The cost of the storage was \$135,784 and brought the capacity of the elevator to over a half million bushels.

In the late fifties and throughout the sixties many more additions were added to FCE's asset base, including a propane plant in 1959, grain dryer in 1961, a liquid nitrogen plant in 1962, and a new office, warehouse, service station, and scales were added in 1965. That brought FCE total assets to a value over \$6,000,000. During the 1960s and 70s many additions and changes were seen throughout the co-op, such as entering the anhydrous ammonia business, building dry fertilizer facilities, a new liquid fertilizer plant and a new feed mill, beginning floater operations, and most importantly, entering the computer age with data processing equipment.

In 1977, the current manager Charlie Swayze took over the general manager's job and led the continued the growth of FCE. Mr. Swayze implemented the current equity redemption program which has been very successful for FCE.

The 1980s and 90s have seen even more changes and new additions. At Isabel, there was a new annex addition to the elevator, a new bigger outside leg and dump pit, additional warehouses, and fertilizer application equipment along with a bulk chemical facility. In

late 1989, FCE consolidated into their operation the Zenda Grain and Supply facilities which included locations of Nashville and Zenda. Then FCE continued new growth with the addition of Sawyer Cooperative in Medicine Lodge and Sawyer in 1990. In 1998, FCE purchased a facility in Lake City from Cargill which is operated as a seasonal facility. Continuing changes in agriculture have made FCE continue to make new improvements and build new assets to keep up with demand. Production efficiency in the farm industry has resulted in FCE building additional grain storage at the Nashville, Zenda, Sawyer, and Medicine Lodge locations.

### **1.3 Motivation**

Personal motivation for this project has been tremendous. This is an opportunity to learn more about cooperatives, their internal structures and find ways to continue to make them better. This research will help me learn and accomplish goals of my life in the future. The author's hope is to use this project to improve FCE's business and financial structure, making it attractive to new members of all ages.

Specifically, the substantial growth in FCE's assets has required a careful focus on how to finance those assets with a proportional mix of debt and equity. Then one must determine the best way to obtain equity investment capital from each patron-owner and how to manage the level of their contribution through an effective equity redemption program.

### **1.4 Scope of Project**

The intent of this project is to evaluate FCE and their financial structure to provide suggestions to FCE management and their board of directors on future financial decisions.

FCE is a very strong and sound cooperative which will be evidenced through the Cooperative Performance Profile detailed in this report. FCE is currently using a specialized plan for distributing their patronage refunds and equity redemptions to their cooperative members. The specialized redemption strategy that FCE is using consists of paying off patrons at the age of 65, and again at a later age voted upon by the board of directors. The only other ways to receive equity redemption from FCE is through special redemptions including estate settlements (death), retirement from farming, or moving from the trade area.

This project will detail FCE's critical success factors determined through (1) a historical Cooperative Performance Profile, and (2) a financial projection that evaluates various alternative equity redemption plans to help determine what is best for FCE. Many profitability, liquidity, solvency, and efficiency ratios will be examined to determine the financial strength of FCE. The historical figures along with the future projections then will be used to evaluate alternative equity redemption programs through the use of pro forma financial analysis.

### **1.5 Methodology**

This thesis is being performed to help strengthen FCE for years to come. There are two basic parts to the analysis being performed in this project, a historical financial performance profile and a set of pro forma financial projections developed to evaluate alternative future equity redemption programs. The historical analysis tells us about FCE's past performance, and also gives us information to use in constructing the pro forma financial projections used to run simulations for future alternative equity redemption

programs. Dr. Barton and his staff at the Arthur Capper Cooperative Center at Kansas State University developed a financial analysis program called PERFORM that we used to develop the financial performance profile. The pro forma financial analysis is the basic mythology used for my financial projections. We used Microsoft Access and a program written in Visual Basis called FINPLAN to make financial projections and evaluate the different alternative equity redemption programs. FINPLAN is a financial simulator developed by the Arthur Capper Cooperative Center.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Glossary of Terms Used

The terms defined below were gathered from multiple sources and used to provide basic background knowledge to understand this thesis.

#### *2.1.1 Cooperative*

Although there is no universally accepted definition of a cooperative, it is generally described as a business that is organized, owned and democratically controlled by the people who use its products and services, and whose earnings are distributed on the basis of use rather than investment. The people who use and own the cooperative are referred to as members. A cooperative operates for the benefit of its members. A distinct feature of a cooperative organization is that the role of owner and patron are closely connected. A patron refers to a person who uses the cooperative and is eligible to receive a share of the patronage income in the form of patronage refunds, normally divided between cash and retained. A cooperative is distinct because there is a link between the ownership and the users of the business. A cooperative is also distinct because it distributes its earnings to members according to the level of business conducted with the company, as patronage refunds rather than dividends based on equity invested.

#### *2.1.2 Cooperative characteristics*

A cooperative has three general attributes that distinguish it from other types of business structures. They are:

- the user-benefits principle

- the user-owner principle
- the user-control principle.

As you can see, the emphasis in agricultural cooperatives like FCE is on the users of the business, who are also the producer-customers, patrons, investors, and voting members. In IOFs (investor owned firms), the emphasis is on the investors, who might never be users of the business. One of the key features of new generation cooperatives is to increase the emphasis on the role of users as investors who make an initial cash equity investment proportional to use. However, FCE is not a new generation cooperative. It is a traditional cooperative in which producer-customers make a relatively small initial equity investment and then earn the rest by doing business and investing retained patronage refunds.

#### *2.1.2.1 The user-benefits principle:*

As mentioned, the cooperative operates for the benefit of its members. Members represent the people who use and own the cooperative. Earnings that the cooperative generates during the year are distributed to members according to the level of individual business that they conducted with the cooperative during that year in the form of patronage refunds. Earnings are therefore distributed according to the level of use rather than level of equity investment.

#### *2.1.2.2 The user-owner principle:*

The people who use the cooperative are its owners. Since they own the cooperative, the members are responsible for providing equity capital in order to finance the cooperative's operations. Typically, members finance their cooperative in three different ways: by direct

contribution of membership fees or purchase of equity stock, by allowing the cooperative to allocate or distribute some of the net income earned from member business as cash patronage refunds and as retained patronage refunds to member equity accounts, and through assessments on some regular basis such as per unit of product sold or purchased, typically called per unit retains. Therefore there are three main methods by which members provide equity financing for their cooperative: direct investment, retained patronage refunds, and per unit capital retains. Noting two of the three methods provide equity as a result of business operations. A member is usually required to make some sort of payment when they join the cooperative. This direct investment might be the purchase of a membership share or some sort of common or preferred stock. A patronage refund occurs once the cooperative determines how much patronage earnings it has generated during the past year. Once the earnings are calculated, they are distributed to members according to how much business that patron has done with the cooperative during the year. Members who have done business with the cooperative are called patrons. These distributed earnings are called patronage refunds. Usually, not all of the patronage refunds are distributed as cash. Some of the patronage refunds are retained in the cooperative and allocated to members' equity accounts instead. Retained patronage refunds occur when the cooperative does not distribute all of the patronage refunds in cash. Per unit capital retained can be used to finance cooperative. In such a situation, the cooperative withholds a portion of earnings proceeds due to its members.

#### *2.1.2.3 The user-control principle:*

Members, through their role as owners, control the cooperative. They exert their control through voting power. Members elect a board of directors and may vote in other affairs of

the cooperative, such as major proposed policy changes. Generally, control is based on a one member, one vote principle; each member has only one vote in the affairs of the cooperative, regardless of the level of business that they conduct with the cooperative or the level of equity invested. However, some cooperatives vote based upon patronage business, equity investment, or a combination of both. FCE follows the one-member, one-vote rule even though voting based on patronage and equity are legal in Kansas.

#### *2.1.2 Cooperative Finance*

Finance in any business is defined by three major concerns: investment decisions, financing decisions, and income decisions. Financial management of these three decisions determines the long term stability of the company. In cooperatives, the board of directors makes the investment decisions, decides how to finance their asset investment decisions, and also decides how to distribute the earnings; all of these policies are implemented and over seen by a manager chosen by the board of directors.

#### *2.1.3 Profitability*

Profitability is a measure of the success of a company. Measuring profitability is done by the use of many different ratios, such as return on sales, equity, or assets. Profitability is crucial to the longevity of an organization since it is the primary source of new equity. The profitability of FCE will be evaluated in Chapter 3 by looking at different ratios. The ratios used to evaluate the historical profitability of FCE will be further defined in Chapter 3.

#### *2.1.4 Liquidity*

Liquidity is the ability to cover short term liabilities. If a company is able to achieve optimum liquidity, liquidity that is not too high or too low, it can maintain working capital

and cash flows as it attempts to reach high profitability levels. Enough liquid assets should be maintained to meet payments on payroll, debt, and inventory for a twelve to eighteen month period. Liquidity will be further defined and evaluated for FCE in chapter 3.

#### *2.1.5 Solvency*

Solvency is the ability of a corporation to meet its long-term fixed expenses and to accomplish long-term expansion and growth. The better a company's solvency, the better it is financially. When a company is insolvent, it means that it can no longer operate. Optimum solvency is the right balance between debt and equity, and leads to sustainable high profitability. Ratio's from which solvency can be evaluated are defined and discussed in Chapter 3 when we look at the financial performance of FCE.

#### *2.1.6 Efficiency*

Efficiency is how effectively a company is operating and using its resources, including but not limited to assets and employees. High efficiency leads to low costs, high revenue, and high profitability. There are many ratios which measure the efficiency of an organization, Chapter 3 will define some of those ratios and evaluate FCE's efficiency.

## **2.2 Explanation of a Cooperative Performance Profile**

Chapter 3 describes in detail a cooperative performance profile for FCE. The FCE cooperative performance profile reviews financial performance of cooperatives in the seven Great Plains states of North Dakota, South Dakota, Nebraska, Kansas Colorado, Oklahoma, and Texas for a twenty-five year time period, 1980-2005. A cooperative performance profile uses ratios from four different financial perspectives: profitability, solvency, liquidity, and efficiency. The profile can answer several questions about the stability of co-

ops in general and the case study cooperative, FCE. Three major questions of interest in the evaluation of all Great Plains Cooperatives (GPC) are

- 1) What has GPC performance been in the past?
- 2) That factors influence GPC profitability the most?
- 3) What strategies can be used to improve GPC profitability?

When looking at the case cooperative as an individual we will answer three questions of interest.

- 1) How has FCE's performance changed over the years and why?
- 2) How does FCE's performance compare to other GPC's?
- 3) What strategies could be considered to improve the future performance of FCE?

### **2.3 Explanation of Alternative Equity Redemption Methods**

The definitions below were gathered from research performed by David Barton and define different redemption methods that we can use when constructing alternative equity redemption programs for Farmers Cooperative Equity to redeem equity. Table 2.1 at the end of this section provides a brief overview of some of the advantages and disadvantages of the alternative equity redemption methods.

#### *2.3.1 Six Redemption Alternatives*

There are six basic methods of redeeming equity. The methods are (1) base capital, (2) revolving fund, (3) percentage of all equities, (4) specialized plans, (5) age of patron, prorated, and (6) age of patron, oldest first. Shown at the end of this Chapter is an example

of base capital, revolving fund, and percentage of all equities redemption strategies in a table format.

### *2.3.2 Base Capital Plan*

The base capital method is simple in principle but complex in practice to calculate. A base capital plan determines a member's equity obligation on an annual basis, based upon the patron's use of the cooperative and the financial needs of the cooperative. Members who are underinvested continue to invest, and members deemed over invested receive partial or full redemption of their excess investment. The base capital plan is considered the most equitable plan because it links investment to current cooperative use rather than to historic patterns of returns or earnings retained from members. It also enables management to alter equity requirements to meet the changing needs of the cooperative. Finally, the base capital plan provides a logical framework for correcting investment imbalances between underinvested and overinvested members.

### *2.3.3 Revolving Fund Plan*

A cooperative using a revolving fund plan pays off or redeems the oldest equities on a first-in, first-out basis, or for simplification in the order that they were allocated. In other words, the oldest equity is redeemed first.

### *2.3.4 Percentage of all Equities*

A cooperative using the percentage of all equities or percentage pool method, retires a percentage of all member's equity regardless of issue dates or the age of the owner. The

percentage the cooperative reduces member's equity by is the same percentage regardless of the size of the member's equity investment or the amount of usage of the member.

#### *2.3.5 Specialized Plan*

A specialized plan is one by which a change in a situation of a patron qualifies that person's equity for redemption. Examples of specialized plans are retirement from farming or a move. Many cooperatives in Kansas use this method.

#### *2.3.6 Age of Patron/Oldest First*

The age of patron oldest first redemption method redeems the equity of a patron when the patron reaches a specified age, normal redemption age is 65, however that age is not attainable for all cooperatives. It is assumed that the co-op knows the birth date of the patron for this equity redemption method.

#### *2.3.7 Age of Patron/Prorate*

The age of patron prorate redemption method redeems a percentage of each person's allocated equity for all patrons who have reached or exceeded a specified age. The percentage is selected each year base upon the funds made available in the equity redemption budget. Some co-ops use variations of this method, but in all cases they redeem a portion of the account at a specified age and continue to redeem that patron's equity until it is 100% redeemed.

**TABLE 2.1 ADVANTAGES AND DISADVANTAGES OF EQUITY REDEMPTION METHODS**

<b>Redemption Methods</b>	<b>Advantages</b>	<b>Disadvantages</b>
Revolving Fund	<ul style="list-style-type: none"> <li>1) Easily understood by members</li> <li>2) Easily administered</li> <li>3) Equity levels proportional to use if short revolving period</li> <li>4) Easy to extend revolving period if more equity needed or weak financial performance experienced</li> </ul>	<ul style="list-style-type: none"> <li>1) Equity levels not proportional to use if long revolving period</li> <li>2) Little equity redeemed if revolving period too easily extended</li> <li>3) Members perceive redemption as certain regardless of cooperative financial condition</li> </ul>
Base Capital Plan	<ul style="list-style-type: none"> <li>1) Most equitable--equity always in proportion to use</li> <li>2) Easier to alter equity requirements</li> <li>3) Best framework for requiring underinvested members to contribute</li> </ul>	<ul style="list-style-type: none"> <li>1) Underinvested members are often least able to contribute</li> <li>2) May be difficult to explain</li> </ul>
Percentage-of-all-equities	<ul style="list-style-type: none"> <li>1) New patrons receive some immediate reward</li> <li>2) Easy to explain and administer</li> </ul>	<ul style="list-style-type: none"> <li>1) Does little to keep equity levels proportional to use</li> </ul>
Specialized	<ul style="list-style-type: none"> <li>1) Minimizes a cooperative's redemption burden</li> <li>2) Easy to explain</li> </ul>	<ul style="list-style-type: none"> <li>1) Provides members with minimal redemption</li> <li>2) Minimizes member realized returns</li> <li>3) Does least to keep equity levels proportional to use</li> </ul>

Source: Cobia and Peterson, Chapter 14 “Managing Capital Structure.”

## **2.4 Balance Sheet Management**

Balance sheet management for a cooperative allows them to achieve desirable liquidity, solvency, and capital structure. Balance sheet management is when a cooperative

determines targeted solvency and liquidity goals, meets them first and then distributes residual equity over and above that needed as the equity redemption budget in any year. A reasonable liquidity goal for a cooperative is a current ratio of 1.2 to 1.4. An example of a reasonable solvency goal is an equity to adjusted assets ratio of at least 80% or an equivalent debt to equity ratio of 35 percent. Therefore, the solvency target will determine the amount of equity required on the balance sheet to finance assets and also determine the total amount of excess equity available for redemption.

## **2.5 Observations and Recommendations for a Strong Cooperative**

Dr. Barton's research has led to lots of theories and educational material for cooperatives to rely on for guidance. He came up with five specific observations that need to be present to have a firm, stable cooperative. The observations are as follows:

- 1) Co-ops must be competitive. A cooperative business is a unique business in its user-owner member structure, but a cooperative is still a business that must earn the business of its customer-patrons. A co-op cannot solely rely on "member loyalty." A co-op must be managed so that it can compete in a highly competitive environment.
- 2) Co-ops should make as much profit as possible. This means that a cooperative should operate with the core principles of being competitive in the market place, being as cost efficient as possible, making as much profit as possible, and then distributing excess cash and equity back to patron-owners.

- 3) Co-ops should use balance sheet management. Cooperatives should position themselves in a financial model that is sustainable for both the short term and long run. This allows the co-op to have adequate risk capital by establishing solvency and liquidity targets.
- 4) Serving core customers comes first. The core customers of an agricultural cooperative like FCE are those producer customers who are also patrons, owners, and members. However, there is a natural financial conflict of interest that develops between the customer, patron and owner roles built into the co-op model that must be managed. Co-op leaders are responsible for making a profit first before pleasing customers.
- 5) Finance, strategy, and risk management should be integrated. Finance and strategy have always been known to go hand in hand, but in today's fast moving times of agriculture, risk management must also be a partner. Co-ops historically have been used to pool or diversify risk for producers by assuming risk at the co-op level. However, cooperatives are essentially an extension of the farm business and should be managed to eliminate high levels of market risk.

## **2.6 Summary of literature review**

The majority of the information in this literature review is from many sources. Some of the concepts, definitions and material use different terminology but all help define and explain parts of this thesis project. The concepts and applications used to define and develop the scope of this thesis project and to conduct the performance profile and the pro forma

financial projections are primarily based on work performed by Dr. David Barton and the Arthur Capper Cooperative Center at Kansas State University.

**Table 2.2 Illustration of Five-Year Base Capital Plan**

Member	Beginning Equity	5-year patronage total	Share of Co-op's business (%)	Adjusted equity obligation	Over or under invested
A	\$ 1,685	\$ 120,208	11	\$ 2,035	-\$350
B	\$ 3,345	\$ 207,631	19	\$ 3,515	-170
C	\$ 2,805	\$ 152,991	14	\$ 2,590	+215
D	\$ 5,515	\$ 327,839	30	\$ 5,550	-35
E	\$ 4,550	\$ 284,127	26	\$ 4,810	-260
F	\$ 350	--	--	--	+350
Total	\$ 18,250	\$ 1,092,796	100	\$ 18,500	

Source: Cobia and Peterson, Chapter 14, "Managing Capital Structure."

**Table 2.3 Illustration of Revolution Fund Operation**

Year	Beginning equity	Patronage allocations retained	Equity amount redeemed	Equity years redeemed
Cooperative level				
1	0	500	0	--
2	500	500	0	--
3	1000	500	0	--
4	1500	500	500	1
5	1500	1000	1000	2,3
6	1500	500	500	4
Member A				
1	0	50	0	--
2	50	100	0	--
3	150	150	0	--
4	300	200	50	1
5	450	200	250	2,3
6	400	200	200	4

Source: Cobia and Peterson, Chapter 14, "Managing Capital Structure."

**Table 2.4 Illustration of Percentage-of-all-Equities Plan at the Cooperative Level**

Item	Dollars
Allocated equity at beginning of year	2000
Patronage allocations retained	500
Equity available at end of year	2500
Equity required	2300
Equity redeemable (2500 minus 2300)	200
Percentage of beginning year equity redeemable (200/2000)	10%

Source: Cobia and Peterson, Chapter 14, “Managing Capital Structure.”

**Table 2.5 Illustration of Percentage-of-all Equities Plan Applied to Members**

Member	Beginning equity	Percentage of equity redeemable	Amount to be redeemed
A	750	10	75
B	250	10	25
C	250	10	25
D	500	10	50
E	250	10	25
Total	2000	10	200

Source: Cobia and Peterson, Chapter 14, “Managing Capital Structure.”

## **CHAPTER 3: FCE COOPERATIVE PERFORMANCE PROFILE**

This chapter details the results of a cooperative performance profile performed for Farmers Cooperative Equity (FCE) using selected ratios from four different financial perspectives: profitability, solvency, liquidity, and efficiency. In evaluating the profitability of FCE we look at their return on equity, return on total assets, return on local assets, percent gross margin, percent grain gross margin, and farm supply gross margin. To determine the liquidity of FCE, we looked at the current ratio which measures the ability to meet short-term obligations. To evaluate solvency, the ability to meet long-term obligations, we focused primarily on the equity to asset ratio and also the adjusted equity to asset ratio. The final financial perspective evaluated was efficiency, which was evaluated by looking at FCE's gross income to personnel expense.

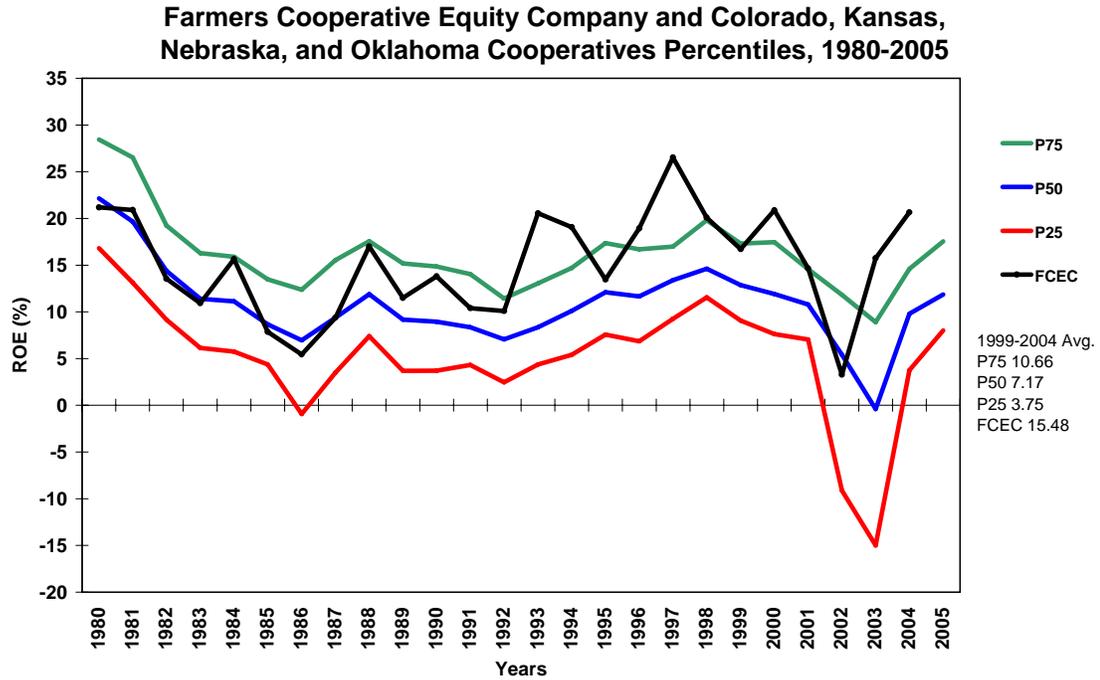
Only selected performance measures are described below. The complete performance profile is provided in Appendix A. The figures illustrated below here in Chapter 3 are also found in Appendix A.

### **3.1 Return on Equity**

Return on equity is the best measure of returns on total operations, local, regional, and to member owner patrons. Return on equity is calculated by dividing net earnings by member's equity. Figure 3.1 below illustrates the return on equity for Farmers Coop Equity when compared to other cooperatives within their regional vicinity. Looking at the chart it is obvious that FCE has performed very well in the last twenty five years. The last five year average shows that FCE has outperformed many of their fellow cooperatives. They have an average return on equity of 15.48% compared to the 50<sup>th</sup> percentile average

of 7.17%. Return on equity is generally the best single financial measure of the board of director's performance.

**Figure 3.1 Return on Equity**



### 3.2 Return on Total Assets

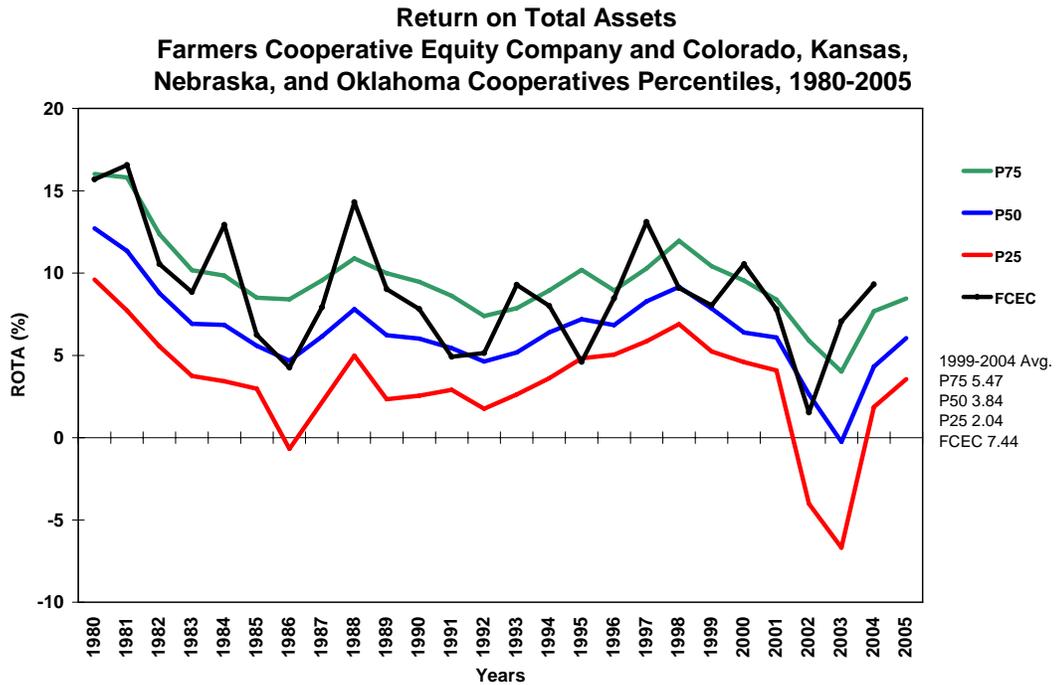
The return on total assets is calculated by taking the total earnings before income taxes and dividing it by total assets. This ratio is a measure of the company's total performance.

Many co-ops use different financing and income distribution strategies, therefore this measure provides a more uniform comparison between co-ops who use diverse strategies.

Looking at figure 3.2 below you can see that FCE is above the top 50<sup>th</sup> percentile for the twenty five year period examined, and had an average return on total assets for the last five

years examined well above the 75<sup>th</sup> percentile at 7.44%. This means that FCE is a very high performing cooperative based on their asset investment decisions.

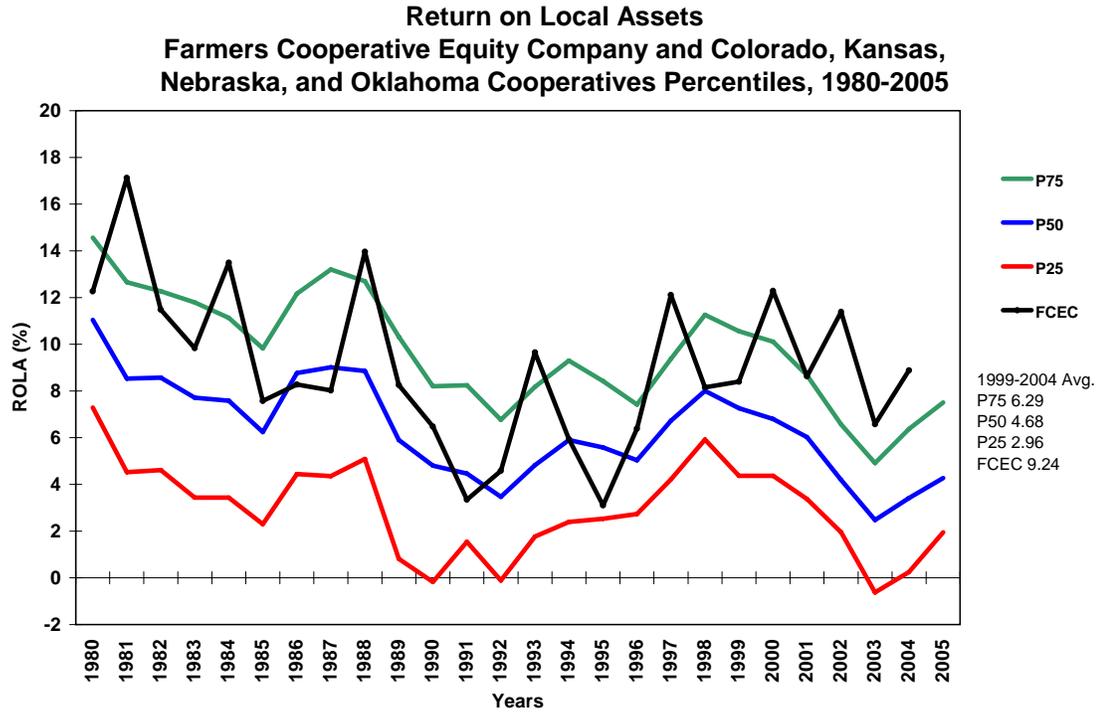
**Figure 3.2 Return on Total Assets**



### 3.3 Return on Local Assets

Local assets tell the story of the overall size of the cooperative. Local assets are the total assets of a cooperative less their investments in regional cooperatives. Looking at figure 3.3, you can see that FCE has managed their assets well over time and receive good return per dollar invested in local assets. High asset utilization generally produces nice profitability in return.

**Figure 3.3 Return on Local Assets**

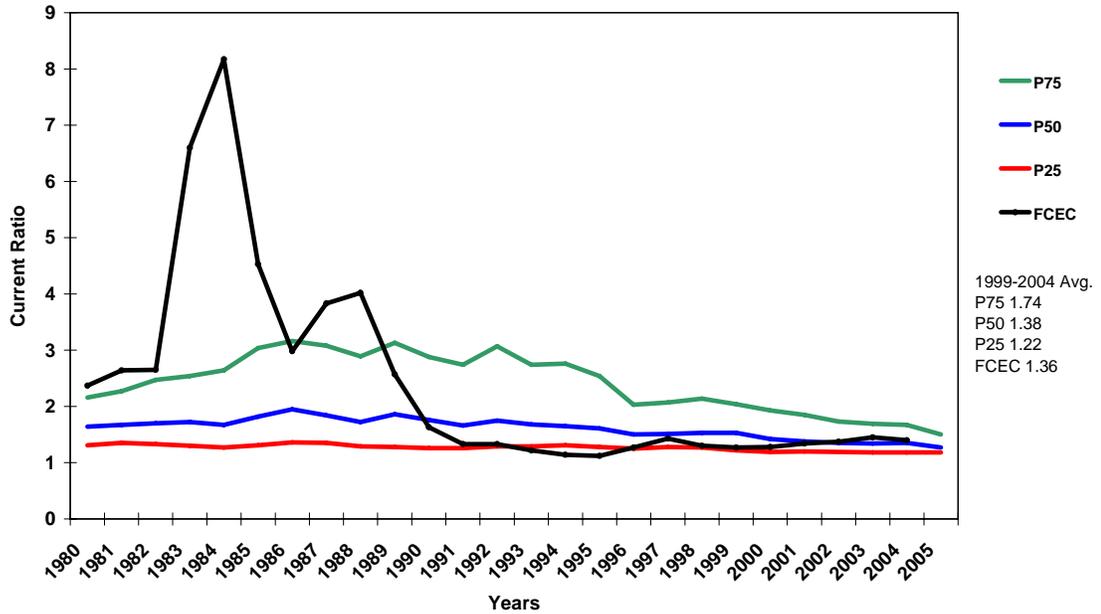


### 3.4 Current Ratio

The current ratio is a liquidity ratio calculated as current assets divided by current liabilities. The current ratio specifies the dollars of current assets that are available for every dollar of current liabilities; this ratio is figured from values taken off the balance sheet. The higher the ratio, the higher the firm's liquidity; a current ratio is typically expected to exceed one by a relatively wide margin. A current ratio of less than one signifies low liquidity. FCEC for the five year period of 1999-2004 had an average current ratio of 1.36 which means they had an average of \$1.36 of current assets available for every dollar of current liabilities. In the last five years evaluated their ratio of 1.36 was very close to the P50 co-op value of 1.38.

**Figure 3.4 Current Ratio**

**Farmers Cooperative Equity Company and Colorado, Kansas, Nebraska, and Oklahoma Cooperatives Percentiles, 1980-2005**



**3.5 Gross Margin**

The formula to calculate gross margin is to take total gross margins and divide it by sales.

This ratio measures the difference between purchase price and sales price. It is a good indicator of pricing strategy. Looking at figure 3.5 below you can see that FCE is not

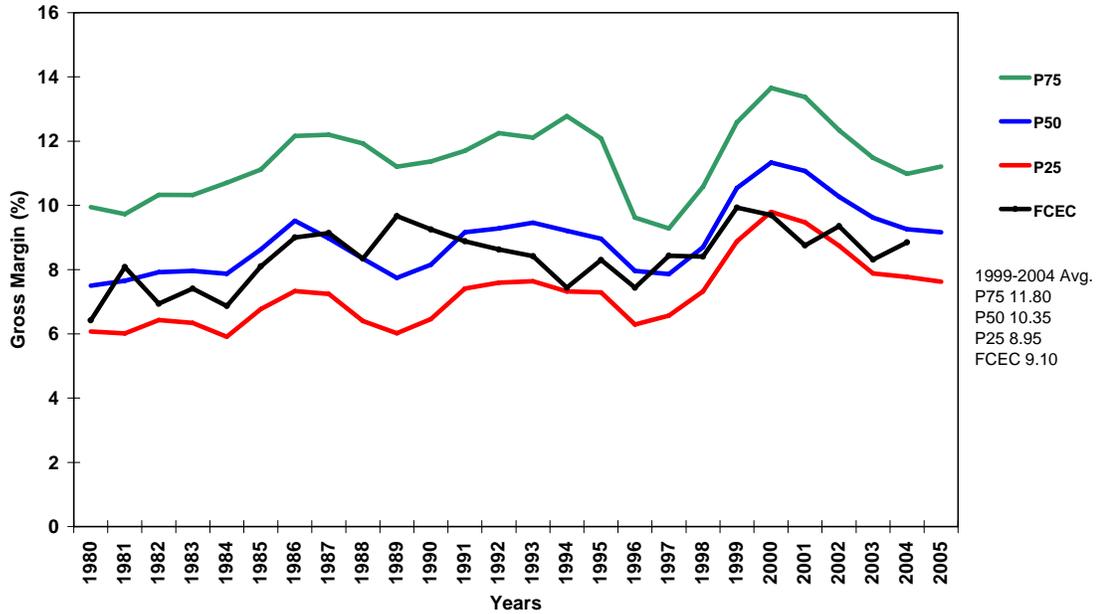
grossing as much profit per commodity compared to many other cooperatives evaluated.

FCE is performing below the top 50<sup>th</sup> percentile with a five year average of 9.1% compared to the P50 co-op average of 10.35%. Since profitability is relatively high this suggests FCE

either has relatively high volumes, a Wal-Mart type strategy, or a low cost structure, or both.

**Figure 3.5 Gross Margin**

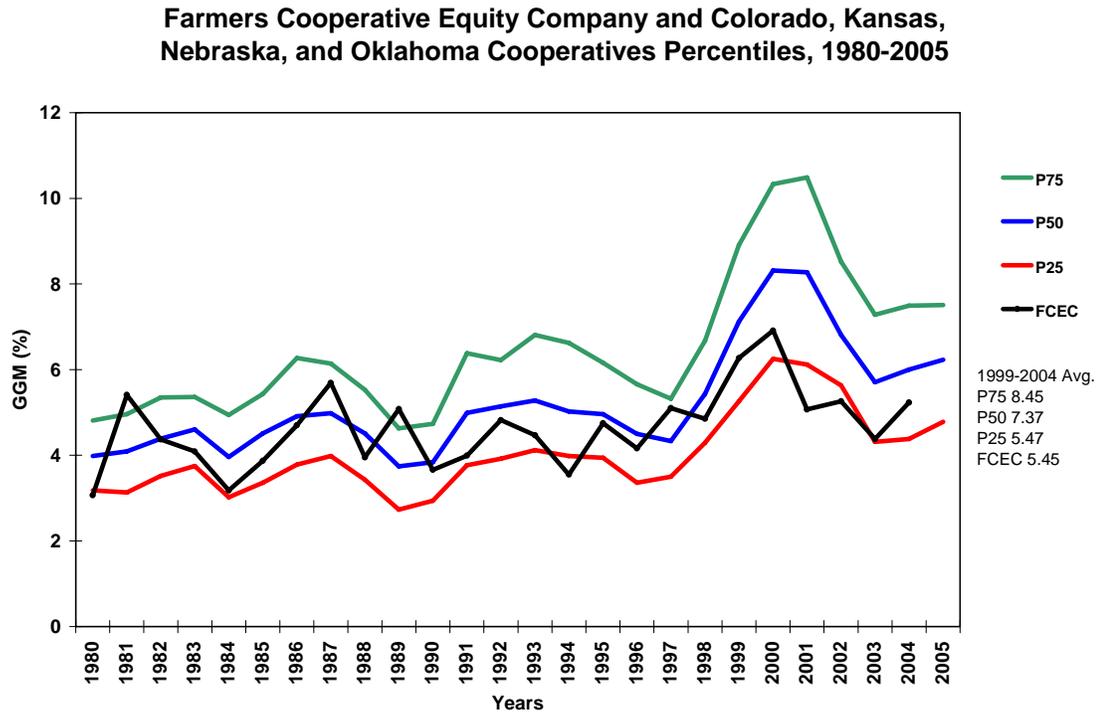
**Farmers Cooperative Equity Company and Colorado, Kansas, Nebraska, and Oklahoma Cooperatives Percentiles, 1980-2005**



**3.6 Grain Gross Margin**

Grain gross margin is calculated by taking grain gross margins and dividing by grain sales. This ratio measures the difference between purchase price and sales price of grain. Figure 3.6 illustrates that over the twenty five year period evaluated, FCE was earning 5.45 cents per dollar of grain sold. FCE was performing just below the 25<sup>th</sup> percentile suggesting it had very competitive grain prices paid to farmers or it was more effective in merchandising purchased grain than the typical co-op.

**Figure 3.6 Grain Gross Margin**

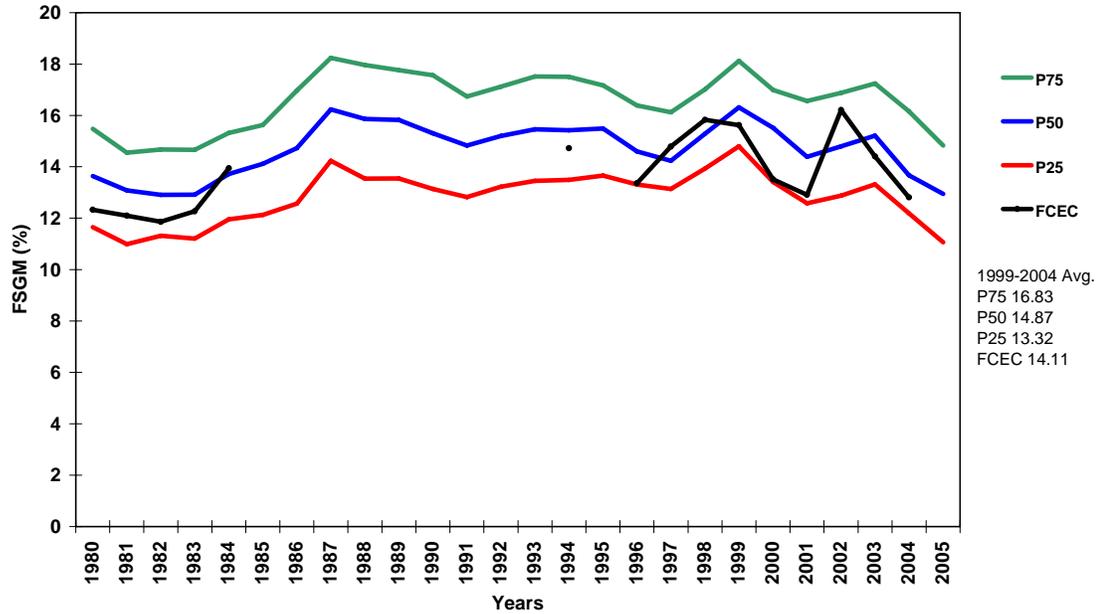


**3.7 Farm Supply Gross Margin**

The formula to calculate farm supply gross margin is to take total farm supply gross margins and divide it by the cost of farm supply sales. This ratio measures the difference in cost of farm supplies versus the sales price of farm supplies. From figure 3.7 below you can see that FCE is making an average margin of 14.7 cents per dollar of farm supplies purchased. This also places them below the 50<sup>th</sup> percentile of 14.87%, as did total and grain gross margins. The story may be similar to grain gross margins. Either supplies are purchased from suppliers at higher than typical prices of they are sold at better (lower) prices to farmer-customers, or both. Again, high volumes and low costs may be the source of high profits since gross margins are relatively low.

**Figure 3.7 Farm Supply Gross Margin**

**Farmers Cooperative Equity Company and Colorado, Kansas, Nebraska, and Oklahoma Cooperatives Percentiles, 1980-2005**

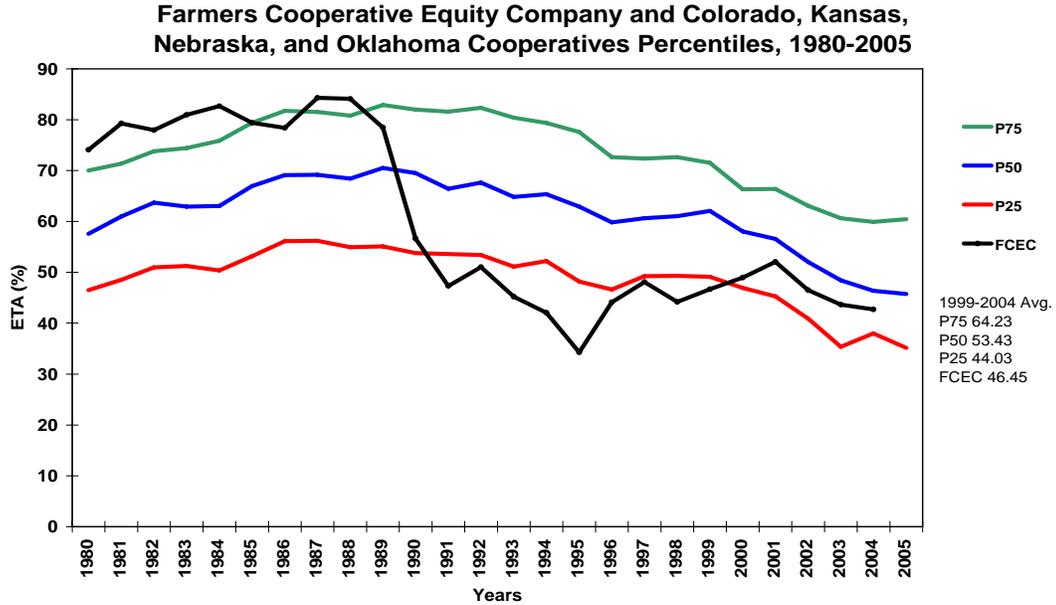


**3.8 Equity to Assets**

The formula to figure equity to assets is to take total member’s equity and divide it by total assets. This ratio measures the proportion of total assets being financed by member’s equity. Equity to assets is key measure of a cooperative’s long-term financial strength and solvency. One of the most important decisions made by the board of directors is the level of solvency it prefers to see maintained. By looking at figure 3.8 below you can see that over the twenty five year period FCE early on had a very high equity to asset ratio and over the last five years actually had a relatively low equity to asset ratio, meaning that FCE has actually reduced the amount of their assets being financed by members. A good ratio for equity to assets is more than 50% but not more than 75%, with a recommended range of 60 to 65%. The five year average ratio of 46.45 % is below the P50 value of 53.43%. This

higher leverage helps explain part of the reason return on equity is higher for FCE than the other P50 co-ops.

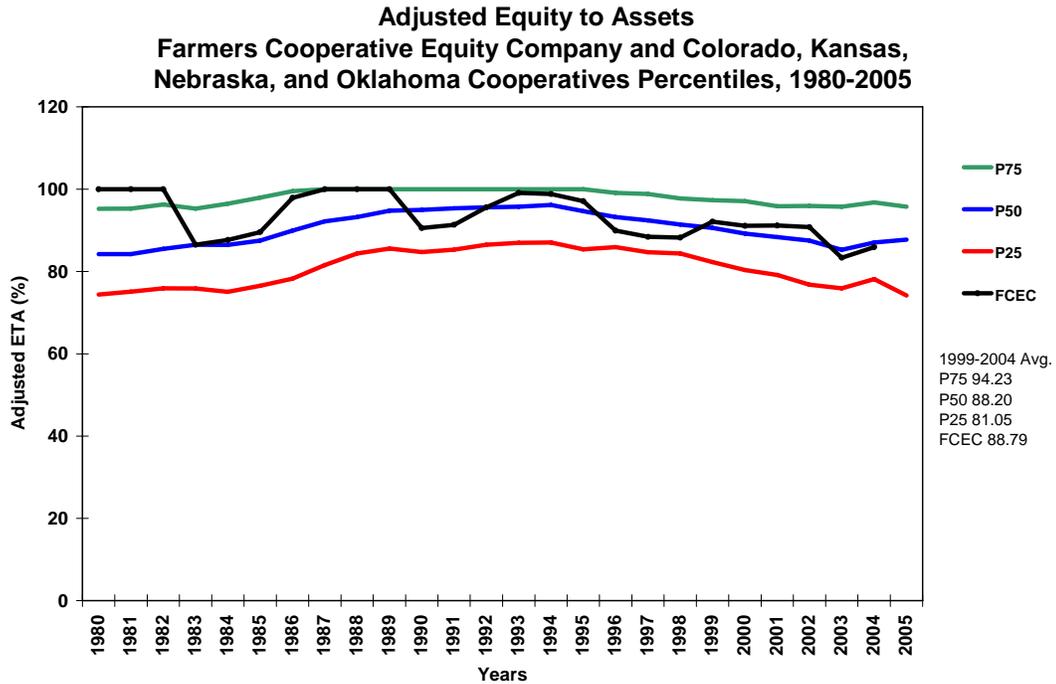
**Figure 3.8 Equity to Assets**



### 3.9 Adjusted Equity to Assets

Adjusted equity to assets is another key measure of long-term financial strength and solvency. The formula for figuring adjusted equity to assets is taking member’s equity and dividing it by total assets minus current liabilities. This ratio measures the proportion of total assets measured on a net or working capital basis being financed by member’s equity. This measure adjusts for the seasonality of a co-op’s fiscal year end since current assets may vary widely throughout the year but working capital is more stable. When looking at figure 3.9 below you can see that FCE is right above the 50<sup>th</sup> percentile for the 25 years that were researched, with a mean average of 88.79% for the last five years.

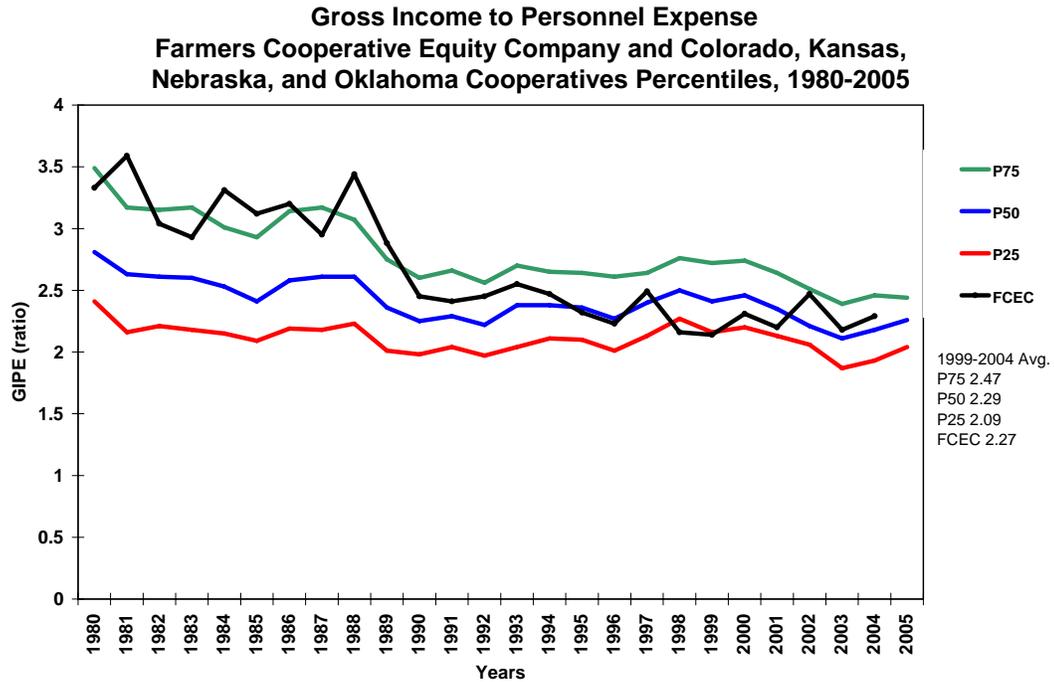
**Figure 3.9 Adjusted Equity to Assets**



**3.10 Gross Income to Personnel Expense**

Gross income to personnel expense is an important efficiency measure that tells how effectively personnel are used to generate gross income and serves as a measure for labor productivity. It is one of most important financial efficiency measures because it is highly correlated to profitability. High efficiency leads to high profitability. We strongly recommend monitoring this measure. FCE’s value for the last five years is 2.27% compare to the P50 value of 2.29% so labor efficiency is typical for that period. This suggests that FCE’s high profitability is due other sources of efficiency such as asset turnover and/or better non-labor expense control compared to the typical co-op.

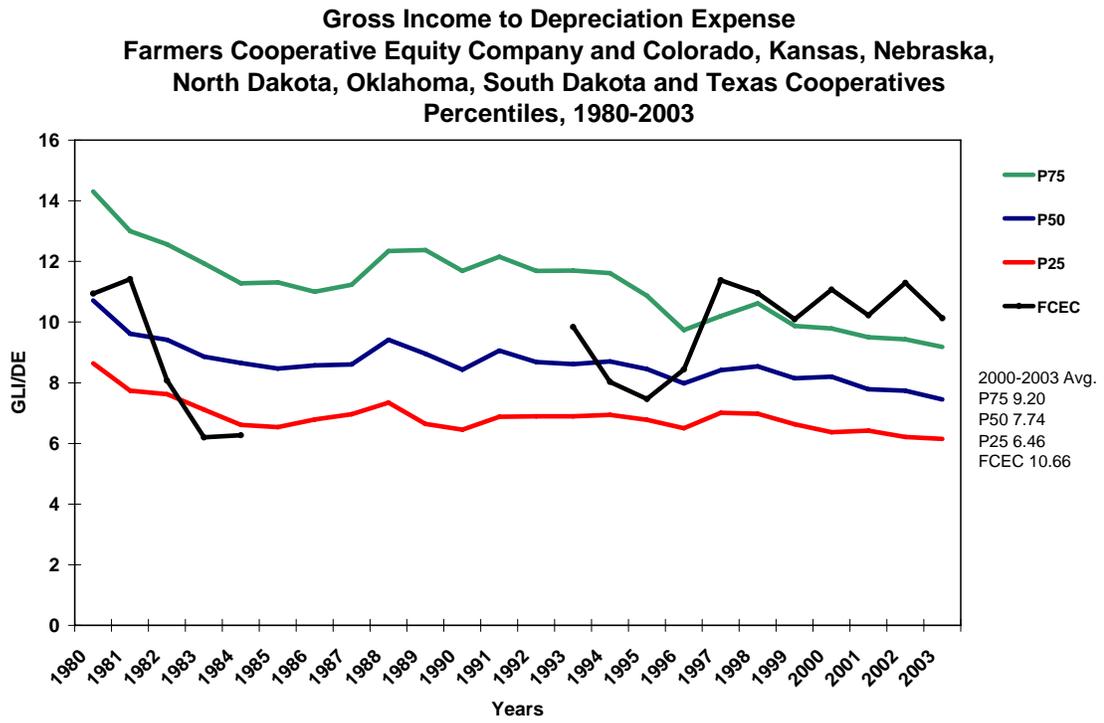
**Figure 3.10 Gross Income to Personnel Expense**



**3.11 Gross Income to Depreciation Expense**

Gross income to depreciation expense is an efficiency ratio that measures how efficiently a cooperative uses its assets, “asset turnover.” The more income compared to depreciation expense shows that the cooperative is using its assets to maximize profitability. In FCE’s case their relatively high profitability is most likely a result of high asset utilization compared to other efficiency measures. It is illustrated in figure 3.11 that over the last five year average, FCE is in the top 75<sup>th</sup> percentile on income to depreciation expense.

**Figure 3.11 Gross Income to Depreciation Expense**



## **CHAPTER 4: EVALUATION OF ALTERNATIVE EQUITY MANAGEMENT STRATEGIES**

### **4.1 Introduction**

Equity management involves making five critically important and interrelated decisions:

- 1) Determine income generation and income distribution
- 2) Determine desired assets
- 3) Determine desired financial structure
  - Liquidity: Cash, working capital, current ratio
  - Solvency: Equity to assets, debt to equity
- 4) Determine desired equity investment and structure
- 5) Determine desired equity redemption
  - First manage balance sheet: total redemption budget is surplus equity
  - Second manage patron accounts: redemption program distributes budget

The philosophy of managing the balance sheet in equity management is to protect the company; the owners get what is left over, the surplus budget.

To evaluate alternative equity management strategies for FCE, financial projections were made for the nine years, 2006 to 2014, by looking at historical data on trend lines along with using the actual data for the year ended in 2005. Assumptions were made to assume normal sales growth of 2.5 percent per year for the years 2006-2014. The complete set of projections is found in the Appendix B.

In this chapter selected information is used and explained. The first is the Operating Statement, it can be found in Appendix B labeled 6.1. An abbreviated version of the operating statement can be found below as Table 4.1. Other key projections illustrated in the table besides sales were gross margin, other operating income, total operating expense, total operating income, and net income. The balance sheet is shown in Table 4.2. One other table of interest that is also shown in an abbreviated form is the resulting balance sheet ratios for each of the alternative equity redemption strategies of interest (Table 4.3). This is relevant because, for each of the alternatives, the balance sheet is managed to determine the amount of equity that will be redeemed to patrons. The full results for the predictions used to evaluate the strategies can be found in Appendix B.

Several alternative equity redemption strategies were constructed. S0 will be the first strategy that is discussed. It describes where FCE is currently going if it continues to operate under current income distribution and equity management strategies and assuming normal asset growth. Then we take the same financial projections and evaluate different management strategies by evaluating alternative equity redemption programs following the guidelines of balance sheet management setting targeted liquidity and solvency targets. Evaluating the alternatives will help FCE management and directors decide where they want to go and provide them with ideas of how they can get there. And then after the evaluations they are posed with one final question of “What Decisions Need to Be Made Now?” Further detailed in this chapter is a brief discussion of each equity redemption program that was evaluated.

Each equity redemption program evaluated has three main components: 1) income as presented in the operating statement; 2) financial structure as presented in the balance sheet; and 3) equity structure as presented in the equity section of the balance sheet. A complete summary of the projections and assumptions made to due the evaluations is included in Appendix B.

**Table 4.1 Operating Statement**

	<b>OPERATING STATEMENT (1000'S)</b>					
	<b>2000</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2010</b>	<b>2014</b>
<b>Sales</b>	<b>19310</b>	<b>25334</b>	<b>32526</b>	<b>30000</b>	<b>33114</b>	<b>36552</b>
<b>Total Operating Income</b>	<b>376</b>	<b>544</b>	<b>545</b>	<b>564</b>	<b>870</b>	<b>1121</b>
<b>Other Income</b>	<b>175</b>	<b>260</b>	<b>399</b>	<b>383</b>	<b>422</b>	<b>466</b>
<b>Total Income</b>	<b>551</b>	<b>804</b>	<b>944</b>	<b>946</b>	<b>1292</b>	<b>1587</b>
<b>Income Taxes</b>	<b>25</b>	<b>49</b>	<b>63</b>	<b>63</b>	<b>91</b>	<b>115</b>
<b>Net Income</b>	<b>526</b>	<b>755</b>	<b>881</b>	<b>883</b>	<b>1202</b>	<b>1472</b>

Source: Table 6-1-S0 in Appendix B.

**Table 4.2 Balance Sheet**

<b>Balance Sheet (\$1,000's)</b>							
<b>ASSETS</b>		<b>2000</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2010</b>	<b>2014</b>
<b>Total Current Assets</b>		<b>4533</b>	<b>6867</b>	<b>8653</b>	<b>7250</b>	<b>8000</b>	<b>9579</b>
<b>Total Investments</b>		<b>1397</b>	<b>810</b>	<b>962</b>	<b>1071</b>	<b>1501</b>	<b>1928</b>
<b>Net Fixed Assets</b>		<b>1749</b>	<b>2188</b>	<b>2863</b>	<b>2863</b>	<b>2863</b>	<b>2863</b>
<b>Total Assets</b>		<b>7678</b>	<b>9865</b>	<b>12478</b>	<b>11184</b>	<b>12364</b>	<b>14371</b>
<b>LIABILITIES</b>							
<b>Total Current Liabilities</b>		<b>3551</b>	<b>4823</b>	<b>6217</b>	<b>5371</b>	<b>4874</b>	<b>4284</b>
<b>Total Long-Term Liabilities</b>		<b>368</b>	<b>710</b>	<b>1482</b>	<b>619</b>	<b>115</b>	<b>115</b>
<b>Total Equity</b>		<b>3759</b>	<b>4331</b>	<b>4779</b>	<b>5193</b>	<b>7375</b>	<b>9972</b>
<b>Total Liabilities and Equity</b>		<b>7678</b>	<b>9865</b>	<b>12478</b>	<b>11184</b>	<b>12364</b>	<b>14371</b>
<b>FIXED ASSET TRANSACTIONS</b>							
<b>Sales (\$)</b>							
<b>Purchases (\$)</b>				<b>1021</b>	<b>487</b>	<b>487</b>	<b>487</b>
<b>Depreciation Rate (%)</b>				<b>17.08%</b>	<b>17.00%</b>	<b>17.00%</b>	<b>17.00%</b>

Source: Table 6-3-S0

**Table 4.3 Balance Sheet Ratios**

<b>Balance Sheet (1000's)</b>						
	<b>2000</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2010</b>	<b>2014</b>
<b>Financial targets</b>						
<b>Liquidity: Cash</b>			50	50	50	50
<b>Liquidity: Current Ratio</b>			1.20	1.20	1.20	1.20
<b>Liquidity: Working Capital</b>			1200	1,230	1,358	1,499
<b>Financial Results</b>						
<b>Liquidity: Cash</b>	227.00	31.00	50.00	50.00	50.00	50.00
<b>Liquidity: Current Ratio</b>	1.28	1.42	1.28	1.31	0.01	1.38
<b>Liquidity: Working Capital</b>	982.00	2,044.00	1,713.00	1,705.00	20.42	2,441.00
<b>Solvency: Equity/Assets</b>	48.96%	43.91%	40.68%	42.00%	46.00%	50.00%
<b>Solvency: Adjusted Equity/Assets</b>	46.52%	50.52%	59.90%	60.94%	50.34%	94.11%
<b>Profitability: Return on Local Assets</b>	8.37%	8.34%	8.17%	9.27%	9.73%	10.70%
<b>Profitability: Return on equity</b>	13.98%	17.43%	18.44%	19.95%	18.58%	18.37%

Source: Table 6-3-S0 in Appendix B.

## **4.2 Brief Description of Each Strategy**

### *4.2.1 Strategy- S0- Business as Usual*

The first equity management alternative is referred to as strategy S0 (S zero) and it assumes business as usual. It projects where FCE is expected to go if it continues operating under the same financial policies as used in the past, including the same income distribution and equity management practices that it has been using in the past. The evaluation of the strategy begins with baseline projections, based upon the history of income and income distribution. Under the current program common stock is accumulated by all voting patrons and non-voting patrons in units of \$25. Upon becoming a member of the cooperative patrons are expected to purchase the first \$25 unit in cash, and patrons are expected then to accumulate and maintain a balance of \$500 of common stock from retained patronage refunds before having any retained patronage placed in the primary revolving equity class called “ledger credits.” Common stock is only redeemed using the traditional estate settlement method. In strategy S0 the balance sheet is managed to

achieve liquidity targets but not solvency targets since FCE currently does not practice strict balance sheet management. Under this base plan, the rate of profitability, equity investment due to income distribution, and equity redemption determine the financial structure. For this plan debt financing and equity redemptions are managed in a way so as to not exceed the liquidity targets as appears to be occurring in the past.

Redemptions for strategy S0 use a combination of methods by first off redeeming specials, meaning estates or move-aways, second, redeeming by the age of patron, oldest first (AP/O) to patrons turning age 66, and then, third, redeeming again by AP/O, which historically has been at age 84. The FCE board of directors has determined the last redemption age annually based upon income and looking at what future birth years to pay off. For the projection we assumed age 84 was selected for each year.

Some key reasons that explain the overall strength of FCE and why there current redemption program has worked can be seen by looking at some resulting liquidity and solvency ratios. Liquidity as measured by the current ratio is expected to increase 1.39 to 2.24 by 2014, staying well above the minimum target ratio of 1.2. Working capital increases from 2.4 million to 5.3 million by 2014. Solvency, as measured by equity to assets, is projected at 46.44 percent in 2006 and increases to 69.39 percent by 2014. Actual solvency achieved by 2014 in strategy S0, 69%, is higher than the targets for strategies S1-S5 in all years, suggesting there is the opportunity to increase redemptions, if all assumptions predicted are accurate, by implementing a strict balance sheet management strategy. In other words, a more aggressive equity redemption strategy could be implemented given the relatively high projected profitability of FCE.

#### *4.2.2 Strategy- S1- Business as Usual but Manage Balance Sheet with Equity/Asset Ratio of 50%*

To evaluate strategy S1 the sales were kept identical to S0, as well as net income was identical except with higher interest expense due to lower solvency or higher debt to equity ratio. The goal of strategy S1 was to achieve an equity to assets solvency target of 50% by 2014 and to redeem all surplus equity remaining. The target equity to asset ratio was better than 50% at the end. The equity to assets ratio was 43.9% in the 2004 historical and was 40.7% for the projection in 2005. The simulation for 2006-2014 slowly increases the solvency of FCE by about 2% in 2006 to 42% and then by 1% per year after until the final projected year in 2014 ended with an equity to asset ratio of 52%. In the process working capital grew from 1.7 to 2.4 million over the 10 year period. S1 used a redemption process of first redeeming estates, secondly redeeming 100% to those age 66, and then redeeming 100% of the residual redemption budget using the age of patron prorated method, selecting age 55 and older as the eligible ages.

Strategy S1 addresses the question of where FCE wants to go. Strategy S1 achieves specific financial structures targets for liquidity and solvency and thus derives an actual redemption budget to redeem member equity. To achieve the targeted ratios strategy S1 had a larger redemption budget available than S0. Strategy S1 increased redemptions to oldest persons first by reducing the age below 84. Since it quickly hit age 66 in 2008 we then switched redemption programs to age of patron, prorated at age 55 for 2008 to 2014.

#### *4.2.3 Strategy- S2- Phasing Out Age of Patron, Oldest First, Moving to Age of Patron Prorate*

Strategy S2 is very similar to S1 in that it uses the age of patron prorate method, but it completely drops the age of patron redemptions at ages 66 and 84 beginning in 2006. See Appendix B table 8-12-Ledger-S2:SP+AP/P55. S2 used a prorate redemption for those age 55 and older. The age of patron prorate method that is used here redeems the excess ledger credit equity by redeeming a percentage of each patron's ledger credit account for all patrons who have reached or exceeded a specified age, for this strategy FCE set an age of 55 and older. The redemption budget for using this prorate method is determined by managing the balance sheet by targeting a solvency ratio of 42% in 2006 and increasing by 1% in each year to reach a desired equity to asset ratio of 50% by 2014. The prorate percentage varies from a high of 40% in 2006 to a low of 23% in 2014.

#### *4.2.4 Strategy- S3- Phasing Out Age of Patron, Oldest First and Phasing in Revolving Fund*

Strategy S3 is also similar to strategy S1, except that it drops age of patron at age 84 and phases out age of patron, oldest first at age 66 over the nine year period of 2006-2014 by reducing the percentage payment schedule in each year, from 100% in 2005, to 90% in 2006, and declining to 10% each year to reach 10% in 2014, and 0% in 2015. This frees up additional funds in the redemption budget to redeem additional equity varying by using a revolving fund. The revolving fund then is used to disperse the residual redemption budget to achieve the solvency target. A revolving fund method redeems allocated revolving equity based upon the age of the equity, the older the equity the sooner it is redeemed. The solvency target that is being achieved by FCE in this strategy to determine the redemption budget is starting at an equity to asset ratio of 42% in 2006 and increasing it by 1% per year

to reach the desired solvency of 50% in 2014; while maintaining a liquidity ratio greater than 1.2 determined by the current ratio.

#### *4.2.5 Strategy S4- Switch Immediately to Revolving Fund*

Strategy S4 is similar to strategy S3 in that it involves using a revolving fund, however S3 does not phase out age of patron oldest first, but switches immediately to a revolving fund. The only two methods for redeeming equity in strategy S4 is through specials and a revolving fund with a set solvency target. The solvency target for strategy S4 is the same as S3 in that the equity to assets ratio starts at 42% in 2006 and increases by 1% to 50% by 2014, while maintaining liquidity by keeping a current ratio greater than 1.2.

#### *4.2.6 Strategy- S5- Switch Immediately to Base Capital*

When comparing strategy S5 to the other strategies it is most similar to strategy S4 because it performs a cold turkey switch to an alternative redemption method, in this case, base capital. Therefore, instead of moving to a revolving fund, strategy S5 moves straight to redeeming ledger credit equity by using base capital. The base capital method maintains a pre-selected equity capital base for the total cooperative and then distributes excess equity determined by percentage of equity owned by each patron. The pre-selected equity capital chosen to be maintained by FCE for this analysis was determined by the FINPLAN financial simulator by inputting a solvency target of 42% equity to asset ratio in 2006 and growing it by 1% to 50% in 2014, while maintaining strong liquidity with a current ratio greater than 1.2 and increasing working capital each year.

### **4.3 Comparison of Strategies**

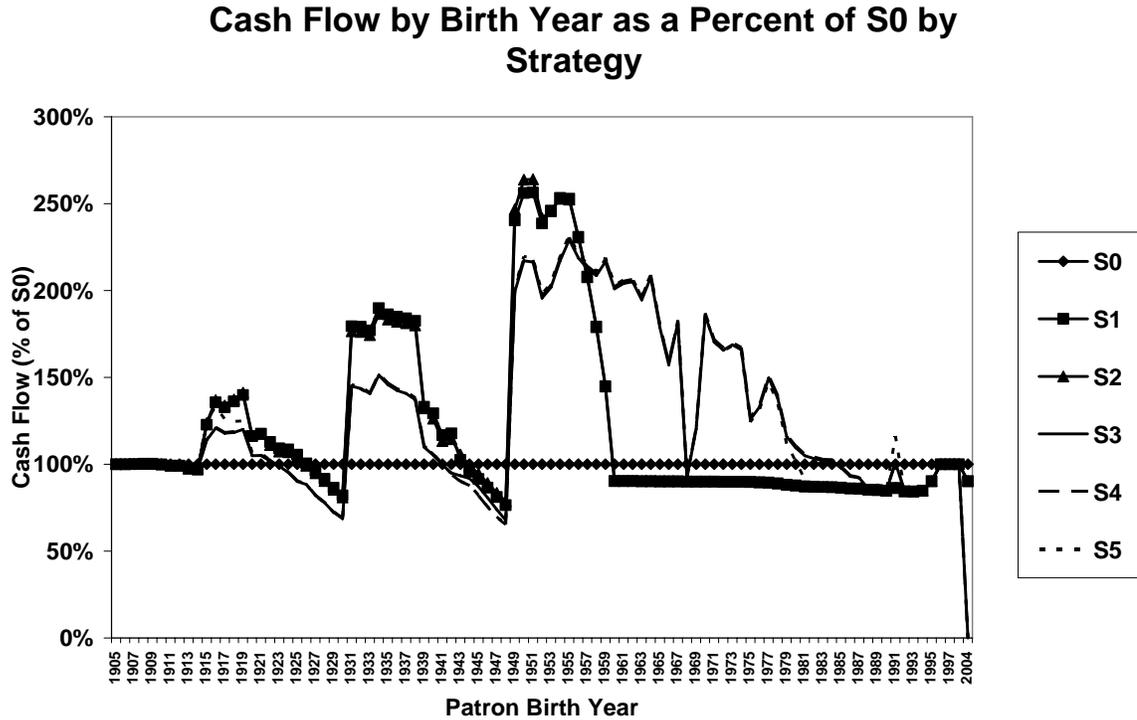
To compare each strategy and determine the results from both a patron and FCE board of director perspective we can look at different results to see pro's and con's of each alternative redemption method. We will evaluate the cash flow to each age group compared to strategy S0 to see who the winners are. Also we look at key economic measures such as proportionality, equity turnover, length of revolving fund (if using revolving fund), and percentage of overinvestment if using base capital.

#### *4.3.1 Winners and losers in each strategy*

One way to understand the nature and impact of the alternative equity redemption strategies is to evaluate the cash flow to patrons resulting from the impact of implementing each different strategy. The winners and losers of each strategy can be illustrated by the cash flow to patron owners, the impact based upon age, and the influence of percent investment based upon percent of member business.

The following graph, figure 4.1 illustrates cash flow back to patrons as a percentage of strategy S0.

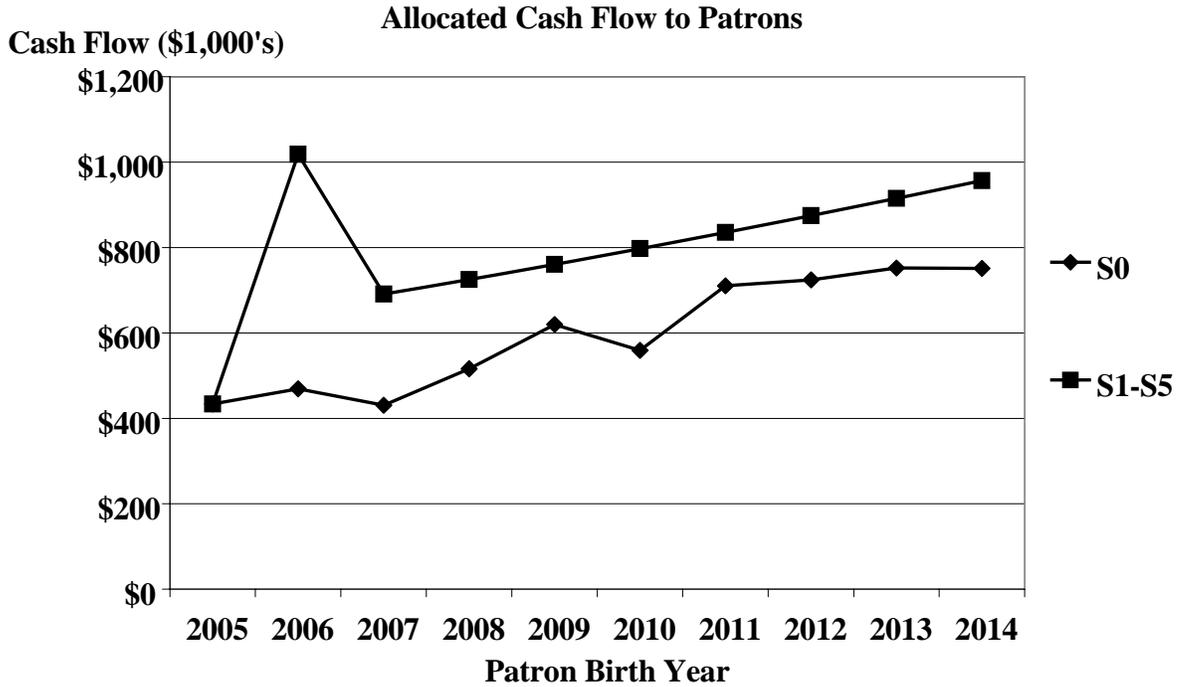
**Figure 4.1 Cash Flow as a Percent of Strategy S0**



Source: Figure 8-13 in Appendix B.

The above chart is a little compacted in this format but can be better seen in Appendix B. It depicts a comparison where strategy S0 is the baseline measure and you can see that the majority of the time the winners by age group are the patrons with a birth year of approximately 1950 to 1963. This also directly correlates with the percent of member business per year based upon cooperative business usage. Another figure that depicts winners by evaluating the alternative equity redemption programs is illustrated below. It shows allocated cash flows to patrons. By evaluating figure 4.2, you can see that equity is redeemed faster by all alternative strategies when compared to strategy S0.

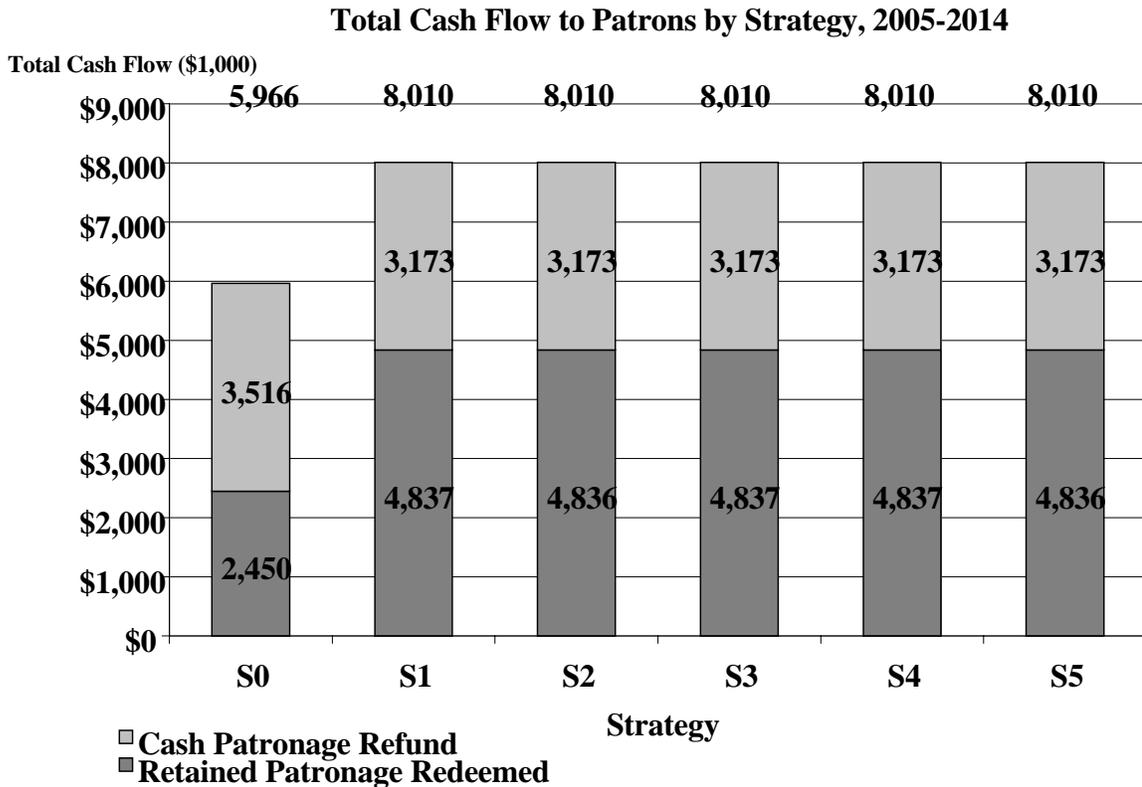
**Figure 4.2 Allocated Cash Flow to Patrons**



Source: Figure 8-1 in Appendix B.

One last figure that illustrates patrons are winning by the cooperative managing the balance is illustrated below in figure 4.3 which shows total cash flow by strategy. By looking at this figure you can see that in strategy S0, when compared to the alternatives, cash patronage was actually larger in S0, but the total amount of equity redeemed in the evaluation period was actually larger in each of the alternative equity redemption strategies because retained patronage was being redeemed at a faster rate.

**Figure 4.3 Total Cash Flow by Strategy, 2005-2014**



Source: Figure 8-9 in Appendix B.

#### 4.3.2 Proportionality

All different alternative equity redemption treats patrons very differently with respect to when equity is redeemed. This causes very different proportionality results. Many experts believe the ideal way to finance a cooperative is to expect patrons to invest equity in proportion to use of the cooperative. Proportional investment is seen as fair since all patrons share this cost in an equitable way, that is, in proportion to their use of the cooperative. Proportionality is measured in two different ways, for each individual birth group and for all birth groups or entire patron base together. To evaluate each of the

alternative equity redemption strategies for FCE we will look at patron cash flow and patron equity investment proportionality. The purpose for evaluating proportionality of each alternative distribution strategy is to compare differences among each patron birth group and the cooperative as a whole.

The criteria from which co-op level proportionality is determined by is the proportionality of investments for all patrons combined, as measured by the proportionality index. The higher the proportionality index, the higher the degree of equity financing from current patrons. The ideal proportionality index is 1.0. The proportionality index measures the difference between actual equity financing of a cooperative and financing in proportion to patronage. It is easy for any cooperative to compute its proportionality index value. To do so follow the following steps:

- 1) Determine the proportion of the cooperative's total patronage done by each patron during the last year or during a base period.
- 2) Multiply the proportion of patronage done by each patron times the total allocated equity of the cooperative to determine the amount of equity the patron would supply if equity was supplied strictly in proportion to patronage.
- 3) For each patron, subtract the value determined in step 2 from the amount of allocated equity the patron is currently supplying.
- 4) Regardless of whether the amount determined in step 3 for each patron is positive or negative, treat it as if it is positive.

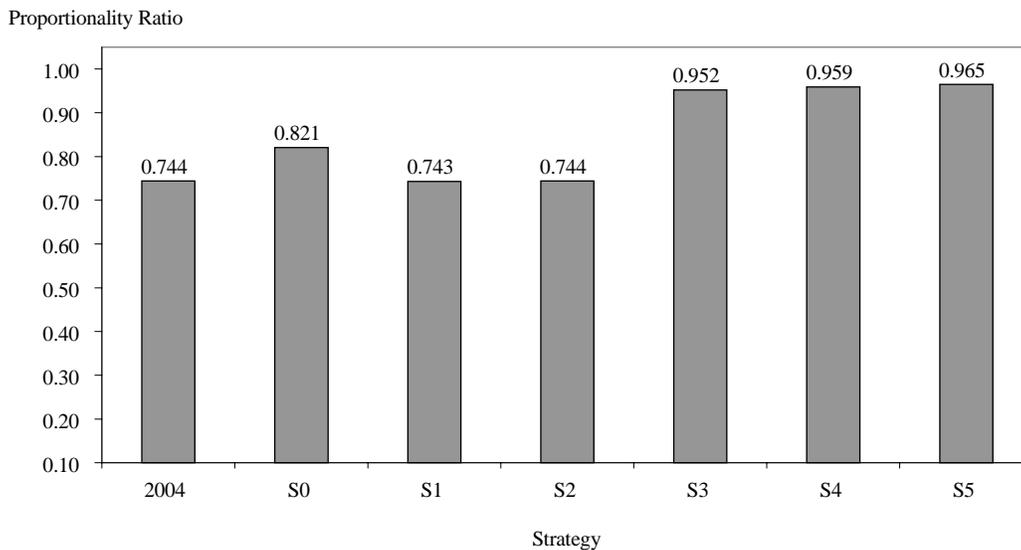
- 5) Add the amounts determined in step 3 (now all positive).
  
- 6) Divide the sum determined in step 5 by two times the total allocated equity of the cooperative.

The proportionality ratio for each patron group is calculated by dividing each patron's actual equity investment by their target equity investment. Their target equity investment is equal to the proportion of business done by the group times the total of allocated equity or retained patronage refunds needed by the cooperative from all groups combined to achieve the equity target. The ideal proportionality ratio is 1.0. However, the ratio can be less than or greater than 1.0 since some patrons are underinvested and others are over invested.

The figure 4.4 below shows the ending proportionality index for FCE in 2014 for each of the alternative equity redemption strategies and also the last year's proportionality index for 2004 with actual data. In analyzing the results you can see by looking at the chart that the worst performance by 2014 is strategy S1, which is the strategy closest to strategy S0 or business as usual. The most surprising is that it is actually worse than the predicted index value for strategy S0. Another surprising result is the poor performance of strategy S2, when compared to the base strategy S0, with an index of 0.7440 since S2 uses a normally high performing method, age of patron, prorated. The main explanation for the poor performance of S2 is that the majority of patrons age 55 and older become underinvested. A lower age, such as 50, might produce a better result, but the primary message is that the AP/P method is not effective for a relatively high profit cooperative such as FCE. You can also see by the chart that the resulting best performing strategies are S3-S5, and that is

because they use methods that are better at providing high proportionality of equity financing. S5 has the best resulting ratio, as expected, because it uses the best capital method. The base capital method redeems equity by meeting a solvency target and then redeeming all remaining equity based upon relative cooperative usage by each patron.

**Figure 4.4 Proportionality Index 2014**



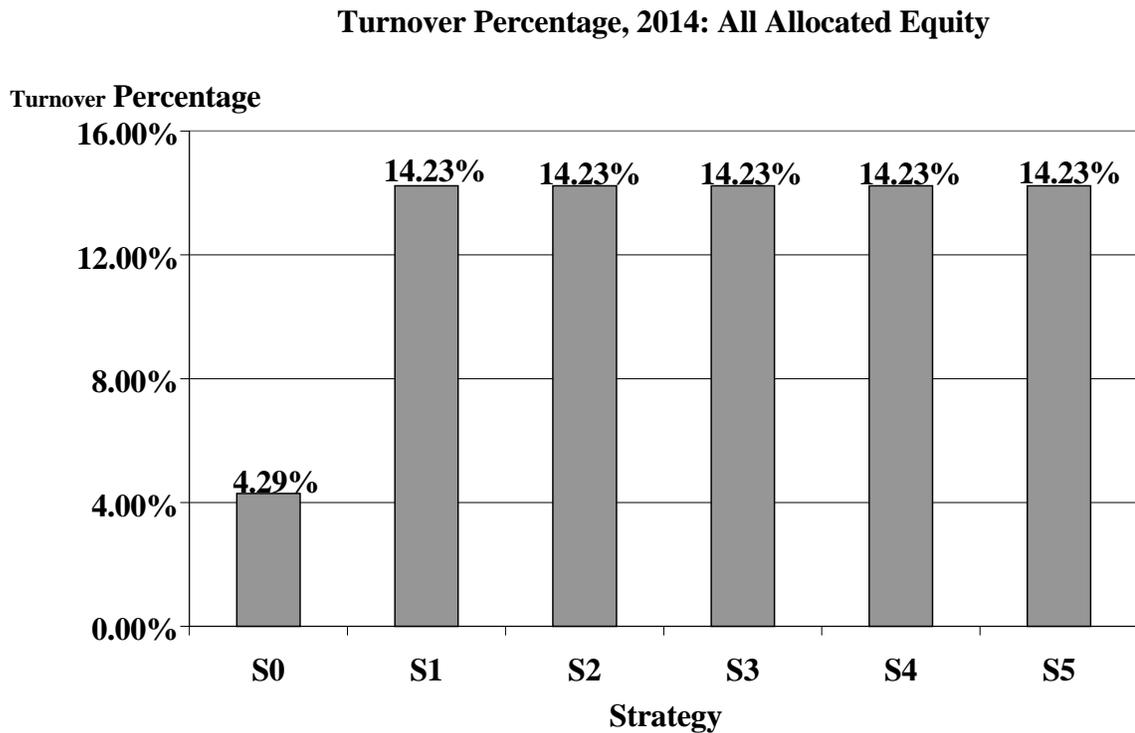
Source: Figure 8-18 in Appendix B.

#### *4.3.3 Equity turnover*

Equity turnover is the rate at which equity is being redeemed. From a patron owner perspective, this measure would seem key as it would generate money back into their hands faster so they could reinvest in something that might have better long term returns. The following figure, figure 4.5 shows the equity turnover rate that results from each alternative equity distribution method analyzed. The bar graph illustrates that equity is being returned to patron-owners faster by implementing an equity redemption method that involves using

balance sheet management. All strategies examined redeem patron equity faster than the base strategy S0.

**Figure 4.5 Equity Turnover**



Source: Figure 8.7 in Appendix B.

#### *4.3.4 Revolving fund length*

Another good measure to gauge the performance of alternative equity redemption programs is to look at the length of the revolving fund if using that method. In the case co-op evaluated here, FCE is using the revolving fund method in strategies S3 and S4, and in both cases the number of years achieved in both strategies is seven years. That is a pretty

impressive revolving fund length. It provides an equity turnover rate that is just outstanding.

#### *4.3.5 Percent Overinvestment Redeemed by the Base Capital Method*

One last key measure to examine is the percentage of overinvestment being redeemed resulting from implementing a strategy that uses the base capital method. In our research the only strategy that used the best capital method was strategy S5. The percentage of over investment being redeemed resulting from implementing strategy S5 starts at 64% in 2006 and is 78.6% in 2014.

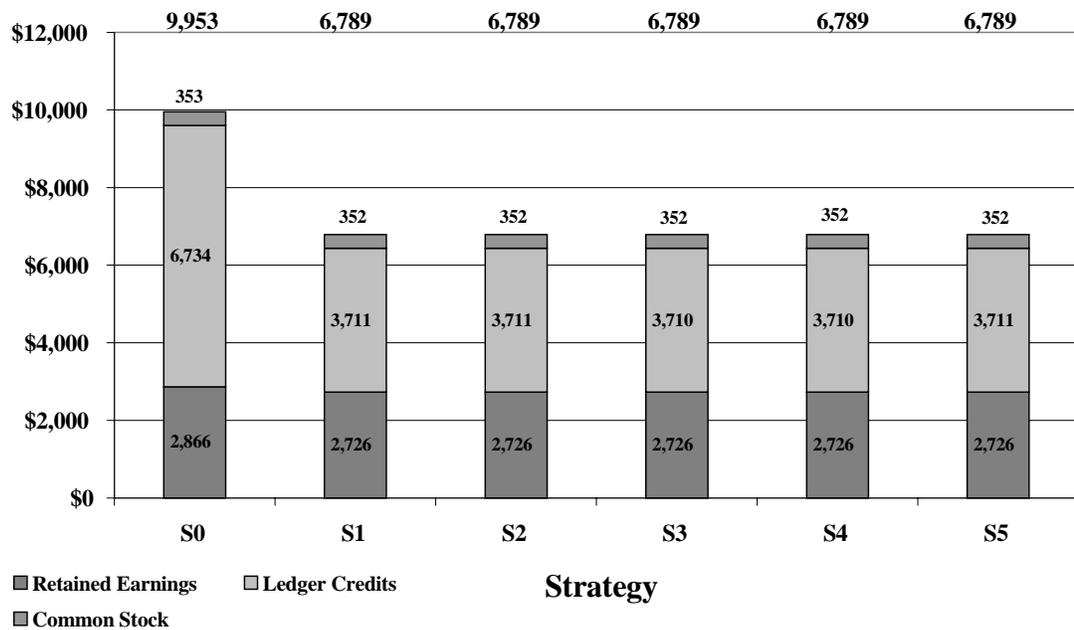
#### *4.3.6 Ending Equity Matrix*

The ending equity matrix for each strategy is also of interest. The ending equity matrix shows the impact of each strategy on the equity level or balance remaining by birth year and year retained may also be of interest. The set of ending equity matrices are available in Appendix B, Tables 6-15, 7-15, and 8-15, illustrate the results of evaluating the different alternative equity redemption strategies. These ending matrices are of the same format of the beginning matrices, also shown in Appendix B, tables 6-10-CS and 6-10-LC (common stock and ledger credit), can be compared back to them to compare the impacts of each strategy. Also shown in the ledger credit matrices is the percent of member business. The percent of member business is the percent of patronage business done by the patron-owners in the LC equity class for each birth group. Percent of member business is calculated by taking the sum of estimated patron business divided by estimated total patron business.

Figure 4.6 below is an evaluation of the total ending equity structure as a result of each alternative equity redemption strategy. From examining the illustration you can see that all the alternative redemption strategies redeem equity faster than strategy S0.

**Figure 4.6 Ending Equity Structure: 2014**

**Total Cash Flow (\$1,000)**



Source: Figure 8-23 in Appendix B.

## **CHAPTER 5: SUMMARY AND CONCLUSIONS**

### **5.1 Introduction**

When determining the success of any cooperative you must look at and evaluate several key financial aspects. Each and every cooperative must have and maintain the four cornerstones of financial success.

- 1) Be a profitable business and manage income generation.
- 2) Return profits to patrons and manage income distribution.
- 3) Provide sufficient equity financing and manage the balance sheet.
- 4) Require patron equity investment proportional to use and manage patron equity accounts.

From the previous chapters and especially as illustrated in chapter 3, you can see that FCE is a very profitable business. This will be further discussed below by summarizing the results of chapter 3 to illustrate the critical success factors for FCE. FCE must be profitable to have to worry about the second cornerstone of financial success, income distribution which historically FCE has done very well. There are many alternatives to returning profit back to patrons or distributing income. Alternatives for this were looked and examined in Appendix B and also discussed in chapter 4 of this project. Below in this conclusion we will provide final insight to what direction FCE may want to venture now and what decisions need to be made now.

## **5.2 What the FCE Performance Profile Shows**

### *5.2.1 FCE's Critical Success Factors*

From looking at the performance profile in Appendix A and the brief discussion of the results discussed in chapter 3 of this project you can see that FCE is a very profitable and outstanding cooperative from a performance standpoint. The fact that they are above the 50<sup>th</sup> percentile on many of the financial ratios examined shows the excellent financial strength of FCE.

When evaluating the different financial in Chapter 3, it appears that the board of directors for FCE is making very sound decisions based upon their high return on equity and also their sound asset investment decisions. Proof of FCE being a very profitable cooperative is illustrated by their high return on investment in local assets. FCE appears to make good margin on both farm supply and grain sales. FCE has historically operated as a very profitable, efficient, and solvent cooperative while still maintaining excellent liquidity.

### *5.2.2 Suggestions to how FCE can improve performance*

To continue their excellent performance and ensure their long term financial success FCE needs to continue to maintain their profitability and efficiency. They can do this by continuing to make sound investment, financing, and equity redemption decisions. As a cooperative, FCE has to continue to attract new members and maintain their current customer base. To better improve their performance and ensure their long-term sustainability FCE needs to make sure that they remain a very profitable, liquid, and solvent company. This can be achieved by being cost efficient and by implementing an equity redemption program that is tied to strict balance sheet management. If they can

manage the amount of equity on the balance sheet to provide adequate asset financing, it will deliver a redemption budget that can be distributed to patron owners based upon their usage of the cooperative. If FCE would implement an alternative equity redemption strategy that would redeem equity based upon proportional usage of the cooperative they would be better able to attract new members.

### **5.3 Suggestion of FCE's Best Equity Management Plan**

In Chapter 4 of this project we evaluated different alternative equity redemption strategies and they are discussed below. In conclusion, profitability is critical to the success of FCE and whatever equity management plan they decide to use. One important aspect to keep in mind when comparing the different strategies is that all patrons at some point in time will have all of their equity redeemed. The major difference when accounting for that aspect is taking into account the timing of that redemption. FCE could continue with the current equity disbursement program they are using but it would be strongly recommended that they switch to a method that manages the balance sheet like S1 to S5. A strict balance sheet management approach that includes setting solvency targets would provide FCE better risk management in volatile agricultural markets. There are advantages and disadvantages to the different alternatives.

When comparing the strategies evaluated in Appendix B and discussed in Chapter 4 the following conclusions may be assumed. Strategies that involve balance sheet management are strategy S1 through S5. Strategy S1 uses age of patron oldest first while S3 uses age of patron phasing into a revolving fund. Strategy S4 makes an immediate switch to a revolving fund. For strategies S1, S3, and S4 income generation and distribution are the

same along with the balance sheet, financial and equity structure. Cash flow before and after taxes are also the same for those three strategies to patron owners combined as a whole group, but the cash flow to individual owners is different because of the difference in redemption methods. The losers in strategy S1 with reduction of patronage by greater than 10% are most birth years of 1916-1945; and the winners with an increase in patronage greater than 10% are birth years 1946-47. In conclusion, the resulting greatest proportionality ratios, based upon the evaluation of the different alternative equity redemption strategies, are from strategies S2-5 using the revolving fund and base capital equity redemption methods.

From a simplicity standpoint, the easiest to implement and understand would be strategy S2 using the age of patron prorated at age 55, with strategies S3 and S4 using the revolving fund method being slightly more complex, and with strategy S5 using the base capital method being the most complex. A general recommendation would be to implement one of the strategies S2-S5 because of their rewards of maintaining a solvency and liquidity target. Below are the highlights of each strategy for FCE board of directors and management to review.

Strategy S2, which was using age of patron prorated to age 55 is very simple to administer. The resulting proportionality ratio's in regard to usage are lower than the ratio's resulting from implementing a revolving fund strategy like S3 or S4. FCE would have annual redemption rates using strategy S2 of 23% to 28% suggesting that getting to an age lower than 55 would be possible. The resulting cash flow from S2 to the oldest patrons is better than a revolving fund or base capital redemption plan.

Strategies S3 and S4 using the revolving fund method are very simple to administer. The resulting proportionality ratios are slightly lower than strategy S5 using the base capital method but are better than the other alternative equity redemption strategies evaluated. However the resulting cash flow to ages 55 to 75 is lower than strategy S2. The impressive statistic resulting from strategies S3 and S4 is the equity revolving fund length of seven years and a corresponding average equity turnover rate of about 14.2%. The last strategy evaluated was S5 using the base capital method. The base capital method is the most complex to set up, but has the highest resulting proportionality ratios based upon patron usage. Strategy S5 is the fairest way to adjust patron-owner equity investment but is not substantially better than a revolving fund in the case of FCE.

Even with the evaluation of the different equity redemption strategies, further research may need to be conducted. A discussion with the FCE management team and the board of directors would help to determine where they want to go and how they want to achieve their goals. It would also help them take into account the necessary steps to continue FCE's strong performance as well as gaining a better understanding of their preferred financial structure. FCE may determine that they would like to evaluate other alternative equity redemption strategies before making a decision on whether or not to move from their current redemption program. If it is determined that there is sufficient information to choose an alternative equity redemption strategy, FCE must determine if their articles and by-laws permit such strategy. One last thing to keep in mind is decisions need to be made that will benefit both the cooperative and patrons as a whole.

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