

Managerial Compensation in Midwestern Cooperatives: Results from a Follow-up Study

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Results are presented from a follow-up survey of managerial compensation practices in local farm supply and marketing cooperatives in Minnesota, North Dakota, and Wisconsin. In contrast to findings from the original survey, total compensation levels, bonuses, and changes in compensation are all found to be positively and significantly associated with local net margin and not closely related to sales and sales growth.

Recruiting, motivating, and retaining effective managers are some of the most important and difficult challenges facing agricultural cooperative boards. Managerial performance can be critical to the success of a cooperative enterprise. A managerial incentive system is one of the most influential tools boards have for signaling cooperative objectives and rewarding progress toward meeting them. However, restrictions on forms of compensation that grant ownership in the cooperative and the complexity of mapping cooperative goals into clear-cut performance targets greatly complicate the tasks of evaluating managers and setting their compensation levels.

In the 1995 issue of this journal, Trechter and King reported findings from a 1993 survey of managerial compensation practices in Minnesota and Wisconsin cooperatives for the 1992 fiscal year. Results from that study indicated that overall compensation and bonuses received by general managers of local cooperatives were more closely associated with size measures than with levels of profitability. The results also suggested that there was not a strong relationship between compensation practices and cooperative performance, measured by return on assets.

A follow-up compensation survey was conducted in the spring of 1994 to collect compensation data for the 1993 fiscal year. The study population was expanded to include local cooperatives in North Dakota, along with the Minnesota and Wisconsin cooperatives that responded to the first survey questionnaire. In addition, new questions were added to the survey to elicit information on the use of specific cooperative performance targets in settings where there were no explicit incentive clauses in the manager's contract. Finally, collecting compensation data for a second consecutive year made it possible to analyze factors associated with changes in compensation levels. While the importance of studying

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changes in compensation was recognized in 1962 by McGuire, Chiu, and Elbing (p. 761), most studies of managerial compensation in agribusiness firms (e.g., Akridge, Whipker, and Erickson 1989) and small and medium sized businesses (e.g., Storey, Watson, and Wyncarczyk 1995) have focused on compensation levels in a single year.

Results from this follow-up survey are reported here. In the sections that follow, data collection procedures are first briefly summarized. Then findings regarding compensation levels and changes in compensation performance are presented, and relationships between compensation practices and cooperative performance are briefly discussed.

Data Collection

Data collection procedures for this study were essentially the same as those for the initial survey, as described in greater detail by Trechter and King (1997, 50-51). Mail survey questionnaires completed by both the cooperative manager and the board chair were the source of data on cooperative characteristics, compensation practices, and compensation levels. These data were supplemented with financial data for each cooperative from the financial statement database maintained by the St. Paul Bank for Cooperatives.

Questionnaires were mailed to the 120 Minnesota and Wisconsin cooperatives that returned both questionnaires in the first survey. Of these, 75 returned complete responses to both questionnaires in the follow-up survey. Questionnaires were mailed to 159 cooperatives in North Dakota. Of these, 22 returned complete responses to both questionnaires. Overall, then, the response rate for this survey was 35%, identical to that in the first survey. The questionnaire sent to managers of North Dakota cooperatives differed slightly from that sent to managers in the other two states. Information on compensation levels for both the current year and the previous year was requested from the North Dakota managers, since compensation data were not collected from them in the initial survey. Of the 97 cooperatives that returned complete responses to both questionnaires, four cooperatives were eliminated from the analysis because of inconsistent information on benefits, and one cooperative was eliminated because it sustained catastrophic losses in 1992. Therefore, there were 92 cooperatives in the final sample.

Summary information for the cooperatives included in this study is presented in table 1. The size groupings for Farm Supply and Marketing cooperatives are the same as those used in reporting results from the initial survey (Trechter and King 1997, 52). Figures in table 1 are averages for cooperatives in each size category.

Table 1. Selected Characteristics of Ninety-two Surveyed Cooperatives in Minnesota, North Dakota, and Wisconsin

Characteristic	Farm Supply			Marketing		
	Small	Medium	Large	Small	Medium	Large
	(<\$5 Million)	(\$5-\$10 Million)	(\$10+ Million)	(<\$10 Million)	(\$10-\$19 Million)	(\$20+ Million)
Number of Cooperatives	30	28	12	9	6	7
Co-op Characteristics						
Members	916	1,217	3,660	266	638	900
Employees	11	23	58	5	9	26
Lines of Business	5.7	8.0	8.6	4.5	4.9	4.3
Total Sales '93	3,299,207	7,285,435	16,282,597	7,319,231	13,337,619	31,249,060
Total Assets '92	1,919,495	7,364,476	7,677,536	2,493,924	5,049,408	11,116,281
Local Net Margin '93	69,031	170,053	253,320	121,602	113,620	396,619
ROA '93	7.3	5.2	5.4	7.0	3.2	4.5
Manager Characteristics						
% with College Degree	30	57	67	11	17	14
Years Managerial Exp.	11	13	14	16	18	18
Compensation Levels '92						
Salary	36,539	47,830	62,600	41,372	43,833	61,361
Bonus	1,514	3,088	2,153	2,511	5,550	3,471
Benefits	4,200	5,481	7,683	5,393	3,917	6,908
Total Compensation	42,253	56,399	72,436	49,276	53,300	71,740
Compensation Levels '93						
Salary	37,816	46,752	65,675	41,306	46,783	63,753
Bonus	1,884	3,748	2,175	2,861	6,883	5,714
Benefits	4,469	5,688	6,800	4,892	4,775	6,654
Total Compensation	44,169	53,188	74,640	49,059	58,441	76,121

Levels of Compensation

One of the primary objectives of the initial survey was to identify relationships between cooperative and manager characteristics and the level of compensation received by the manager. Parameters of the following model were estimated:

$$(1) \quad \text{TCOMP}_{t+1} = b_0 + b_1\text{LNM}_t + b_2\text{TA}_t + b_3\text{SALES}_t + b_4\ln(\text{MANEX}_t) + b_5\text{DEGREE}_t \\ + b_6\ln(\text{NLINE}_t) + u_t$$

where TCOMP is total compensation (the sum of salary, bonuses, commissions, and benefits), LNM is local net margin, TA is total assets, SALES is total sales, MANEX is years of management experience, DEGREE is a binary variable equal to one if the manager has a four-year college or graduate degree, NLINE is the number of lines of business for the cooperative, b_0 to b_6 are parameters to be estimated, and u is a stochastic error term. The use of natural logarithms for MANEX and NLINE reflects an assumption that increases in the level of compensation associated with an added year of experience or line of business diminish as these variables increase. The cooperative and manager characteristics on the right-hand side of the model are for year t , while compensation is for year $t+1$. Therefore, this model allows a board to use known factors to establish an "expected" compensation level for the coming year.

For the original specification of equation 1, the error term was found to have non-constant variance. To correct for heteroskedasticity, the parameters of the model were estimated by weighted least squares regression, using total cooperative assets (TA) as the weighting factor.

Based on data collected in the original survey, Trechter and King (1995, 58-59) reported positive signs for all parameter estimates, as expected, and the model explained 75% of observed variation in compensation levels. The parameter estimates for LNM and NLINE were not statistically significant at the 0.05 level of significance, however. These results for compensation levels in 1992 suggested that managerial compensation was not closely linked to profitability or to the complexity of the manager's task.

Parameters for this same model were estimated by weighted least squares regression, using 1993 compensation data from the follow-up survey. In the following results, numbers in parentheses are t statistics.

$$(2) \quad \text{TCOMP}_{t+1} = 19402 + 0.031364\text{LNM}_t + 0.0022036\text{TA}_t + 0.00065492\text{SALES}_t + \\ (6.527) \quad (2.462) \quad (1.745) \quad (1.433) \\ 2160\ln(\text{MANEX}_t) + 7984\text{DEGREE}_t + 1471\ln(\text{NLINE}_t) \\ (1.756) \quad (4.321) \quad (4.393)$$

$$\text{Adjusted } R^2 = 0.6399$$

Once again, all parameter estimates have positive signs, as expected. Parameters for local net margin, the four-year degree binary variable, the log of the number of lines of business, and the constant term are all significantly different from zero at the 0.02 level. Parameters for total assets and the log of managerial experience are significantly different from zero at the 0.10 level. Only the parameter for total sales is not significantly different from zero at the 0.15 level. In contrast to results for 1992 from the original study, these results suggest that compensation was closely related to profitability and to the complexity of the manager's task. Differences in parameter estimates and significance levels for the two years may be due to statistical factors, such as multicollinearity, and it is not possible to determine whether one set of parameter estimates more closely reflects common practices. It is clear, however,

that the 1993 results are more consistent with recommendations based on economic theory and accepted business practices.

Bonuses are an important part of the compensation package for many local cooperative managers. They are a tool boards can use to reward outstanding overall performance or specific accomplishments in more narrowly defined areas that are critical to the short- and long-term success of the cooperative. In the initial survey, 47% of the managers who responded received a bonus as part of their 1992 compensation package. Only 7% of the respondents indicated that pre-determined incentive clauses were used to determine their bonuses. In the follow-up survey, 54 of the managers responding (57%) received bonuses in 1993, and 22 of the respondents (25%) indicated that their bonuses were based on specific incentive clauses.

In the analysis of data collected in the initial survey, Trechter and King (1985, 59-60) found no statistically significant relationship between profitability, as measured by local net margin, and the bonus received by the manager. They did report weak but statistically significant relationships between bonuses and two size measures: total assets and total sales. The following Tobit regression model was specified to investigate relationships between bonuses and cooperative performance levels reported in the follow-up survey.

$$(3) \quad \text{BONUS}_{t+1} = \min \left\{ \begin{array}{l} 0 \\ \text{ICLAUSE}_i [b_0 \text{TA}_t + b_1 \text{LNM}_t + b_2 \text{DSALE}_t + b_3 \text{DLNW}_t] \\ + (1 - \text{ICLAUSE}_i) [b_4 \text{TA}_t + b_5 \text{LNM}_t + b_6 \text{DSALE}_t + b_7 \text{DLNW}_t] + u_t \end{array} \right.$$

where BONUS is the bonus received in 1993, ICLAUSE is a binary variable equal to 1 if the manager's bonus was based on a specific incentive clause formula, TA and LNM are total assets and local net margin in the fiscal year that ended just prior to the bonus payment, DSALE and DLNW are changes in sales and local net worth in the fiscal year ending just prior to the bonus payment, b_0 through b_7 are parameters to be estimated, and u is a stochastic error term. Prior year financial performance measures are used as explanatory variables because they reflect the information available to the board at the time a bonus is determined. Once again, the error term had non-constant variance and observations were weighted by total assets to correct for heteroskedasticity. This specification allows for differences between cooperatives that use incentive clauses and those that do not.¹

When the full model was estimated, only b_1 , b_4 , and b_6 were significantly different from zero at even the 0.30 level of significance, based on the likelihood ratio test suggested by Tobin (1958, 29). Therefore, the model was restricted to include only these parameters. The estimation results, with chi-square p-values in parentheses, are:

$$(4) \quad \text{BONUS}_{t+1} = \min \left\{ \begin{array}{l} 0 \\ \text{ICLAUSE}_i [0.018372 \text{LNM}_t] \\ (0.026) \\ + (\text{ICLAUSE}_i - 1) [-0.000543 \text{TA}_t + 0.026485 \text{DSALE}_t] \\ (0.100) \quad (0.000) \end{array} \right.$$

Squared correlation between observed and expected values = 0.2350

For managers with incentive clauses, the predicted bonus is slightly less than 2 percent of local net margin. For managers without incentive clauses, the predicted bonus is slightly more than 2.5 percent of sales growth exceeding a threshold level related to the size of the cooperative's total assets. In contrast to the results for 1992, then, these results suggest that bonuses are related to profitability in cooperatives that use incentive clauses. In

cooperatives that do not use incentive clauses, the manager's bonus is most closely associated with growth in sales volume. From an economic perspective, the performance measures associated with bonuses in cooperatives that use incentive clauses appear to be more appropriate than those in cooperatives that do not use incentive clauses.

Changes in Compensation

A manager's total compensation reflects the history of compensation decisions made by the board during the manager's tenure. A high level of compensation may be due to superior performance in the past, rather than in the present. Therefore, changes in compensation may provide more useful insights into the factors boards emphasize when evaluating a manager's current performance. The follow-up survey made it possible to estimate relationships between changes in compensation and various measures of cooperative performance.

Total compensation for a manager is comprised of a salary, which can be viewed as a base component of compensation that would decline only in very unusual circumstances; bonuses and commissions, which are not a permanent part of the compensation package; and benefits, which generally reflect compensation policies that apply to all employees.² Changes in the first two of these components—salary and bonus—are the primary instruments boards use to signal their assessment of the manager's performance. Changes in salary, because they are essentially permanent, are most likely to be used to reward permanent improvements in the cooperative's position and are less likely to reflect transitory changes. On the other hand, bonuses can be more reflective of short-term changes in performance. In this analysis, we consider absolute and percentage changes in salary (DSAL and PDSAL, respectively) and absolute and percentage changes in the sum of salary and benefits (DSB and PDSB, respectively).³ Benefits were not included in this analysis for two reasons. First, as noted above, changes in benefits may reflect cooperative policies that apply equally to all employees or changes in costs for employee insurance coverage. Second, there were inconsistencies in benefit data from the two surveys that were difficult to reconcile. We believe some of these inconsistencies were due to difficulties in actually calculating the value of benefits.

Measuring cooperative performance is difficult, since the ultimate benefits from a cooperative should be reflected in the financial position and performance of its members. In this analysis, the explanatory variables included absolute and percentage changes in three commonly used performance measures: local net margin (DLNM and PDLNM, respectively for absolute and percentage changes), sales (DSALES and PDSALES, respectively), and local net worth (DLNW and PDLNW, respectively). Several measures of current profitability were also considered, including local net margin (LNM), return on assets (ROA), and relative return on assets (RELROA), which was defined as the ratio of the cooperative's ROA to the average ROA for cooperatives of similar type.⁴ None of these variables added to the explanatory power of the model, however, and they were ultimately excluded from the analysis. Finally, the percentage change in a measure of operating efficiency—the ratio of gross margin plus sales from services to total operating expenses—was also considered in the analysis of percentage changes in compensation. This variable was named PDOE.⁵

Absolute changes in salary and salary and bonuses for 1993 were regressed on DLNM, DSALES, and DLNW for 1992, with each observation weighted by total assets to correct for heteroskedasticity. The regression results follow, with t-statistics for parameter estimates in parentheses.

$$(5) \quad \text{DSAL}_{t+1} = 643.99 + 0.0069214\text{DLNM}_t - 0.000068120\text{DSALES}_t + 0.005329\text{DLNW}_t$$

$$(2.869) \quad (2.251) \quad (-0.2525) \quad (2.567)$$

$$\text{Adjusted } R^2 = 0.1222$$

$$(6) \quad \text{DSB}_{t+1} = 697.48 + 0.0089817\text{DLNM}_t + 0.00040129\text{DSALES}_t + 0.0070483\text{DLNW}_t$$

$$(2.273) \quad (2.137) \quad (1.088) \quad (1.388)$$

$$\text{Adjusted } R^2 = 0.0974$$

It is noteworthy that change in local net margin has a positive coefficient that is significantly different from zero at the 0.05 level in both models and that change in sales does not have a statistically significant coefficient in either model. Change in local net worth, perhaps the best measure of longer term performance, has a statistically significant, positive coefficient in the salary model but is not statistically different from zero at even the 0.15 level in the salary and bonus model. This is consistent with the hypothesis that changes in salary are used to reward permanent changes in the cooperative's financial position.

Percentage changes in salary and salary and bonuses for 1993 were regressed on PDLNM, PDSALES, PDLNW, and PDOE for 1992. The regression results follow, with t-statistics for parameter estimates in parentheses.

$$(7) \quad \text{PDSAL}_{t+1} = 0.027517 + 0.0062147\text{PDLNM}_t + 0.098292\text{PDSALES}_t$$

$$(3.190) \quad (3.209) \quad (2.844)$$

$$- 0.0098469\text{PDLNW}_t + 0.13957\text{PDOE}_t$$

$$(-0.1565) \quad (2.819)$$

$$\text{Adjusted } R^2 = 0.2138$$

$$(8) \quad \text{PDSB}_{t+1} = 0.028311 + 0.0064581\text{PDLNM}_t + 0.18318\text{PDSALES}_t$$

$$(2.524) \quad (2.565) \quad (4.076)$$

$$- 0.066666\text{PDLNW}_t + 0.10910\text{PDOE}_t$$

$$(-0.8150) \quad (1.695)$$

$$\text{Adjusted } R^2 = 0.2060$$

Percentage change in local net margin has a positive, highly significant coefficient in both models. In contrast to the results for absolute changes in compensation, percentage change in sales has a positive, statistically significant coefficient in both of these models, while percentage change in local net worth does not have a statistically significant coefficient in either model. It is noteworthy that the coefficient of PDSALES is much larger in the second model, indicating that changes in bonuses are more strongly influenced by growth in sales than are changes in salary. Finally, percentage change in operating efficiency has positive coefficients that are statistically different from zero at the 0.10 level in both models. The effects of improvements in operating efficiency are stronger, however, in the model that only includes changes in salary in the dependent variable. This suggests that changes in operating efficiency may be viewed by boards as more permanent changes.

In summary, these regression results present a somewhat mixed picture of the financial performance factors that help predict changes in compensation levels. In all four models, increases in local net margin are associated with increases in salary and the sum of salary and bonus. On the other hand, it is much more difficult to sort out the influence of changes in sales and local net worth on changes in compensation. The change in sales and the change in local net worth measures are highly correlated in the data set. We are not able to determine whether statistical problems or actual differences in behavior lead to these differences in results.

Relationships between Compensation Practices and Return on Assets

Results from the original survey indicated that there was only a weak statistical relationship between compensation practices and cooperative performance, measured by return on assets. This relationship was even weaker for data from the follow-up survey, with less than 5% of the variation in return on assets explained by the model. Therefore, statistical results from this segment of the analysis are not presented here. We believe the poor explanatory power of a wide range of statistical models may be due to the fact that many cooperatives performed poorly in 1993 because of widespread flooding.

Concluding Remarks

The results from this follow-up study on managerial compensation in local cooperatives provide additional evidence on relationships between cooperative performance and managerial compensation. In general, they suggest a stronger relationship between the general manager's compensation and cooperative profitability and operating efficiency than was found in the initial study. It is not possible to determine definitively whether these findings or those from the first survey more truly reflect current compensation patterns in these cooperatives. We do believe, however, that the patterns and relationships reported here are more consistent with compensation practices that can be sustained in the long run and will encourage managerial actions that are in the best interests of cooperative members.

Results from the analysis of changes in compensation add a new perspective to the literature on managerial compensation in cooperatives. They point to a strong link between changes in local net margin and changes in compensation. They also suggest that more permanent changes in local net worth and operating efficiency have a stronger effect on salary, while more transitory changes in sales tend to be rewarded through changes in bonus levels.

To supplement this study, Trechter, King, Cobia, and Hartell (1997) conducted five case studies designed to collect more detailed information on compensation practices in cooperatives with outstanding performance. One of two key findings from these case studies helps explain survey findings and regression results regarding bonuses. Board chairs from four of the five case cooperatives were hesitant to use specific *ex ante* incentive clauses as the basis for setting bonuses, largely because they believed focusing on a narrow set of performance measures could lead to unexpected, undesirable results. From the perspective of most of the managers, internal motivation and pride in their work were as important as "high powered" incentives in encouraging strong performance. The second key finding from the case studies provides insights on why it is difficult to draw statistical inferences on compensation procedures from survey data. A wide range of approaches can be effective for communicating goals and providing incentives to achieve them. The proper approach and mix of incentives is influenced by the length of the manager's tenure, the nature of the cooperative, and the relationship between the board and the manager.

Notes

1. The (1 - ICLAUSE) term in this model was mistakenly written as (ICLAUSE -1) in Trechter and King (1995, 59-60).
2. Commissions were rarely used by the cooperatives in the study. When present, they are treated as bonuses.
3. Since bonus levels can be zero, it is not possible to analyze percentage changes in bonuses.
4. See Antle and Smith (1986) for an investigation of the importance of relative performance in determining compensation for corporate executives. More recently, Meyer and Vickers (1997) have presented theoretical results that suggest the use of relative performance measures may not be optimal in a dynamic setting.
5. The absolute change in operating efficiency was not included in the absolute change model for two reasons. First, its coefficient is difficult to interpret in a model where all other variables are measured in dollar terms. Second, it is highly correlated with absolute change in local net worth and so introduces serious multicollinearity problems into the model.

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