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Journal of Cooperatives

Volume 32

2017

Page 23- 45

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A Descriptive Summary of Cooperative Governance and Performance

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Abstract

Empirical work in the field of corporate governance is extensive, but may not uniformly apply to cooperative businesses with patron-driven, multiple objective functions. This descriptive analysis offers further insights into the relation between cooperative governance and performance using unique survey and accounting data. Findings of better performance among firms with smaller boards, and to a lesser extent, those with outside directors seem to extend to the cooperative model. Experienced CEOs and board chairs appear to sacrifice financial performance to better serve patron-members. Director training enhances financial performance. Cooperatives with more active boards and members tend to have better overall performance.

Key words: Boards of directors, Cooperatives, Corporate governance, Performance

Introduction

Extensive research on the governance and performance of investor-owned firms or IOFs evidences only a few empirical regularities—specifically, firms with smaller boards tend to perform better, and in contrast to expectations, outside directors, appointed for their industry expertise, do not systematically enhance performance (Hermalin and Weisbach, 2003). Even less is known about the optimal structure and processes of cooperative boards, which differ in function from IOFs (Babcock, 1935; Nourse, 1942).¹ Few studies offer insights into cooperative governance and its relation to performance (Bond, 2009; Burrell, et al., 2011; Hakelius, 2013).

For a sample of 44 U.S. cooperatives, Bond (2009) finds that board size varies between 5 and 33 with an mean of 9.74 and exhibits limited effects on financial performance with adverse effects unapparent until sizes exceed 17 directors. However, assessment of financial performance may yield inaccurate implications regarding optimal cooperative governance, as financial performance is only one aspect of cooperative performance. Franken and Cook (2015) establish that financial performance is positively related to overall cooperative performance but to a lesser degree for marketing cooperatives than multipurpose cooperatives.² Using board chair responses to a survey item on overall performance of Swedish cooperatives, Hakelius (2013) reports that high performing cooperatives have larger boards on average than poorer performing cooperatives (11.8 and 9 directors, respectively) but does not test the statistical significance of this difference. Burress, et al. (2011) corroborates Bond's (2009) finding of a negative relationship between board size and financial performance of U.S. cooperatives, but finds no relation to a survey measure of nonfinancial performance. Clearly, further research on optimal cooperative governance is warranted.

This article provides insights into the relation between cooperative governance and performance through a descriptive summary that partitions cooperatives by various measures of performance and board structures and processes. We investigate these relationships for 460 U.S. agricultural cooperatives using 2010 accounting data from the U.S. Department of Agriculture (USDA) Cooperative Statistics database and a mail survey of board chairs conducted in 2010. Board chairs are often selected by their peers and have a longer tenure than other directors, and thus, should provide a well-informed perspective. The majority are marketing cooperatives (56%), followed by supply cooperatives (42%) and service cooperatives (2%). Prior studies of this dataset summarize board structures and processes but not in a manner that permits assessment of the relation to performance (Burress, et al., 2012; Burress, et al., 2011). Measures of financial performance include return on assets (*ROA*), return on equity (*ROE*), and extra-value index (*EVI*), and *Cooperative Health* is a subjective (i.e., respondent or firm defined/interpreted) measure of cooperative success computed by averaging responses to five survey items.³

Discussion of Survey Results

Results of unpaired t-tests of mean differences in cooperative characteristics across high and low performing cooperatives (i.e., above and below the 75th percentile) are reported for *ROA* (Table 1), *ROE* (Table 2), *EVI* (Table 3), and *Cooperative Health* (Table 4). For additional perspective, unpaired t-tests of mean differences in performance across cooperatives that do and do not possess certain characteristics are reported in Table 5. In each case, the t-tests are computed assuming unequal variance across samples, and results are presented based on both 1-tailed and 2-tailed tests. The 1-tailed test is appropriate when an *a priori* expectation is held regarding the sign of the difference; for instance if one expects that training board directors should improve performance. However, if no expectation is held or if there are compelling potential explanations for either sign, then the 2-tailed test is more appropriate. From another perspective, detection of significant differences under the more conservative 2-tailed test can be viewed as stronger evidence than the 1-tailed test. The analysis is conducted for the full sample and subsamples of each cooperative type (i.e., marketing, multipurpose, and service). Given that the dataset consists of only 15 service cooperatives, few statistical differences are expected and less confidence is placed in statistical differences found for this subsample. Hermalin and Weisbach (2003) survey much of the empirical work on corporate governance, and we often refer to their review when comparing our results for cooperatives to findings for IOFs.

Board Size:

According to Hermalin and Weisbach (2003, p. 8), “one of the most consistent empirical relationships ... is that board size is negatively related to firm profitability.” A survey by Lang (2002) indicates that industry and academic experts on cooperatives also believe that smaller boards allow more selective voting for directors and lead to greater accountability, less anonymity, and more efficient board meetings. Empirical work indicates mixed effects for U.S. cooperatives, depending on the measure of performance, but offers some evidence that smaller boards exhibit better financial performance (Bond, 2009; Burrell, et al., 2011). In contrast, Swedish cooperatives with high overall performance, as rated by board chairs, have larger boards on average than those with lower performance (Hakelius, 2013). In our study, for the full sample and the subsample of marketing cooperatives, based on each measure of financial performance, there

is strong evidence that more successful cooperatives have significantly smaller boards (Tables 1 through 3). For instance, the statistically significant difference of -1.070 for the full sample results for *Board Size* in Table 1 indicates that cooperatives in the top quartile of *ROA* have on average about one less director on the board than cooperatives performing at lower levels (i.e., roughly eight versus nine directors). Similar results are found for multipurpose cooperatives in sensitivity analyses comparing those in the top 5% of *ROA* and *ROE* to underperformers. A 1-tailed test offers weak evidence that cooperatives with better overall health also have smaller boards on average (Table 4).

Outside and Female Directors:

Hermalin and Weisbach (2003) assert that the most widely discussed question about corporate boards is whether or not outside directors improve performance. Employee directors (insiders) are ill-suited to monitor a CEO who has influence over promotion and tenure, whereas outside (non-employee, non-affiliated) directors are better positioned to reduce managerial opportunism. In cooperatives, however, directors are typically user members (i.e., patrons) democratically elected for representational purposes (Cornforth, 2004). While these *insiders* share none of the monitoring disincentives of their corporate counterparts, limited industry knowledge inhibits their monitoring and strategic capacities, and hence, outsiders (non-patrons) are sometimes included on cooperative boards for industry expertise. We also examine whether including female directors on the board influences performance, since cooperative patrons, and hence their boards, are predominately male. *Outsider* and *Female* are the number of these types of directors in each cooperative. A number of significantly negative mean differences indicate fewer *Outsider* and *Female* directors on average in cooperatives in the top quartile of performance (Tables 1 through 4). These results reflect that only two percent of cooperatives in our sample have outside directors with voting rights and 12% have female directors, and much of the variation in performance is likely driven by other factors.

Cutting the data another way offers further perspective. There is some evidence in the full sample and the subsample of marketing cooperatives that boards with outside directors have better overall cooperative *Health* (Table 5). Marketing cooperatives with female directors have worse financial performance by some measures (Tables 1 through 3), while multipurpose cooperatives with

female directors have better cooperative *Health* (Table 5). Perhaps these results reflect tradeoffs between the cooperatives' financial wellbeing and serving members in other ways (e.g., desirable pay, prices, or products).

Board Equity:

Directors with significant equity in the organization possess strong incentives to actively monitor management, enhance their knowledge of firm operations, and become involved in firm decision making (Daily and Dalton, 1997; Kosnik, 1990; Shleifer and Vishny, 1997). Such directors may be more likely to make value-maximizing decisions than others that are prone to free ride because they have inadequate financial stake to justify costly monitoring activities (Shleifer and Vishny, 1986). *Board Equity* is the percentage of cooperative equity held collectively by the board. There is no evidence that cooperatives with better financial performance have a higher percentage of equity held by their boards (Tables 1 through 3), and there is only weak evidence that boards of cooperatives with higher overall *Health* collectively hold about three percent more equity on average (i.e., full sample in Table 4).

CEO and Chair Tenure:

Scholars suggest that managerial experience and firm-specific expertise that comes with experience at a particular firm may lead to better decision making and direction of the firm (Carpenter and Westphal, 2001; Taylor, 1975). Therefore, cooperatives with more experienced CEOs and board chairs may be expected to perform better. Alternatively, long-tenured CEOs may gain more board trust and less scrutiny (Hermalin and Weisbach, 2003), and long-tenured board chairs and directors may favor the status quo and become complacent, inactive monitors, thereby permitting some degree of managerial opportunism. Hence, it is also feasible that worse performance may be associated with entrenched CEOs and board chairs. While years of *CEO Tenure* and *Chair Tenure* exhibit significantly negative relationships with financial performance in some cases (Tables 1 through 3), their relationships with overall cooperative *Health* are more consistently positive (Table 4). The significantly negative differences in *CEO Tenure* between cooperatives with high and low financial performance (Tables 1 through 3) are notably smaller in magnitude than the positive differences in *CEO Tenure* between cooperatives with high and low overall

Health (Table 4). These results may reflect experienced leadership choosing to sacrifice on the financial performance of the cooperative entity in order to better pass more earnings back to patron members or improve member services.

Director Orientation and Training:

As noted earlier, cooperative boards consist predominately of lay representatives, and hence, outside directors are sometimes appointed for their industry expertise (Cornforth, 2004). Orientation training for new directors and continued training may also enhance the ability of directors to monitor management and productively contribute to strategic planning. *Orientation* is hours of training for new directors, and *Training* is hours of annual training for all board members. There is somewhat stronger evidence of a positive relationship between these variables and financial performance than overall cooperative *Health* (Tables 1 through 4). For instance, marketing cooperatives in the top quartile of *ROA* have about 4 hours more annual *Training* on average than cooperatives with lower levels of *ROA* (Table 1). These positive relationships are also apparent when comparing the performance of cooperatives that do and do not hold orientation and annual training for their directors (Table 5). For example, marketing cooperatives with new director orientation have about 12% high *ROE* on average than those that do not, and those that have annual director training have about 14% higher *ROE* on average than those that do not.

Board Activity:

An active and engaged board is expected to improve performance. (Judge and Zeithaml, 1992; Westphal, 1999). *Board Meetings* is the number of meetings held, *Executive Meetings* is the number of meetings held by the board of directors without the CEO, and *Chair/CEO Meetings* is the number of meetings between the CEO and the board chair outside of board meetings annually. There is little evidence that additional board meetings enhance performance (Tables 1 through 4), and there are even some statistically negative mean differences suggesting fewer board meetings among cooperatives with higher *EVI* (Table 3) overall *Health* (Table 4). As noted by an anonymous reviewer, poorly performing cooperatives may choose to hold more meetings to address problems. There is somewhat more evidence, albeit weak (i.e., 1-tailed tests), that *Executive Meetings* and *Chair/CEO Meetings* are positively related to some measures of

performance (Tables 1 through 4). Notably, meeting frequency may be a poor proxy for active boards because meetings are often consumed by formalities, leaving little time for meaningful discussion (Lipton and Lorsch, 1992). The subjective measure, *Active Board* (i.e., scale: 1=passive to 6=active), shows a stronger relation to performance, as measured by *ROA*, *ROE*, and *Health*. Table 5 results also suggest that active boards (i.e., rated 4 and above on the scale from 1 to 6) also have significantly better overall cooperative *Health*. These results may indicate that the number of meetings does not necessarily reflect how active and engaged directors are during those meetings or otherwise.

Active (Voting) Members:

Active Members is measured by the percentage of cooperative members voting in the last election. While there is little evidence of any statistically significant relationship between the percentage of members voting in the last election and financial performance, there is stronger evidence of a positive relationship with overall cooperative *Health* in Tables 1 through 4. A positive relationship also emerges with some financial performance measures, in addition to cooperative *Health*, when comparing performance across those cooperatives with the majority of membership voting and those with lower voting participation (Table 5).

Conclusions

Empirical work in the field of corporate governance is extensive, but may not uniformly apply to cooperative businesses with patron-driven, multiple objective functions (Cook, 1995; Fulton, 1995). Limited inquiry into cooperative governance finds results inconsistent with the corporate governance literature (Bond, 2009; Burress, et al., 2011; Fulton, 2001). This descriptive analysis offers further insights into through tests of mean differences in the existence of certain board characteristics and cooperative performance and mean difference in performance across cooperatives that do and do not exhibit these characteristics.

Results corroborate corporate governance research findings that better performing firms have smaller boards, and firms with outside and female directors also perform better by some measures. In contrast to the corporate governance literature, the level of equity held by key decision makers—here, the board—does not vary significantly with performance. The mechanisms in IOFs that reward key decision makers with additional shares for good performance are not present in cooperatives. Cooperatives with more experienced CEOs and board chairs tend to have worse financial performance but better overall cooperative health, which may reflect sacrificing cooperative performance to better serve patron-members in other ways (i.e., preferred price or cost levels). Orientation for new directors and continued annual board training also seems to enhance financial performance, and cooperatives with more active boards and members tend to perform better, particularly in terms of overall health of the organization.

Funding and Support

This research received funding from USDA under Cooperative Research Agreement RBS-09-40. We also acknowledge the detailed and enthusiastic responses of survey participants.

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Table 1. Unpaired t-tests of mean differences in cooperatives above and below the 75th percentile in ROA

	Full Sample	Multipurpose	Marketing	Service
Employees				
Above	125	90	345	69
Below	218	162	445	71
Difference	-93*	-72 ⁺	-100	-2
Board Size				
Above	8.265	8.055	9.818	10.000
Below	9.335	8.427	12.426	10.091
Difference	-1.070***	-0.372	-2.608**	-0.091
Outsider				
Above	0.009	0.012	0.045	0.000
Below	0.051	0.024	0.149	0.000
Difference	-0.042*	-0.012	-0.104 ⁺	0.000
Female				
Above	0.101	0.071	0.227	0.000
Below	0.137	0.067	0.375	0.364
Difference	-0.036	0.003	-0.148	-0.364**
CEO Tenure				
Above	10.112	11.082	8.455	14.625
Below	10.494	10.252	10.750	8.150
Difference	-0.382	0.830	-2.295	6.475 ⁺
Board Equity				
Above	0.125	0.093	0.174	0.378
Below	0.109	0.089	0.186	0.137
Difference	0.016	0.004	-0.013	0.241
Chair Tenure				
Above	6.750	7.174	5.523	7.125
Below	6.438	6.008	7.841	6.818
Difference	0.312	1.166*	-2.318*	0.307
Orientation				
Above	4.658	5.717	3.864	0.250
Below	4.629	4.829	3.537	0.909
Difference	0.028	0.888	0.326	-0.659
Training				
Above	8.239	8.337	9.143	1.500
Below	6.652	7.281	4.716	2.909
Difference	1.587*	1.056	4.426*	-1.409

Table 1. Continued

Active Members				
Above	36.896	30.591	49.850	68.500
Below	36.829	31.056	59.493	48.556
Difference	0.067	-0.465	-9.643 ⁺	-6.818
	Full Sample	Multipurpose	Marketing	Service
Active Board				
Above	4.982	4.912	5.227	5.250
Below	4.765	4.798	4.597	4.909
Difference	0.218**	0.114	0.630***	0.341
Board Meetings				
Above	14.009	13.978	14.818	9.250
Below	13.797	13.683	14.618	11.727
Difference	0.212	0.295	0.201	-2.477
Executive Sessions				
Above	3.105	2.902	4.091	2.500
Below	2.635	2.218	3.971	4.091
Difference	0.470	0.685 ⁺	0.120	-1.591
CEO & Chair Meetings				
Above	18.339	17.022	25.545	31.250
Below	17.903	14.216	31.254	14.909
Difference	0.436	2.806 ⁺	-5.708	16.341

Note: Unpaired t-tests of mean differences assume unequal variance across samples. ⁺, ⁺⁺, ⁺⁺⁺ and ^{*}, ^{**}, ^{***} denote statistical significance at 10%, 5%, 1% for one-tailed and two-tailed tests, respectively.

Table 2. Unpaired t-tests of mean differences in cooperatives above and below the 75th percentile in ROE

	Full Sample	Multipurpose	Marketing	Service
Employees				
Above	151	100	426	56
Below	210	159	419	76
Difference	-59	-59	7	-21
Board Size				
Above	8.281	8.516	9.545	8.500
Below	9.333	8.265	12.515	10.636
Difference	-1.053***	0.251	-2.969***	-2.136
Outsider				
Above	0.046	0.012	0.091	0.000
Below	0.039	0.024	0.134	0.000
Difference	0.007	-0.012	-0.043	0.000
Female				
Above	0.083	0.059	0.182	0.333
Below	0.143	0.071	0.391	0.273
Difference	-0.061*	-0.013	-0.209*	0.061
CEO Tenure				
Above	9.254	9.972	8.341	14.625
Below	10.777	10.644	10.787	8.150
Difference	-1.523*	-0.672	-2.446 ⁺	6.475 ⁺
Board Equity				
Above	0.117	0.079	0.176	0.378
Below	0.111	0.093	0.186	0.137
Difference	0.005	-0.014	-0.010	0.241
Chair Tenure				
Above	6.400	6.255	4.727	9.750
Below	6.556	6.334	8.106	5.864
Difference	-0.156	-0.079	-3.379***	3.886 ⁺
Orientation				
Above	4.325	4.813	3.727	0.250
Below	4.741	5.151	3.582	0.909
Difference	-0.417	-0.337	0.145	-0.659
Training				
Above	7.652	7.163	6.500	1.500
Below	6.841	7.696	5.530	2.909
Difference	0.811	-0.533	0.970	-1.409
Active Members				
Above	38.528	30.966	57.250	66.250
Below	36.298	30.925	57.284	49.556
Difference	2.230	0.041	-0.034	16.694

Table 2. cont.

	Full Sample	Multipurpose	Marketing	Service
Active Board				
Above	5.018	4.978	5.000	5.500
Below	4.752	4.775	4.672	4.818
Difference	0.265**	0.203 ⁺	0.328	0.682
Board Meetings				
Above	13.730	13.837	14.500	10.750
Below	13.890	13.733	14.721	11.182
Difference	-0.159	0.104	-0.221	-0.432
Executive Sessions				
Above	2.843	2.891	3.227	2.750
Below	2.721	2.221	4.250	4.000
Difference	0.123	0.670 ⁺	-1.023 ⁺	-1.250
CEO & Chair Meetings				
Above	20.009	14.711	25.909	31.250
Below	17.347	15.019	31.134	14.909
Difference	2.662	-0.308	-5.225	16.341

Note: Unpaired t-tests of mean differences assume unequal variance across samples. ⁺, ⁺⁺, ⁺⁺⁺ and *, **, *** denote statistical significance at 10%, 5%, 1% for one-tailed and two-tailed tests, respectively.

Table 3. Unpaired t-tests of mean differences in cooperatives above and below the 75th percentile in EVI

	Full Sample	Multipurpose	Marketing	Service
Employees				
Above	139	119	375	45
Below	214	152	435	77
Difference	-75 ⁺	-32	-60	-32
Board Size				
Above	8.465	8.462	10.136	9.000
Below	9.272	8.283	12.324	10.333
Difference	-0.807**	0.179	-2.187*	-1.333
Outsider				
Above	0.018	0.011	0.045	0.000
Below	0.048	0.024	0.149	0.000
Difference	-0.030	-0.012	-0.104 ⁺	0.000
Female				
Above	0.056	0.034	0.136	0.000
Below	0.152	0.080	0.406	0.333
Difference	-0.096***	-0.046*	-0.270**	-0.333**
CEO Tenure				
Above	10.143	10.736	9.477	13.833
Below	10.484	10.375	10.419	8.955
Difference	-0.341	0.361	-0.942	4.879
Board Equity				
Above	0.132	0.100	0.194	0.487
Below	0.107	0.086	0.180	0.128
Difference	0.025	0.014	0.014	0.359
Chair Tenure				
Above	6.575	6.527	6.432	9.000
Below	6.497	6.236	7.538	6.375
Difference	0.078	0.290	-1.106	2.625
Orientation				
Above	6.026	6.312	4.636	0.333
Below	4.171	4.611	3.284	0.833
Difference	1.856**	1.701 ⁺	1.353	-0.500
Training				
Above	8.684	8.118	8.636	2.000
Below	6.499	7.355	4.818	2.667
Difference	2.186**	0.763	3.818 ⁺	-0.667
Active Members				
Above	36.807	31.077	57.150	58.333
Below	36.858	30.884	57.313	53.600
Difference	-0.051	0.193	-0.163	4.733

Table 3. cont.

	Full Sample	Multipurpose	Marketing	Service
Active Board				
Above	4.929	4.870	5.000	5.667
Below	4.782	4.813	4.672	4.833
Difference	0.147	0.056	0.328	0.833
Board Meetings				
Above	13.702	14.000	12.364	11.000
Below	13.899	13.674	15.412	11.083
Difference	-0.197	0.326	-3.048**	-0.083
Executive Sessions				
Above	3.114	2.968	4.045	2.333
Below	2.632	2.192	3.985	4.000
Difference	0.482	0.776*	0.060	-1.667
CEO & Chair Meetings				
Above	17.107	13.868	30.955	40.333
Below	18.308	15.318	29.478	14.000
Difference	-1.201	-1.450	1.477	26.333

Note: Unpaired t-tests of mean differences assume unequal variance across samples. +, ++, +++ and *, **, *** denote statistical significance at 10%, 5%, 1% for one-tailed and two-tailed tests, respectively.

Table 4. Unpaired t-tests of mean differences in cooperatives above and below the 75th percentile in cooperative health

	Full Sample	Multipurpose	Marketing	Service
Employees				
Above	151	79	424	81
Below	212	168	420	66
Difference	-61	-89*	4	16
Board Size				
Above	8.730	8.219	10.519	10.400
Below	9.200	8.373	12.333	9.900
Difference	-0.470	-0.154	-1.815 ⁺	0.500
Outsider				
Above	0.034	0.000	0.154	0.000
Below	0.043	0.028	0.111	0.000
Difference	-0.009	-0.028	0.043	0.000
Female				
Above	0.121	0.101	0.160	0.250
Below	0.131	0.056	0.410	0.300
Difference	-0.010	0.045	-0.250**	-0.050
CEO Tenure				
Above	13.371	13.303	13.093	14.100
Below	9.272	9.417	8.944	7.722
Difference	4.099***	3.886***	4.148*	6.378 ⁺
Board Equity				
Above	0.136	0.103	0.242	0.304
Below	0.104	0.085	0.161	0.153
Difference	0.032 ⁺	0.019	0.081	0.152
Chair Tenure				
Above	7.488	7.124	8.673	8.100
Below	6.143	6.004	6.669	6.300
Difference	1.345*	1.120*	2.004	1.800
Orientation				
Above	5.381	6.146	3.259	0.800
Below	4.351	4.654	3.774	0.700
Difference	1.030	1.492 ⁺	-0.515	0.100
Training				
Above	7.937	8.649	6.074	2.800
Below	6.701	7.141	5.639	2.400
Difference	1.236 ⁺	1.508 ⁺	0.435	0.400
Active Members				
Above	41.132	35.258	60.520	66.250
Below	35.219	29.308	55.968	49.556
Difference	5.913**	5.950**	4.552	16.694

Table 4. continued

	Full Sample	Multipurpose	Marketing	Service
Active Board				
Above	5.244	5.128	5.654	5.600
Below	4.661	4.718	4.381	4.700
Difference	0.583***	0.410***	1.273***	0.900 ⁺
Board Meetings				
Above	13.118	13.175	13.296	10.800
Below	14.130	13.981	15.254	11.200
Difference	-1.011 ⁺	-0.805 ⁺	-1.958	-0.400
Executive Sessions				
Above	3.016	2.794	3.741	3.200
Below	2.651	2.245	4.111	3.900
Difference	0.365	0.549	-0.370	-0.700
CEO & Chair Meetings				
Above	20.153	15.958	36.462	28.000
Below	17.204	14.559	27.111	14.900
Difference	2.950 ⁺	1.399	9.350 ⁺	13.100

Note: Unpaired t-tests of mean differences assume unequal variance across samples. ⁺, ⁺⁺, ⁺⁺⁺ and

*, **, *** denote statistical significance at 10%, 5%, 1% for one-tailed and two-tailed tests,

respectively.

Table 5. Unpaired t-tests of mean differences in performance by board characteristics

	Full Sample				Multipurpose				Marketing				Service			
	ROA	ROE	EVI	Health	ROA	ROE	EVI	Health	ROA	ROE	EVI	Health	ROA	ROE	EVI	Health
Female Director																
With female directors	0.058	0.143	1.606	8.059	0.068	0.164	0.067	8.341	0.041	0.121	0.074	7.779	0.077	0.140	0.118	7.600
Without female directors	0.072	0.163	0.085	8.001	0.068	0.151	0.082	7.974	0.082	0.226	0.086	8.157	-0.013	-0.037	-0.041	7.880
Difference	-0.015 ⁺	-0.020	1.520	0.059	0.000	0.013	-0.014	0.366*	-0.040 ⁺	-0.105*	-0.012	-0.377	0.090	0.177	0.160	-0.280
Outside Director																
With outside directors	0.054	0.199	0.082	8.560	-0.101	-0.293	-0.270	8.300	0.072	0.263	0.110	8.625	—	—	—	—
Without outside directors	0.070	0.159	0.336	7.997	0.069	0.154	0.081	8.012	0.068	0.185	0.079	7.975	0.017	0.022	0.012	7.787
Difference	-0.016	0.040	-0.255	0.563 ⁺	-0.170	-0.447	-0.351	0.288	0.003	0.078	0.030	0.650 ⁺	—	—	—	—
Orientation																
With orientation	0.072	0.176	0.107	8.079	0.072	0.157	0.090	8.104	0.064	0.250	0.152	8.061	0.050	0.068	0.003	7.150
Without orientation	0.068	0.143	0.580	7.922	0.063	0.147	0.068	7.896	0.075	0.134	0.010	8.000	0.005	0.006	0.015	8.018
Difference	0.004	0.033*	-0.472	0.157	0.009 ⁺	0.010	0.023 ⁺	0.209 ⁺	-0.011	0.116*	0.143*	0.061	0.045	0.062	-0.012	-0.868
Board Training																
With training	0.074	0.169	0.099	8.061	0.071	0.151	0.082	8.067	0.072	0.242	0.154	8.057	0.043	0.059	0.014	7.857
Without training	0.060	0.136	0.905	7.884	0.061	0.157	0.075	7.858	0.063	0.105	-0.043	7.994	-0.006	-0.010	0.010	7.725
Difference	0.014	0.033 ⁺	-0.806	0.177	0.009 ⁺	-0.006	0.006	0.209	0.010	0.137**	0.198**	0.063	0.048	0.069	0.003	0.132
Active Board																
Yes	0.069	0.163	0.431	8.301	0.070	0.158	0.085	8.272	0.061	0.183	0.138	8.365	0.000	0.007	0.004	8.636
No	0.071	0.152	0.042	7.173	0.064	0.136	0.066	7.221	0.086	0.214	-0.049	7.274	0.064	0.063	0.033	5.450
Difference	0.011	0.011	0.389	1.129***	0.006	0.023	0.018	1.051***	-0.024	-0.031	0.187*	1.090***	-0.064	-0.056	-0.028	3.186
Active Membership																
Yes	0.067	0.179	0.910	8.243	0.074	0.184	0.102	8.370	0.042	0.162	0.104	8.079	0.085	0.150	0.117	8.000
No	0.070	0.151	0.073	7.876	0.066	0.143	0.074	7.892	0.107	0.238	0.043	7.873	-0.058	-0.112	-0.091	7.233
Difference	-0.003	0.027 ⁺	0.838	0.366***	0.008	0.041*	0.028**	0.479***	-0.065	-0.076	0.061	0.207	0.143	0.262 ⁺	0.208 ⁺	0.767

Note: Unpaired t-tests of mean differences assume unequal variance across samples. ⁺, ⁺⁺, ⁺⁺⁺ and *, **, *** denote statistical significance at

10%, 5%, 1% for one-tailed and two-tailed tests, respectively.

Endnotes

¹ Whereas shareholders of IOFs benefit from profit maximization, members of cooperatives benefit through patronage. The cooperative model also complicates the definition of ownership rights (i.e., residual claim and control) in comparison to IOFs (Cook, 1995).

² Cooperatives represent vertical integration of members' operations with another stage, and thus, evaluating performance of the joint entity by examining only cooperative data is inappropriate, as financial performance may be altered simply by shifting income from one entity to the other (Sexton and Iskow, 1993).

³ Respondents evaluate performance by rating their cooperative's level of member satisfaction, competitive position in the industry, profitability, ability to achieve vision, and overall performance on a scale from one (equals "poor") to ten (equals "excellent"). We utilize the same method as Liebrand (2007) to calculate *EVI*:
$$EVI = (\text{Net Income after Taxes} - [(\text{Total Equity}) * (\text{LIBOR 12 month maturity December average} + 2\%)]) / (\text{Total Assets} - \text{Current Liabilities}).$$
 To estimate an interest surcharge, we add two per cent to the 12-month maturity December average of the London Interbank Offered Rate (LIBOR). We multiply this surcharge by total equity to calculate the opportunity cost of capital for members. This opportunity cost of capital is subtracted from net income after taxes; we then divide by total assets less current liabilities.