

Effects of Firm Complexity on the Adaption of Board Structure: Evidence from
U.S. Electric Utilities Following Deregulation

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The *BRC Academy Journal of Business* 7, no. 1 (2017):111–134

<http://dx.doi.org/10.15239/j.brcacadjb.2017.07.01.ja06>

Web Appendix

<http://dx.doi.org/10.15239/j.brcacadjb.2017.07.01.wa06>

Table 1

Mean values of board and firm characteristics in two periods: before and after deregulation

	Before deregulation snapshot calculated over the period 1989-1992	After deregulation snapshot calculated over the period 1993-2000	
Variables	Mean	Mean	$p(t)$
<u><i>Board characteristics</i></u>			
Board size	11.761	11.318	0.00
Insiders	2.708	2.202	0.00
Outsiders	9.053	9.116	0.62
Outsider fraction	0.768	0.803	0.00
<u><i>Firm characteristics</i></u>			
TA	6579.4	7351.3	0.00
Sales	2421.7	2838.0	0.00
TD	2631.4	2792.7	0.06
Segments	1.939	2.338	0.00
Incremental complexity	-0.282	0.282	0.00

Note: The sample consists of 92 firms with available data from 1989 to 2000. *Board size* is the number of board members. *Insiders* is the number of directors who are current or past employees and their relatives. *Outsiders* is board size minus insiders. *Outside fraction* is the ratio of outsiders over board size. *TA*, *Sales* and *TD* are expressed in constant 2000 dollars and they represent total assets, net sales and total debt respectively. *Segments* is the number of business segments in which the firm operates. *Incremental complexity* is the factor score generated by applying factor analysis to rates of change in *TA*, *Sales*, *TD* and *Segments*. *p(t)* is the based on matched-pair t-test.

Table 2

Changes in board size and director type by incremental complexity

	Sampling by <i>Incremental complexity_t</i>		<i>p</i> (F)	<i>p</i> (χ^2)
	<i>Low-incremental-complexity</i>	<i>High-incremental-complexity</i>		
	<i>Incremental complexity_t</i> is below sample median in the 1993-2000 period (n=46)	<i>Incremental complexity_t</i> is above sample median in the 1993-2000 period (n=46)		
Δ Board size	-0.828 ^{***}	-0.057	0.00	0.00
Δ Outsiders	-0.306	0.432 ^{**}	0.00	0.00
Δ Insiders	-0.522 ^{***}	-0.489 ^{***}	0.82	0.95

*** indicate significance at the 1% and 5% levels respectively.

Note: Mean values are reported in the table. *p*(F) is *p*-value for F-test and *p*(χ^2) is *p*-value for the Kruskal-Wallis test.

Table 3

Association between strategy, boards and firm characteristics in the post-deregulation period

		Mean	Median	S.D.	1	2	3	4	5	6	7
1	Incremental complexity	0.28	0.00	1.20							
2	%ΔTA	0.19	0.12	0.36	0.94***						
3	%ΔSales	0.23	0.08	0.60	0.71***	0.49***					
4	%ΔTD	0.15	0.09	0.39	0.91***	0.92***	0.42***				
5	%ΔSegments	0.28	0.19	0.42	0.33***	0.21**	0.19***	0.18**			
6	ΔBoard size	-0.44	-0.27	1.38	0.26***	0.23**	0.27***	0.23**	-0.13		
7	ΔOutsiders	0.06	-0.13	1.22	0.28***	0.25**	0.29***	0.25**	-0.11	0.86***	
8	ΔInsiders	-0.51	-0.50	0.70	0.01	0.02	0.03	0.01	-0.08	0.47***	-0.04

*** indicate significance at the 1% and 5% levels respectively.

Note: This table reports Pearson correlation coefficients. Δ is the over time change from before-deregulation to after-deregulation.

S.D. stands for standard deviation.

Table 4

OLS Regression Results

	Model 1	Model 2	Model 3	Model 4
Independent variables	Δ Board size	Δ Board size	Δ Outsiders	Δ Outsiders
Incremental complexity _t	0.292 ^{***} (0.01)	0.301 ^{**} (0.02)	0.285 ^{***} (0.01)	0.282 ^{**} (0.04)
Board size _{t-1}		-0.354 ^{***} (0.000)		-0.228 ^{***} (0.00)
CEO tenure _{t-1}		-0.059 (0.07)		-0.053 [*] (0.09)
Board ownership _{t-1}		-7.929 (0.38)		-4.661 (0.61)
ROA _{t-1}		-0.123 (0.98)		-5.149 (0.54)
ROA _t		17.453 (0.21)		14.246 (0.31)
Holding company status		-0.016 (0.94)		0.020 (0.92)
State deregulation		0.080 (0.75)		-0.062 (0.80)
Intercept	-0.525 ^{***} (0.00)	2.949 ^{***} (0.01)	-0.017 (0.89)	2.447 ^{***} (0.01)

Adjusted R ²	0.05	0.40	0.07	0.23
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*** and ** indicate statistical significance at the 1% and 5% levels, respectively.

Note: Holding company status is a dummy variable; it equals one if the company was a holding company in 1992, otherwise it equals 0. State deregulation takes the value of 1 if the company was located or had operated in states that were involved in retail deregulation during the sampling period; it equals zero otherwise.