

# **The Determinants and Performance Impact of Outside Board Leadership**

## **Additional Robustness Tests**

### *IA.1. Outside Chair and Firm Performance: Additional Endogeneity Controls*

We also estimate a system of simultaneous equations that explicitly endogenizes Tobin's Q, outside chair, fraction of inside directors and board size, using three-stage least squares (3SLS) regressions. The instrument for each endogenous variable is the one year lag of the corresponding endogenous variable. As reported in Table IA3, we find that outside chair continues to be positively and significantly associated with Tobin's Q.

### *IA.2. Transitional versus Non-transitional Outside Chairs*

We run firm fixed effects performance regressions after subdividing our outside chair indicator into two separate binary indicators based upon whether the outside chair is transitional, i.e., the firm in question has only one year with an outside chair; or non-transitional, i.e., the firm has multiple years with an outside chair. Our objective is to ensure that the positive association between outside chair and firm performance we observe is driven by firms which have outside chairs as part of a longer term arrangement. In Table IA4, we find that the coefficient on non-transitional outside chair continues to be positive and significantly associated with firm performance, while that on transitional chair is insignificant. We also find that the coefficient on the non-transitional outside chair is statistically greater than the coefficient on the transitional outside chair. This is consistent with the benefits of an outside chair only accruing to firms which are committed to this governance structure.

### *IA.3. Effect of Sarbanes-Oxley Act on the Impact of an Outside Chair*

We also examine whether the impact of an outside chair is different before and after the Sarbanes-Oxley Act of 2002. Although there are no explicit regulations requiring appointments of outside chairs, stock exchange and Sarbanes-Oxley requirements have required more outside directors since 2002. The existence of more outside directors potentially reduces the incremental monitoring benefit of having an outside chair. In Table IA5, we find that outside chair has a significant and positive association with firm performance in both the pre-SOX (1996-2002) and post-SOX (2003-2010) periods.

### *IA.4. Alternative Governance Mechanisms*

We also run firm fixed effects performance regressions after including additional independent variables to control for other governance mechanisms, similar to Adams and Ferreira (2009). We use the Gompers et al. (2003) GIM index, as well as the E-index of Bebchuk, Cohen and Ferrell (2009) to measure the quality of other governance mechanisms. Since each of these variables are available only for limited period, i.e., the Gompers et al. index ends in 2006, we use a sub-sample for which data on these variables is available. We also control for performance-based incentive compensation since they align incentives and potentially reduce agency problems. In addition, we control for the level of product market competition measured using the Herfindahl index of industry sales at a 2-digit SIC code level (e.g., Masulis and Mobbs, (2011)) since it can also limit agency problems. After controlling for these other governance mechanisms, in Table IA6 we find that the coefficient on outside chair in the regression explaining Tobin's Q continues to be positive and significant while the sign and significance of these additional controls are generally as predicted.

## **TABLE IA1**

### **Illustrations of Different Types of Non-CEO Board Chairs**

#### **1. Independent Outside Chair- George Mitchell, Walt Disney Company 2005**

Senator Mitchell, 71, has served as Chairman of the Board of the Company since March 2004 and is Chairman of the law firm of DLA Piper Rudnick Gray Cary LLP and senior counsel to Preti, Flaherty, Beliveau & Pachios in Portland, Maine. He previously served as Chairman of the law firm of Verner, Liipfert, Bernhard, McPherson & Hand in Washington, D.C., which merged with Piper Rudnick in October 2002. He served as a United States Senator from 1980 to 1995, and was Senate Majority Leader from 1989 to 1995. He is a director of Staples, Inc., an office supply company. He has also served as Chairman of the Peace Negotiations in Northern Ireland and the International Fact-Finding Committee on Violence in the Middle East.

#### **2. Affiliated Outside Chair – William Macaulay, Pride International Inc. 2004**

William E. Macaulay, 58, has been a director of Pride since July 1999 and became chairman of the board of Pride in June 2003. Mr. Macaulay is chairman and chief executive officer of First Reserve Corporation and First Reserve GP IX, Inc., which manage three investment funds that own an aggregate of 14% of the outstanding Pride common stock. He is a director of the following SEC reporting companies: National-Oilwell, Inc., a distributor of oilfield equipment and machinery; Dresser Ltd., a manufacturer and marketer of equipment and services to

customers in the energy industry; and Weatherford International, Inc., an oilfield services company.

3. Separate Inside Chair – William Clay Ford, Jr., Ford Motor Company, 2006

Mr. Ford has held a number of management positions within Ford, including Vice President — Commercial Truck Vehicle Center. From 1995 until October 30, 2001, Mr. Ford was Chair of the Finance Committee. Effective January 1, 1999, he was elected Chairman of the Board of Directors and effective October 30, 2001, he was elected Chief Executive Officer of the Company. Mr. Ford became Executive Chairman of the Company on September 1, 2006. Mr. Ford also is Vice Chairman of The Detroit Lions, Inc., Chairman of the Detroit Economic Club, and Chairman of the Board of Trustees of The Henry Ford. He also is a Vice Chairman of Detroit Renaissance.

**TABLE IA2**  
**Correlation Matrix**

This table presents correlation coefficients between different variables. Variable descriptions are reported in Appendix.

	Outside Chair	Tobin's Q	Firm Size	Div.	Lev.	Firm Age	CEO Tenure	CEO Own.	Inside r Ratio	Prior Profit.	Ret. Vol.	R&D	Int. Asset s	Insider Own.	Inst. Own.	Lnboard
Outside Chair	1.000															
Tobin's Q	0.023	1.000														
Firm Size	-0.157	-0.082	1.000													
Diversification	-0.066	-0.105	0.181	1.000												
Leverage	-0.022	-0.251	0.160	0.075	1.000											
Firm age	-0.069	-0.136	0.374	0.193	0.053	1.000										
CEO Tenure	-0.225	0.038	0.095	0.032	0.038	0.033	1.000									
CEO Ownership	-0.096	0.030	0.176	0.044	0.070	0.125	0.342	1.000								
Insider Ratio	-0.020	0.100	0.228	0.078	0.106	0.202	0.198	0.300	1.000							
Prior Profitability	-0.023	0.373	0.168	0.041	0.113	0.017	0.028	0.013	0.046	1.000						
Volatility	0.050	0.029	0.371	0.001	0.046	0.310	0.029	0.047	0.104	0.298	1.000					
R&D Intensity	0.064	0.208	0.288	0.059	0.086	0.115	0.016	0.026	0.003	0.306	0.299	1.000				
Intangible assets	0.013	0.160	0.112	0.046	0.197	0.138	0.024	0.034	0.064	0.163	0.102	0.198	1.000			

Insider Ownership	0.003	-0.015	0.053	0.140	0.064	0.051	0.111	0.269	0.105	0.009	0.042	-0.040	-0.024	1.000		
Institutional Own.	-0.035	-0.033	0.061	0.059	0.010	0.040	-0.032	0.224	-0.233	0.065	0.028	-0.049	0.029	0.026	1.000	
Lnboard	-0.056	-0.116	0.543	0.154	0.199	0.378	-0.122	0.160	-0.236	0.043	0.306	-0.161	-0.151	-0.038	-0.111	1.000

---

**TABLE IA3**  
**3-SLS Estimation of Tobin's Q, Outside Chair, Insider Ratio and Board Size**

This table presents results from 3SLS estimation in which the dependent variables are Tobin's Q, Outside Chair, Insider Ratio and Board Size. z-statistics in parentheses are reported below each coefficient estimate. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5% and 1% level, respectively.

	Dependent Variable			
	Tobin's Q	Outside Chair	Insider Ratio	Lnboard
Outside Chair	0.038* (1.745)		-0.003 (-1.569)	-0.001 (-0.146)
Tobin's Q		-0.001 (-0.392)	0.001* (1.760)	0.002 (1.184)
Insider Ratio	0.050 (0.561)	0.018 (0.535)		-0.027 (-1.568)
Lnboard	-0.046 (-1.087)	-0.019 (-1.170)	-0.007** (-2.125)	
Firm Size	0.013* (1.930)	-0.013*** (-5.433)	-0.002*** (-3.812)	0.017*** (13.683)
Diversification	-0.004* (-1.696)	0.001 (1.330)	-0.000 (-0.175)	0.000 (1.140)
Leverage	-0.461*** (-9.722)	0.001 (0.044)	-0.003 (-0.766)	0.032*** (3.505)
Firm Age	-0.004 (-0.405)	-0.001 (-0.331)	-0.001 (-1.529)	0.006*** (2.940)
CEO Tenure	0.003 (0.338)	-0.036*** (-12.812)	0.006*** (9.717)	-0.001 (-0.414)
CEO Ownership	0.053 (0.422)	-0.144*** (-3.040)	0.027*** (2.705)	-0.103*** (-4.284)
ROA <sub>t-1</sub>	0.613*** (6.392)	0.019 (0.523)	-0.006 (-0.755)	-0.021 (-1.109)
Volatility	-0.357*** (-2.675)	0.059 (1.181)	-0.001 (-0.067)	0.013 (0.497)
R&D Intensity	0.394*** (6.504)	0.055** (2.390)	0.000 (0.009)	0.014 (1.177)
Intangible Assets	0.003 (0.124)	0.003 (0.311)	0.001 (0.463)	-0.001 (-0.284)
Insider Ownership	0.147** (2.087)	-0.006 (-0.234)	0.032*** (5.715)	0.058*** (4.321)
Institutional Ownership	0.068 (1.512)	-0.043** (-2.563)	-0.012*** (-3.483)	-0.046*** (-5.438)
(Tobin's Q) <sub>t-1</sub>	0.753*** (110.317)			
(Outside Chair) <sub>t-1</sub>		0.756*** (120.863)		
(Insider Ratio) <sub>t-1</sub>			0.774*** (139.949)	
(Lnboard) <sub>t-1</sub>				0.775*** (123.714)
Intercept, Year and Industry Included	Yes	Yes	Yes	Yes
Number of Observations	10264	10264	10264	10264
Adj. R-Sqd.	0.7256	0.6404	0.7491	0.7686

**TABLE IA4**  
**Transitional, Non-transitional Outside Chair and Firm Performance**

This table presents results from firm fixed effects regressions in which the dependent variables are Tobin's Q and ROA. Non-transitional outside chair takes a value of 1 if a firm reports having outside chair in at least 2 consecutive years, zero otherwise. t-statistics in parentheses are reported below each coefficient estimate. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5% and 1% level, respectively. Variable descriptions are reported in Appendix.

	Dependent Variable	
	Tobin's Q	ROA
Non-Transitional outside chair ( $\alpha_1$ )	0.049** (2.111)	0.009* (1.768)
Transitional outside chair ( $\alpha_2$ )	0.021 (0.360)	0.004 (1.199)
Firm Size	-0.169*** (-7.295)	0.015*** (6.817)
Diversification	-0.003 (-1.132)	-0.001*** (-4.967)
Leverage	-0.900*** (-12.336)	-0.141*** (-18.975)
Firm Age	0.017 (0.384)	0.003 (0.749)
CEO Tenure	0.001 (0.986)	-0.001 (-0.707)
CEO Ownership	0.279 (1.604)	0.006 (0.350)
Insider Ratio	0.240** (2.330)	0.013 (1.194)
ROA <sub>t-1</sub>	0.544*** (4.466)	0.333*** (29.646)
Volatility	0.380 (1.525)	-0.079*** (-3.114)
R&D Intensity	2.376*** (6.025)	-0.897*** (-23.031)
Intangible Assets	-0.020 (-0.293)	0.042*** (6.105)
Insider Ownership	0.025 (0.298)	-0.003 (-0.295)
Institutional Ownership	0.393*** (5.530)	0.052*** (7.379)
Lnboard	-0.186*** (-3.880)	-0.009* (-1.807)
(Tobin's Q) <sub>t-1</sub>	0.482*** (54.326)	
Intercept, Year and Industry Included	Yes	Yes
Number of Observations	10264	10264
Adj. R-Sqd.	0.5434	0.3284
p-value (F-Test for ( $\alpha_1$ - $\alpha_2$ ))	(0.036)	(0.081)

**TABLE IA5**  
**Outside Chair and Firm Performance: Impact of SOX**

This table presents results from firm fixed effects regressions in which the dependent variables are Tobin's Q and ROA. t-statistics in parentheses are reported below each coefficient estimate. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5% and 1% level, respectively. Variable descriptions are reported in Appendix.

	Dependent Variable	
	Tobin's Q	ROA
Outside chair	0.065** (2.023)	0.009* (1.877)
Outside chair*Post-SOX	0.009 (0.039)	0.001 (0.238)
Post-SOX	-0.719*** (13.665)	-0.056*** (-13.482)
Firm Size	-0.182*** (-7.462)	0.042*** (22.232)
Diversification	-0.002 (-0.801)	-0.001*** (-3.675)
Leverage	-0.965*** (-12.515)	-0.089*** (-14.739)
Firm Age	-0.008 (-0.180)	-0.012*** (-3.447)
CEO Tenure	0.006 (0.593)	-0.001 (-1.575)
CEO Ownership	0.260 (1.320)	-0.015 (-1.001)
Insider Ratio	0.380*** (3.380)	0.014 (1.637)
ROA <sub>t-1</sub>	0.636*** (4.979)	0.428*** (46.008)
Volatility	0.476* (1.806)	0.034 (1.637)
R&D Intensity	2.158*** (5.195)	-0.207*** (-6.354)
Intangible Assets	0.001 (0.018)	-0.046*** (-8.219)
Insider Ownership	0.040 (0.468)	-0.002 (-0.328)
Institutional Ownership	0.420*** (5.449)	0.025*** (4.144)
Lnboard	-0.205*** (-3.993)	-0.013*** (-3.156)
Tobin's Q <sub>t-1</sub>	0.472*** (49.846)	
Intercept, Year and firm fixed effects included	Yes	Yes
Number of Observations	10264	10264
Adj. R-Sqd.	0.5681	0.3761

**TABLE IA6**  
**Outside Chair and Firm Performance: Additional Governance Controls**

This table presents results from firm fixed effects regressions in which the dependent variables are Tobin's Q and ROA. t-statistics in parentheses are reported below each coefficient estimate. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5% and 1% level, respectively. Variable descriptions are reported in Appendix.

	Dependent Variable	
	Tobin's Q	ROA
Outside chair	0.106** (2.576)	0.002 (0.516)
Firm Size	-0.271*** (-6.923)	0.034*** (12.347)
Diversification	0.007* (1.697)	-0.000 (-1.317)
Leverage	-0.976*** (-7.655)	-0.068*** (-7.421)
Firm Age	-0.309*** (-4.259)	-0.039*** (-8.397)
CEO Tenure	-0.021 (-1.358)	-0.002** (-2.047)
CEO Ownership	0.133 (0.378)	0.049** (1.991)
Insider Ratio	0.394** (2.115)	0.006 (0.447)
ROA <sub>t-1</sub>	0.363 (1.522)	0.539*** (35.340)
Volatility	-1.418*** (-3.250)	-0.011 (-0.356)
R&D Intensity	0.831 (1.191)	-0.360*** (-7.234)
Intangible Assets	0.006 (0.046)	-0.056*** (-6.370)
Insider Ownership	0.041 (0.317)	-0.025*** (-2.648)
Institutional Ownership	-0.008 (-0.063)	0.004 (0.429)
Lnboard	-0.170** (-2.034)	-0.007 (-1.166)
E-index	-0.024 (-1.575)	-0.005*** (-4.001)
GIM-index	-0.009 (-1.266)	-0.001* (-1.667)
CEO Equity pay ratio	0.408*** (9.229)	0.016*** (4.840)
Product market competition	-0.000 (-0.382)	0.000 (0.089)
Tobin's Q <sub>t-1</sub>	0.490*** (29.896)	
Intercept, Year and firm fixed effects Included	Yes	Yes
Number of Observations	4791	4791
Adj. R-Sqd.	0.4484	0.4464

