COUNTRY VERSUS INDUSTRY EFFECT ON BOARD STRUCTURES

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ABSTRACT

We examine the board structures of US and Indian firms in two industries. We examine three aspects of board structures: board size, board independence, and board leadership. The two industries selected for analysis are information technology and capital goods. While Indian information technology firms have close ties to the American economy, capital goods firms have a domestic focus. Thus, we are able to analyze differences in board structures of firms in two countries and two industries, one of which is closely related and the other relatively unrelated. We do not find any significant differences in board size and board leadership for US and Indian firms in either industry. However, we find that US boards are more independent than Indian firms, both for information technology firms and capital goods firms. These findings are more supportive of the country effect than for the industry effect on board structures.

JEL: F23; G34; N20

KEYWORDS: Board of Directors, Corporate Governance, and Board Composition.

INTRODUCTION

In a survey paper, Adams, Hermalin, and Weisbach (2010) state that "The two questions most asked about boards are: "What determines their makeup and what determines their actions?" This study contributes to the literature by examining factors relating to the first issue, i.e., factors affecting board structures. We study this issue in a cross-country setting and compare board structures of US and Indian firms in two different industries: information technology and capital goods. We examine the three variables of 'the number of directors,' 'the percentage of independent directors,' and 'the CEO also holding the chairperson position' to compare board size, board independence, and board leadership respectively.

While the Indian information technology industry is closely related to the American economy, Indian capital goods firms operate with a domestic focus. Thus, we are able to examine differences in board structures across two countries and two industries where the industries are related at different levels between the two countries.

If the country effect is more dominant in shaping boards then we expect to find differences in board structures of US and Indian firms irrespective of industry affiliation. However, if the industry effect is more dominant then we expect to find similar board structures for US firms and Indian technology firms, but not for US firms and Indian capital goods firms.

Our findings are supportive of the country effect being the more dominant force in shaping board structures. While we find that US firms and Indian firms are similar in board size and board leadership structures, we also find that Indian firms are less independent than US firms. This finding is true for both technology and capital goods firms.

The rest of paper is organized as follows: section 2 discusses the earlier literature, section 3 describes the data and methodology; section 4 provides a discussion of the results, and section 5 presents the conclusions.

LITERATURE REVIEW

As stated earlier, the literature on boards can be broadly classified under two categories: determinants of board characteristics, and, the relation between board characteristics and board performance. Adams, Hermalin and Weisbach (2010) provide a comprehensive review of literature related to the board of directors. While several board characteristics have been studied, three characteristics are considered to be the most important: board size, board independence, and board leadership.

Board size refers to the number of directors on the board. A larger board can provide bigger and more diverse talent pool, especially in a complex business environment (Coles, Daniel and Naveen, 2008). However, it can also introduce the free rider problem as well as bureaucratic problems. A free rider problem refers to the fact that if there are too many people involved in the process, there may be incentives for an individual member to avoid investing time and effort in collecting information and monitoring management. Yermack (1996) who studies domestic firms and Eisenberg, and Sundgren and Wells (1998) who study foreign firms find that firms with smaller boards are valued more highly. Their findings suggest that smaller boards are more efficient.

Board of directors is a body that supervises management on behalf of shareholders. It is imperative for them to be objective in assessing management and in their other roles. To be objective, it is important that they are not only capable but also independent of management's influence. Thus, independent boards can be expected to be more efficient. On the other side, board members who are not well informed about the business may not be as useful as people close to the business. Thus a debate has been going for some time, and over time a consensus is evolving that independence is a preferable board characteristic. The empirical evidence, however, is not very conclusive. Rosenstein and Wyatt (1990) find a statistically significant positive market reaction to addition of an outside director, Weisbach (1988) finds that board independence affects the decision to remove top management based on past performance. Borokhovich, Parrino and Trapani (1996) find that more independent boards are more likely to appoint an outsider as CEO. On the other hand, Hermalin and Weisbach (1991) and Bhagat and Black (2001) find no significant relationship between board independence and firm value.

Board leadership relates to whether the CEO of a firm also holds the position of the chair of the board or not. As stated earlier, one of the most important roles of boards is to supervise the management team led by the CEO. A board that is led by a chairman who is also the CEO creates a potential conflict of interest. For example, Goyal and Park (2002) find that CEO turnover based on performance is affected by board leadership structure. On the other hand, opponents of the separation of leadership issue (for example, Brickley, Coles and Jarrell, 1997) argue that there are potential costs in separating the two posts. Linck, Netter and Yang (2008) argue that the choice of a combined position is affected by the complexity of business and information asymmetry.

While there are studies that examine the effect of board structures on firm performance in an international setting (Ghosh, 2006), there seems to be a gap in the literature which relates to the impact of the home country of a firm and the impact of the industrial sector in which the firm operates on the firm's board size, board independence, and board leadership. This study attempts to fill that gap.

DATA AND METHODOLOGY

Our sample includes firms from two industries: information technology and capital goods. We select ten US firms and ten Indian firms in each of the two industries. In total, we use 40 firms in our analysis. We select the largest firms in each industry. We use Google Finance to identify the largest US firms in these two industries. For Indian firms, we use the BSE capital good index and the BSE Tech Index to identify the largest Indian firms. Information about these two indices is obtained from www.Moneycontrol.com.

Table 1 provides a list of 40 firms and their financial variables with Panel A reporting results for technology firms and Panel B reporting results for capital goods. We report total assets, sales, and net income for the financial year ending 2008 or 2009. All financial information is sourced from latest annual reports we find on the firms' websites. US firms' figures are reported in US dollars and Indian firms' figures are reported in Indian Rupees. On December 8, 2009 the value of one dollar is equivalent to 46.5 Indian rupees.

The mean (median) asset size of American information technology firms is $84.53 billion ($60.99 billion), with AT&T ($265.25 billion) as the largest and Qualcomm Inc. ($27.45 billion) as the smallest of the group. The mean (median) asset size of Indian information technology firms is Rs.185.97 billion (Rs.117.74 billion), with Reliance Communications (Rs.825.94 billion) as the largest and Mphasis (Rs.11.74 billion) as the smallest of the group.

The mean (median) asset size of American capital good firms is $38.28 billion ($34.47 billion), with Caterpillar ($68.78 billion) as the largest and Illinois Tool Works ($15.21 billion) as the smallest of the group. The mean (median) asset size of Indian capital good firms is Rs. 63.42 billion ($31.46 billion), with L&T (Rs.190.15 billion) as the largest and Thermax (Rs.9.62 billion) as the smallest of the group.

As mentioned earlier, the primary objective of this study is to compare the boards of firms in two different countries for two different industries, one that is closely related and one that is not. In this study, we focus on three board variables: board size, board independence, and board leadership which are defined as follows: Board size is defined as the number of directors on board, board independence is defined as the percentage of directors that are independent, and board leadership is a binary variable taking the value of '1' if the CEO is also the chairman of the board, and '0' if the two positions are split. For Indian firms, CEO position is sometimes defined as Managing Director.

Table 2 reports on the board size variable, Table 3 reports on board independence (percentage of independent directors), and Table 4 reports on board leadership. Both US firms and Indian firms have to report the number of independent directors on their boards as per listing requirements. We use proxy statements to obtain board information for US firms, and annual reports to obtain board information for Indian firms.

In each of the three tables, Panel A compares a particular board variable of US firms and Indian firms in the information technology industry and Panel B compares the same board variable of US firms and Indian firms in capital goods industry. We report mean and median of each of the three board variables for both industries, for both countries. Significance for difference in means is obtained using the 2-sided t-test. Statistical significance for differences in medians is obtained using the Wilcoxon Rank Sum test.

Table 1: Descriptive Statistics

Panel A: Information Technology				
US Firms	**Year End**	**Total Assets**	**Sales**	**Net Income**
Microsoft Corp.	06/30/09	77,888	58,437	14,569
Google Inc.	12/31/08	31,768	21,795	4,227
Apple Inc.	09/26/09	53,851	36,537	5,704
IBM Corp.	12/31/08	109,524	103,630	12,334
AT&T Inc.	12/31/08	265,245	124,028	12,867
Cisco Systems	07/25/09	68,128	36,117	6,134
Hewlett-Packard	10/31/08	113,331	118,364	8,329
Oracle Corp.	05/31/09	47,416	23,252	5,593
Intel Corporation	12/27/08	50,715	37,586	5,292
Qualcomm Inc.	09/27/09	27,445	10,416	1,592
Mean		**84,531**	**57,016**	**7,664**
Median		**60,990**	**37,062**	**5,919**
Indian Firms	**Year End**	**Total Assets Rupees Millions**	**Sales Rupees Millions**	**Net Income Rupees Millions**
Infosys	03/31/09	178,090	202,640	58,190
Tata Consultancy	03/31/09	134,870	224,040	46,960
Bharti Airtel	03/31/09	353,580	340,480	77,440
Wipro	03/31/09	175,290	216,130	29,740
Reliance Communications	03/31/09	825,940	150,870	48,020
HCL Technologies	06/30/09	40,020	46,750	9,970
Idea Cellular	03/31/08	100,610	67,120	10,440
Mphasis	10/31/08	11,740	14,520	2,650
Siemens	09/30/08	20,700	86,100	5,930
Tech Mahindra	03/31/09	18,810	43,580	9,870
Mean		**185,965**	**139,223**	**29,921**
Median		**117,740**	**118,485**	**20,090**
Panel B: Capital Goods				
	Year End	**Total Assets**	**Sales**	**Net Income**
United Technologies	12/31/08	56,469	58,681	4,689
The Boeing Company	12/31/08	53,779	60,909	2,672
Caterpillar Inc.	12/31/08	67,782	51,324	3,557
Honeywell International	12/31/08	35,490	36,556	2,792
Lockheed Martin	12/31/08	33,439	42,731	3,217
General Dynamics	12/31/08	28,373	29,300	2,459
Illinois Tool Works Inc.	12/31/08	15,213	15,869	1,519
Deere & Company	10/31/08	38,734	28,437	2,052
Raytheon Company	12/31/08	23,296	23,174	1,672
Northrop Grumman	12/31/08	30,197	33,887	(1,262)
Mean		**38,277**	**38,087**	**2,337**
Median		**34,465**	**35,222**	**2,566**
Indian Firms	**Year End**	**Total Assets**	**Sales Rupees**	**Net Income**
BHEL	03/31/09	130,880	285,040	31,380
L&T	03/31/09	190,150	342,500	34,820
ABB	12/31/08	21,190	73,710	5,470
Crompton Greaves	03/31/09	12,960	49,720	3,970
Bharat Electronics	03/31/09	38,080	46,270	7,460
Suzlon Energy	03/31/09	139,100	72,540	(4,690)
Thermax	03/31/09	9,620	32,010	2,870
Areva T&D	12/31/08	11,940	28,370	2,260
Punj Lloyd	03/31/09	55,470	69,200	3,210
BEML Ltd	03/31/09	24,830	29,310	2,690
Mean		**63,422**	**102,867**	**8,944**
Median		**31,455**	**59,460**	**3,590**

This table reports descriptive statistics for firms used in our analysis. Sample consists of forty firms. Panel A reports on twenty information technology firms: ten US firms and ten Indian firms. Panel B reports on twenty capital goods firms: ten US firms and ten Indian firms. Asset size, sales, and net income figures are from annual reports.

Table 2: Board Size

Panel A: Information Technology					
US Firms	**Proxy Date**	**Board Size**	**Indian Firms**	**Annual Report**	**Board Size**
Microsoft Corp.	09/29/09	10	Infosys	03/31/09	16
Google Inc.	03/24/09	10	Tata Consultancy	03/31/09	11
Apple Inc.	01/07/09	8	Bharti Airtel	03/31/09	16
IBM Corp.	03/09/09	13	Wipro	03/31/09	10
AT&T Inc.	03/11/09	15	Reliance Communications	03/31/09	5
Cisco Systems	09/23/09	13	HCL Technologies	06/30/09	7
Hewlett-Packard	01/20/09	11	Idea Cellular	03/31/08	12
Oracle Corp.	08/21/09	12	Mphasis	10/31/08	10
Intel Corporation	04/03/09	12	Siemens	09/30/08	13
Qualcomm Inc.	01/13/09	12	Tech Mahindra	03/31/09	14
Mean		**11.60**	**Mean**		**11.40 (-0.15)**
Median		**12.00**	**Median**		**11.50 (0.00)**
Panel B: Capital Goods					
US Firms	**Proxy Date**	**Board Size**	**Indian Firms**	**Annual Report**	**Board Size**
United Technologies	02/20/09	14	BHEL	03/31/09	16
The Boeing Company	03/13/09	9	L&T	03/31/09	17
Caterpillar Inc.	04/21/09	14	ABB	12/31/08	8
Honeywell International	03/12/09	10	Crompton Greaves	03/31/09	8
Lockheed Martin	03/13/09	13	Bharat Electronics	03/31/09	16
General Dynamics	03/20/09	10	Suzlon Energy	03/31/09	6
Illinois Tool Works Inc.	03/25/09	10	Thermax	03/31/09	9
Deere & Company	01/15/09	12	Areva T&D	12/31/08	8
Raytheon Company	04/24/09	8	Punj Lloyd	03/31/09	10
Northrop Grumman	04/17/09	13	BEML Ltd	03/31/09	11
Mean		**11.30**	**Mean**		**10.90 (-0.28)**
Median		**11.00**	**Median**		**9.50 (0.61)**

*This table reports board size for firms used in our analysis. Forty firms are included in the sample. Panel A reports on twenty information technology firms: ten US firms and ten Indian firms. Panel B reports on twenty capital goods firms: ten US firms and ten Indian firms. Board size is the number of directors on the board, and is obtained from proxy statements for US firms and annual reports for Indian firms. Significance for difference in means is obtained using the two-sided t-test, and statistical significance for differences in medians is obtained using the Wilcoxon rank sum test. *, **, and *** mean that Indian firms value is significantly different than US firms value at the 10%, 5%, and 1% level respectively. T-stats for difference in means and Z-scores for difference in medians are given in parenthesis below the significance indicators.*

DISCUSSION OF RESULTS

The objective of this study is to study the country effect and industry effect on board structures. The results of our comparison of the board structures of US firms and Indian firms in two different industries are reported in four tables. As discussed above, Table 1 provides descriptive statistics of the forty firms used in our analysis.

Table 2 reports results of a comparison of board size of US firms and Indian firms in technology and capital good sectors with Panel A reporting results for technology firms and Panel B reporting results for capital goods. The mean (median) number of directors of US technology firms is 11.60 (12.00). AT&T has the largest board with 15 directors and Apple Inc. has the smallest board with eight directors. The mean (median) number of directors of Indian technology firms is 11.40 (11.50). Infosys and Bharti Airtel have the largest board with 16 directors and Reliance Communication has the smallest board with five directors. Both mean and median values for Indian technology firms are not significantly different than values for US technology firms. The mean (median) number of directors of US capital goods firms is 11.30 (11.00). United Technologies and Caterpillar Inc. have the largest board with 14 directors and Raytheon Company has the smallest board with eight directors. The mean (median) number of directors of Indian capital goods firms is 10.90 (9.50).

L&T has the largest board with 17 directors and Suzlon Energy has the smallest board with six directors. Both mean and median values for Indian capital goods firms are not significantly different than values for the corresponding US firms.

These results indicate that both US firms and Indian firms have similar sized boards in both for technology and capital goods industries. Another finding is that three of the four firms with largest boards are also the biggest in terms of size. This is supportive of the Coles, Daniel and Naveen (2008) finding that large complex firms need bigger boards. Table 3 reports results of a comparison of board independence of US firms and Indian firms in the technology and capital good sectors with Panel A reporting results for technology firms and Panel B reporting results for capital goods firms.

Table 3: Board Independence

Panel A: Information Technology					
Us Firms	**Proxy Date**	**Independent Directors (%)**	**Indian Firms**	**Annual Report**	**Independent Directors (%)**
Microsoft Corp.	09/29/09	80%	Infosys	03/31/09	50%
Google Inc.	03/24/09	70%	Tata Consultancy	03/31/09	55%
Apple Inc.	01/07/09	88%	Bharti Airtel	03/31/09	50%
IBM Corp.	03/09/09	85%	Wipro	03/31/09	60%
AT&T Inc.	03/11/09	93%	Reliance Communications	03/31/09	80%
Cisco Systems	09/23/09	85%	HCL Technologies	06/30/09	86%
Hewlett-Packard	01/20/09	82%	Idea Cellular	03/31/08	50%
Oracle Corp.	08/21/09	67%	Mphasis	10/31/08	40%
Intel Corporation	04/03/09	83%	Siemens	09/30/08	46%
Qualcomm Inc.	01/13/09	83%	Tech Mahindra	03/31/09	50%
Mean		**82%**	**Mean**		**57%*** (-4.70)**
Median		**83%**	**Median**		**50%*** (2.96)**
Panel B: Capital goods					
US Firms	**Proxy Date**	**Independent Directors (%)**	**Indian Firms**	**Annual Report**	**Independent Directors (%)**
United Technologies	02/20/09	86%	BHEL	03/31/09	50%
The Boeing Company	03/13/09	89%	L&T	03/31/09	53%
Caterpillar Inc.	04/21/09	93%	ABB	12/31/08	50%
Honeywell International	03/12/09	90%	Crompton Greaves	03/31/09	75%
Lockheed Martin	03/13/09	92%	Bharat Electronics	03/31/09	44%
General Dynamics	03/20/09	80%	Suzlon Energy	03/31/09	67%
Illinois Tool Works Inc.	03/25/09	90%	Thermax	03/31/09	56%
Deere & Company	01/15/09	83%	Areva T&D	12/31/08	38%
Raytheon Company	04/24/09	88%	Punj Lloyd	03/31/09	50%
Northrop Grumman	04/17/09	85%	BEML Ltd	03/31/09	27%
Mean		**88%**	**Mean**		**51%*** (-8.20)**
Median		**88%**	**Median**		**50%*** (3.75)**

*This table reports board independence for firms used in our analysis. Forty firms are included in the sample. Panel A reports on twenty information technology firms: ten US firms and ten Indian firms. Panel B reports on twenty capital goods firms: ten US firms and ten Indian firms. Board independence is the percentage of independent directors on the board, and is obtained from proxy statements for US firms and annual reports for Indian firms. Significance for difference in means is obtained using the two-sided t-test, and statistical significance for differences in medians is obtained using the Wilcoxon rank sum test. *, **, and *** mean that Indian firms value is significantly different than US firms value at the 10%, 5%, and 1% level respectively. T-stats for difference in means and Z-scores for difference in medians are given in parenthesis below the significance indicators.*

The mean (median) percentage of independent directors of US technology firms is 82.0% (83.0%). AT&T has the most independent board with 93 percent independent directors and Oracle Inc. has the least independent board with 67 percent. The mean (median) number of directors of Indian technology firms is 57.0% (50.0%). HCL Technologies has the most independent board with 86 percent independent directors and Mphasis has the least independent board with only 40 percent independent directors. Both mean and median values for Indian technology firms are significantly different than values for US firms at the one percent level. The mean (median) percentage of

independent directors of US capital goods firms is 88.0% (88.0%). Caterpillar Inc. has the most independent board with 93 percent independent directors and General Dynamics has the least independent board with 80 percent. The mean (median) number of directors of Indian capital goods firms is 51.0% (50.0%). Crompton Greaves has the most independent board with 75 percent independent directors and BEML has the least independent board with only 27 percent independent directors. Both mean and median values for Indian technology firms are significantly different than values for US firms at the one percent level. These results indicate that Indian firms have less independent boards as compared to US firms in both the technology and capital goods sectors.

Table 4 reports the results of a comparison of board leadership of US firms and Indian firms in both the technology and capital good sectors. If the CEO also holds the position of Chairman then we define the dual role as '1' and otherwise '0.' Panel A reports results for technology firms and Panel B reports results for capital goods.

Table 4: Board Leadership

Panel A: Information Technology					
US Firms	**Proxy Date**	**Dual Role (0 Or 1)**	**Indian Firms**	**Annual Report**	**Dual Role (0 or 1)**
Microsoft Corp.	09/29/09	0	Infosys	03/31/09	0
Google Inc.	03/24/09	1	Tata Consultancy	03/31/09	0
Apple Inc.	01/07/09	0	Bharti Airtel	03/31/09	1
IBM Corp.	03/09/09	1	Wipro	03/31/09	1
AT&T Inc.	03/11/09	1	Reliance Communications	03/31/09	0
Cisco Systems	09/23/09	1	HCL Technologies	06/30/09	1
Hewlett-Packard	01/20/09	1	Idea Cellular	03/31/08	0
Oracle Corp.	08/21/09	0	Mphasis	10/31/08	0
Intel Corporation	04/03/09	0	Siemens	09/30/08	0
Qualcomm Inc.	01/13/09	0	Tech Mahindra	03/31/09	0
Mean		**0.50**	**Mean**		**0.30 (-0.88)**
Median		**0.50**	**Median**		**0.00 (0.41)**
Panel B: Capital Goods					
US Firms	**Proxy Date**	**Dual Role (0 Or 1)**	**Indian Firms**	**Annual Report**	**Dual Role (0 or 1)**
United Technologies	02/20/09	0	BHEL	03/31/09	1
The Boeing Company	03/13/09	1	L&T	03/31/09	1
Caterpillar Inc.	04/21/09	1	ABB	12/31/08	0
Honeywell International	03/12/09	1	Crompton Greaves	03/31/09	0
Lockheed Martin	03/13/09	1	Bharat Electronics	03/31/09	1
General Dynamics	03/20/09	0	Suzlon Energy	03/31/09	1
Illinois Tool Works Inc.	03/25/09	1	Thermax	03/31/09	0
Deere & Company	01/15/09	0	Areva T&D	12/31/08	0
Raytheon Company	04/24/09	1	Punj Lloyd	03/31/09	1
Northrop Grumman	04/17/09	1	BEML Ltd	03/31/09	1
Mean		**0.70**	**Mean**		**0.60 (-0.45)**
Median		**1.00**	**Median**		**1.00 (0.85)**

*This table reports board leadership for firms used in our analysis. Forty firms are included in the sample. Panel A reports on twenty information technology firms: ten US firms and ten Indian firms. Panel B reports on twenty capital goods firms: ten US firms and ten Indian firms. Dual role is equal to '1' if the CEO also holds the chairperson position and '0' otherwise. The information is obtained from proxy statements for US firms and annual reports for Indian firms. Significance for difference in means is obtained using the two-sided t-test, and statistical significance for differences in medians is obtained using the Wilcoxon rank sum test. *, **, and *** mean that Indian firms value is significantly different than US firms value at the 10%, 5%, and 1% level respectively. T-stats for difference in means and Z-scores for difference in medians are given in parenthesis below the significance indicators.*

The mean (median) value for board leadership of US technology firms is 0.50 (0.50), and for Indian technology firms is 0.30 (0.00). It indicates that fifty percent of US firms and thirty percent of Indian technology firms have a dual role for the CEO. However, these mean and median values for Indian firms are not significantly different than the values for US firms. The mean (median) value

for board leadership of US capital goods firms is 0.70 (1.00), and for Indian capital goods firms is 0.60 (1.00). It indicates that seventy percent of US firms and sixty percent of Indian capital goods firms have a dual role for the CEO. These mean and median values for Indian firms are not significantly different than values for US firms either.

These results indicate that US firms and Indian firms have similar board leadership structure for both technology firms and capital goods firms. To summarize, the results of a comparison of board structures of US firms and Indian firms suggests that Indian firms have similar board size and board leadership structure irrespective of the industry. However, Indian firms are less independent than US firms for both industries indicating that there is more of a country effect in the determination of board structures.

CONCLUSION

The Board of Directors is an important institution in the corporate governance of firms. Studies find that a relationship exists between board structures and board actions and imply that some board characteristics are more desirable than others. The three most important board characteristics identified in the literature are board size, board independence, and board leadership. Several studies have examined factors affecting the determination of these board characteristics. However, our study contributes by examining the issue in an international setting. We analyze country and industry effects on board structures. We compare the board structures of large US firms and Indian firms in the technology and capital goods sectors. Our findings are supportive of a stronger country effect relative to industry effect. We find that US firms and Indian firms have similar board size and board leadership structures in both technology and capital goods sectors. However, boards of Indian firms have less independent directors as compared to US firms be it the technology sector or the capital goods sector.

As companies become more international and operate under different regulatory and corporate cultures across the globe, their boards will be affected. Our study examines a narrow topic related to this discussion, and offers interesting avenues for further research. For example, it may be interesting to compare the board structure of companies which have expanded beyond their home countries with the board structure of purely domestic companies.

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BIOGRAPHY

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