The Changing Structure of US Corporate Boards: 1997–2003

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We document changes in board characteristics in public US firms between 1997 and 2003. We find significant changes in board independence, committee independence, board size, interlocking directorships, director occupation and multiple directorships. Most of the changes occur between 2000 and 2003. In general, these changes appear both in small and large firms. However, changes in board size and in multiple directorships are statistically significant in large firms only. We find weaker trends in the financial stake of independent directors and in separating CEOs from the chairman position. In 2003 many independent directors have small holdings in the firms they direct and CEOs chair around two-thirds of the boards in our sample. Together, these results shed light on the types of board structures that have recently become the norm in US public firms.

Keywords: Board of directors, board structure, director independence, board size

Introduction

Since the early 1990s, there has been an increased interest from investors, financial institutions and regulators in the structure of corporate boards of directors. For example, the California Public Employees' Retirement System (CalPers) has been advocating for more independent directors on boards, the National Association of Corporate Directors (NACD) has been recommending a limit on the number of directorships each director can have, and the series of corporate scandals in the US in 2001 and 2002 has led to new rules that require a reform in the structure and operation of corporate boards. These rules consist of the Sarbanes-Oxley Act and the changes to the US stock exchange regulations.

The purpose of this article is to document the trends in board characteristics in US public firms between the years 1997–2003. We believe that such a study can shed light on the changes that corporate boards of US public firms have been going through recently. This study is also useful to academics and practitioners in assessing what board structures have become the norm in US public firms.

We develop a list of board characteristics that have been argued to be important determinants of board structure. Our list of characteristics includes director independence, committee independence, board size, CEO chairmanship, interlocking directorships, director occupation, director financial stake in the corporation, and multiple directorships.

We obtain board structure information from the Investor Responsibility Research Center (IRRC), which collects this information from proxy filings of US firms which belong to the S&P 500, MidCap 400, and SmallCap 600 indexes. This sample captures about 80 per cent of the total market capitalisation of US public firms. We examine these board characteristics in 1997, and then again in 2000 and 2003. (For some board characteristics our starting year is 1998.) We examine the way these characteristics are distributed across firms and whether there has been a change in these characteristics over time.

Board characteristics used in the study and related literature

Board and committee independence: Our definition of an independent director is a board member who has not been an employee of the firm and who is not affiliated with the firm through business ties or family ties. Past

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studies show that independent directors on the board are associated with higher firm value and with better corporate decisions (e.g. Byrd and Hickman, 1992; Brickley, Coles and Terry, 1994; Cotter, Shivdasani and Zenner, 1997; Dann, Del Guercio and Partch, 2003; Anderson, Deli and Gillan, 2004), but there is also some evidence that boards which have a super majority of independent directors do not necessarily perform better (for a survey of the literature see Bhagat and Black, 1999).

Associated with board independence is the independence of the three main committees that boards form: audit, compensation and nominating committees. Past studies show a relation between committee independence, committee activities and firm value. For example, Klein (1998, 2002) finds that the independence of the audit committee is associated with higher firm value and with less earning manipulations, and Vafeas (1999, 2003) finds that independent nominating committees appoint more independent directors than non-independent committees and that when insiders are part of the compensation committee, the fixed portion of the compensation is higher and the contingent component is lower.

In recent years, the SEC and the exchanges have toughened independence requirements from boards. In December 1999, the NYSE and NASDAQ ruled that all audit committee members should be independent. The Sarbanes-Oxley Act of 2002 requires independence of the audit committee members of all US public firms, and the exchange regulations of 2003 require boards of public corporations to have a majority of independent directors, independent audit, independent compensation, and independent nominating committees.[1]

Our measures of board independence are the fraction of independent directors on the board and an indicator variable that equals one if the board has a majority of independent directors and zero otherwise.

Board Size: Several scholars argue that while larger boards possess more information and a larger variety of expertise that they can use in their decision making, they also bear higher coordination costs. Such costs can reduce their effectiveness (Lipton and Lorsch, 1992; Jensen, 1993). Consistent with this argument, empirical evidence suggests that large boards are on average less effective (e.g. Yermack, 1996; Eisenberg, Sundgren and Wells, 1998; Dann, Del Guercio and Partch, 2003).

CEO-chairman: Several scholars and practitioners have been recommending separating the CEO from the chairman position (e.g. Jensen, 1993; Roe, 1994; Lorsch and MacIver, 1989). Their main argument is that the board fires, evaluates and compensates the CEO and CEOs who are chairmen cannot perform these tasks successfully, because they are subject to conflicts of interest. However, others warn that these restrictions might entail potential coordination costs between the CEO and the Chairman (e.g. Brickley, Coles and Jarrell, 1997).

Evidence suggests that chairmen CEOs extract higher rents in the form of compensation. They are also more entrenched, and are more likely to manipulate earnings (e.g. Core, Holthausen and Larcker, 1999; Grinstein and Hribar, 2004; Anderson, Deli and Gillan, 2004; Shivdasani and Yermack, 1999).[2]

Interlocking directorship: An interlocking directorship is a situation in which the CEO of firm A serves on the board of firm B and the CEO of firm B serves on the board of firm A. There might be benefits to such arrangements when the skill set of one CEO as a director highly complements the skill set of the other CEO. However, arguably, such arrangement leads to ineffective monitoring because interlocked directors are likely to look for each other's interests rather than for those of the shareholders. Consistent with this argument, Hallock (1997) finds that CEOs with interlocking relations tend to extract higher salaries than CEOs without interlocking relations.

Our measure of interlocking directorships is therefore a dummy variable that takes the value of one if the firm has interlocking directors and zero otherwise.

Director occupation: When firms establish boards, they look for a set of director skills that is necessary for the particular activities and decisions that their boards face. Since boards perform different tasks, we expect heterogeneity in the set of skills that directors in different boards have (Adams 2003). However, one set of skills that is perhaps necessary in almost all boards is financial literacy. Jensen (1993) points to the need for financially knowledgeable directors. The new exchange rules require that audit committee members be financially literate. They also require that at least one member of the audit committee be a financial expert.

Director occupation is not readily available in the IRRC database. Instead, we use information about director affiliation as an indirect measure of director expertise. We divide corporate affiliation into ten categories: academic, medical, law, finance, industrial, venture, retired, consultant, private investor and others. We measure corporate affiliation only for the years 2000 and 2003 because of data quality considerations.

Director's financial stake: A way to align incentives of directors with those of the shareholders is to require that they have long-term financial stake in the firm. Of course, the use of such incentive mechanism depends on its

costs and benefits to the director and to the firm (e.g. Demsetz and Lehn, 1985). Yermack (2004) shows that the largest part of the performance-related incentives of outside directors to monitor comes from their stock and options holdings.

Several empirical studies find a positive relation between financial stake of board members and board effectiveness (e.g. Shivdasani, 1993; Bhagat, Carey and Elson, 1999). Our measures of board's financial interest are shareholdings (in percentage) by directors out of total shares outstanding and the value of their share holdings in millions of dollars.

Multiple directorships: Fama and Jensen (1983) argue that firms who look for highly qualified directors might prefer directors who serve on other boards because multiple appointments can signal director quality (Peyer and Perry, 2005). Successful directors are also more likely to receive more offers to serve on other boards (Kaplan and Reishus, 1990; Ferris, Jagannathan and Pritchard, 2003). However, memberships on too many boards could impair the decision quality of directors (e.g. Roe, 1994; Jensen, 1993). Our measure of multiple directorships is the number of other boards on which directors serve.

Results

Board and committee independence

Table 1 shows the distribution of independent directors in our sample. Few interesting patterns appear in the table. We find that most

Table 1: Board independence

Panel A: Board independence (in %)

Year	Type	N	Mean	Median	25th Percentile	75th Percentile	Standard Dev.	Majority Independent	t-test	W-test
1997	All	1378	61.1	62.5	50.0	75.0	18.3	76.3		
2000	All	1369	64.0	66.7	50.0	77.8	17.8	81.9	***	***
2003	All	1473	68.5	71.4	57.1	81.0	15.4	90.4	***	***
1997	S&P 500	472	66.3	68.8	57.1	78.6	15.6	86.7		
2000	S&P 500	470	68.3	70.0	59.4	80.0	16.0	89.8	**	**
2003	S&P 500	492	72.3	75.0	62.5	83.3	14.4	93.9	***	***
1997	MidCap	370	60.6	61.5	46.2	75.0	19.0	74.6		
2000	MidCap	381	64.0	66.7	50.0	80.0	18.6	79.8	**	**
2003	MidCap	394	67.7	70.0	57.1	80.0	15.9	89.1	***	***
1997	SmallCap	536	56.9	57.1	42.9	71.4	19.0	68.5		
2000	SmallCap	518	60.3	62.5	50.0	75.0	17.9	76.3	**	**
2003	SmallCap	587	66.0	66.7	55.6	77.8	15.5	88.1	***	***

Panel B: Affiliation of replaced directors and new directors

Director type	% Directors Replaced	% New directors	Test for difference
	1997–2000		
Employed	22.6	18.9	*
Independent	60.8	70.2	***
Affiliated	16.6	10.9	***
	2000–2003		
Employed	20.9	17.8	
Independent	63.4	70.3	***
Affiliated	15.7	11.9	**

Panel A shows summary statistics of the percentage of independent directors on the board and the percentage of firms that have a majority of independent directors. Panel B shows the distribution of directors who were replaced and who entered their position between the years 1997–2000 and 2000–2003. In panel A the t-test and the Wilcoxon test in each year are for differences in the percentage of independent directors on the board relative to the previous year in the panel. In panel B, the test is a binomial test for differences in the probability that a director who leaves is replaced by a director with the same affiliation. (***), (**), (*) indicates significance at the 1%, 5% and 10% levels respectively.

Table 2: Committee independence

Year	Type	N	% of firms with a committee			% of firms with an independent Audit committee		% of firms with an independent nominating committee		% of firms with an independent compensation committee	
			Audit	Compen.	Nomin.						
1998	All	1321	100	98.8	65.4	52.0		38.7		66.2	
2000	All	1369	100	98.6	65.7	63.3	***	42.3		71.5	
2003	All	1473	100	99.2	88.9	76.8	***	63.4	***	77.2	***
1998	S&P 500	461	100	99.3	86.6	49.7		40.1		73.3	
2000	S&P 500	470	100	99.1	85.7	61.5	***	45.1		78.5	*
2003	S&P 500	492	100	100.0	96.5	77.6	***	64.5	***	81.5	
1998	MidCap	361	100	99.2	65.1	51.2		44.7		64.0	
2000	MidCap	381	100	99.2	62.2	64.3	***	45.9		70.6	*
2003	MidCap	394	100	99.2	89.7	76.9	***	67.0	***	76.9	
1998	SmallCap	499	100	98.0	46.1	54.7		30.4		61.1	
2000	SmallCap	518	100	97.7	50.0	64.1	***	34.6		65.8	
2003	SmallCap	587	100	98.6	81.6	76.1	***	59.7	***	73.9	***

The table shows the percentage of firms with independent audit, compensation and nominating committees in the years 1998, 2000 and 2003. The binomial test in each year is for differences in the percentage of firms with independent committees relative to the previous year in the panel. (***) and (*) indicates significance at the 1% and 10% levels respectively.

firms have a majority of independent directors on the board. It appears also that smaller firms tend to have a larger fraction of non-independent members than larger firms. We also find a positively significant trend in the fraction of independent directors on the board across all firm sizes.

Table 1 panel B shows that there has been an increase in the percentage of independent directors that enter the board and a decrease in the percentage of employee and affiliated directors that enter. Thus, directors that leave the board are more likely to be replaced by independent directors than by non-independent directors.

Table 2 shows the fraction of firms that have independent compensation, audit and nominating committees. Between 1998 and 2000 there is a significant increase in the percentage of firms that have an independent audit committee. The increase is significant across all firm sizes. Between 2000 and 2003 there is a significant increase in the percentage of firms that have an independent compensation committee, an independent nominating committee and an independent audit committee.

Board size

Table 3 shows the distribution of board size in our sample. Consistent with previous studies, board size increases with firm size. However, there is also a time trend in board size. Across all firm sizes, average board size decreases between 1997 and 2003. The decrease is statistically significant in large firms.

CEO-chairman position

Table 4 reports results on CEO-chairman positions. Most firms in the sample do not separate the chairman from the CEO position. However, there is a slight decrease in CEO-chairman positions across the entire period which comes mostly from large firms. The decrease, however, is not statistically significant.

Interlocked directors

Table 5 shows the percentage of firms with interlocked directors. The vast majority of firms do not have interlocking directorships in 1997. Boards of larger firms are more likely to have interlocking relations than boards of smaller firms. Across the years we find a decline in the percentage of interlocked directors across all firm sizes.

Director occupation

Table 6 shows director occupation in our sample. In the year 2000, most directors in our sample are from industrial companies. By and large, these directors are executives of other companies. The second most frequent occupation is retirees, followed by directors from financial companies. Between 2000 and 2003

Table 3: Board size

Year	Type	N	Mean	Median	25th Percentile	75th Percentile	Standard Dev.	t-test	W-test
1997	All	1378	9.87	9	8	12	3.15		
2000	All	1369	9.71	9	8	11	3.07		
2003	All	1473	9.37	9	7	11	2.61	***	***
1997	S&P 500	472	11.58	11	10	13	3.00		
2000	S&P 500	470	11.50	11	10	13	3.03		
2003	S&P 500	492	10.83	11	9	12	2.65	***	***
1997	MidCap	370	9.67	9	8	11	2.83		
2000	MidCap	381	9.41	9	8	11	2.71		
2003	MidCap	394	9.17	9	8	10	2.35		
1997	SmallCap	536	8.49	8	7	10	2.77		
2000	SmallCap	518	8.29	8	7	9	2.47		
2003	SmallCap	587	8.26	8	7	9	2.14		

The table shows summary statistics of the number of directors on the board. The t-test and the Wilcoxon test in each year are for differences in board size relative to the previous year in the panel. (***) indicates significance at the 1% level.

Table 4: CEOs who Chair their board

		Descriptive Statistics by Size			
Year	Type	Firms	CEO-Chair	Percentage	Test
1997	All	1338	965	72.1	
2000	All	1337	935	69.9	
2003	All	1473	967	65.6	
1997	S&P 500	468	384	82.1	
2000	S&P 500	465	356	76.6	
2003	S&P 500	492	369	75.0	
1997	MidCap	363	252	69.4	
2000	MidCap	369	265	71.8	
2003	MidCap	394	252	64.0	
1997	SmallCap	507	329	64.9	
2000	SmallCap	503	314	62.4	
2003	SmallCap	587	346	59.0	

The table shows the number of companies whose CEO is also the chairman of the board. The binomial test is for differences in the probability that a CEO is also a chairman in a given year relative to the previous year in the panel.

there is a significant decrease in the percentage of directors from the industrial sector and a significant increase in retiree directors, directors from the financial sector, and directors from law firms.

Directors' holdings

Table 7 reports summary statistics of directors' holdings for the entire sample as well as for each size group. The table suggests that there is no increase in director shareholdings over the years. In fact, there is a slight decrease in mean director shareholdings in recent years.

Table 7 also shows that the decrease in mean director holdings comes from a decrease in holdings across small-cap firms. There is no significant change in holdings in S&P 500 and MidCap firms.

Table 5: Boards with interlocked directors

Year	Type	Firms	Interlocked	Percentage	Test
1997	All	1378	159	11.5	
2000	All	1369	134	9.8	
2003	All	1473	72	4.9	***
1997	S&P	472	78	16.5	
2000	S&P	470	58	12.3	*
2003	S&P	492	30	6.1	***
1997	MidCap	370	41	11.1	
2000	MidCap	381	41	10.8	
2003	MidCap	394	21	5.3	**
1997	SmallCap	536	40	7.5	
2000	SmallCap	518	35	6.8	
2003	SmallCap	587	21	3.6	**

The table shows the percentage of companies that have interlocking directorships. The binomial test is for differences in the probability that a firm has an interlocking directorship in a given year relative to the previous year in the panel. (***), (**), (*) indicates significance at the 1%, 5% and 10% levels respectively.

Table 6: Director Occupation 2000–2003

	2000	2003	Test
Academic	5.3%	4.9%	
Medical	0.5%	1.0%	
Law	2.0%	4.1%	***
Financial	5.7%	13.2%	***
Industrial	62.2%	46.1%	***
Venture	0.7%	1.0%	
Ambiguous	6.1%	6.2%	
Retired	11.5%	14.8%	***
Consultant	2.3%	2.3%	
Private investor	2.1%	3.1%	
Other	1.6%	3.3%	***
Number of directors	13283	14536	

The table shows the summary statistics of director occupations in 2000 and 2003, as reported by IRRC. For each firm, IRRC lists the companies for which directors work for. We categorise corporate affiliation into eleven groups. Corporate employees are excluded. Statistics are based on binomial tests for differences in representation across occupations between the years 2000 and 2003. (***) indicates significance at the 1% level.

Multiple directorships

Table 8 reports the results on multiple directorships. The table shows that directors in S&P 500 firms hold more directorships than directors in MidCap and SmallCap firms. It also shows that over the entire sample period there is a decline in the average number of additional directorships per director. The decrease also appears across each size group. However, the sharpest decrease is in the S&P 500 firms.

Robustness tests

We form several robustness tests to ensure that we indeed capture trends in board characteristics over time. One concern we have is that the trends might be attributed to changes in firm characteristics over time. For example, in the tests we include all firms in the sample. But firms might move in and out of the sample because they just entered the S&P index or are bought by other firms. Firms might also change their level of board independence because, for example, they face certain economic shocks that affect their choice of the number of independent directors on their boards.

We perform three additional tests to control for these potential biases. First, we redo all of our univariate analysis using firms that exist in the sample throughout the period 1997–2003. None of our results changes when we redo the analysis with this subsample. Second, for each board characteristic we run a regression where the characteristic is the dependent variable and the independent variables include year dummies as well as control variables for size, book to market ratio, and industry dummies. The year dummies should capture any time tends after controlling for the above firm and industry characteristics. Our results are again consistent with the univariate results. Third, we run a multinomial logit regression where the dependent variable is the year (1 for 1997 (1998), 2 for 2000 and 3 for 2003), and the inde-

Table 7: Director holdings

Year	Type	N	Mean	Median	Value (Mean $M)	Value (Median $M)	t-test	W-test
1998	All	1049	1.18%	0.39%	43	6.7		
2000	All	1196	1.24%	0.43%	80	7.4		
2003	All	1406	1.04%	0.42%	33	6.5	*	
1998	S&P 500	385	0.60%	0.11%	89.6	8.2		
2000	S&P 500	425	0.55%	0.14%	183.6	10.6		
2003	S&P 500	477	0.49%	0.13%	69.5	9.2		
1998	MidCap	288	1.15%	0.39%	23.5	7.8		
2000	MidCap	329	1.22%	0.38%	40.4	7.0		
2003	MidCap	374	1.13%	0.44%	22.0	7.0		
1998	SmallCap	376	1.81%	0.98%	10.2	4.3		
2000	SmallCap	442	1.92%	0.94%	11.4	4.4		
2003	SmallCap	555	1.46%	0.76%	7.6	3.7	**	**

The table shows summary statistics of director holdings. Two measures of director holdings are calculated. The first measure is the mean director share holdings in the firm they direct as a fraction of the outstanding shares. The second measure is the value of the mean director shareholding. The t-test and the Wilcoxon test in each year are for differences in percentage holdings in a given year relative to the previous year in the panel. (**), (*) indicates significance at the 5% and 10% levels respectively.

Table 8: Multiple directorships

Year	Type	N	Mean	Median	25th Percentile	75th Percentile	Standard Dev.	t-test	W-test
1998	All	1321	0.90	0.71	0.33	1.33	0.74		
2000	All	1369	0.89	0.77	0.37	1.27	0.68		
2003	All	1473	0.78	0.66	0.30	1.12	0.60	***	***
1998	S&P 500	461	1.45	1.40	0.9	1.94	0.76		
2000	S&P 500	470	1.35	1.29	0.83	1.81	0.72	*	*
2003	S&P 500	492	1.21	1.15	0.78	1.54	0.60	***	***
1998	MidCap	361	0.77	0.63	0.33	1.14	0.59		
2000	MidCap	381	0.78	0.71	0.37	1.12	0.55		
2003	MidCap	394	0.68	0.58	0.28	1.00	0.51	**	**
1998	SmallCap	499	0.49	0.40	0.14	0.75	0.46		
2000	SmallCap	518	0.55	0.48	0.17	0.80	0.46		**
2003	SmallCap	587	0.49	0.40	0.14	0.71	0.44	*	*

The table shows summary statistics of additional directorships to directors. The t-test and the Wilcoxon test in each year are for differences in additional directorships relative to the previous year in the panel. (***), (**), (*) indicates significance at the 1%, 5% and 10% levels respectively.

pendent variables are the board characteristics. The multinomial logit results are similar to the univariate test results.

Conclusion

We document significant changes in certain board characteristics in US public firms between the years 1997 to 2003. These characteristics include board and committee independence, board size, interlocked directorships, multiple directorships and director occupation. These findings complement earlier studies that documented trends in these board characteristics in earlier periods (e.g. Vafeas, 2003, 2005).

We find that while there is an overall trend in the adoption of certain characteristics, there

is a weak trend in the adoption of others. Most importantly, directors did not increase their stake in the corporations they serve on, and most firms in our sample do not separate the CEO position from the chairman position.

Acknowledgements

We gratefully acknowledge the insightful comments and suggestions made by two anonymous referees, Lucian Bebchuk, Stuart Gillan, Rick Green, Murali Jagannathan, Steve Kaplan, Roni Michaely, Kristian Rydqvist, and seminar participants of Carnegie-Mellon University and Cornell University. This paper is distilled from an earlier version of the paper under the name "The transformation of US corporate boards: 1997–2003".

Notes

1. NASDAQ allows firms not to have formal compensation and nominating committees, as long as the compensation and nomination decisions are made by a majority of independent directors.
2. According to the new NYSE and NASDAQ rules, CEOs cannot serve on nominating committees. But the new rules do not require separating the CEO from the chairman position. However, in an effort to reduce the influence of CEOs on directors, the new NYSE rule requires additional executive sessions without the presence of management, and recommends having a lead director to run these sessions.

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