

DOCTOR OF PHILOSOPHY IN MANAGEMENT

Essays on Board Structure, Interlocking and Director Networks

By

Caruna Bhat



भारतीय प्रबंध संस्थान बेंगलूर
INDIAN INSTITUTE OF MANAGEMENT
BANGALORE

2022

DOCTOR OF PHILOSOPHY IN MANAGEMENT

Essays on Board Structure, Interlocking and Director Networks

By

Caruna Bhat

A Dissertation submitted in Partial Fulfilment of the Requirements for the
degree of Doctor of Philosophy at

INDIAN INSTITUTE OF MANAGEMENT BANGALORE

2022

Prof. Ananth Krishnamurthy
Chairperson
Doctoral Programme

Prof. Rejie George Pallathitta
Chairperson
Dissertation Advisory Committee

Members of the Dissertation Advisory Committee

- | | |
|--|-------------|
| 1. Prof. Rejie George Pallathitta | Chairperson |
| 2. Prof. S Raghunath | Member |
| 3. Prof. Ganesh N Prabhu | Member |
| 4. Prof. Suresh Bhagavatula | Member |

Copyright © 2022 by Caruna Bhat
All rights reserved.

*To Nani (Khyama Veena Rambal),
for watching over me.*

Acknowledgements

This journey has been a long lesson in the art of life. I'm a decidedly different person now than the wide-eyed girl that walked through the hallowed halls of IIMB many moons ago and this is all thanks to the guidance and support of the faculty, colleagues, friends and family. First, I'd like to express my immense and eternal gratitude to my DAC Chair, Prof. Rejie George Pallathitta, whose constant encouragement, support and benevolence are not just held in the highest regard, but also set a personal standard for me for the kind of person I want to emulate, not just professionally, but especially, personally. From providing me with a personal hero in Edith Penrose through his course on strategy classics to his detailed comments on papers that really bring it to life, his expert guidance has been the driving force behind this thesis.

A very special thank you goes out to Prof. Raghunath who has been a stabilizing force through the many lows and the rare highs that I've experienced in this journey. His ability to treat his students like family while exposing them to the various nuances of the academic career is second to none. I'd next like to endlessly thank Prof. Ganesh Prabhu who believed in me even in times where my own belief in myself was put to the test. His feedback and methods expertise have always benefitted my work tremendously. I'm deeply grateful to Prof. Suresh Bhagavatula for his inspiring encouragement in times of crises and for his logical questions that have helped shape this dissertation into what it is today.

I wish to express my sincere thank you to Prof. Rishikesh T Krishnan and Prof. Mukta Kulkarni for being an incredible source of support and encouragement throughout the duration of this program. I'd also like to thank Prof. Ananth Krishnamurthy and the PhD Office – Anjali Ma'am, Shilpa Ma'am, Ashoka Ma'am, Shankarappa and Srinath ji - for their support.

I'm also blessed with a great group of doctoral colleagues and friends who have supported me throughout this journey. In particular, I'd like to thank Manu, Mauli, Punyashlok, Abhishek, Sachi, Ravi, Deepti, Kshitij, Rajani, Rupanwita, Shobha, Bibek and Shivangi – for being people

I could lean on and for putting up with me all these years!

My special gratitude is reserved for my family. First, my grandparents who have set stellar examples for me in life, while at the same time, accepting an unchanging answer to their questions on my progress with the PhD. Next, my parents, who have stood by me through it all. Papa, thank you for always putting life into perspective for me when it felt as if the tides would engulf me. For being the person I knew I could reach out to, at any point of time, any hour of the day. Mumma, thank you for setting your personal standards so high that awe and inspiration are what I feel even today. For personal anecdotes to every single problem, however big or small, which even as I cribbed about it, I realised provided me with a solution I did not foresee. Thank you for always telling me to do my best and then believe in the almighty. To maasi, who fought personal health battles while still asking after me, your love makes me who I am. To my uncles, aunties and cousins, thank you for the constant sense of belonging, entertainment and support for all these years. I dedicate this work to family.

All the errors and shortcomings in this work remain my own.

Caruna

Table of Contents

List of Tables	.....	x
List of Figures and Graphs	.....	xii
List of Appendices	.....	xiv
Abstract	.....	xv
Chapter 1	.....	1
Introduction		
Chapter 2	.....	14
Corporate Governance: A Qualitative Systematic Review		
2.1 Introduction	.....	15
2.2 Qualitative Systematic Review Methodology	.....	17
2.3 Concept Maps: Methodology and Findings	.....	23
2.4 Research Categories and Research Themes	.....	27
2.4.1 Theme 1: Individual	.....	27
2.4.2 Theme 2: Team	.....	32
2.4.3 Theme 3: Linkage Between Individual and Team Level	.....	39
2.4.4 Theme 4: Network	.....	40
2.4.5 Theme 5: Linkage Between Individual and Network Levels	.....	43
2.4.6 Theme 6: Links Between Team and Network Levels	.....	44
2.4.7 Theme 7: Miscellaneous	.....	45
2.5 Results and Conclusions	.....	47
2.6 References	.....	49
2.7 Appendix 1	.....	78
Chapter 3	.....	85
Board Attributes and Firm Performance: Evidence from India		
3.1 Introduction	.....	86
3.2 Theoretical Background	.....	87
3.3 Hypotheses Development	.....	91

3.3.1 Agency Theory	.....	91
3.3.2 Network Theory	.....	101
3.3.3 Implications of the Companies Act (2013)	.....	104
3.4 Methods	.....	109
3.4.1 Data and Sample	.....	109
3.4.2 Measures	.....	110
3.4.3 Statistical Approach	.....	112
3.5 Results	.....	113
3.5.1 Moderating effect of the Companies Act (2013)	.....	115
3.6 Additional Analyses	.....	116
3.7 Endogeneity Test	.....	117
3.8 Discussion and Conclusions	.....	118
3.9 Limitations and scope for future research	.....	122
3.10 References	.....	123
3.11 Appendix 1	.....	152
Chapter 4	.....	159
Evolution of Network Due to Institutional Disruptions: Impact of Companies Act on Indian Firm Networks		
4.1 Introduction	.....	160
4.2 Theoretical Development	.....	162
4.3 Data and Methodology	.....	164
4.3.1 Empirical Context	.....	164
4.3.2 Data	.....	165
4.4 Network Metrics	.....	166
4.5 Results and Inferences	.....	170
4.6 Conclusions	.....	176
4.7 Limitations and scope for future work	.....	177
4.8 References	.....	178
4.9 Appendix 1	.....	206
4.10 Appendix 2	.....	208
4.11 Appendix 3	.....	213
Chapter 5	.....	250
Conclusions		

List of Tables

Chapter 2

Table 1: PRISMA framework for sample derivation	.....	66
Table 2: Steps taken to synthesize the themes based on Nowell et al.'s (2017) Thematic Analysis Framework	.....	67
Table 3: Stages of Qualitative Systematic Thematic Review of Corporate Governance literature	.....	68
Table 4: Summary of papers across individual, team and network levels, and inter-levels, by journal	.....	69

Chapter 3

Table 1: Descriptive Statistics	.....	137
Table 2: Pairwise Correlations	.....	137
Table 3: Regression results for Agency theory hypotheses	.....	138
Table 4: Regression results for betweenness and eigenvector centrality hypotheses	.....	139
Table 5: Regression results for Companies Act (2013) interaction hypotheses	.....	140
Table 6: Regression results for Companies Act (2013) interaction hypotheses	.....	141
Table 7: Robustness Checks	.....	142
Table 8: Endogeneity Check for betweenness centrality	.....	143
Table 9: Endogeneity Check for eigenvector centrality	.....	144
Table 10: VIF	.....	145

Chapter 4

Table 1: Positioning of the paper as adapted from Chen, Mehra, Tasselli, & Borgatti (2022)	.....	187
Table 2: Year wise director-firm level observations	.....	187
Table 3: Network metrics across years	.....	187
Table 4: Number of closed triangles across years	.....	188
Table 5: Triad persistence	.....	188
Table 6: Proportion of Closed Triads	.....	188
Table 7: Balanced and unbalanced triads across years	.....	188
Table 8: Persistence of ties across time frames	.....	189
Table 9: Tie persistence for all ties versus tie persistence for multiplex ties	.....	189

List of Figures and Graphs

Chapter 2

Figure 1: Administrative Science Quarterly Map	.....	70
Figure 2: Academy of Management Review Map	.....	71
Figure 3: Academy of Management Journal Map	.....	72
Figure 4: Strategic Management Journal Map	.....	73
Figure 5: Organization Science Map	.....	74
Figure 6: Journal of International Business Studies Map	.....	75
Figure 7: Composite Map	.....	76
Figure 8: Venn Diagram illustrating the themes in corporate governance literature	.....	77

Chapter 3

Figure 1: Margins Plot Independent Directorship X Board Meetings Attended	.....	146
Figure 2: Margins Plot Multiple Directorship X Board Meetings Attended	.....	146
Figure 3: Margins Plot Betweenness Centrality X Board Meetings Attended	.....	147
Figure 4: Margins Plot Eigenvector Centrality X Board Meetings Attended	.....	147
Figure 5: Margins Plot Companies Act (2013) X Board meetings attended	.....	148
Figure 6: Margins Plot Companies Act (2013) X Multiple Directorship	.....	148
Figure 7: Margins Plot Companies Act (2013) X Multiple Directorships X Board meetings attended	.....	149
Figure 8: Margins Plot Companies Act (2013) X Betweenness Centrality	.....	149
Figure 9: Margins Plot Companies Act (2013) X Eigenvector Centrality	.....	150
Figure 10: Margins Plot Companies Act (2013) X Betweenness Centrality X Board meetings attended	.....	150

Figure 11: Margins Plot Companies Act (2013) X Eigenvector Centrality X Board meetings attended	.....	151
Figure 12 : Conceptual Representation of Essay 2	.....	151

Chapter 4

Figure 1: Transitive and Intransitive Triads	.....	190
Figure 2: A star graph	.....	190
Figure 3: Network Spatialization using Force Atlas2 (Jacomy et al., 2014) of firm networks, 2010	.....	191
Figure 4: Core of the network, 2010	.....	192
Figure 5: Network Spatialization using Force Atlas2 (Jacomy et al., 2014) of firm networks, 2013	.....	193
Figure 6: Core of the network, 2013	.....	194
Figure 7: Network Spatialization using Force Atlas2 (Jacomy et al., 2014) of firm networks, 2016	.....	195
Figure 8: Core of the network, 2016	.....	196
Figure 9: Network Spatialization using Force Atlas2 (Jacomy et al., 2014) of firm networks, 2019	.....	197
Figure 10: Core of the network, 2019	.....	198
Figure 11: Types of Triads	.....	199
Figure 12: The Triad Isomerism Class (M-A-N Labelling)	.....	199
Graph 1: Graph depicting temporal trends in network diameter	.....	200
Graph 2: Graph depicting temporal trends in network density	.....	200
Graph 3: Graph depicting temporal trends in network clustering coefficient	.....	201
Graph 4: Graph depicting temporal trends in network modularity	.....	201
Graph 5: Graph depicting temporal trends in Louvain communities	.....	202
Graph 6: Graph depicting temporal trends in network degree centralization	.....	202

Graph 7: Graph depicting temporal trends in network betweenness centralization	.....	203
Graph 8: Number of closed triangles across years	.....	203
Graph 9: Proportion of Closed Triads	.....	204
Graph 10: Balanced and unbalanced triads across years	.....	204
Graph 11: Persistence of ties (count of) across time frames	.....	205
Graph 12: Persistence of ties (percent of nodes) across time frames	.....	205

List of Appendices

Chapter 2

Appendix 1	78
-------------------	-------	----

Chapter 3

Appendix 1	152
-------------------	-------	-----

Chapter 4

Appendix 1	.....	206
Appendix 2	.....	208
Appendix 3	.....	213

Abstract

Boards of organizations have a significant impact on the quality of their governance and the performance of organizations (Kogut, 2012; Hillman and Dalziel, 2003). The internal dynamics of the board and the external position of the board impact the level of monitoring and resources that the board provides. The internal structure of the boards affects firm performance through the level of monitoring and external position of board enables access to resources primarily through interlocking directorates (Desai, 2016, Barroso-Castro et al., 2016). Agency theory hypothesizes that busy directors cannot pay attention to the multiple firms they sit on the boards of, and hence have a detrimental effect on firm performance. From another theoretical perspective the board of directors links the organization through various types of relationships and puts it in a strategically important position in the network. Network centrality of a firm as reflected in interlock ties with other firms, is a form of social capital as it provides access to information flows through the network (Davis, 1991). Heavily interlocked directors constitute corporate elite which is often at the forefront of innovations and firms centrally located in the interlock network would be among the first to make use of these innovations to generate value for the firm (Mizruchi, 1996). Network theory allows us to move beyond these shortcomings. I seek to understand the role of boards in India, an emerging market, in a dynamic institutional context, a period that covers the pre and post enactment phases of government regulation (i.e., Companies Act, 2013) from 2010 to 2019.

The first essay of my thesis attempts to comprehensively document governance literature landscape that focuses on characteristics of CEO's and directors, boards/teams as well as networks from the perspective of their effect on firm performance. This decade (2009-19) has seen a significant rise in publications in the field of corporate governance (Zheng and Kouwenberg, 2019). Using a novel methodology of qualitative systematic review for narrative synthesis for summarization of prior knowledge in the field of corporate governance required

an iterative and purposive search strategy. The main objective was to develop an overarching visualization through concept maps detailing its landscape through the prism of publications from six high ranking journals from FT50 list published over the decade 2009-19. Concept maps are graphical tools for organizing and representing knowledge parsimoniously. The PRISMA (Preferred Reporting Item for Systematic Review & Meta-analysis) framework was used for sample derivation. The defining element of qualitative systematic reviews is the adoption of a narrative approach in the process of analysis and synthesis which required us to go through the research articles intensely and categorize these hundred and eighteen papers into seven categories on the basis of their units of analyses. The thematic categorization across three-levels viz. individuals (e.g., directors), teams (e.g., board of directors) and networks (e.g., director network) reveals prospective research gaps. I discover that while there have been publications that have focused on a single level viz. individual, team or network level, fewer publications focus on inter-level analysis. Intra-level papers form the bulk of the publications (a total of 92 out of 118) with 27 papers focused on the individual, 49 on the team and 16 on the network level. Inter level papers, which together constitute (a total of 17 out of 118) less than 15% of the papers published. My second essay attempts to fill that gap by empirically linking network characteristics of individual directors on a board of directors to firm performance. It takes individual (director attributes) and team (board of directors' attributes) and links it to firm outcomes. Another major gap was identified in papers bridging the individual to network level analysis. It is evident that the connection between traditional corporate governance issues and network theory properties is still under-investigated. The third essay aims to bridge this gap by linking the individual level (directors) to network level (board of directors).

In second essay I investigate the relationship between board attributes and firm performance in detail by analysing data from a large set of companies in India from 2010 to 2019, a period

that covers the pre and post enactment phases of government regulation (i.e., Companies Act, 2013) that limits the number of directorships that can be held by a single director. I utilize this exogenous shock to examine the changes that have occurred in Indian boards as companies hit the stipulation for compliance. I find evidence that agency theory is limited in its prediction of busy directors negatively affecting firm performance. Despite this, interestingly, its predictions with regard to the positive effect of attendance of board meetings by directors on firm performance hold. In addition, the network theory prediction that the focal director's centrality in the director network has a positive impact on firm performance holds, but only when the relationship is moderated by director attendance. While agency theory is the dominant paradigm in literature, it has its limitations. Network theory allows us to move beyond these shortcomings. It allows me to visualize directors and their linkages beyond mere count measures that are agnostic to board complexity and functioning. It allows me to incorporate "how" and "who" a director is connected to in a network, as opposed to just "how many" other directors he/she is associated with. Therefore, I used centrality measures, particularly betweenness and eigenvector centrality, to examine the impact of director networks on firms. They allow me to go beyond a simple count measure of the number of directorships and examine how many directors are linked to a focal director and who a focal director is linked to and how important they are in the network of directors. While Based on a fixed effects estimation, I do find a statistically significant relationship between betweenness or eigenvector centrality and firm performance, I also find a significant positive relationship of their interaction effect with board meetings attended and firm performance. This indicates that it is not only the incidence of multiple directorships that is beneficial for the firm, or the extent to which they are boundary spanners or connected to influential others in the director network, but also their attendance of board meetings of a focal firm that allows them to act as boundary spanners in favour of the firm and bring in information and resources to benefit the firm.

Implications of the interactions with the Companies Act (2013) are also interesting. I find significant and interesting interaction effects of board meetings attended, multiple directorships, betweenness and eigenvector centralities with Companies Act that shed light on how the corporate landscape in India has adapted to this institutional change.

The third essay aims to bridge the gap identified in the first essay by linking the individual level (directors) to network level (network of firms). Board interlocks are known to allow promoters to extort disproportionate gains from the company in the context of a developing country. In India Companies Act (2013) aims at restricting this influence by limiting the number of directorships that can be held by a director, and hence, limit firm interlocks. I utilize this exogenous shock to study its impact on the structure of the firm networks in the superset of NSE 100 firms from 2010-2019 which covers pre- and post-institutional disruption period. Four panels, constructed for the years 2010, 2013, 2016 and, 2019, allow us to examine the shift in various network characteristics as Indian companies adapt to the stipulations proposed in the Companies Act (2013). Overall, I find that the network of firms continues to be susceptible towards the formation of clusters even as the number of clusters has sharply fallen over the last decade, leading a focal firm to be better connected to more firms that are a part of its new, bigger cluster. In conclusion, while the Companies Act (2013) does lead to a major upheaval in the corporate directors' network, I find that the disruptions do not affect companies that are linked to each other more strongly (multiple ties) to a huge extent and instead are localized to companies that were linked through a single multiple director. This might be an indication that firms search for new linkages to companies that might help them tide over institutional dynamism in the short term but do not do it at the cost of companies they are closely linked to, instead choosing to sacrifice peripheral connections.

In conclusion, this thesis structured around three essays provides both theoretical and empirical contributions. In the first essay I provides a systematic qualitative review along with concept

maps to document the current state of corporate governance literature and develop broad research gaps around inter-level categories. Essay two and essay three aim attempt to bridge these gaps by providing a reasonably accurate picture of the impact of stipulations of the Companies Act (2013) on the Indian corporate governance network by moving beyond agency theory framework to network theory and analysis.

Keywords

Corporate Governance, Board Interlocks, Qualitative Systematic Review, Agency Theory, Network Theory, Network Evolution, Centrality, Companies Act (2013)