



**The Influence of Director Network in Corporate Lobbying  
Companies**

**A Thesis submitted for the degree of Doctor of Philosophy**

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## **Abstract**

Companies can gain both strategic and financial benefits from corporate lobbying and director networks. However, no clear consensus has emerged from the academic literature in regard to how director networks can influence corporate decisions relating to director compensation packages and company growth (such as capital structure decision) in lobbying companies. This study addresses these gaps in the existing literature and provides greater insight into the significance of director networks, along with lobbying networks, in corporate decision making (director compensation and capital structure) in U.S. lobbying companies.

Specifically, the thesis attempts to address the following research questions:

- 1) What is the relationship between director networks and director compensation in U.S. lobbying companies?
- 2) How can director networks affect directors' decisions about capital structure in U.S. lobbying companies?

To test hypothesis 1 (see Chapter 5.2), I used 7,129 director-level yearly observations from 2005 to 2014 from 278 U.S. lobbying companies. From the critical empirical analysis, I conclude that the directors with large network connections managed to get an offer of higher compensation compared to directors with fewer network connections in U.S. lobbying companies. The results reveal that directors' traditional networks along with lobbying networks enhance the quality of decisions taken by directors and better managerial decision-making benefits the company (Larcker et al., 2013). As a result, when a company performs well because of the above reasons, directors receive higher compensation because of their better performance (Goergen et al., 2019). The results of my study are similar to other research, where, however, there is no mention of lobbying networks (Renneboog and Zhao, 2011). I expand on the existing studies by focusing on the U.S. lobbying companies in the thesis. When directors are linked with lobbying, they create an additional network that allows them to collect information about the decisions the government will be taking in the near future (Unsal et al., 2016). This allows directors to better align their corporate decisions with government requirements. Thus, usually shareholders and the stakeholders are satisfied with the directors' managing ability, which leads to higher compensation for the directors. To test the above argument, in the analysis I use an interaction term which consists of director

network and corporate lobbying to determine director compensation in these companies. The results reveal that director networks and corporate lobbying complement each other in relation to director compensation in the U.S. lobbying companies, suggesting that both director networks and corporate lobbying are effective for directors to collect complementary information and thus improve corporate decision making.

Empirical section 2 (see Chapter 5.3) answers the second research question. A sample size of 39,914 director-level observations from 607 U.S. lobbying companies between 2005 and 2015 was used to examine the relationship between director networks and capital structure decisions in U.S. lobbying companies. By combining agency theory, social capital theory, and the pecking order theory, two main variables (capital structure and director network) were constructed with different proxies. I find that directors with high network centrality prefer higher debt in capital structure decisions in lobbying companies. This is because directors with a high-quality network have improved access to unpublished information and are in a better situation to take corporate financing decision by using the information gathered from their network. Existing studies have reached similar conclusions (Huang and Shang, 2019). However, by considering the lobbying company sample, I contribute to the academic literature related to capital structure. The coefficient of the interaction terms (corporate lobbying and types of director network centrality) are statistically significant in the empirical analysis. Thus, it is evident that directors can use their traditional network in addition to lobbying networks to obtain valuable information and are able to focus on the growth aspects of the company that depend on debt-based capital structure decisions.

The composite theoretical model and the empirical findings presented here add to the academic literature by expanding the research related to corporate lobbying, director networks, director compensation and capital structure. The results offer directors a practical understanding about the importance of director networks in lobbying companies and suggest that director networks can incentivise lobbying activities, helping directors to obtain higher compensation. In addition, director networks could also be an incentive for debt-based capital structure in lobbying companies.

## **Declaration**

I hereby declare that this thesis is my original research work and has never been submitted for a degree or qualification to any other academic institutions previously.

I also declare that all information in this thesis has been acquired and presented in accordance with academic rules and ethical conduct.

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# Chapter 1 Introduction

# Chapter 1: Introduction

## 1.1 Background

Corporate lobbying is one of the important forms of corporate political activity, which is a strategic practice of a company, through which directors try to influence government officials and politicians to make favourable political decisions for the company (Unsal et al., 2016). Companies can generate various benefits through lobbying activities (Unsal, 2018), such as improvements in revenue and sales to achieve better financial performance (Unsal et al., 2016; Chen et al., 2015), lower tax rate (Faccio and Xu, 2018; Richter et al., 2009), better trade policies (Kerr et al., 2011), and protection from government when they are involved in any fraud (Yu and Yu, 2012). From the literature, it is evident that corporate lobbying activities allow companies to meet shareholder interests and increase shareholder wealth (Dahan, 2005). In the United States (U.S.), corporate lobbying expenditure doubled between 2000 and 2020, especially since directors in companies have recognised the benefits of lobbying activities (Center for Responsive Politics, 2020). For example, Boeing Company, an American company with competitive advantages, increased its lobbying expenses from \$29 million between 2005 and 2007 to \$53 million between 2008 and 2010, which allowed the company to get a big contract from the U.S. government which is criticised in the literature (Center for Responsive Politics, 2019; O'Connell and Lamothe, 2019). The increase in lobbying expenses by the Boeing Company is an example of directors' involvement in lobbying for the overall benefit of the company (Dusso et al., 2019). Moreover, companies in the U.S. spent more than \$3.5 billion on lobbying activities in 2020 (Center for Responsive Politics, 2020).

Lobbying activities not only bring benefit to the lobbying companies, but also bring benefits to directors, either executive or non-executive directors (Renneboog and Zhao, 2011). Directors, as the decision-makers in a company, need lots of information to make appropriate corporate decisions (Akbas et al., 2016). In corporate lobbying negotiations, directors can influence government policy and get potential policy change information to make timely appropriate strategic decisions for their companies (Unsal et al., 2016), which helps them to achieve better company performance compared to their peers in non-lobbying companies. Because of better company performance achieved under a director's management, a director

could also benefit of a higher compensation (Crespi-Cladera and Pascual-Fuster, 2015). However, some directors with high director power may make lobbying decisions to meet their own interests and achieve their own satisfaction (Mathur et al., 2013). Thus, from the literature, I get an indication that directors, in order to achieve better compensation, might have an interest in being involved in lobbying activities.

As a strategic practice of a company, corporate lobbying has drawn lots of public and academic attention in the last two decades (Cao et al., 2018). Corporate lobbying aims to directly influence a government's legislative decision-making processes to meet the company's preference (Unsal et al., 2016). In the existing literature, there is evidence of the influence of corporate lobbying on business operations. It has also been shown that company performance will be improved with the right corporate lobbying strategy (Hill et al., 2013; Chen et al., 2015) and that lobbying activities also meet with the satisfaction of shareholder interests and increase shareholder wealth (Dahan, 2005). Thus, in this thesis, I do not intend to examine the relationship between lobbying and company performance further. However, companies with different characteristics have different needs in terms of corporate lobbying (Cao et al., 2018). The various relationships between demand and supply for specific products or services provided by a company would also act as a determinant of the need for corporate lobbying (Acemoglu et al., 2016). After critically examining the above strand of literature, it becomes apparent that it is important to focus on lobbying companies separately in this thesis.

In the existing literature, there is a need for more research on lobbying companies. Mostly, the literature is focused on the impact of corporate lobbying activities on the performance of a company (Cao et al., 2018; Chen et al., 2015). However, there is a lack of evidence about how directors try to use lobbying, not only to influence company performance but also for personal benefits. Here, the term "directors" refers to all the members of the board, no matter whether they are in the senior management team for daily management or not. In lobbying companies, the directors manage to develop a lobbying network with politicians, lobbyists and directors from other companies, which acts as an additional factor that could have an impact on benefits for themselves (Nandy et al., 2020), for example, their compensation. Thus, I believe it is important to check if the directors of lobbying companies are able to influence compensation for themselves by using their lobbying network.

However, in lobbying companies, there exists other types of networks among the directors. In the literature, I find director networks can be developed through their personal connections, social connections or through professional connections (Faleye et al., 2014; Andres et al., 2013). For example, a director network could come from their professional employment, those who are sitting on the same board currently or have previously served in the same company (Lu, Shailer and Wilson, 2016). A director network could also develop among those with the same educational background, who have attended or graduated from the same institutions (El-Khatib et al., 2015). Moreover, a director network could come from social activities, especially when these directors are in the same sports clubs, charities or any other non-professional groups (Fracassi and Tate, 2012).

In addition, in the literature, I find evidence that director network centrality is also important to directors. Director centrality captures the quality of a director's connections (Inintoli et al., 2018), and reflects the quality of the connections that a director has with others (El-Khatib et al., 2015). Director network centrality comprises degree, closeness, betweenness and eigenvector centrality. Degree captures the numbers of direct connections that a director has in a network, which indicates the importance of a director within the network (Inintoli et al., 2018). Closeness captures the number of all geodesic paths from a director to any other directors, which measures how quickly a director can connect to other directors in the network (Renneboog and Zhao, 2011). Betweenness captures the shortest paths between two directors passing through another individual director, which refers to the position of a director to other directors within the network (Inintoli et al., 2018). Eigenvector centrality is a weighted degree measure, which is based on how well-connected every direct network is (Inintoli et al., 2018).

Because of the above-mentioned importance of various types of networks among directors of companies, there is a higher possibility of an impact from these networks on strategic decisions that are taken by companies. The effects of director networks have been widely discussed among academics over recent decades. One major stream of literature on director networks investigates the influence of director networks on director level benefits. A director network is determined as a guarantee of a director's quality, which reflects a director's managerial talent, industrial reputation, working experience as well as professional achievements in their current or previous employment (Renneboog and Zhao, 2011). Thus, directors with intensive networks are proved to have a better ability to make appropriate



decisions for their company to achieve better performance. However, I find that in the literature, researchers discuss about importance of the director network on company performance. In addition, there is evidence that directors get more compensation, when the company performance is higher, compared to their peers (Renneboog and Zhao, 2011; Crespi-Cladera and Pascual-Fuster, 2015; Balsam et al., 2017). The effects of director networks on company performance and later on director compensation are especially discussed in the corporate finance and corporate governance literature (Renneboog and Zhao, 2014; Martin et al., 2015; Miranda-Lopez et al., 2018). A director network is defined as an effective channel for information exchange (El-Khatib et al., 2015), including knowledge, ideas, opinions and even unpublished or private information (Renneboog and Zhao, 2011; Akbas et al., 2016). Thereby, companies can change their own strategies based on the information gathered from director networks to achieve better performance and increase company value (Horton et al., 2012; Kathy et al., 2018). Through this kind of information, companies benefit in terms of their future decision-making (Larcker et al., 2013; Cohen et al., 2010). Thus, I consider director networks in this thesis.

In this research, I consider lobbying as an important strategic decision of a company. Any decision taken by the directors will affect the agency relationship for the company (Balsam et al., 2017). Here, I focus on the agency relationship because, when directors are given higher compensation based on rich information shared via networks, the shareholders might need to sacrifice their dividend (Smirnova and Zaveriaeva, 2017). Thus, it is always important to understand how the rights of shareholders can be protected and, at the same time, directors can be given appropriate compensation. Thus, as lobbying is an additional tool for networking, I examine the research questions by using a sample of lobbying companies.

In the literature, I find evidence that better performance leads to high director compensation (Coles et al., 2006; Renneboog and Zhao, 2011; Crespi-Cladera and Pascual-Fuster, 2015). However, for better performance, directors need to follow certain strategies to use the correct information at the right time to take correct decisions for the benefit of the company (Cambini et al., 2015). I find evidence of flow of good quality information transmission through networks among directors (Kathy et al., 2018). The better the quality of the information, the better a company can perform (Horton et al., 2012). Thus, any types of director network are linked with company performance. This argument gives me an indication that, in a lobbying company, a director can get an advantage from an additional

network on top of the traditional network, so there could be better performance in a lobbying company when compared with non-lobbying companies. However, the above argument from the literature cannot prove that more network opportunities in lobbying companies will lead to higher compensation for directors. In the literature, when researchers explain a link between director network and compensation (Renneboog and Zhao, 2011; Crespi-Cladera and Pascual-Fuster, 2015), they have not explained the similar relationship in a lobbying company set-up. Being motivated by this research gap in the literature, I examine the relationship between types of director network and director compensation for lobbying companies as the first research question of the thesis.

From the above discussion, it is evident that lobbying is an important strategic decision taken by company directors on behalf of any company. However, we all know that the directors of a company are responsible for the capital structure decisions in their company. The capital structure will not only affect the performance of the company but will also help the directors to measure how much compensation they will draw out of the better performance of the company. In this thesis, I define capital structure as the specific proportion of debt and equity that a company applies in the financial operation (Gill et al., 2011). In order to maximise company value and to fulfil shareholder interests, the corporate decision-makers (directors) need to make appropriate choices in terms of capital structure and also find the most suitable financial method to apply the capital structure choice (Gill et al., 2009; Lindner et al., 2018; Sheikh and Wang, 2011). An appropriate capital structure can also maintain competitiveness and increase the profitability of the company (Linder et al., 2018; Gallo, 2015), and decrease the risk of financial distress and bankruptcy of the company (Sheikh and Wang, 2011; Myers, 1984).

In a capital structure decision, if the directors are introducing higher debt for the company, they could choose to invest more in innovative and growth activities for the company (Lindner et al., 2018; Sheikh and Wang, 2011). From the literature, I know that the higher the growth of a company, the higher the possibility of increased profit, which will lead to a better compensation package for the directors, even after paying off all the dues of the companies (Hanlon et al., 2003). Usually, these types of companies are very attractive to investors and also to other directors from a similar industry (Daskalakis et al., 2017; Focke et al., 2017). As higher growth opportunity can generate higher compensation for the directors, there is a tendency among directors to follow the capital structure strategy of a growing company

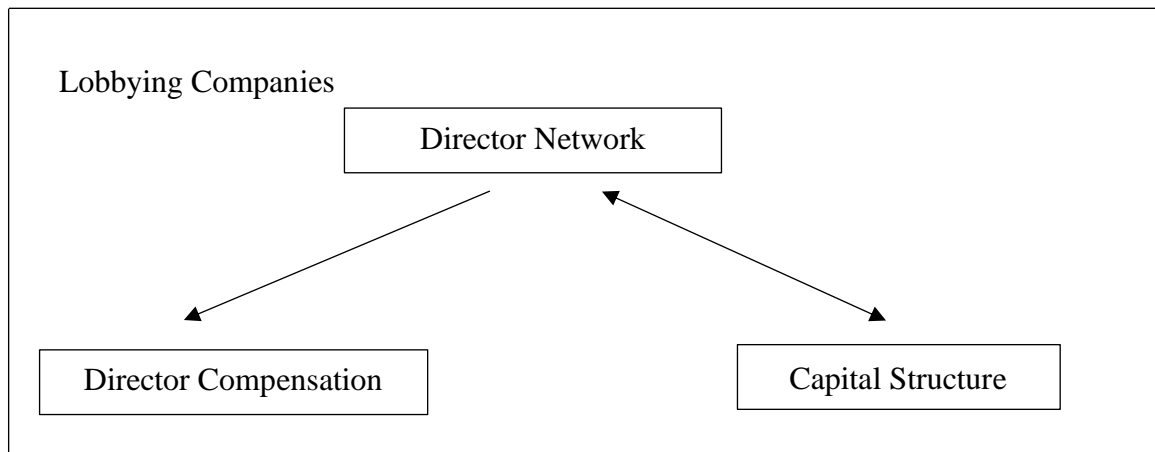
(Huang and Shang, 2019). However, in the literature, I find that high growth can create additional obligations for the company in terms of paying its dues (Berger and Di Patti, 2006). These obligations could negatively affect the performance of the company (Toraman et al., 2013; Muritala, 2012), and then lead to lower compensation for the directors (Cambini et al., 2015). Thus, I observe in the literature that researchers discuss the importance of director networks in capital structure decisions (Huang and Shang, 2019). They focus on the quality of information processed in the network about capital structure that allows the directors to maintain their compensation even when they have to spend money to pay the company debts. This information gives confidence to directors about their decisions related to debt (Gupta et al., 2020). Sometimes, the network can assist the director in the network to make an arrangement to pay the debt to continue the activities that will help other directors in the network (Hasan et al., 2017).

On the other hand, higher equity is mostly good for directors as they can show prospective investors that the directors are able to mitigate the agency problem to a great extent (Cole and Schneider, 2020). In this situation, directors are in a better position to utilise their network to share the good vibes about the company and keep maintaining their compensation package (Hasan et al., 2017). From the above explanation, it is evident that directors use their networks when they take capital structure decisions for a company, as the capital structure decisions influence the company performance and director compensation (Coles et al., 2006; Al-Thuneibat, 2018). However, in the literature, there is no clear conclusion about the relationship between director networks and capital structure decisions in lobbying companies. As explained before, in a lobbying company, every director is in an advantageous position to use lobbying as an additional network tool. Thus, to address the above research gap in the literature, I examine the relationship between director network centrality and capital structure in lobbying companies as the second research question in the thesis.

In summary, after critically examining the literature, I find that company directors consider lobbying as an important strategic decision. There exists research about the relationship between corporate lobbying and performance; director network and director compensation, and the effects of network on capital structure, but how lobbying with director network can influence the relationship between director compensation and capital structure in lobbying companies needs further examination.

## 1.2 Research Problem and Scope

Based on the above-mentioned background of the thesis, I draw a conceptual framework to explain the research problem of the thesis in the following diagram (see Fig 1.1).



*Figure 1.1 Research Problem*

The prior research provides evidence that directors are proved to receive valuable and unpublished information, and also exchange knowledge, ideas and opinions through their networks (Akbas et al., 2016), with which information directors can make appropriate adjustments to strategic decisions (for example, capital structure decision) to achieve better company performance (Crespi-Cladera and Pascual-Fuster, 2015; Balsam et al., 2017). Then in return, directors can receive higher compensation in the future (Renneboog and Zhao, 2011).

It is better to mention here that the focus of the thesis is not on re-examining the relationship between corporate lobbying and company performance. Instead, the intention of the first research question is to examine the relationship between director networks and director compensation for lobbying companies. Following the literature, here, I apply social capital theory to show that a director's decisions could influence company performance, which, in turn, benefits directors when they take decisions about their compensation (Renneboog and Zhao, 2011). Social capital theory deals with all the available resources, such as information, that an individual could use to benefit from their social network (Harris and Helfat, 2007). Thus, it helps to explain how the information processed in the network of directors can influence the compensation of the director.

I extend the model by introducing the relationship between director networks and director compensation in U.S. lobbying companies, by focusing mainly on stakeholder theory. Stakeholder theory suggests that the purpose of a company is not only to maximise the shareholders' wealth but also to meet other stakeholders' needs (Gromstein and Hribar, 2004). The main objective of stakeholder theory is to protect stakeholders' rights (Gromstein and Hribar, 2004). The directors, as one of the most important stakeholders of a company, should also play an important role in developing protection for the stakeholders (Bebchuk et al., 2011). However, in the literature, I find that even after protecting the stakeholders, the directors are still keen to get extra information that can help them to achieve higher compensation (Brick et al., 2006). The literature gives an indication that directors would have higher compensation only if they are making their company attractive to stakeholders and are able to generate higher profit for the company (Kathy et al., 2018). Such higher performance can be observed only when the directors are able to use quality information through their network to hedge the risk in the market and overcome the limitations imposed by the efficient market hypothesis (El-Khatib et al., 2015; Larcker et al., 2013). Thus, stakeholder theory helps to explain why directors would get higher compensation when company performance is improved and when other stakeholders are satisfied.

The other important decision taken by directors is the decision about capital structure. In the literature, I observe several discussions about agency theory, which plays an important role in explaining the influence of director networks on company performance (Wintoki and I, 2019), the influence of corporate lobbying on company performance (Unsal et al., 2016) and also the influence of company performance on director compensation (Smirnova and Zavertiaeva, 2017). In these studies, researchers prove that there is a direct impact of director networks on company performance (Larcker et al., 2003; Fracssi and Tate, 2012), which also influences decisions related to capital structure (Berger and Patti, 2006). The information generated through lobbying can be an additional advantage for directors who are already using other networks to reduce agency problems. In addition to agency theory, directors can apply the information generated in their network to apply pecking order theory in making decisions about capital structure. Pecking order theory refers to a perfect hierarchical order for corporate financing decisions (Lindner et al., 2018), which helps the director to understand the corporate financing needs properly and to choose an appropriate capital structure after reducing the information asymmetry through their network.

However, after critically examining the literature, I find that there is a need to understand the above-mentioned relationships in lobbying companies as lobbying is an extra network tool for the directors alongside the traditional ways of networking by directors. Thus, the scope of the thesis is based on lobbying companies.

From the critical analysis of the relevant literature, I find some research on director networks, and director compensation or company level social capital and capital structure, but I cannot find evidence of studies where the scope of their research is U.S. lobbying companies, especially those asking similar questions to the ones I ask in this thesis. On the other hand, the literature explains the importance of lobbying in corporate decision-making (Hill et al., 2013; Chen et al., 2015; Larcker et al., 2013; Cohen et al., 2010). The above explanation justifies the scope of the thesis. In this thesis, I use U.S. lobbying companies, following the major literature on corporate lobbying and corporate finance. The U.S. is the largest market for corporate lobbying activities. The lobbying activities in the U.S. allow company level negotiation with the government and the directors can engage in negotiation with members of Congress, staff in Congress, the President, White House staff and high-level employees of relevant agencies (Chen et al., 2015). In addition, corporate lobbying is a legally accepted and widely popular practice by companies in the U.S. Thus, I focus on lobbying companies in the U.S. to investigate the relationship between director networks and director compensation as well as the effects of director network on capital structure. Moreover, the availability of lobbying information of a company and details of the director network are the other reasons that motivate me to focus the thesis on U.S. lobbying companies.

### **1.3 Research Aim and Objectives**

It is important to understand why some directors are able to get higher compensation compared to other directors within a company. In the news, there are many discussions around unexpected compensation packages for directors (Yeung, 2021), where they ignore the balance expected by agency theory. In the academic literature, very often, there are discussions about director compensation in a company (Perryman et al., 2016; Vo and Canil, 2019). In some of these research articles, I find evidence of the influence of director networks on director compensation. In addition, there is also evidence of the influence of director social capital on capital structure. However, it is not clear from the literature how such a

relationship can be beneficial for lobbying companies because of the additional lobbying networks created among directors.

Therefore, the aims of this thesis are:

1. To investigate the relationship between director networks and director compensation in U.S. lobbying companies;
2. To examine the influence of director networks on capital structure in U.S. lobbying companies;
3. To provide empirical guidance for directors to help them to understand the importance of director networks and corporate lobbying in U.S. lobbying companies.

To address the above aims of the study, the following objectives have been developed, which are explained in detail in the following chapters:

1. To provide a critical literature review of corporate lobbying, director networks, director compensation and capital structure to identify the research gap, and to address the research questions;
2. To develop a conceptual framework and develop hypotheses to address the gaps and the research questions mentioned in the thesis;
3. To evaluate empirically the proposed hypotheses;
4. To discuss and link the results and findings to previous research and identify the academic and practical implications of the key findings.

## **1.4 Research Questions**

From the above discussion, it is evident that to enhance our understanding of director networks, director compensation and capital structure, there is a need to examine their relationships in lobbying companies to check if there is any additional benefit from corporate lobbying in addition to director network. As lobbying expenditure is increasing year on year, it hints that there are definitely some advantages for a company to engage in lobbying activities.

To address the research aims and objectives above, the research questions to be addressed in this thesis are as follow:

- What is the relationship between director network and director compensation in U.S. lobbying companies?
- How can director networks affect directors' decisions about capital structure in U.S. lobbying companies?

## **1.5 Methodology**

Following the research problem, in this thesis, I develop two hypotheses to examine the research questions. The hypotheses are well linked with the aims and objectives of the study. This study applies a positivistic research philosophy, with a deductive approach and a quantitative method. The research philosophy and approach are discussed in detail in the methodology chapter. The data in this study are collected from available secondary databases used in previous studies. The lobbying data are hand-collected from the Center for Responsive Politics, and director-related data are manually collected from Bloomberg and all the other financial data are collected from Datastream.

The detail of the sample is mentioned in the empirical chapter. Following the literature and the scope of the thesis, Eq 1 is applied to test Hypothesis 1 (see Section 3.4 and Section 4.7), which examines the relationship between director networks and director compensation in U.S. lobbying companies. The first hypothesis is tested by using a sample of 278 companies with 7,144 director yearly observations over a ten-year period from 2005 to 2014. Eq 2 is related to Hypothesis 2 (see Section 3.4 and Chapter 4), which examines the influence of director networks on capital structure in U.S. lobbying companies. I use a sample of 607 companies with 39,914 director yearly observations during the period from 2005 to 2015 to examine the second hypothesis.

## **1.6 Main Findings**

In this thesis, I combine social capital theory, agency theory, stakeholder theory and pecking order theory to meet the research aims and objectives of this study. Theoretically, I find that in answering the research questions, I need to think differently about the theoretical framework to support the empirical model. As the focus of the study is more on director



networks and also on lobbying networks, so, I contribute theoretically to the literature in explaining the above-mentioned corporate relationships.

This thesis provides empirical evidence that director networks do play an important role in determining director compensation and influencing capital structure decisions in U.S. lobbying companies.

The findings show that directors with extensive network sizes get higher compensation in lobbying companies. In addition, the empirical analysis proposes that both director networks and corporate lobbying are important to determine director compensation in lobbying companies, which are complementary to each other in terms of determining director compensation.

The evidence also shows that directors with high network centrality will prefer a higher book leverage and market leverage ratio in their capital structure choices. In addition, director networks and corporate lobbying complement each other when a capital structure decision is taken in lobbying companies in the U.S.

## **1.7 Main Contribution**

This study contributes to the academic literature by expanding the research related to corporate lobbying, director networks, director compensation and capital structure. It fills the research gap by providing evidence that director networks are also important in determining director compensation and capital structure in U.S. lobbying companies. By extending the existing literature on the influence of director networks on director compensation (for example, Reeneboog and Zhao's (2011)), my thesis provides new evidence for U.S. lobbying companies, which support the literature stating the importance of lobbying in corporate finance. In addition, my study also provides a new explanation of how both corporate lobbying activities and director networks affect director compensation in U.S. lobbying companies. By extending the literature on network and capital structure (for example, Huang and Shang's (2019)), my thesis applies the director centrality measure to examine the effects of director network on capital structure in U.S. lobbying companies. Moreover, my study suggests that both director networks and corporate lobbying improve the access to valuable

information, which helps director to make appropriate capital structure decisions for these lobbying companies in the U.S. In summary, the main contribution of this study is to provide a new set up of sample companies to investigate the influence of director networks on director compensation and capital structure, which explains the importance of corporate lobbying in building up director networks and in determining director compensation and capital structure in the U.S.

Practically, this study heightens directors' sense of the importance of corporate lobbying and director networks, that could help them in collecting valuable information for corporate decision-making. In addition, this study also provides a better view of the growth of director compensation in lobbying companies. Those who make decisions about director compensation understand the importance of a director's corporate lobbying decisions and director networks. This study allows decision-makers to develop more transparent and all-inclusive models for companies. In previous lobbying literature, the importance of lobbying is highlighted in the discussion of company performance. But, when director compensation or capital structure are discussed, there is no importance given to the lobbying company that can allow a director to use an extra networking tool with their existing network mechanism. Thus, the outcome of the thesis will assist policy makers to check if there is any need for an additional restriction on lobbying companies to restrict them to be market makers by depriving other directors of better compensation or by taking advantage of flexible capital structure.

## **1.8 Thesis Structure**

This study is structured into seven chapters, including this introduction chapter. Chapter 1 provides an overview of the study, including the research background, research problem and question, research aims and objectives, methodology for empirical testing and main findings and contribution. Chapter 1 ends with the structure of this thesis.

Chapter 2 provides a review of the existing literature on director networks, corporate lobbying, director compensation and capital structure to identify the research gap.

Chapter 3 introduces the theoretical framework that explains the background of the empirical chapter, which includes a review of existing theory that is used in the existing literature. It also provides the development of hypotheses examined in the two empirical sections.

Chapter 4 explains the methodology used in this study. It describes the research design and builds up the appropriate methodology to address the research question by choosing a positivist research philosophy with a deductive approach and quantitative method. It also provides a model which explains variable descriptions for the two empirical sections separately.

Chapter 5 provides an initial analysis of the collected data from the existing database after running various types of estimations, linking to the two empirical sections.

Chapter 6 presents an in-depth discussion of the results given in Chapter 5.

The last chapter provides a conclusion for this study, including the limitations of the study and recommendations for future studies.

# Chapter 2 Literature Review

## **Chapter 2: Literature Review**

### **2.1 Introduction**

In order to investigate how director networks help directors to take appropriate decisions about capital structure and whether there is any relation between the network and their compensation, in this chapter I critically examine the relevant existing literature. The review of the literature is mainly focused on corporate lobbying, director networks, director compensation and capital structure. To identify the literature that will help me explain the aims and objectives of the thesis, I include the definition, main determinants, measurements and importance of the aforementioned terms. After a detailed discussion of the above, I identify the key papers related to each of these terms. From the review of literature, I identified the gap in the literature, which has been summarised in the last section of this chapter. I use the critical analysis of the literature in explaining the theoretical framework, the justification behind the empirical model, the discussion of the results, and finally the contribution of the thesis.

### **2.2 Corporate Lobbying**

Corporate lobbying is a strategic process that a company aims to influence government officials and politics in terms of policy-making decisions (Unsal et al., 2016). With the priority of increasing shareholders' benefits, corporate lobbying has positive effects on company performance. These potential benefits comprise revenue growth, tax expenditure savings via a favourite tax policy (Richter et al., 2009), favourable visa and trade policies in international business (Kerr et al., 2011), as well as reduced operational risk in hard times (Unsal et al., 2016).

Because of the mentioned benefits above, corporate lobbying is widely discussed in the existing literature. Empirical researches on corporate lobbying can be divided into two major streams. One is investigating the lobbying influence for company-related issues, comprising company performance, finance and accounting operations of the company and other aspects within these lobbying companies. Another major stream is investigating the determinants of

lobbying activities. Table 2.2.1 lists some of the popular research areas related to corporate lobbying.

Table 2.2.1 Corporate lobbying related studies

<b>Area</b>	<b>Authors</b>	<b>Research about</b>
Determinants	Hill et al., 2013	The determinants and value effects of corporate lobbying
	Mathur et al., 2013	How corporate governance determines the choice and degree of lobbying; the relation between lobbying and firm value.
Company performance	Cao et al., 2018	Relation between corporate lobbying and firm performance by focusing on varies firm characteristics
	Chen, et al., 2015	Relation between lobbying and accounting performance; relation between lobbying and market measures of financial performance
	Unsal, 2018	how political connections increase firms' innovation performance
	Ghouma and Hewitt, 2019	The relationship between lobbying expenditures and the market performance for sin stock
Finance and Accounting	Burnett et al., 2018	“examine whether these lobbying activities by accounting firms are associated with their clients' audit quality”
	Borisov et al., 2012	“examine whether the stock market considers corporate lobbying to be value enhancing, using an event that potentially limited the ability of firms to lobby but was exogenous to their characteristics and prior lobbying decisions”
Other	Brodmann et al., 2019	Investigate the reason of why CEOs from lobbying companies receive higher compensation compared to their non-lobbying peers, on insider trading aspect
	Choi et al., 2015	“how the structure of political institutions influences the effectiveness of corporate political lobbying by shaping the “veto points” and “entry points” that lobbying firms encounter and require, respectively, when attempting to influence public policies”
	Dusso et al., 2019	Investigate the effects of corporate lobbying on getting federal contract for these lobbying companies
	Unsal et al., 2016	investigate the influence of CEO political orientation on corporate lobbying efforts; relation of lobbying and firm value
	Nandy et al., 2020	Investigate the lobbying effects on determining executive compensation

### 2.2.1 Definition of Corporate Lobbying

Lobbying is an important part of a company's political engagement (Hillman and Dakziel, 2003; Anastasiadis, 2014), with the aim of persuading legislators, regulators and courts to influence the legislative decision-making process and obtain favourable policies and outcomes (Ghouma and Hewitt, 2019; Anastasiadis, 2014; Yu and Yu, 2011).

More specific to the United States, where there is the largest market for corporate lobbying, it can be defined at the federal level as any negotiation made by lobbyists on behalf of their clients to members of Congress, Congressional staffers, the President, White House staff and high-level employees of relevant agencies, in order to get benefits from making, modifying or adopting legislation (Chen et al., 2015).

There are two major ways of an individual company to doing lobbying activities. Companies can 1) engage in lobbying activities by making donations to political parties or candidates, via a director's social networking with politicians, or 2) by hiring external professional lobbyists to directly attempt to make beneficial policy by influencing government (Cao et al., 2018).

### 2.2.2 Importance of Corporate Lobbying

The reasons why companies prefer to engage in lobbying activities are widely discussed in the previous literature. It is because lobbying activities can bring lots of benefit for those companies participating in lobbying. The lobbying benefits are discussed from several perspectives in the existing literature, mainly in terms of government-related benefits and financial outcomes.

From the perspective of government-related benefits, corporate lobbying can help these lobbying companies to get government contracts (Unsal, 2018). In order to build up the connection with relevant parties or politicians, companies prefer to spend large amounts of lobbying expenditure (Hill et al., 2013). By increasing their lobbying expenditures, companies have more chance to get and secure massive contracts from government (Chen et al., 2015; Unsal et al., 2016; Dusso et al., 2019). Moreover, the lobbying connections help these lobbying companies to obtain government subsidies, which positively influence corporate innovation outcomes (Unsal, 2018). It also helps these lobbying companies to

receive bailout assistance from governments (Duchin and Sosyura, 2012), and get more Trouble Asset Relief Program funds since the 2008 financial crisis (Blau et al., 2013). Therefore, through corporate lobbying, companies could gain protection from the government by creating entry barriers, or by issuing new visa and trade policies for foreign or global competition (Unsal et al., 2016; Kerr et al., 2011).

Corporate lobbying brings financial benefits for lobbying companies, allowing them to achieve better performance (Cao et al., 2018). Corporate lobbying could lower the tax payments for these lobbying companies (Richter et al., 2009). Richter et al. (2009) find that the more lobbying expenditure that lobbying companies spend, the more tax reduction they would receive in the following year. Arguably, lobbying expenditure reduces taxation costs and reflects an improvement in the company's profitability to some extent (Marceau and Smart, 2003). In addition, corporate lobbying also has positive effects on marketing and accounting measures of company performance (Chen et al., 2015), encourages accounting conservatism (Kong et al., 2013), improves stock performance and returns (Goldman et al., 2013), and protects companies from corporate fraud detection to some extent (Yu and Yu, 2012).

Based on the benefits mentioned above, corporate lobbying is considered as an important strategy for all companies that take participant in lobbying activities, especially in the United States (Unsal et al., 2016). Because corporate lobbying activities have high chance to affect government's policy making, it is considered as a risk-reducing strategy for companies (Kong et al., 2013; Chen et al., 2015). Corporate lobbying activities can keep the company informed about possible political changes allowing them to modify their own business strategy accordingly in a timely manner. According to this, lobbying companies can get a benefit in terms of adjustments to business risks (Mathur et al., 2013).

### 2.2.3 Determinants of Corporate Lobbying

Based on Hill et al.'s (2013) research, the factors contributing to corporate lobbying activities are mainly discussed at the director level and company level.



In order to maximise the shareholders' benefits, directors try hard to improve the prospects of their company by seeking political networks (Hill et al., 2013). Lobbying activities are the best methods to fit the directors' expectations to increase corporate revenue, reduce costs or decrease company risks. In other words, lobbying activities are the director's decision from the perspective of a company's prospects.

I can observe the presents of lobbying activities when directors use the same for value enhancement of the company, reducing the agency problem associated with director, doing campaign contributions to maintain their network with the politicians (Rayfield and Unsal, 2019; Nandy et al., 2020; Hill et al., 2013). Thus, I can observe the above-mentioned reasons as the determinants of corporate lobbying decisions by a director. In the following section, I will consider in detail these above-mentioned determinants from the literature with the support of the key papers.

### ***Value Enhancement***

Value enhancement determinants are related to corporate financial factors including company size and company growth opportunities, and also industry affiliation and competitiveness (Hill et al., 2013).

Firstly, researchers find larger companies can get more attention from politicians and have more visible political support from the government, as larger-sized companies would have more politically useful directors or managers (Agrawal and Knoeber, 2001). Directors of larger companies would prefer to increase political intelligence or build up good relationship with politicians through lobbying actions in order to offer new opportunities for companies to increase value. At the same time, professional lobbyists could target larger and more visible companies with good reputations as potential clients (Sadrieh and Annavarjula, 2005).

Company growth opportunities are determined as another possible factor that would affect corporate lobbying activities. Directors will make decisions to increase expenditure on lobbying activities based on a company's growth prospects (Rayfield and Unsal, 2019). In addition, for these companies in growth industries, they have more willingness to influence the political outcomes to gain benefits for the company (Ridge et al., 2017).

Industry affiliation and competition is another important determinant of corporate lobbying. According to industry affiliation, the company's relationship with government varies in terms of the degree of the company's reliance on the government as a customer and the degree of government regulation and control in the industry (Hill et al., 2013; Agrawal and Knoeber, 2001). Lobbying is more important for companies in industries with higher sensitivity to government oversight and intervention (Polk et al., 2014). In other words, these companies would prefer to engage in lobbying activities. Policy change is spread significantly positively among companies with fewer market participants, because the lobbying benefits are for all the companies not only for some specific companies in a particularly competitive industry (Lee and Baik, 2010).

### ***Agency Issue***

According to agency conflicts, increases in lobbying activities could be a result of excess free cash flow as well as directors' or managers' personal interests instead of an improved company operating or legal environment, by influencing the policy making process (Kong et al., 2017). Therefore, the agency issue of free cash flow is a possible reason for directors' lobbying decisions (Matur et al., 2013).

### ***Campaign Contributions and Proximity to Politicians***

Based on Hill et al. (2013), corporate PAC (Political Action Committees) campaign contributions, and the distance between company headquarters and the respective state capital are other lobbying activity determinants.

Campaign contributions are a useful method for directors to establish and keep up a network with politicians (Cooper et al., 2010). The more campaign contributions the company makes, the more possibility the company can influence the policy-making process (Jia, 2018).

The proximity of politicians refers to how far the distance is for a company to reach the politicians and how many lobbyists the company needs to communicate with the politicians. If the company has more representing politicians as well as less geographic distance between their headquarters and Washington, it will have less need of lobbyists to transfer their information to the government (Ramanna and Roychowdhury, 2010; Igan et al., 2012). Thus, Electoral College votes and distance from a company's headquarters to the capital city are potential determinants of corporate lobbying (Hill et al., 2013).

#### 2.2.4 Theoretical Explanation of Corporate Lobbying

Based on the existing literature, there are two theories that mainly explain the importance of corporate lobbying, namely agency theory and stewardship theory.

Agency theory deals with the relationship between principles and agents in business, concerning separating the ownership and control of a company (Jensen and Meckling, 1976). Corporate lobbying is mainly based on agency problems (Unsal et al., 2016). Agency theory argues that directors with a powerful and entrenched management style pursuing their personal interests as well as strengthening their own political networks for lobbying activities may not benefit the company and may change the positive relationship between corporate lobbying and value growth (Mathur et al., 2013). Because of a potential agency problem, lobbying influence should only occur if lobbying offers benefits to shareholders (Unsal et al., 2016).

Stewardship theory is an alternative to agency theory (Muth and Donaldson, 1998), which examines the directors' actions as the stewards in the company (Davis et al., 1997). Corporate lobbying is defined as an internal corporate strategy under stewardship theory (Cao et al., 2018). The government regulations and actions could affect the business environment of a company. Therefore, lobbying could help the company to stay in the future business regulatory agenda and modify their own business plans and decisions in a short time. Lobbying expenditure is also considered to give a high return on investment based on stewardship theory (Alexander et al., 2009).

### **2.3 Director Network**

Networks play an important role in our daily life (Renneboog and Zhao, 2011). Companies usually invite top managers or bankers from other organisations to sit on their company boards as members or directors (Renneboog and Zhao, 2014). These board members build up useful connections at personal, social and professional levels, and these connections help the directors to share critical and significant information to benefit the companies (Fracassi and Tate, 2012). Director networks have drawn lots of academic attention over the last decades,

especially in the corporate finance and corporate governance areas (Renneboog and Zhao, 2014; Martin et al., 2015; Miranda-Lopez et al., 2018).

For directors, as the decision makers and implementors of corporate strategic decisions, their network has significant effects on the company. Table 2.3.1 lists some of the existing literature investigating the effects of director networks on financial reporting quality, company performance and director compensation. Overall, director networks reflect the directors' managerial talent, reputation, working experience and past success, which guarantee the directors' quality of managing power and decision-making ability (Renneboog and Zhao, 2011; Crespi-Cladera and Pascual-Fuster, 2015; Balsam et al., 2017). Director networks also reflect an effective channel of information collection and reduce information asymmetry (Akbas et al., 2016; El-Khatib et al., 2015), which includes knowledge, ideas, opinions and even unpublished or private information (Renneboog and Zhao, 2011; Akbas et al., 2016). Therefore, with the valuable and useful information from director network, directors can make timely decisions to improve the company's performance and then get higher compensation in return.

### 2.3.1 Types of Director Networks

Based on the way that directors can link with each other, there are three main types of director networks: professional networks, personal networks and social networks.

Professional network is determined by connections built up through professional employment (Lu, Shailer and Wilson, 2016). These networks can be built up within the current employment as well as through past employment when these directors sit on the same company board or have worked in the same company (Renneboog and Zhao, 2014).

Educational network, which is also known as personal network, is determined as the connection built up through the educational or professional training backgrounds (El-Khatib et al., 2015; Bulter and Gurun, 2012). This kind of network is established among directors who have graduated from the same universities or attended the same professional training programme.

Table 2.3.1 Director network related studies

<b>Area</b>	<b>Authors</b>	<b>Research about</b>
Finance and Accounting	Intintoli et al., 2018	How director network could improve financial reporting quality
	Engelberg et al., 2012	Relation of director network and the interest rates of bank loan changes
	Omer et al., 2018	Relation between director networks and financial reporting quality
	Fogel et al., 2018	How CFO's network affects the cost and terms of private debt of the borrowing firm
	Renneboog and Zhao, 2020	Influence of director network of obtain labour market information to help director get better opportunities
Company performance	Hassan et al., 2017	Relation between social network and corporate tax avoidance.
	Miranda-Lopez et al., 2018	Influence of director network on corporate cash holdings
	Faleye et al., 2015	Relation between director network on investments in corporate innovation
Director Compensation	Renneboog and Zhao, 2011	relation between CEO compensation and networks of both executive and nonexecutive directors in listed UK companies
	Balsam, Kwack and Lee, 2017	Relation between CEO indirect network with other directors and CEO compensation
	Cherry and Gatchev, 2019	how firms use the network of overlapping directorships to determine chief executive officer (CEO) compensation
Other	Ho and Chiu, 2013	How companies can collect information from director networks
	Renneboog and Zhao, 2014	the impact of corporate networks on the takeover process.
	Effiezal et al., 2020	relationship between director networks and earnings quality in Malaysia

Social network is determined as connections built up through social organisations (Intintoli et al., 2018). This kind of network is established through the same charity organisations, sports clubs, and non-profit events (Fracassi and Tate, 2012; Intintoli et al., 2018).

### 2.3.2 Measurements of Director Networks

In the existing literature, there are two main streams for measuring director networks. One stream measures director network by counting the total number of connections that one individual director has (Akbas et al., 2016; Faleye et al., 2014; Fracassi and Tate, 2012; Ferris et al., 2017). In order to diversify the aggregate director connections, these studies are investigated understanding the different type of director networks, namely professional networks, personal networks and social networks (Akbas et al., 2016; Faleye et al., 2014; Butler and Gurun, 2012).

Another stream uses the centrality network measure to examine studies related to director networks (Goergen et al., 2019; El-Khstib et al., 2015; Intintoli et al., 2018; Renneboog and Zhao, 2014), which is widely used to examine the effect of director networks on company performance (El-Khatib et al., 2015), corporate cash holding (Miranda-Lopez et al., 2018), director compensation (Renneboog and Zhao, 2011) and so on. By measuring the quality of an individual director compared to another director, the network centrality measure contains four individual measurements, namely degree, closeness, betweenness and eigenvector centrality. The director network centrality measure is to help understand how important an individual director is in the network and how effective the network is for the directors (Intintoli et al., 2018). Degree measures all the direct connections of directors in the networks with other directors, which measures how important a director is in their connections (El-Khatib et al., 2015 and Goergen et al., 2019). Closeness measures the number of geodesic paths from an individual director to another director within their network. This measure captures the connections for highly influential directors. Betweenness measures the shortest paths connecting two directors in the network. This measure captures the absolute position of a director in the network. Eigenvector centrality is defined as the extent to which a director connects with other highly connected directors. This measure captures the tightness of a connection that a director has in the network.

### 2.3.3 Importance of Director Networks

Over the decades, more and more researchers have investigated the effects of director networks. It is widely recognised that director networks enhance company value (Renneboog and Zhao, 2011) and have a positive relationship with company performance (Larcker et al., 2013).

The director network is an effective channel for transmission of knowledge, as well as exchanging ideas and information (El-Khatib et al., 2015). Directors have a higher chance to access unpublicised information among their networks, which is important for the company as a potential information source for future strategic decision-making (Akbas et al., 2016); it also allows directors to reconsider and adjust their discussions on the board (Renneboog and Zhao, 2011). Arguably, through such information, companies get benefit from their future decision-making if they are seeking a new strategic alliance, planning a merger or acquisitions, or opening a new market (Renneboog and Zhao, 2011). Thereby, companies can change their own strategy based on the information gathered from director networks to achieve better performance and increase company value (Horton et al., 2012; Kathy et al., 2018). Therefore, Larcker et al. (2013) and Cohen et al. (2010) find a positive relationship between the director network and company performance. However, this information is not only related to company strategy, sector trends, and economic evolutions, but also related to changes in directors' compensation and possible vacancies in other companies (Renneboog and Zhao, 2011). Fracassi and Tate (2012) find the director network reduces a company's value and makes corporate governance less effective. When director realised there is a potential position with better compensation package in other companies through their network, they may take this opportunity and resign from the current employment. In this situation, the director network leads to negative effects to the company.

Moreover, extensive director networks lead to the high probability of successful takeover transactions with more potential active bidders and less negotiation time (Renneboog and Zhao, 2014). The annualised return for informed trading is also higher in the companies with strong director networks (Akbas, Meschke and Wintoki, 2016).

However, strong director networks have negative effects on company performance as well. Board monitoring is poor when the directors have well-connected networks, which has negative effects leading to decreasing corporate performance (Fracassi and Tate, 2012; Anders et al., 2013). In addition, directors with high network centrality would pursue merger and acquisition decisions based on the information they collect from their network (El-Khatib et al., 2015). But researchers found that high network centrality directors could have a negative influence on company value (El-Khatib et al., 2015).

#### 2.3.4 Theoretical Explanation of Director Network

Based on director network activities, there are two main theories applied to director network-related studies: Agency Theory and Social Capital Theory (Wintoki and Xi, 2019; El-Khatib et al., 2015; Ferris et al., 2019).

Agency theory argues that directors who have more connections with other directors or have a high level of network centrality, reduce the agency problem raised by separation of ownership and control (Wintoki and Xi, 2019). Fama and Jensen (1983) discuss that directors with a good reputation monitor the company more effectively via the board and with other directors or managers, and help the company improve their performance and increase their company value (Wintoki and Xi, 2019). However, agency theory also argues that companies could pay more for these directors with more connections or high network centrality (Andres et al., 2013). Recruiting the well-connected directors could be costly, and these associated benefits with these directors could not cover the costs after certain events. In addition, directors may establish a network for their personal use instead of benefit for the company. Thus, another agency problem related to director networks would be raised within the company.

*“the idea that strong social networks – tight communities bound by shared norms, trust, and reciprocity – enhance cooperation and productivity when people belong to communities with high levels of social capital, the theory goes, they're far more willing to work together and take chances on risky ideas. It followed that high social capital would fuel innovation”* (Florida et al., 2002).

Social capital theory deals with resources that an individual can benefit from a social network (Harris and Helfat, 2007), which provides an insight into investigating different socio-economic phenomena (Ferris et al., 2019). Social capital theory also deals with the reciprocity that an individual can get from their social network, including information, knowledge, even trust from others (Ferris et al., 2019). Mainly, social capital theory can be divided into two dimensions, cognitive and structural. Under the cognitive dimension, social capital can be “understand as shared norms, attitudes and beliefs”, which can be defined as the elements for information and/or knowledge change (Coleman, 1988). Under the structural dimension, social capital theory is focusing on the patterns and intensity of different network



connections (Lin, 2014). In addition, social capital improves economic efficiency and reduces information asymmetry (Ferris et al., 2019). Therefore, information based on social capital theory is also widely applied in research to investigate a director's position in the network in terms of accessing information, and then decision making (Cohen et al., 2008; El-Khatib et al., 2015).

### 2.3.5 Research Motivation 1 (Director Network and Corporate Lobbying)

The first motivation of this thesis is to find the influence of director networks in lobbying companies. By reviewing the existing literature on director networks, I find that director networks have a significant influence on company performance (Unsal et al., 2016; Cao et al., 2018). Meanwhile, corporate lobbying, as an important strategic decision made by directors, also benefits company performance (Fracassi and Tate, 2012). In addition, corporate lobbying is also defined as another kind of director network, providing valuable information for directors' decision-making processes (Nandy et al., 2020). However, in most director network-related research, there is a failure to distinguish between lobbying or non-lobbying companies in explaining the influence of director networks, or lobbying networks are not taken into consideration. In this thesis, this research gap is addressed to investigate the influence of director networks in U.S. lobbying companies.

## 2.4 Director Compensation

Over decades, director compensation all over the world has increased significantly above inflation (Renneboog and Zhao, 2011). The pay gap between individual directors is widely discussed in the economic press and academic literature, especially since the financial crisis in 2008. The director compensation pay gap is significantly big, not only among individual directors on the same board, but also among male and female directors in the same company (Perryman et al., 2016; Vo and Canil, 2019). Female directors are paid less compensation than male directors in the literature (Perryman et al., 2016). The pay gap between directors could be a result of efficient contracting, including an ability matching mechanism (Masulis and Zhang, 2013) and/or an incitement of tournaments (Kale et al., 2009). Besides that, the managerial power of directors is another widely discussed determinant of the pay gap in the

existing literature (Vo and Canil, 2016; Smirnova and Zavertiaeva, 2017). Table 2.4.1 shows the major studies that related to director compensation.

Table 2.4.1 Director Compensation related studies

<b>Area</b>	<b>Authors</b>	<b>Research about</b>
Company performance	Bebchuk, Cremers and Peyer, 2011	relation between the director compensation and company value, performance
	Lee, Cho, Arthurs and Lee, 2019	“the influence of CEO compensation inequity on CEOs' decision-making by examining the relationship in the acquisition context”
	Focke et al., 2017	company prestige and director compensation
	Grinstein and Haribar, 2004	Relation between director compensation and completion of merger and/or acquisition deal
Director ability	Song and Wan, 2019	relation between director managerial power and their compensation
	Vo and Canil, 2019	Relation between director pay gap and efficient contracting/ managerial power
Determinants of Director Compensation	Gomez-Mejia et al., 2003	Determinants of executive compensation in family-controlled companies.
	Liang et al., 2015	The political determinants of executive compensation
	Chowdhury and Wang, 2020	relationship between the role and compensation structure of non-executive directors when firms on the TSX Venture Exchange (TSX-V) move to the Toronto Stock Exchange (TSX-C) in Canada
	Bui, 2020	The role of independent outside director in determining executive compensation in Japan

#### 2.4.1 Definition of Director

Renneboog and Zhao (2011) defined the director as either an executive or a non-executive director. In other words, directors are all members of the board, no matter whether they are in senior management in terms of daily management or not.

#### 2.4.2 Determinants of Director Compensation

According to the existing literature, the determinants of director compensation are mainly based on two aspects: company level determinants and director level determinants (Renneboog and Zhao, 2011; Crespi-Cladera and Pascual-Fuster, 2015; Focke et al., 2017). From the company level, the determinants are company performance-related determinants, corporate governance (board characteristics), and ownership structure. The director level determinants are director characteristics, including the director's network.

### ***Company Performance-related Determinants***

Firstly, company growth opportunities are an important determinant of director compensation as companies with high level growth opportunities would hire higher quality director and offer them a high compensation package (Hwang and Kim, 2009). Performance-based contracts provide a motivation for directors to help the company to achieve a better performance and an explanation of why director can get higher compensation after achieving a better performance (Crespi-Cladera and Pascual-Fuster, 2015). Performance determinants for director compensation include stock market returns and accounting measures such as return on assets (ROA) and return on earnings (ROE) (Crespi-Cladera and Pascual-Fuster, 2015; Renneboog and Zhao, 2011). Moreover, company size is another determinant of director compensation, which refers to company investment opportunities and explains the cross-sectional variables in total managerial compensation (Core et al., 1999; Cladera and Pascual-Fuster, 2015; Renneboog and Zhao, 2011). Bigger companies pay more to a director than medium-sized and small companies as bigger companies need specific managerial talent for the directors to operate the company (Crespi-Cladera and Pascual-Fuster, 2015).

### ***Corporate Governance***

Corporate governance deals with the relationship between directors, board and shareholders of the company in the institutional setting (Cladera and Pascual-Fuster, 2015). The directors can get more compensation if they have a concentration of power and limit the shareholders' control of the company (Brick et al., 2006). Board size is one important determinant within corporate governance, where a larger board size could lead to more coordination issues (Crespi-Cladera and Pascual-Fuster, 2015). Board independence, which refers to the proportion/numbers of non-executive directors on the board, is also related to director compensation. A higher proportion/number of non-executive directors on a board limits the director's compensation and leads to larger pay for performance sensitivity (Renneboog and Zhao, 2011).

### ***Ownership Structure***

Ownership structure is a key aspect of corporate governance. A capital structure with more ownership concentration means large shareholders may have an incentive and the expertise to take strong control of a company and may lead to more compensation for directors (Renneboog and Zhao, 2011; Crespi-Cladera and Pascual-Fuster, 2015).

### ***Director Characteristics***

Directors with a longer tenure have more chance of obtaining a higher compensation package (Crespi-Cladera and Pascual-Fuster, 2015). The longer the experience of a director the better managerial ability and more competitive the director is in the labour market. A higher education level of a director indicates better management knowledge, especially if a director has an MBA degree (Bulter and Gurun, 2012). In addition, gender is another important determinant of the director's compensation. Beretrans and Hallock (2002) and Kulich et al. (2011) found that the number of female directors is less and they earn 45% less than their male colleagues. Moreover, the director's network is also one of the important determinants of director compensation. Directors with higher network centrality as well as more network connections are more likely to be offered a higher compensation package in the company (Renneboog and Zhao, 2011; Core et al., 1999).

### **2.4.3 Theoretical Explanation of Director Compensation**

According to the function of director compensation as well as the relevant people involved in daily operations within a company, there are two main theories that apply to investigating director compensation: stakeholder theory and agency theory.

Stakeholder theory indicates that a company offers a director a compensation contract to maximise shareholders' value. The compensation level is also based on the demand and supply of the particular director in the labour market as well as the efforts they put in to maximise shareholders' value and improve the company's performance (Grinstein and Hribar, 2004). Therefore, under stakeholder theory, a director would be offered higher compensation if the director has better skills and can efficiently maximise the shareholders' wealth. But on the other hand, paying directors higher compensation is not in the shareholders' interests, while shareholder is another stakeholder in the company. Thus,

stakeholder theory for director compensation is meant to find a balance between the relevant stakeholders.

However, agency theory argues that directors with higher managerial power would influence the board decisions based on their personal interests instead of to maximise shareholders' values (Grinstein and Hribar, 2004). In this situation, agency theory assumes that the board needs to have enough independent outside directors to limit the inside director's management of the company, which makes it important to include a suitable mix of directors with different backgrounds and experience on boards to maintain business success (Farag and Mallin, 2017). In this way, the more directors on the board, the more compensation the company should pay for them. In other words, director compensation would be defined as a potential agency problem with a high agency cost (Vo and Canil, 2016). A high director compensation gap within the board is always associated with agency problems (Bebchuk et al., 2011).

#### 2.4.4 Brief literature Review of Director Compensation

In the existing literature, there are lots of studies investigating the relationship between director compensation and mergers and acquisitions. Guest (2009) investigate director compensation in 2471 UK public companies from 184 to 2001 along with merger and acquisition activities. The researcher find that director compensation is significantly increased after acquisition activities. Grinstein and Hribar (2004) also find similar results as the director could have more power to encourage and make the merger and acquisition decision, which is significantly positively related to their bonus compensation.

Another study by Focke et al. (2017) investigate the influence of company prestige on executive compensation. They find that in the case of higher company prestige, the directors would get 8% less compensation than lower or non-ranking companies. This could be because higher prestige companies bring better social status and improve a director's future career prospects (Focke et al., 2017). Therefore, these directors would prefer the trade-off of higher prestige for monetary compensation and allow a lower compensation growth rate.

Moreover, as the compensation gap is significantly large between directors, there are a lot of studies that focus on this area. Perryman et al. (2016) investigate the gap between male and

female directors in top management teams along with company performance and risk. They find that the compensation pay gap between genders is significantly large, but with increasing of gender diversity on boards, the compensation gap is dropping between the genders.

### ***Research Motivation 2 (Director Networks, Director Compensation and Corporate Lobbying)***

By reviewing the literature on corporate lobbying, director networks and director compensation, the second motivation of this thesis is to find out the effects of director networks on director compensation in lobbying companies. I find that both corporate lobbying and director networks are significantly related to company performance, while company performance is significantly related to director compensation. Arguably, company performance would be increased through the appropriate use of a director's network and corporate lobbying activities, which lead to an increase in director compensation. However, in the research examining the relationship between director network and director compensation (for example, Renneboog and Zhao, 2011), they fail to mention if these companies have a corporate lobbying set-up or not. Through corporate lobbying and director networks, directors could get access to valuable information (Unsal et al., 2016; Renneboog and Zhao, 2011), which helps them to make better strategic decisions to improve the company performance. When the company performance is improved under a director's appropriate decisions and management, there is more chance of them receiving higher compensation (Renneboog and Zhao, 2011). Therefore, director networks should have some effects on director compensation in lobbying companies. Moreover, there are studies investigating director compensation in lobbying companies (for example, Brodmann et al., 2019), but they do not take the influence of director networks on determining director compensation into consideration. To address these research gaps, due to a lack of research on the influence of director networks on director compensation in lobbying companies, in this thesis, I first examine the influence of director networks on director compensation in U.S. lobbying companies.

## **2.5 Capital Structure**

Capital structure is defined as the specific combination of debt and equity that a company applies in its financial operations (Gill et al., 2009; Gill et al., 2011). There are lots of choices

of capital structure that a company can choose from. Companies can choose a high proportion of debt or a low proportion of debt, or arrange lease financing, apply warrants, issue convertible bonds etc. (Gill et al., 2009; Lindner et al., 2018).

Capital structure is significantly important for every company. Generally speaking, it is important for the management team to make the most appropriate capital structure decision to maximise the company value (Sheikh and Wang, 2011), maintain the company competitiveness and increase company profitability (Linder et al., 2018; Gallo, 2015). Finding the perfectly balanced combination of debt and equity and controlling the cost of the capital structure decisions are not a simple job for directors and managers (Oztekin, 2015). An unsuitable capital structure may lead to financial distress and bankruptcy for the company (Sheikh and Wang, 2011). Capital structure is also significantly related to company risks as an inappropriate capital structure could reduce the company value and harm shareholders' interests (Myers, 1984). Therefore, the capital structure is very important for the management team, including directors and managers, to make the right decision (Lindner et al., 2018).

In the existing literature, the determinants of capital structure are widely discussed, both globally and in specific countries. This section will provide a detailed review of all the relevant determinants of capital structure as well as the related theories that apply to capital structure.

### 2.5.1 Determinants of Capital Structure

The existing literature provides an understanding of the determination of capital structure. The main key factors that determine capital structure are asset structure, non-debt tax shields, company growth, uniqueness, industry classification, company size, earnings volatility and company profitability (Titman and Wessels, 1988; Oztekin, 2015; Daskalakis et al., 2017; Gill et al., 2009; Gill et al., 2011). In the following sections, I will briefly summarise the findings of the determinants of capital structure from the literature.

#### ***Assets Structure***

The assets structure owned by the company is determined as an influence of capital structure choice based on the most theories that explain capital structure (Titman and Wessels, 1988).

Lots of empirical studies give evidence of this statement. Companies with a more flexible assets structure prefer to apply more debt instead of issuing new equity because of the costs of the new issue of equities (Titman and Wessels, 1988). However, a higher debt level along with more perquisites by directors and managers would lead to a higher possibility of bankruptcy (Grossman and Hart, 1982). The capital structure cost of the companies with fewer collateralizable assets would be high. Therefore, these companies with fewer collateralizable assets would prefer higher debt levels to limit the director's and managers' decisions to consume perquisites (Titman and Wessels, 1988).

### ***Non-debt Tax Shields***

A model of capital structure investigating the influence of corporate taxes, personal taxes and non-debt related taxes is carried out by DeAngelo and Masulis (1980), with the finding that tax deductions for depreciation and investment tax credits are a substitute for the tax benefits of debt financing, which means companies with large non-debt tax shields compared to their expected cash flow would prefer less debt in the capital structure (Daskalakis et al., 2017; Titman and Wessels, 1988).

### ***Company Growth***

According to Titman and Wessels (1988), growth opportunities are “capital assets that increase value to a company but cannot collateralized and do not collect current taxable income”, which is determined as a kind of intangible asset of the company. This definition suggests a negative link between capital structure and growth opportunities, which means the companies with higher or better growth opportunities would borrow less (Sheikh and Wang, 2011).

### ***Firm Size***

Titman and Wessels (1988) have suggested that large companies tend to be more diversified with less opportunity for bankruptcy, less cost for issuing debt and equity, and longer terms for issuing debt and equity, which supports a positive relationship between firm size and capital structure.

### ***Earnings Volatility***

The existing empirical studies have found a negative relationship between capital structure and earnings volatility (Titman and Wessels, 1988; Sheikh and Wang, 2011). The greater



volatility of earnings a company has would lead to a higher chance of the company being unable to pay back the contract on time (Oztekın, 2015). In other words, a company's debt capacity would be less, along with more earnings volatility.

### ***Company Profitability***

Because of information asymmetry and the transaction cost incurred when issuing new equity, the previous profitability, which is the amount of available earnings left from the previous year, become an important determinant of capital structure choice (Titman and Wessels, 1988). In other words, the more profitability left from the past, the higher the cost of capital structure choice would be applied for the company as they have more available money to pay the cost of corporate financing.

Except all the listed company level determinants of capital structure, there are lots of studies that have examined the macroeconomic determinants of capital structure. These determinants include inflation rate and GDP, interest rate on borrowing, legal and regulatory framework, bankruptcy law and procedures and accounting standard (Daskalakis et al., 2017; Oztekın and Flannery, 2012; Oztenkin, 2015).

### **2.5.2 Theoretical Explanation of Capital Structure**

Agency theory (Jensen and Meckling, 1976) determines that the optimal capital structure of every company depends on the value of debt that decreases conflicts between stockholders and managers, as well as the conflicts between stockholders and debt holders. The theory suggests that the right choice for the capital structure can mitigate the agency cost of the company (Berger and Patti, 2006). In other words, an appropriate capital structure with higher leverage or a low equity to asset ratio mitigates the agency costs of external equity and increases a company's value. In addition, higher leverage also decreases the agency conflicts between shareholders and managers in choosing the capital structure as well as minimising the company investment risks (Jensen and Meckling, 1976).

The foundation of Trade-off theory is bankruptcy and financial distress costs and agency costs (Sheikh and Wang, 2011; McNamara et al., 2017). Trade-off theory for capital structure argues that a company sets a target level for their debt to equity ratio that balances the tax

advantages of additional debt against the costs of possible financial distress and bankruptcy arising from excessive debt (Modigliani and Miller, 1958), in which managers are assumed to focus on shareholders' interests (Bhagat et al., 2011) and maximise the company value (Lindner et al., 2018). In other words, corporate legal and contracting issues are involved in the Trade-off Theory of capital structure. The company's institutional environment can affect its choice of optimal capital structure and its institutional environment can affect the company's adjustment speed in terms of the capital structure choice (Ostekin and Flannery, 2012).

Pecking order theory (Myers, 1984; Myers and Majluf, 1984) is one of the most popular capital structure theories, which is based on two assumptions. One is that the directors or managers are well informed about the company's future plans compared to outsiders; another is that directors or managers are behaving in the best interests of the current shareholders (Sheikh and Wang, 2011). According to this theory, companies tend to apply a perfect hierarchical order of financing: internal resources first and then, if external financing is required, they prefer debt to outside equity (the following pecking order: retained earnings – debt – equity) (Lindner et al., 2018). In general, this behaviour is explained in terms of information asymmetries between managers and potential outside financiers, which limits access to external finance, based on company valuation prospects, investment opportunities and earnings volatility (Lindner et al., 2018; Myers and Majluf, 1984).

### 2.5.3 Brief Literature Review of Capital Structure

Capital structure, as one of the most important corporate financial activities, aims to maximise company value (Gill et al., 2009). Therefore, capital structure-related studies examine the relationships between capital structure and company performance. Moreover, the relationships between capital structure and information asymmetry are also widely discussed in the existing literature (see Table 2.5.1). Directors, who are the capital structure decision makers, need information on the financial market and/or the financial industry to adjust to an appropriate capital structure to maximise the company value. Table 2.5.1 lists several research areas on capital structure in the existing literature.

According to the existing literature, the asymmetric information between the firm and external investors is important for capital structure decision-making (Lemmon and Zender,

2019). The director's network is also treated as an effective way to reduce the information asymmetry (Intintoli et al., 2018). However, there is no clear research examining the influence of director networks on capital structure among the prior studies. Thus, this study would like to address the research gap to investigate the effects of director networks on capital structure.

Table 2.5.1 Capital Structure related studies

Area	Authors	Research about
Company performance	Chadha and Sharma, 2015	impact of capital structure company financial performance
	Abor, 2005	investigate the relationship between capital structure and company profitability
	Berger and Di Patti, 2006	Relation between capital structure, agency cost and company performance under Corporate governance theory
	Chen et al., 2019	relation between company profitability and capital structure
asymmetric information	Ripamonti, 2020	the long run relationship between capital structure adjustments and asymmetric information
	Lemmon and Zender, 2019	Relation between Capital structure choice and asymmetric information
Director characteristics	Bhagat et al., 2011	the effects of manager characteristics on capital structure
	Lin et al., 2020	By applying a mediating effect model to examine the mechanism of effect of director characteristics on accounting information disclosure quality in China
Other	Huang and Shang, 2019	Relation between Capital structure and social capital
	El-Ghoul et al., 2021	examines how cross-country variations in legal institutions (creditor rights) influence corporate structure

#### 2.5.4 Research Motivation 3 (Director Network, Capital Structure and Corporate Lobbying)

By reviewing the literature on corporate lobbying, director networks and capital structure, another motivation for this thesis is to find out the influence of director networks on capital structure in lobbying companies. I find that corporate lobbying, director networks and capital

structure are significantly related to company performance. Through corporate lobbying and director networks, directors can get access to valuable information (Unsal et al., 2016; Renneboog and Zhao, 2011), which helps directors to make better strategic decisions to improve their company's performance. Capital structure is one of the most important decisions that a director can make to maximise company value. In order to decide the appropriate capital structure, directors need more information to reduce the information asymmetry in the decision-making process. This could be achieved through the director's network, and also their lobbying network (Akbas et al., 2016; Nandy et al., 2020). Therefore, director networks should have some effects on capital structure in lobbying companies. Although there is some research investigating the effects of networks on capital structure (for example, Huang and Shang, 2019), their network effects are based on the country and company level social capital, and do not examine a lobbying company set-up. To address this research gap, in the second research question, I exam the effects of director networks on capital structure in U.S. lobbying companies, by applying a network centrality measure to this.

## **2.6 Research Gap**

Based on the key literature, the important points related to corporate lobbying, director networks, director compensation and capital structure have been summarised to identify the research gaps for this thesis. Overall, I find two main research gaps from the literature which are linked to the two individual research questions for this thesis. Figure 2.1 presents the research gap for director networks and director compensation in lobbying companies, which aims to answer the first research question (see p.23). Figure 2.2 presents the research gap for director networks and capital structure in lobbying companies, which aims to answer the second research question (also see p.23).

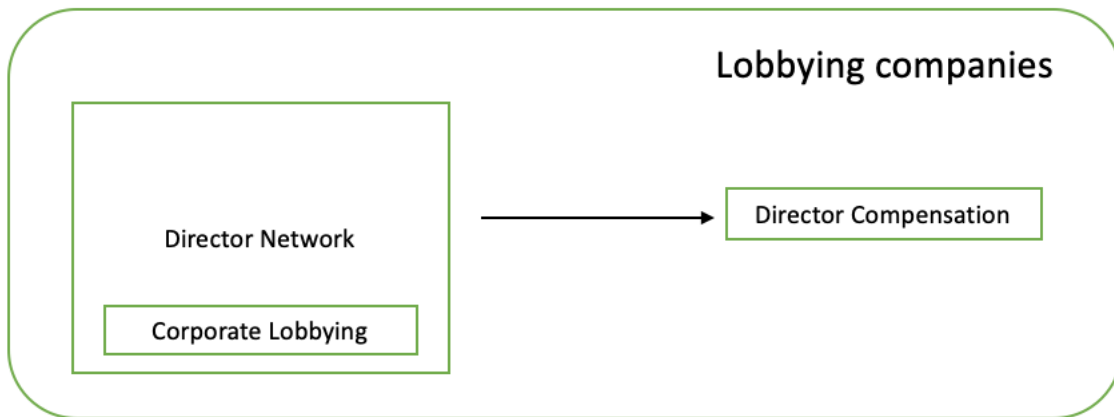


Figure 2.1 Research gap – the effects of director network on director compensation in corporate lobbying companies

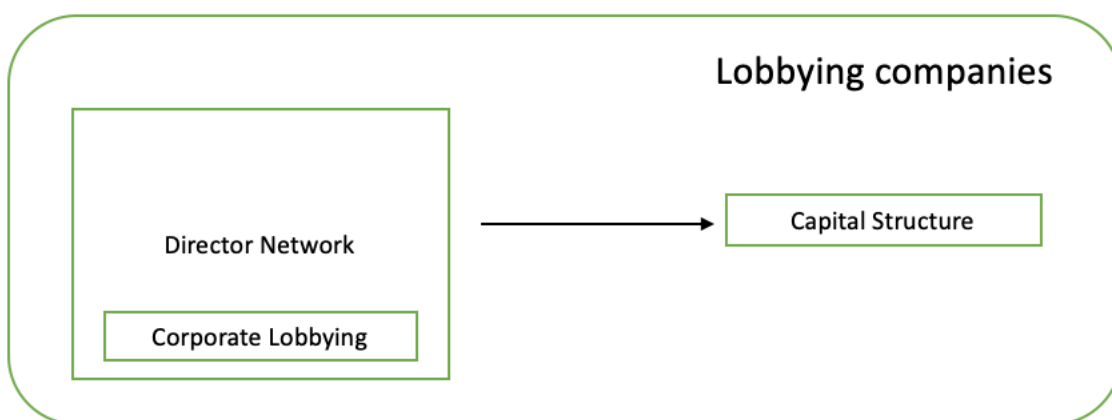


Figure 2.2 Research gap – the effects of director network on capital structure in corporate lobbying companies

Since corporate lobbying activities are considered as an important corporate strategy, this topic is still highly discussed in the literature. The focus in the academic area is mostly based on the corporate level determinates of corporate lobbying, the financial and strategic benefits that corporate lobbying could bring to these lobbying companies, and the legislative benefits that the lobbying company could achieve (Hill et al.,2013; Chen et al., 2015; Larcker et al., 2013). Although existing studies have considered corporate lobbying activities as an important decision taken by directors of companies, but there are limited studies that considered corporate lobbying as a kind of director network. Also, corporate lobbying is a channel for directors to build up their networks with politicians and lobbyists, through which the director could get access to valuable information and make better strategic decisions for the company (Fracassi and Tate, 2012; Nandy et al., 2020). However, there is a lack of evidence about how directors achieve personal benefits through corporate lobbying activities.

Director networks are also highly discussed in the literature, as networks can bring benefits to companies as well create damage for the company. According to the existing literature,

director networks have either positive or negative impact or even not obviously related to company performance (Larcker et al., 2013; Anders et al., 2013). However, the evidence shows that through director networks, directors can exchange information, ideas and knowledge, which would affect their decision-making for their companies (Renneboog and Zhao, 2016). For example, when directors meet politicians through their networks, this could encourage them to make lobbying decisions for the company. Arguably, both director networks and corporate lobbying activities significantly affect the company performance. Although there is research where the topic investigates the influence of director networks for the company, but it does not distinguish whether these companies are engaging in lobbying activities or not. Therefore, in this study, I will address the research gap focused on corporate lobbying

Usually, when directors take decision on behalf of the company, they prefer to maintain a balance in the agency relationship. When the directors are able to maintain shareholders interest they receive a reasonable compensation for their performance (Kale et al., 2009). Agency Theory states that director compensation is an incentive for directors to lead the company to achieve better performance and maximise the shareholders' wealth (Smirnova and Zavertiaeva, 2017). In order to achieve a better corporate performance and get higher director compensation in return, directors need to implement their managerial ability and take the appropriate decisions for the company. Director networks play an important role in directors' decision-making processes. The existing literature provides a clear view that director networks, which reflect the directors' quality, reputation, managerial power, previous achievements and experiences, bring valuable information which helps the company to modify or make better corporate decisions (Renneboog and Zhao, 2011; Larcker et al; 2013; Fracassi and Tate, 2012; Renneboog and Zhao, 2014). By applying valuable and useful information in daily corporate operations, directors have good opportunities to make timely adjustments to corporate strategic plans and make appropriate decisions for the benefit of the company. Therefore, there is a high chance that director networks will have a positive and significant relation with compensation. The literature on director compensation shows that well-connected directors get higher compensation than directors who have a less extensive network. Renneboog and Zhao (2013) find both direct and indirect networks bring directors higher compensation in UK-listed companies. Similar results exist for Spanish-listed companies (Crespi-Cladera and Pascual-Fuster, 2015). Balsam et al. (2017) also find that director networks are positively related to director compensation in the U.S.

Corporate lobbying, as a kind of network, also benefits the company in terms of performance (Nandy et al., 2020). It is a corporate strategic decision to influence a government's policy-making process to meet corporate wishes (Unsal et al., 2016). Company performance has been proved to improve in the companies that have lobbied (Unsal et al., 2016; Chen et al., 2015). In addition, there is an evidence that director compensation is different for lobbying companies compared to the non-lobbying companies (Brodmann et al., 2019).

It is evident in the literature that there is a relationship between director network and director compensation. Company performance, as one of the most important assessments of the company's achievement, is also linked with corporate lobbying activities (Cao et al., 2018). Better company performance leads to better director compensation (Bebchuk et al., 2011).

Studies have examined the relationship between director networks and director compensation in listed companies all around the world. But there is no clear identification of these companies in terms of whether they are doing corporate lobbying activities or not. Arguably, there are no clear studies examining the relationship among director networks and director compensation in lobbying companies. Based on the corporate lobbying literature, director network literature and director compensation literature, using company performance as the connection to all, this study aims to fill the research gap by investigating the relationship between director networks and director compensation in the U.S. lobbying companies (See Figure 2.1, p. 51). To address the gap, the research question is "What is the relationship between director networks and director compensation in U.S. lobbying companies?". The research question is link with the aim of the study. By proving this question theoretically and empirically, I am able to fulfil the objectives of the study. The findings of the above-mentioned question allow me to contribute to the existing literature by extending the studies related to corporate lobbying, director networks and director compensation.

Capital structure is one of the most important decisions that a director has to make as it determines how the company can grow, the liability of the company towards to external finance provider etc. Thus, the capital structure decision by the directors can allow a company to maximise the y value and increase shareholders' wealth (Gallo, 2015). The literature strongly establishes an outline of company level determinants of capital structure (Titman and Wessels, 1988; Kieschnick and Moussawi, 2018), as well as macroeconomic

level determinants of capital structure (Daskalakis et al., 2017; Oztekin, 2015; Oztekin and Flannery, 2012). Other studies have examined the relationship between capital structure and corporate profitability. Grill et al. (2011) find that capital structure is positively related to corporate profitability in the United States, while Abor (2005) find a significantly positive relationship between capital structure and probability in Ghana. Moreover, capital structure decision-making is also influenced by the information asymmetry between the company and external investors (Lemmon and Zender, 2019). Therefore, access to valuable information plays an important role, especially for directors when they try to make an appropriate capital structure decision for a company.

Director networks, an effective channel for information exchanges, reduce the information asymmetry (El-Khatib et al., 2015). Corporate lobbying is also a kind of network, reducing the information asymmetry (Unsal, 2018). From the perspective of reducing information asymmetry, both director networks and corporate lobbying could help directors to make appropriate capital structure decisions. Moreover, directors, the decision-makers for capital structure, and their characteristics can also affect their decisions about capital structure (Bhagat et al., 2011; Huang and Shang, 2019). Although there are limited studies examining the effect of directors' social capital on capital structure, they do not consider the lobbying effects of capital structure or the influence of director networks on capital structure in the lobbying company set-up.

Overall, there are limited studies investigating the director-level determinates of capital structure, especially focusing on the director network perspectives. In addition, there is also no clear classification of these companies in the capital structure-related literature in terms of whether they are lobbying companies or not. From the company performance perspective, director networks help directors to access valuable and non-public information. Through the information collected from director networks, directors can make appropriate decisions for the company to improve the company's performance. The capital structure decision is one of the most important corporate financial decisions taken by directors, and directors also need extra information to make appropriate capital structure decisions to maximise the company's value (Grill et al., 2019). Therefore, directors need information to make the appropriate capital structure decision, and the information could come from the director's network as well as corporate lobbying networks. However, there are no prior studies about the influence of director networks on capital structure in lobbying companies (See Figure 2.2, p.51). To



consider the relationship between director networks and corporate lobbying on reducing information asymmetry, and the effects of the information asymmetry on capital structure, it is interesting to address the research gap from the literature to examine the relationship between director networks and capital structure in U.S. lobbying companies. Thus, the second research question of the thesis is “How can director networks affect directors’ decisions about capital structure in U.S. lobbying companies?” By answering this question, I am able to enhance the knowledge of the reader about the importance of considering the pecking order theory along with the agency theory and also extend the corporate finance literature on capital structure by considering the lobbying companies. The findings of the study will guide the policy makers to identify the need of any additional policy to minimize the risk of agency problems.

## **2.7 Conclusion**

In order to investigate the relationship between director networks and director compensation and the influence of director networks on capital structure in U.S. lobbying companies, this chapter provides a review of the previous literature about director networks, corporate lobbying, director compensation as well as capital structure to identify the research gap. Overall, there is no study clearly examining the relationship between director networks and director compensation in lobbying companies and there is limited research investigating the relation between director networks and capital structure, especially in lobbying companies. To address these research gaps, two research questions have been developed in this study.

The conceptual framework is developed to address the research gaps in the next chapter. Based on the developed conceptual framework, two hypotheses are made to answer the research questions.

# Chapter 3

## Conceptual Framework

## **Chapter 3 Conceptual Framework**

### **3.1 Introduction**

After a systematic literature review of corporate lobbying, director network, director compensation and capital structure, I find there is a limited number of studies examining the influence of director network in lobbying companies. Also, very few studies have investigated the effects of networks on capital structure in lobbying companies. To address these research gaps and to answer the two research questions, this chapter aims to develop a conceptual framework and hypotheses relevant to the research aims of this thesis (See p.23 for research aims in detail).

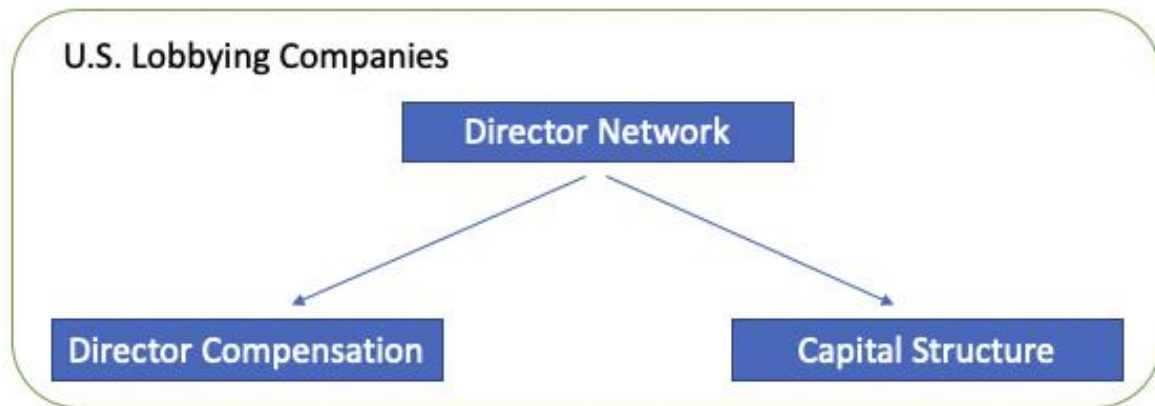
To begin with, I review relevant theories on corporate lobbying, director networks, director compensation and capital structure as discussed in Chapter 2. Based on this detailed review, a conceptual framework was developed to examine the influence of director networks on director compensation and capital structure in U.S. lobbying companies. Moreover, two hypotheses were developed to examine the two research questions.

### **3.2 Development of Conceptual Framework**

From the literature, a significant relationship is found between director networks and director compensation (Renneboog and Zhao, 2011; Crespi-Cladera and Pascual-Fuster, 2015), but they fail to distinguish between lobbying and non-lobbying companies in explaining this relationship. To address this research gap, the first research question of this thesis is to examine this relationship in U.S. lobbying companies (See Figure 3.1).

In addition, I also find limited research which investigates the influence of networks (social capital) on capital structure (Huang and Shang, 2019). But there are researches where researchers discuss the importance of director networks in the discussion of company performance (Larcker et al., 2013) and relationship between company performance and capital structure (Oztekin, 2015). However, in the above studies researchers have not examined these relations in the set -up of lobbying companies. To address this research gap,

the second research question of this thesis is to examine the influence of director networks on capital structure in the U.S. lobbying companies (see Figure 3.1).



*Figure 3.1 Conceptual Framework*

In order to improve the understanding of the relationship between director networks and director compensation and the effects of director network on capital structure in U.S. lobbying companies, two research questions are developed in this study (see p. 23). This section is targeted at developing a conceptual framework to address the research gaps and answer the research questions. Figure 3.2 provides guidelines about the theories applied to develop the theoretical framework supporting the research gaps mentioned in Section 2.6. However, agency theory cannot fully explain the two research questions, especially in the context of lobbying companies, as lobbying is considered as an additional tool of networking for the directors. Thus, there is a need to introduce other theories to better explain the two research questions used in this thesis. More specifically, I introduce the social capital theory to explain director network along with lobbying. Agency theory can reduce the agency problem, but not explain how directors as the main stakeholders of the company can take care of their compensation. Then I apply the stakeholder theory. However, to explain the second research question, I focus on the pecking order theory as that will help in determining the order of preference for equity and debt by the U.S. lobbying companies. The following figure explains how these theories can explain my research questions.

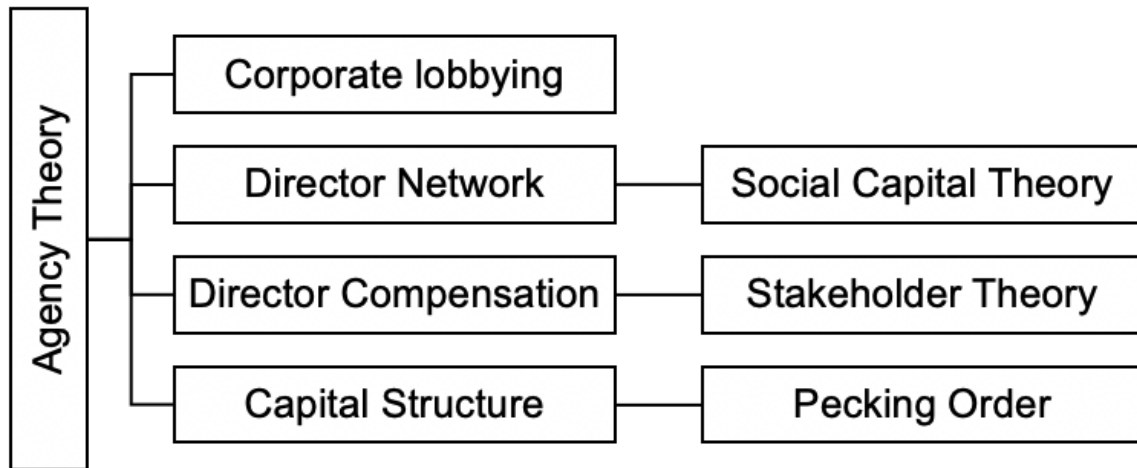


Figure 3.2 Theoretical Framework

Agency theory argues that directors should make full use of the available resources to improve company performance and maximise shareholders' wealth. In directors' daily management or operation of a company, they need to make lots of decision to achieve the above objectives (Hassan et al., 2017). Director's personal characteristics, including their skills, knowledge, experience, and even their networks, are important to serve the company in terms of achieving better performance. Thus, directors with higher managerial power could influence the board decisions based on their personal interests instead of the company's interests (Mathur et al., 2013). In my study, directors may pursue their personal interests in lobbying activities, which would lead to a potential agency issue with agency cost (Unsal et al., 2016). Meanwhile, these powerful directors are usually offered higher compensation (Unsal et al., 2016). In this situation, high director compensation would also lead to agency problems if the director is not worthy of the payment or the benefit gain from the director cannot cover the compensation (Vo and Canil, 2016).

In addition, agency theory states that director compensation is an incentive designed to be linked with company performance; thus, better company performance should lead to higher director compensation (Smirnova and Zavertiaeva, 2017). Given this, directors should make the appropriate decisions to improve the company performance and get higher compensation in return. Capital structure is one of the most important areas of decision-making for directors. Agency theory also argues that if the company makes an inappropriate capital structure decision, the agency cost could be increased and possibly lead to a decrease in company value, which may lead to a decrease in director compensation (Berger and Patti,

2006). Arguably, inappropriate capital structure could lead to agency problems and an increase in corporate financing costs. If the potential agency problem accrues, the agency cost would increase.

Therefore, directors, as corporate decision makers, should make the appropriate decision to improve a company's performance and meet the shareholders' interests. A director network is defined as an effective way to access valuable and non-public information (Akbas et al., 2016; Larcker et al., 2013), which helps directors to make timely strategic decisions and shape long-term strategy for the company. Corporate lobbying activities are also defined as a useful channel to get potential political information through the negotiation with governments (Nandy et al., 2020). Therefore, both director networks and corporate lobbying activities could benefit directors to get access to valid information for strategic decision-making. Arguably, director networks and corporate lobbying are reducing the information asymmetry, thus, reducing the agency cost of information collection. However, due to potential agency problems, director networks and corporate lobbying should be applied only if the director network and lobbying benefit the company performance and meet the shareholders' interests (Unsal et al., 2016). More specifically, the director network and corporate lobbying could harm the company if the director makes corporate decisions based on their own interests (Inintoli et al., 2018). Thus, the agency cost could be increased as the director network effects and lobbying effects are not beneficial for the company.

Social capital theory normally deals with social networks and mutual benefits and value within the business environment (Harris and Helfat, 2007). A director could collect crucial, non-public and superior information through their network to make timely, appropriate and strategic decisions for the company to achieve better performance (Horton et al., 2012; Kathy et al., 2018). In terms of outcomes, the concept of social capital deals with how these networks could enable work effectiveness within an organisation (Dess and Shaw, 2001; Maak, 2007). Therefore, social capital is expected to benefit the organisations in meeting the target that leads to an improvement in organisational performance (Compton and Kenneth, 2016). Through director networks and corporate lobbying activities, directors could get valuable information for their strategic decision-making for the company to achieve better performance (Unsal et al., 2016; Akbas et al., 2016), whereby director networks and corporate lobbying are defined as social capital sources for directors to benefit the company performance and reduce the agency cost. Social capital theory can explain the reduced

information asymmetry among the director network and other benefits that the company can get from the director network (Cohen et al., 2008; El-Khatib et al., 2015).

Stakeholder theory provides a basic structure for understanding, maintaining and enhancing the relationship between companies and their stakeholders (Hill 2010). Stakeholder theory suggests that companies should not only maximise the shareholders' wealth, but should also meet the needs of all other stakeholders (Grinstein and Hribar, 2004). Under this theory, a director, as an important stakeholder in the company, should always aim to achieve better company performance, maximise the shareholders' value and satisfy other stakeholders' needs (Grinstein and Hribar, 2004). When company performance has been improved through director networks and corporate lobbying activities, or even through an appropriate capital structure in the lobbying company, not only directors could benefit of reasonable compensation based on their abilities, previous achievement and corporate decisions, but also other stakeholders could benefit from the performance achievements (Hill, 2010). The shareholder can then be paid more dividends. The employees of the company can receive higher salaries and be more competitive in the job market etc (Grinstein and Hribar, 2004). Thus, stakeholder theory is also applied to examine the effects of director networks on director compensation and capital structure in lobbying companies.

In order to maximise shareholders' benefit and maximise company value, capital structure decisions should be made in a strategic way based on a good understanding of the company's future vision and shareholders' interests (Lindner et al., 2018). Pecking order theory deals with the hierarchical order of financing of a company (Sheikh and Wang, 2011). With the help of reducing information asymmetries and advanced access to external finance organisations through director networks, capital structure decision could increase the company value only if the directors make the capital structure decision based on the development needs of the company under pecking order theory (Lemmon and Zender, 2019), and also reduce the agency costs when issuing appropriate capital structure for the company (Berger and Patti, 2006).

In summary, based on agency theory, corporate decision of corporate lobbying, director compensation, capital structure and even the needs of director network could lead to agency issue and cause agency costs. However, agency theory alone cannot fully support the examination of the relation between director network and director compensation and the

relation between director network and capital structure in the U.S. lobbying companies. In my first research question, I also introduce the social capital theory to support the director network effects, including lobbying network, on their compensation, as director network brings extra information access for directors. Stakeholder theory is applied to explain how directors as main corporative stakeholders consider their compensation and other stakeholders' interests. Thus, to fully explain my first question, I apply a theoretical framework of a combination of agency theory, social capital theory and stakeholder theory. In my second research question, I also apply a combination of agency theory and social capital theory to explain the effects of director network along with lobbying network in capital structure decision in the lobbying companies. In addition to the two theories, I also introduce pecking order theory, mainly to explain the capital structure decision in the lobbying companies. Based on agency theory, it is important for directors to understand the company's financing need of a hierarchical order of debts and equity to make the right capital structure decision to reduce the agency issue and agency costs. With the support of director network and lobbying, directors have high chance to access extra information to make a better financing deal for the company. Thus, to better explain my second research question, I develop a theoretical framework of a combination of agency theory, social capital theory and pecking order theory.

### **3.3 Hypotheses Development**

In this section, based on the previous review of the literature the hypotheses are developed. In order to achieve the research aim and objectives of this study and to answer the research questions, the hypotheses development for two empirical sections will be discussed separately in the following sections

#### **3.3.1 Research question 1: Relationship between Director Networks and Director Compensation in Corporate Lobbying Companies**

Generally, in the existing literature on director networks and director compensation, director networks are widely recognised as having a significantly positive relationship with director compensation. Firstly, director networks are defined as a reflection of directors' quality, reputation, managerial power, previous achievements and experiences in the labour market,



which stands for a higher chance of them making the company successful (Larcker et al., 2013; Fracassi and Tate, 2012). In addition, a well-connected director is meant to have more access to unpublicised information, ideas and knowledge to help the company make more effective strategic decisions (Renneboog and Zhao, 2011). An extensive director network brings with it a high probability of successful takeover transactions with less negotiation duration (Renneboog and Zhao, 2014). The annualised return of informed trading is also higher in companies with strong director networks (Akbas, Meschke and Wintoki, 2016). Thus, a director with a better network could bring benefits for the company in terms of financial gain as well as strategic improvement, which helps them have higher compensation in return.

The literature on director compensation shows that well-connected directors get higher compensation than directors who have less of a network. Renneboog and Zhao (2013) found both direct and indirect networks bring directors higher compensation in UK-listed companies. Similar results in Spanish-listed companies are found by Crespi-Cladera and Pascual-Fuster (2015). Balsam et al. (2017) also found that director networks are positively related to director compensation in the United States.

Thus, based on the literature above, the first hypothesis of the thesis is as follows:

*Hypothesis 1: Well-connected directors will get more compensation in lobbying companies in the United States.*

In the existing literature, there are three main types of executive networks based on their activities: personal networks, which are built up through education, are developed among directors who have graduated from the same universities or attended the same professional training programme (Bulter and Gurun, 2012); social networks are established through similar sports interests, club membership or any other social activities between directors (Fracassi and Tate, 2012); professional networks are defined as directors either sit on the same board as executives or they might have been in the same company in the past (Lu, Shailer and Wilson, 2016; Renneboog and Zhao, 2014). More specifically, the hypothesis is divided into three types of director network to examine the effects of director networks on their compensation in lobbying companies. Therefore, the more detailed hypotheses are as follow:

*Hypothesis 1a: Directors with extensive personal networks will get more compensation in lobbying companies in the United States.*

*Hypothesis 1b: Directors with extensive social networks will get more compensation in lobbying companies in the United States.*

*Hypothesis 1c: Directors with extensive professional networks will get more compensation in lobbying companies in the United States.*

### 3.3.2 Research question 2: Effects of Director Networks on Capital Structure in Corporate Lobbying Companies

Director networks enhance company value (Renneboog and Zhao, 2011). Unpublicised information, ideas and knowledge can be exchanged among directors within their network, which is beneficial to the company's strategic decision-making and also allows directors to reconsider and adjust their own plans of action to achieve better company or even personal performance (Renneboog and Zhao, 2011; Akbas, Meschke and Wintoki, 2016). Well-connected directors have incentives to make more successful takeover transaction decisions with less negotiation duration (Renneboog and Zhao, 2014). The annualised return from informed trading is also higher in companies with strong director networks (Akbas, Meschke and Wintoki, 2016). Moreover, a director's quality, managerial power and previous achievements and success can also be shown in director networks (Renneboog and Zhao, 2011; Wintoki and Xi, 2019), which are defined as a guarantee of the company success. As the director network will reduce information asymmetry, it is also defined as an important factor that will help a company to make appropriate decisions to improve the company performance (El-Khstib et al., 2015; Goergen et al., 2019).

Capital structure is significantly important for every company in its financial operations. Choosing an appropriate capital structure is one of the most difficult and important decisions that directors or top managers need to make (Gill et al., 2009; Gill et al., 2011). An appropriate capital structure decision can maximise the company value (Sheikh and Wang, 2011), maintain the company competitiveness and increase company profitability (Linder et al., 2018; Gallo, 2015) and decrease the bankruptcy risk financially (Sheikh and Wang, 2011; Oztekin, 2015; Myers, 1984). Capital structure is significantly related to company risks as it

deals with the combination of different debts and equity to maximise the company's performance and value (Myers, 1984). The literature on capital structure shows a significant positive relationship between capital structure and corporate probability (Grill et al., 2011; Abor, 2005).

In a summary of the existing literature, director networks promote the exchanges of information, ideas and knowledge, which have been proved to be a valuable method to improve the company performance. Capital structure choice is an important decision that relates to company financial operations and company profitability. The directors can also get more advice and/or experience on capital structure decisions from their network, which means they are likely to achieve higher profitability or performance. Therefore, the hypothesis underdeveloped from this literature is:

*Hypothesis 2: High centrality directors will make better capital structure decisions in lobbying companies in the United States.*

In the existing literature, the director network centrality measure is widely applied in director network-related studies (Inintoli et al., 2018; El-Khatib et al., 2015; Goergen et al., 2019; Renneboog and Zhao, 2014; Andres et al., 2013), which captures how important a director is in their network. The degree measures the direct links that a director has in their network. Closeness measures the number of geodesic paths from an individual director to another director within their network. Betweenness measures the shortest paths connecting two directors in the network. Eigenvector centrality measures the extent to which a director is connected with other highly connected directors.

In order to measure the quality of an individual director compared to another director, the network centrality measure is widely applied in the existing literature to investigate director network-related studies (Inintoli et al., 2018; El-Khstib et al., 2015; Goergen et al., 2019; Renneboog and Zhao, 2014; Andres et al., 2013), namely degree, closeness, betweenness and eigenvector centrality. The director network centrality measure is to help understand how important an individual director is in the network and how effective the network is for the directors (Inintoli et al., 2018). Degree measures all the direct connections of directors in the networks with other directors, which measures the fraction of directors to which he is linked (El-Khatib et al., 2015; Goergen et al., 2019). Closeness measures the number of geodesic

paths from an individual director to another director within their network. This measure captures the connections to highly influential directors. Betweenness is measuring the shortest paths connecting two directors in the network. This measure captures the absolute position of a director in the network. Eigenvector centrality is defined as the extent to which a director is connected with other highly connected directors. This measure captures the importance of a director in the network. Therefore, the more detailed hypotheses are as follow:

*Hypothesis 2a: High degree centrality directors will make better capital structure decisions in lobbying companies in the United States.*

*Hypothesis 2b: High closeness centrality directors will make better capital structure decisions in lobbying companies in the United States.*

*Hypothesis 2c: High betweenness centrality directors will make better capital structure decisions in lobbying companies in the United States.*

*Hypothesis 2d: High eigenvector centrality directors will make better capital structure decisions in lobbying companies in the United States*

### **3.4 Conclusion**

In order to investigate the relationship between director networks and director compensation and the influence of director networks on capital structure in U.S. lobbying companies, the conceptual framework is developed to explain the research questions in this study.

Generally, this study applies a combination of agency theory, social capital theory, stakeholder theory and pecking order theory to examine the relationship between director networks and director compensation and to examine the effects of director network on capital structure decisions in U.S. lobbying companies. To meet the research aims and objectives of this study, I first develop the conceptual framework and then clearly explain the need of combination of theories to develop the two hypotheses, which are discussed in the following chapters.

The next chapter discusses the methodology applied in this study to examine the two hypotheses, including research philosophy, research approach, research strategy as well as

research design. Sample selection and data collection are also explained separately for the two empirical sections with the detailed variable description used in the baseline model applied in the empirical sections.

# Chapter 4 Methodology

## **Chapter 4 Methodology**

### **4.1 Introduction**

The previous chapter has developed a conceptual framework to analyse the impact of a director's network on both director compensation and capital structure in lobbying companies in the U.S. In this chapter, I justify the methodology used.

This chapter explains the methodology applied with the purpose of supporting the study. I describe and explain the procedures and methods applied, which validate the proposed framework. Furthermore, this chapter establishes the appropriateness and reliability of the methodology applied to address the research questions. I discuss the fundamentals of research paradigms. Then, I explain the reasons for using a quantitative method in this study.

Thereafter, the research design and research approach are discussed in detail, followed by discussion of sample selection methods, the data collection process, and data management.

### **4.2 Research Philosophy**

Before selecting the research method and choosing the research design, it is important to choose a suitable research philosophy, because it builds up the foundation of the process that the research follows (Creswell, 2009). The significant original research design step is to apply the most appropriate research paradigm (Saunders et al., 2016). A research paradigm is defined as a philosophical outline that characterises how to perform research from the points of view of different individuals and the type of information around the world (Collis and Hussey, 2009). There are three main research philosophy approaches, namely positivist, interpretive, and critical research (Collis and Hussey, 2014).

Positivism is defined as "an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality and beyond" (Bryman, 2016, p. 24), which is designed to collect data from observable realities and discover similarity in the data collected so that it can be generalised to other researchers' theories (Saunders et al., 2016). Interpretative is defined as follows: "reality is socially constructed and cannot be captured by single interpretations that all observers, or rather, participants in reality, share"

(Rodela et al., 2016, p. 17), which is focused on understanding human behaviours from available participants' personal reference frame (Hussey and Hussey, 1997). Critical research is trying to find “the interpretations of reality, but often does so through the lens of power relations” (Rodela et al., 2016, p. 18).

#### 4.2.1 Rationale for adopting positivist paradigm

Research is described as a series of systematic investigations that attempts, by using the suitable methods through data collection, data analysis and results interpretation, to understand, describe, predict or control a phenomenon in these kinds of context (Burns, 1997; Mertens, 2007). Therefore, without applying a proper paradigm at the beginning, there is no foundation for the methodology, research methods, literature or research design. The nature and conditions of all research questions and problems determine the best match for different research approaches.

The positivist paradigm aims to distinguish between discovery and validation (Fay, 1975). Positivism is defined as research approaches that apply empirical methods, predict the extensive application of quantitative analysis, or develop logical calculations to establish formal explanatory theory (Fox and Miller, 1998, p. 1718). Under a positivist paradigm, theory is the foundation of explanation, controlling the permission of anticipative phenomena and the prediction of phenomena occurrence (Collis and Hussey, 2014, p. 44). In order to be considered a positivist study, research should apply quantifiable variable measures, formal propositions, hypotheses examination and focus on specific phenomena of the chosen sample population (Orlikowski and Baroudi, 1991). Therefore, it is suggested that a well-established research procedure for a positivist study for an empirical study is to summarise the literature to build up a suitable theory and make appropriate hypotheses and investigate the hypotheses (Collis and Hussey, 2014, p. 62).

This study is designed under a broadly positivist paradigm. The purpose of this study is to investigate the effects of director networks on corporate financial terms in lobbying companies in the United States. By reviewing different theories and models about corporate financial terms, this study has applied a hypothesis-based framework. In order to examine the



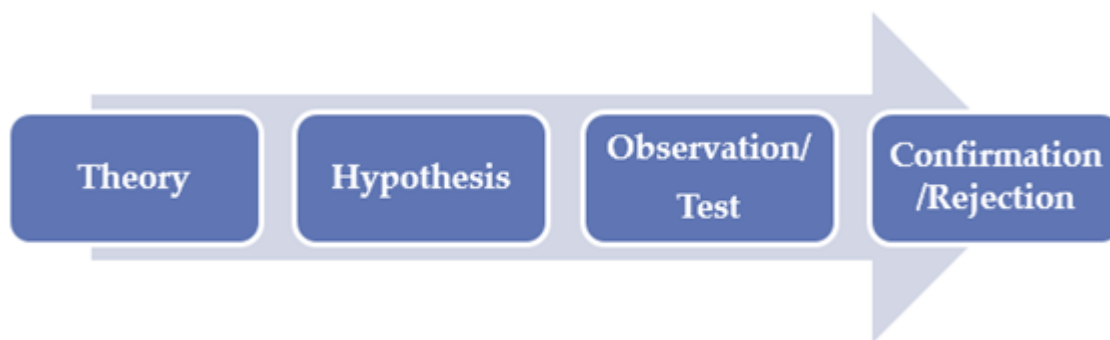
research hypotheses applied in this study, the positivist (quantitative) approach is applied as it is suitable for this research.

The reasons for applying the positivist approach instead of the interpretivist approach in this study are as follow. First of all, a positivist approach requires a large sample population to be involved and emphasises the correlations between two or more variables (Collis and Hussey, 2014). This study is to investigate the influence of director networks on director compensation and capital structure in U.S. lobbying companies. In order to find the link between director networks and director compensation and between director networks and capital structure, a reasonable sample of lobbying companies is required in this thesis. Following the literature, two hypotheses are developed to answer two research questions. By collecting secondary data from different databases, two datasets with reliable sample sizes are applied to meet the research aims of this thesis. Next, the key to a positivist approach is often focusing on the existing theories as the most significant source of knowledge (Schrag, 1992; Saunders et al., 2016). In fact, positivist research is generally carried out based on previously examined relationships (Meredith et al., 1989). This study is individual research and remains neutral throughout the whole research process. Following the literature, this thesis applies a combination of Agency Theory, Social Capital Theory, Stakeholder Theory and Pecking Order Theory to examine the influence of director networks on director compensation and capital structure, which is defined as the theoretical framework to meet the research aims and objectives of this thesis. Finally, a positivist approach is suitable because it provides a clear theoretical focus for this study, improves the data collection, and produces sufficient sample data available to analyse and compare (Hussey and Hussey, 1997). With the help of the literature, it provides the idea of a possible database, a target sample size and the method for data analysis. All this information gives a better understanding of how to meet the research aims and objectives of this study.

#### 4.2.2 Rationale for adopting deductive approach

Deductivism is a significant concept within social research, following a positivist approach (Saunders et al., 2009). A deductive approach is defined in the following way: "the objective of the study is to create hypotheses that can be tested and, in a manner, to clarify laws surveyed" (Bryman, 2016, p.22). The deductive approach is very logical. It involves the

identification of a phenomenon based on literature research, the development of hypotheses based on theory and then, the design of appropriate research strategies to examine these hypotheses (Collis and Hussey, 2003). The deductive approach is applied as it provides the possibility of measuring concepts quantitatively, and an explainable causal relationship between concept and variables, by developing a theoretical framework and examining concepts using empirical data collected from different databases. Therefore, through theory hypotheses are developed; and then through a complete analysis, a confirmation or rejection of hypotheses are classified (Snieder and Larner, 2009). The collected data are tested statistically with a view to “generalizing the results to a population” (Collis and Hussey, 2014, p. 62). Figure 4.2.1 below shows the process of deductive research approaches and outcomes.



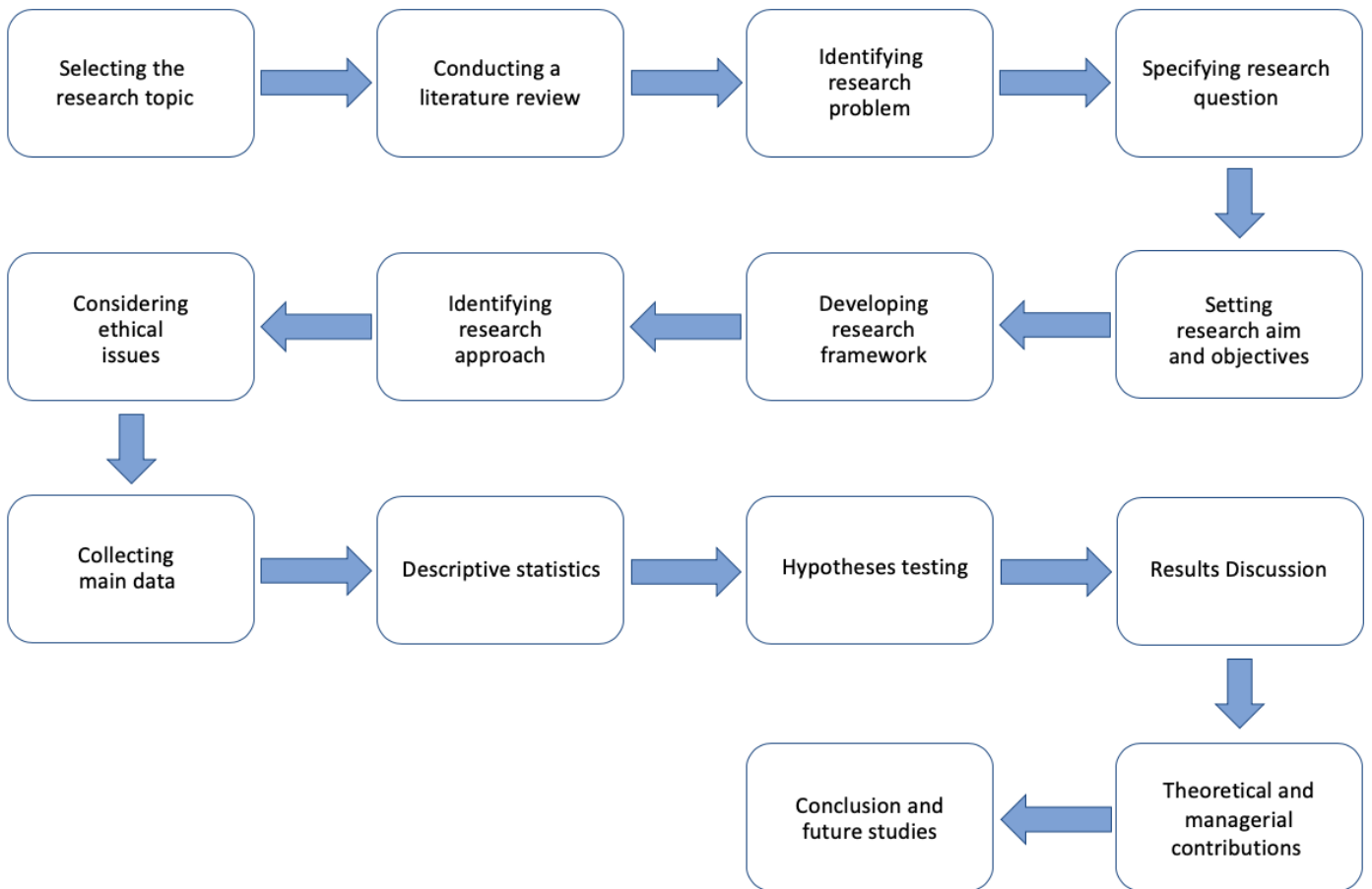
*Figure 4.2.1: Deductive approach (Bryman 2016, p.22)*

This study applies a deductive approach. By reviewing the existing literature on corporate lobbying, director networks, director compensation and capital structure, two main research gaps are found to investigate the influence of director networks on director compensation and capital structure in U.S. lobbying companies. In order to address the research gaps, the research aims of this thesis link to how director networks affect director compensation and capital structure in U.S. lobbying companies, by applying a combination of Agency Theory, Social Capital Theory, Stakeholder Theory and Pecking Order Theory as the theoretical framework. Moreover, with the support of the literature, two hypotheses (see p. 63 and p.65) are developed to examine two research questions for this thesis. The research data are collected specifically for this thesis from secondary databases, DataStream, Bloomberg and Center for Responsive Politics. I use STATA software to clean and analyse the data. After a series analysis of the collected data, two research questions are answered and the research aims are achieved in this thesis.

### **4.3 Research Design**

A research design is defined as a plan that explains how, when and where data should be collected and analysed (Collis and Hussy, 2014). The research design helps to limit the scope of the research, and lessens the chance of describing inaccurate causal effects from the collected data (Hair et al., 2006; Creswell, 2009). Arguably, the research design is the function of research objectives. Therefore, it is important to apply a suitable research design within the whole process of the research. Then, the research design is defined as a framework or systematic approach to be applied to reach the aim and objectives of the research (Bryman and Bell, 2007). The key elements of the research design are described in the following content. Figure 4.3.1 shows the research design of this study.

To begin with the design process in this study takes the choice for the area or topic of interest, which is director networks, corporate lobbying, director compensation and capital structure. Next a comprehensive and critical literature review is undertaken related to the above-mentioned research topics, aiming to identify the research gap within the existing literature and the importance of carrying out this research, and also to extend the knowledge of the existing literature. The research questions, aims and objectives are explained accordingly. After that, a theoretical framework is developed to answer two research questions in which two individual hypotheses are identified based on the existing literature review. Ethical issues are considered before the data collection on director networks and relevant corporate financial terms. In order to investigate the influence of director networks on director compensation and capital structure two datasets are applied to two research questions separately. By using a series of analytical methods, a deep discussion is carried out on the results obtained accordingly for the two research questions and hypotheses. Finally, the conclusion provides a summary of this study, academic and practical contributions of the study, as well as some suggestions for future research.



*Figure 4.3.1 Research Design*

#### **4.4 Research Approach**

There are three main research approaches, namely: quantitative, qualitative and mixed methods (both quantitative and qualitative) (Saunders et al., 2009).

Generally speaking, quantitative research aims to test theories through examination and confirmation of the relationships between different variables (Creswell, 2009). Therefore, the key element of quantitative studies is the quantification of data. By analysing the collected data, it allows us to generalise the results from the sample data to the entire population of interest. Quantitative studies are often related to a positivist paradigm (Goldkuhl, 2012), apply the deductive logic of the social sciences (Saunders et al., 2009), and collect data from existing databases and then examine the hypotheses (Collis and Hussy, 2014). Figure 4.3.1

shows the process through quantitative research by using secondary data through various databases (Bryman and Teevan, 2005). It begins with the selection of the appropriate theory to address the research problem and research question to examine and develop hypotheses. Next, it is the plan of how, when and where the data can be collected and analysed, followed by the discussion of the results gained from the data.

A qualitative approach aims to improve the knowledge of primary reasons for a specific issue (Creswell, 2009). Arguably, qualitative research is not confirmation about some theory but exploratory in nature. Therefore, the results of a qualitative approach are “not arrived at by means of statistical procedures or other means of quantification” (Strauss and Corbin, 1990, p. 17) but, mainly based on comments collected from a small sample of participants (Bryman and Teevan, 2005). Qualitative studies are often related to interpretivism rather than positivism (Goldkuhl, 2012; Miles and Huberman, 1994), and apply an inductive approach, where the theory is the result of the research (Collis and Hussy, 2014; Saunders et al., 2016). There are three main data collection methods under qualitative methods: (1) in-depth, open-ended interviews, (2) direct observation, and (3) analysis of written documents (Patton, 1990).

A mixed-method approach often incorporates the application of both quantitative and qualitative approaches in one piece of research but in different designs. These research designs include a concurrent mixed-methods design, sequential mixed-methods design, and a sequential multi-phase design (Creswell, 2009; Saunders et al., 2016). Mixed-method studies apply both deductive and inductive approaches to build up theories. Exploratory and confirmatory are the nature of mixed-method approach (Amaratunga et al., 2002).

#### 4.4.1 Rationale for adopting quantitative approach

After reviewing the various research approaches, it is necessary to apply an appropriate research approach in this study, based on the nature of this research, the research problem and research question, as well as the requirements and accessibility of data (Punch, 2005). The aim of this study is to investigate the effects of director networks on related corporate financial terms within lobbying companies in the United States, which requires more specific

data related to these contents. This study applies a quantitative method in the form of secondary data analyses for the following reasons.

Firstly, a quantitative approach is often related to a positivist paradigm, which has been applied as the most appropriate research paradigm for this study (Goldkuhl, 2012; Collis and Hussy, 2014; Saunders et al., 2016). In addition, a quantitative approach is often related to deductive logic methods, which aims to understand the variables and theories before doing the research (Creswell, 2009), and to target the database for collecting and then examining the hypotheses (Collis and Hussy, 2014). Secondly, this study applies a theoretical model with examinable hypotheses to investigate the effects of the director network on related corporate financial terms in American lobbying companies. Moreover, the proposed framework is based on existing theories (Agency Theory, Social Capital Theory, Stakeholder Theory and Pecking Order Theory), targeting the validity of empirical confirmation. Finally, based on the characteristics of this study, the sample size for this research should be relatively large and then it is easy to draw some conclusions from the analysis of the collected data (Kothari, 2004). Thus, a quantitative approach by collecting secondary data from various databases is the most appropriate method for this study (Teddlie and Tashakkori, 2010; Saunders et al., 2016).

#### 4.4.2 Research Strategy

A research strategy is defined as an overall plan that helps researchers to answer research questions and meet goals in an academic and logical way (Saunders et al., 2016). In other words, a research strategy is normally considered as a bridge link for the research paradigms or philosophies and practical strategy, which refers to how to collect and analyse the data (Saunders et al., 2016). A good research strategy helps the researcher to define why they are applying a specific research method to carry out the research in an effective way to answer the research questions. Consistently following the chosen research paradigm and approach for an individual study, identifying specific resources or databases for data collection, and thinking about the limitations of the data collection process are the three characteristics considering as constraints of a good research, which should also be based on the research aims and research questions (Collis and Hussy, 2014; Saunders et al., 2016). The data are

primarily collected from the existing databases to achieve the research aims and objectives. A detailed description of sample selection and data collection will be provided next.

An experimental research strategy aims to investigate the link between two variables (Collis and Hussy, 2014; Saunders et al., 2009), which gives researchers an opportunity to investigate the changes from one independent variable to another dependent variable. In my thesis, I apply an experimental research strategy. I first investigate the influence of director networks on director compensation in U.S. lobbying companies. Secondly, I investigate the relationship between director networks and capital structure in U.S. lobbying companies. Compared to the existing literature, I set the sample companies as U.S. lobbying companies, which is a new set-up to investigate the influence of director networks on director compensation and capital structure. Therefore, the experimental research strategy helps me to better address the research gaps and investigate the two research questions for my thesis effectively.

#### **4.5 Sample selection and Data Collection**

In order to investigate the effects of director networks and corporate lobbying on director compensation as well as the effects of director networks on capital structure in lobbying companies, U.S. lobbying companies have been chosen to carry out this study. The reason for targeting the U.S. lobbying company are as follow. Firstly, the U.S. is the largest lobbying country in the world (Borisov et al., 2016). They have an advanced system and legal allowance for companies to do lobbying activities (Cao et al., 2018). Companies can do the corporate lobbying directly to the government via specific channels or hire a professional lobbyist to lobby for them (Unsal et al., 2017). The U.S. government also has an official platform to release lobbying statistics, where lobbying data are more transparent and easier to collect for academic research. Secondly, lobbying in the U.S. is huge compared to other countries (Goldman et al., 2013). At the end of 2015, there are over 100 American organisations employing over 400 lobbyists spending \$45 million lobbying on labour issues (Unsal et al., 2017). The U.S. is a big market for corporate lobbying, where lobbying is not only part of company level negotiations with the government but also federal level negotiations (Chen et al., 2015).

Dusso et al. (2019) state that the potential clients of professional lobbyists could come from any background, including members of Congress, Congressional staffers, the President, White House staff and high-level employees of relevant agencies. Back to the prior literature, U.S. lobbying activities are widely discussed to identify the determinants and importance of lobbying (Hill et al., 2013; Kerr et al., 2011; Chen et al., 2015; Cooper et al., 2010; Cao et al., 2018). The purpose of directors to make lobbying decisions is to get benefits from government political policies (Unsal, 2018), such as tax benefits (Richter et al., 2009), and to achieve better performance by increasing sales revenue (Chen et al., 2015). In addition, lobbying activities are also defined as a kind of network, which helps to reduce information asymmetry in director decision-making processes (Nandy et al., 2020). The lobbying effects of company performance are widely discussed in the literature (Unsal et al., 2016). Because corporate lobbying could bring valuable information for directors to make timely strategic decisions, company performance can be improved. Moreover, corporate lobbying aims to influence a government's policy-making process to make more favourable policies for the company to achieve better performance. Therefore, the prior studies in the U.S. give the motivation and theoretical background for this study to find the research gap. By following prior studies, this research is focusing on U.S. lobbying companies to achieve the research aims. Arguably, all the companies registered in the United States which are also doing lobbying in the United States are the target sample population for this study. According to the lobbying literature, the major lobbying database is the Center for Responsive Politics, which is the official lobbying database in the United States. The lobbying data applied in this study are manually collected from this database.

As this study is targeting U.S. lobbying companies, the first step is to collect lobbying data from the American lobbying database, the Center for Responsive Politics. All the available lobbying data from the database are collected for this research. The lobbying data, mainly the lobbying expenses, cover over 1000 U.S. companies from 2005 to 2015.

After having the company list of lobbying companies, the next step is to find out the director network information for these companies. Bloomberg is the second database used in this study. Bloomberg provides all the demographic information for company directors, including their current employment, job title and all the boards they are sitting on. Moreover, their educational background as well as social activity information is also provided in Bloomberg. In the process of collecting director network data, there are some lobbying companies that do



not have any director network information in Bloomberg, which is defined as missing data and these lobbying companies are deleted from the sample companies. After merging the data from corporate lobbying companies and available director network data, the sample size dropped to 821 lobbying companies with director networks. The other data used in this study, including director compensation data, capital structure data as well as all other financial control variables, are collected from Datastream, which provides comprehensive corporate financial information all over the world.

To investigate the effects of director networks and corporate lobbying on director compensation in U.S. lobbying companies, by answering the first research question is answered and testing Hypothesis 1, director compensation data still needed to be added to the 821 lobbying companies mentioned above. The director compensation data is collected from Datastream. Deleting the missing data yielded a usable sample comprising 278 lobbying companies with 7,144 director yearly observations for a ten-year period from 2005 to 2014.

To examine the influence of director networks on capital structure in U.S. lobbying companies, answering the second research question and testing Hypothesis 2, capital structure-related data, which is collected from Datastream, is added for the 821 lobbying companies mentioned above. Deleting the missing data yielded a usable sample comprising 607 companies with 39,914 director yearly observations during the period from 2005 to 2015.

## 4.6 Model Description

The baseline model below is widely applied in the existing literature to investigate the effects of director networks on different issues (Renneboog and Zhao, 2011; Larker et al., 2013; Ferris et al., 2019). By following the literature, this study will also use the baseline model (*Eq i*) to examine the effects of director networks in U.S. lobbying companies.

$$y = \alpha + \beta_1 X_1 + \beta_2 Control + \varepsilon \quad (Eq\ i)$$

To investigate the relationship of director networks and director compensation in U.S. lobbying companies, a combination of agency theory, social capital theory and stakeholder theory is applied to build up the theoretical framework of the baseline model used in this

empirical section. Inappropriate corporate lobbying activities with director network, quality of director networks and unsuitable director compensation could increase unexpected agency cost and lead to agency problems based on agency theory (Mathur et al., 2013; Vo and Canil, 2016; Wintoki and Xi, 2019). Director networks can obtain information, knowledge and other resources for both the directors and companies, which will improve the company performance and be of benefit to shareholders if the director gets well-used to these social capital terms. Better company performance will enhance the director compensation. In other words, when a company deals with the agency problem in corporate lobbying, it can maintain and increase the benefits for its stakeholders, such as shareholders and directors. Therefore, with the support of agency theory, social capital theory and stakeholder theory, Eq 1 is applied to test Hypothesis 1, where director compensation terms are the dependent variables, and director network terms and corporate lobbying terms are the independent variables. A more detailed description of variables is discussed in the next section (see Section 4.7.1).

$$\begin{aligned} \text{Director Compensation} = & \alpha + \beta_1 \text{Director network} + \beta_2 \text{Corporate Lobbying} + \beta_3 \text{Firm Size} + \beta_4 \text{Tobin's } Q + \beta_5 \\ & \text{Board Size} + \beta_6 \text{Board independence} + \beta_7 \text{ROA} + \text{Year indicates} + \varepsilon \quad (\text{Eq 1}) \end{aligned}$$

To examine the influence of director networks on capital structure in U.S. lobbying companies, a theoretical framework of a combination of agency theory, social capital theory and pecking order theory is used to develop the baseline model in this empirical section. Based on agency theory, inappropriate corporate decision of corporate lobbying through director network and inefficient capital structure could lead to agency issue and increase agency costs (Berger and Patti, 2006). Director networks allow access to valuable information, exchanges of knowledge and other resources for directors to make strategic decisions to benefit the company. Under social capital theory, director networks reduce information asymmetry and provide a channel to exchange knowledge, which aims to help the director to make an appropriate capital structure based on pecking order theory, which helps directors to understand and determine the appropriate corporate financing preference order for equity and debts. Eq 2 is used to test Hypothesis 2, where capital structure terms are the dependent variables, and director network terms are the independent variables. A more detailed description of variables is given in the following section (see Section 4.7.2).

$$\begin{aligned} \text{Capital structure} = & \alpha + \beta_1 \text{ Director network} + \beta_2 \text{ Corporate Lobbying} + \beta_3 \text{ Firm Size} + \beta_4 \text{ Tangibility} + \beta_5 \text{ Payout} \\ & + \beta_6 \text{ Cap Ex} + \beta_7 \text{ Market to Book} + \beta_8 \text{ R\&D} + \beta_9 \text{ Board Size} + \beta_{10} \text{ Board Independence} + \text{Industry indicates} + \\ & \text{Year indicates} + \varepsilon \end{aligned} \quad (\text{Eq 2})$$

#### 4.6.1 Variable Description for Testing Hypothesis 1 - Eq 1

Mainly in Eq 1, director compensation is the dependent variable, which includes salary, bonus, equity-related compensation, and total compensation. Director network is the size of a director's network, which includes personal network, social network and professional network. Corporate lobbying is the annual lobbying expenditures for the company. Firm size, ROA and Tobin's Q, are the financial performance control variables. Board Size and Board independence are the Board characteristics control variables. Year dummy variables are also considered in the regression analysis.

##### ***Director Compensation***

Director compensation is the dependent variables to test Hypothesis 1. Following by Renneboog and Zhao (2011), the examination applies four proxies to measure director compensation. These variables are salary, bonus, equity, and total compensation, which helps to better understand how a director network would affect the different types of director compensation in U.S. lobbying companies. Salary is defined as the fixed annual payment, which is the major component of director compensation and is usually a cash-based payment. Bonus is defined as the additional amount of annual payment, and it is normally paid in cash or shares when specific targets or benchmarks are achieved. Equity Linked Compensation refers to the shares awarded to directors based on their achievements for the company, estimated according to the value of options awarded yearly. Total compensation is the sum of all the compensation proxies listed above. Following Bulter and Gurun (2012), because the pay gap between different directors in different companies is significantly large, the natural log of director compensation proxies is applied to examine Hypothesis 1.

##### ***Director Network***

Director network is the independent variable to test Hypothesis 1. Following Fracassi and Tate (2012), the director network variables are focused on the three types of director networks: personal, social and professional networks. This simple measure helps to understand the exact size of a director network, which is more direct to distinguish the

network size effect of individual directors (Balsam et al., 2017). The number of director connections is counted as the measurement of this variable, which follows Akbas et al. (2016). Personal network is the sum of the network size of 1) the directors attending the same university, graduating within two years of each other and earning a similar degree; 2) the directors attending the same institution for the same professional training or programme (Butler and Gurun, 2012). Social network is the sum of the network size of an individual director attending the same social group, charity or social club (Renneboog and Zhao, 2011; Faleye et al., 2014). Professional network is the sum of the network size of an individual director sitting in the different boards in the same fiscal year (Renneboog and Zhao, 2011).

### ***Corporate Lobbying***

Company lobbying expenditure is used as the corporate lobbying proxy (Hadani et al., 2015; Unsal et al., 2016). Because there is no clear restriction for the minimum and maximum amount of lobbying expenditure, these lobbying companies make their own contribution based on their needs in terms of spending on lobbying activities (Unsal et al., 2016). Arguably, this situation leads to a significant lobbying expenses gap among these lobbying companies (Butler and Gurun, 2012). Therefore, the natural log of the lobbying expenditure in US dollars spent by a company is applied in this study.

In order to assess director networks and corporate lobbying on director compensation in U.S. lobbying companies, in addition to the dependent and independent variables listed above, control variables are also important to better understand the situation. By following the existing literature, the control variables will be based on the determinants of corporate lobbying and director compensation.

### ***Firm Size***

Firm size has been applied to explain the differences in total managerial compensation (Renneboog and Zhao, 2011; Core et al., 1999; Murphy, 2000). Larger companies pay their directors more than small companies as they need more managerial talent from directors to lead large companies (Renneboog and Zhao, 2011). A similar discussion is also carried out in the corporate lobbying companies. Mathur et al. (2013) and Kerr et al. (2011) state that a large company size means there is more spending on corporate lobbying activities to reduce the information asymmetry and seek more potential benefits. Arguably, firm size is an important determinant of lobbying (Mathur et al., 2013) activities as well as director

compensation (Renneboog and Zhao, 2011). To control the influence for different firm sizes, it is calculated as the natural log of the total assets of the company (Renneboog and Zhao, 2011).

### ***Company Performance***

Stewardship Theory states that corporate lobbying activities should lead to positive effects on company performance. Empirical evidence supports this statement when some specific goals have been achieved through these lobbying activities (Yu and Yu, 2011; Richter et al., 2009). In addition, Agency theory states that director compensation is an incentive designed to be linked with company performance (Smirnova and Zavertiaeva, 2017). The application of different methods and indicators to evaluate company performance and director compensation causes a significant differentiation in the literature. Both corporate lobbying and director compensation are significantly influenced by corporate performance (Unsal et al., 2016; Chen et al., 2015; Crespi-Cladera and Pascual-Fuster, 2015). Therefore, it is necessary to have company performance related control variables in examining the relationship between director network and director compensation in the lobbying companies. To control for company performance variables, return on assets (ROA), which is calculated as the ratio of income to total assets, and Tobin's Q, which is natural log of the ratio of the market value of assets to book value of assets, are applied to examine Hypothesis 1.

### ***Board Characteristics***

Board characteristics represent an important control variable for director-related research (Focke et al., 2017) and an important determinant of director compensation (Hadami et al., 2015; Fracassi and Tate, 2012), which controls for the board effects of determining director compensation. To examine the effects of director networks on director compensation, this study is aggregated into two main forms of board characteristics following Renneboog and Zhao (2011). They are board size, which is the total number of directors sitting on a board and board independence, which is the outside or independent director sitting on a board.

By adding up all the dependent, independent and control variables to the baseline model *Eq i*, Eq 1 below will be applied to examine the effects of director networks on director compensation in U.S. lobbying companies.

$$\text{Director Compensation} = \alpha + \beta_1 \text{Director network} + \beta_2 \text{Corporate Lobbying} + \beta_3 \text{Firm Size} + \beta_4 \text{Tobin's } Q + \beta_5 \text{Board Size} + \beta_6 \text{Board independence} + \beta_7 \text{ROA} + \text{Year indicators} + \varepsilon \quad (\text{Eq 1})$$

Table 4.6.1 shows the key variables that are applied in the first empirical section to investigate the impact of director networks (network type measure) on director compensation as well as the importance of corporate lobbying activities on director compensation in U.S. lobbying companies.

#### 4.6.2 Variable Description for Testing Hypothesis 2 - Eq 2

Mainly in Eq 2, capital structure terms are the dependent variable, which includes book leverage, market leverage and MLM. Director network is the centrality measure of a director's network, which includes degree, closeness, betweenness and eigenvector centrality. Corporate lobbying is the annual lobbying expenditure for the company. In order to examine the effect of director networks on capital structure, the main control variables are linked with the other determinants of capital structure in the company, including Firm size, Tangibility, Payout, Capital Expenditure, Market to Book value, and R&D. Moreover, the board characteristics controls also apply in this examination. Industry dummy variables and year dummy variables are also considered in the regression analysis.

#### ***Capital Structure***

Capital structure terms represent the dependent variables to test Hypothesis 2. Following Oztekin and Flannery (2012) and Huang and Shang (2019), this study applies book leverage and market leverage as the proxies for capital structure, which is also widely used in other prior studies (Zhou et al., 2016; Oztekin, 2015). Based on the literature and the available data, book leverage is calculated as total debt (long-term debt plus short-term debt) divided by total assets, while market leverage is calculated as total debt (long-term debt plus short-term debt) divided by market value of total assets (total assets plus market equity minus book equity). Different capital structure measures would lead to different results (Nawaz et al., 2011). In addition, following Kieschnick and Moussawi (2018), this study also applied "MLM" as the proxy of capital structure. "MLM" is calculated as the sum of long-term debt and short-term debt divided by the sum of long-term debt, short-term debt and market value of common stock.

Table 4.6.1: Variable description – Effects of Director network on Executive compensation in lobbying companies

<b>Variables</b>	<b>Description</b>	<b>Source</b>
<b><u>Director Compensation</u></b>		
Salary	Fixed annual payment; usually cash based payment	Bloomberg, Datstream
Bonus	Additional amount of annual payment; normally paid in cash or shares when a specific target or benchmarks were achieved	Bloomberg, Datstream
Equity Linked Compensation	Shares awarded to the directors; the estimated value of options awarded yearly	Bloomberg, Datstream
Total Compensation	Sum of all compensation items listed above	Bloomberg, Datstream
<b><u>Director Networks</u></b>		
Personal Network	Network size when the directors graduated from the university or attend the same professional program with 2 years of each other	Bloomberg
Social Network	Network size when the directors joined the same social group, charity or sports club	Bloomberg
Professional Network	Network size when the directors sit in the same board; total networks size calculated yearly	Bloomberg
<b><u>Corporate Lobbying</u></b>		
Lobbying Expenditure	The expense that firms spend for lobbying activities; collected yearly	the Centre for Responsive Politics (CRP)
<b><u>Financial Performance</u></b>		
Firm Size	Natural log of the total assets	Datastream
ROA	The ratio of net income to total assets	Datastream
Tobin's Q	Natural log of the ratio of the market value of assets to book value of assets	Datastream
<b><u>Board Characteristics</u></b>		
board size	The total number of directors sitting in the board	Bloomberg
board independence	The number of outside or independent directors	Bloomberg

### ***Director Network – Centrality Measure***

Director network is the independent variable to investigate the effects of director network on capital structure. In order to measure the quality of an individual director, followed by El-Khatib et al. (2015) and Goergen et al. (2019), this study applies the network centrality measures to test Hypothesis 2, which includes degree, closeness, betweenness and eigenvector centrality. Degree is defined as all the direct connections of directors in the networks with other directors, which measures most information on a director's connections. Closeness is defined as the number of geodesic paths from a director to another director within their network. This measure captures the connections to highly influential directors. Betweenness is defined as the shortest paths connecting two directors in the network. This measure captures the absolute position of a director in the network. Eigenvector centrality is defined as the extent to which a director connects with other highly connected directors. This measure captures the importance of a director in the network.

In order to examine the influence of director network on capital structure in U.S. lobbying companies, in addition to the dependent and independent variables listed above, control variables are also important to better understand the situation. Firstly, this study is carried out in U.S. lobbying companies. The corporate lobbying variables help to examine whether corporate lobbying also has effects on capital structure or not. By following the existing literature, the other control variables will be based on the determinants of capital structure and the effect of board characteristics on director networks.

### ***Corporate Lobbying***

The lobbying expenditure variable is to create interaction terms with director networks to examine how lobbying activities and director networks affect the capital structure in these U.S. lobbying companies. Company lobbying expenditure is used as the corporate lobbying proxy (Hadani et al., 2015; Unsal et al., 2016). Because there is no clear restriction of the minimum and maximum amount of lobbying expenditure, these lobbying companies make their own contribution based on their need to spend on lobbying activities (Unsal et al., 2016). Arguably, this situation leads to a significant lobbying expenses gap among these lobbying companies (Bulter and Gurun, 2012). Therefore, the natural log of the lobbying expenditure in U.S. dollars spent by a company is applied in this study.

### ***Company Level Control Variables***



In the majority of capital structure determinants studies, company characteristics have significant effects on capital structure decisions. As this study aims to investigate whether director networks would determine capital structure at the director level to some extent, the other company level capital structure determinants are considered as control variables to test Hypothesis 2. Following Huang and Shang (2019), Dasklakis et al., (2017) and Kieschinck and Moussawi (2018), it applies a set of company-level control variables in examining Hypothesis 2, which would affect the relationship between capital structure choice and director networks in lobbying companies. The company-level control variables include Firm size (calculated as a natural logarithm of total assets), Tangibility (calculated as the net property, plant and equipment divided by total assets), Payout (calculated as common dividends divided by operating income before depreciation), Capital Expenditure (calculated as capital expenditure divided by total assets), Market to Book Value (calculated as the market value of assets divided by the book value of assets), and R&D (calculated as a dummy variable if there are research and development expenses in the available database).

### ***Board Characteristics***

Board characteristics represent an important control variable for director-related research (Focke et al., 2017; Hadami et al., 2015; Fracassi and Tate, 2012). As most of a director's network comes from their current and previous employment, the board characteristics control is important to understand how directors build up a professional network. Moreover, this section deals with the influence of director networks on capital structure in U.S. lobbying companies, so it is important to have some board characteristics as a control. Two main forms of board characteristics are applied in this study. They are board size, which is the total number of directors sitting on the board, and board independence, which is the number of outside or independent directors sitting on the board.

By adding up all the dependent, independent and control variables to the baseline model *Eq i*, Eq 2 below will be applied to examine the effects of director networks on capital structure in U.S. lobbying companies.

$$\text{Capital structure} = \alpha + \beta_1 \text{Director network} + \beta_2 \text{Corporate Lobbying} + \beta_3 \text{Firm Size} + \beta_4 \text{Tangibility} + \beta_5 \text{Payout} + \beta_6 \text{Cap Ex} + \beta_7 \text{Market to Book} + \beta_8 \text{R\&D} + \beta_9 \text{Board Size} + \beta_{10} \text{Board Independence} + \text{Industry indicates} + \text{Year indicates} + \varepsilon \quad (\text{Eq 2})$$

Table 4.6.2 shows the key variables that apply in the second empirical section to investigate the influence of director networks (centrality measure) on capital structure decisions as well as the importance of corporate lobbying activities on capital structure in US lobbying companies.

## **4.7 Conclusion**

In order to examine the influence of director networks on director compensation and capital structure in U.S. lobbying companies, the purpose of this chapter has been to discuss the research methodology applied in this study as well as the statistical method applied to address the research gap and test the hypotheses that are related to research questions.

Overall, this study investigates the above-mentioned relationships in lobbying companies, by applying a positivistic research philosophy, deductive approach and quantitative method. A research design for the whole study has also been explained in this chapter. Empirically, the data collection and sample selection process are discussed separately for the two hypotheses related to the research questions.

In order to answer the research questions and to achieve the research aims and objectives, the next chapter discusses the empirical examinations and tests that are conducted in this study related to the two research questions and hypotheses. The hypotheses developed in Section 3.4.1 and Section 3.4.2 are also tested in the next chapter. All the results and data analysis are discussed in the next chapter.

Table 4.6.2: Variable description – Effects of Director network on Capital structure in lobbying companies

Variable	Definition and calculation	Data Source
<b><u>Capital structure</u></b>		
Book Leverage	The ratio of total debt to the book value of total assets	Datastream
Mkt Leverage	Market Leverage; the ratio of total debt to the market value of assets	Datastream
MLM	The ratio of total debt to the sum of total debt and market value of common stock	Datastream
<b><u>Corporate Lobbying</u></b>		
Lobbying Expenditure	The expense that firms spend for lobbying activities; collected yearly	the Centre for Responsive Politics (CRP)
<b><u>Network centrality</u></b>		
D	Degree Centrality: Number of all direct links that each director has with other directors in the network.	Bloomberg and authors' calculation
C	Closeness Centrality: The inverse of the sum of shortest distance between the focal director and all other directors in a network.	Bloomberg and authors' calculation
B	Betweenness Centrality: The probability that a director lies on the shortest path between any other two directors of the network.	Bloomberg and authors' calculation
EC	Eigenvector Centrality: The importance of an individual director in the network	Bloomberg and authors' calculation
<b><u>Company level control</u></b>		
Firm Size	The natural logarithm of book value of total assets	Datastream
Tangibility	The ratio of net property, plant, and equipment to the book value of total assets	Datastream
Payout	Ratio of common dividends to operating income before depreciation	Datastream
Cap Ex	Capital expenditure: Ratio of capital expenditure to assets	Datastream
Market-to-Book	Market-to-book assets; the ratio of the market value of assets to the book value of total assets	Datastream
R&D	Dummy variable that equals to one if R&D expenses are missing in Compustat and zero otherwise	Datastream
<b><u>Board level control</u></b>		
Board size	The total number of directors sitting in the board	Bloomberg
Board independence	The number of outside or independent directors	Bloomberg

# Chapter 5 Empirical Analysis

## **Chapter 5 Empirical Analysis**

### **5.1 Introduction**

The objective of the thesis is to examine the research questions defined above. In this chapter, I focus on empirical analysis of the two research questions.

Based on the discussion in the previous chapter about the research design, in this chapter I show how the research problem is examined. More specifically, this chapter discusses the relationship between director network and director compensation in detail (See Chapter 5.2). In Chapter 5.3, I discuss how the director network can influence capital structure decision making in lobbying companies.

To explain each hypothesis, I start with a description of the data used to examine the argument. I use descriptive statistics to explain the data as the descriptive statistics analysis examines the frequency of categorical variables, reporting mean, median, standard deviation and ordinal numbers (Gefen et al., 2011). I then use Pearson's correlation coefficient to investigate the linear dependence between all the variables used in my two baseline models, resulting in a correlation matrix (Hair et al., 2016). I apply several empirical tests, including pooled ordinary least square analysis, two staged least square analysis, and fixed or random effects analysis, to find out the relation between director network and director compensation and the effects of director network on capital structure in U.S. lobbying companies.

The collected data for both empirical studies were analysed through STATA 14.2 software.

### **5.2 Hypothesis 1: Effects of Director Networks on Director Compensation in Corporate Lobbying Companies**

This empirical section is designed to examine the relationship between director networks and director compensation in the U.S. lobbying companies, answering Research Question 1 and testing Hypothesis 1. The analysis starts with the descriptive statistics for all the variables tested in the baseline model Eq 1, followed by the correlation analysis. The results of pooled ordinary least square analysis, two staged least square analysis and robustness analysis are

then provided. A conclusion for this empirical study is also presented at the end of this section.

### 5.2.1 Descriptive Statistics

Table 5.2.1 reports the summary statistics for all the variables in the sample lobbying companies, which presents of the frequency of the categorical variables used in this empirical section. As mentioned in the previous chapter, the natural log of compensation proxies is used in this study. The average total compensation is 5.948, whereas the mean of Salary, Bouns and Equity are 4.831, 7.706 and 5.572. The average lobbying expenses in the sample companies is 6.699, with a standard deviation of 1.497, which is consistent with the lobbying literature (Cao et al., 2018; Ghouma et al., 2019). The mean value of personal, social and professional network connections is 37, 93 and 18 separately, which is in line with Balsam et al.'s (2017) study. The mean and median values of Firm size, Tobin's Q and ROA are 10.56 (10.369), 7.42 (7.244) and 0.09 (0.087), This indicates that most of the sample companies are big companies, and the control variables show that the sample companies demonstrate normal operating performance. The mean value of board characteristics, Board Size (12.05) and Board Independence (10.31), are consistent with Crespi-Cladera and Pascual-Fuster (2015).

Table 5.2.1 Descriptive Statistics – Impact of director network on director compensation

Variables	Obs	Mean	Std. Dev.	25 <sup>th</sup> Pctl	Median	75 <sup>th</sup> Pctl
Salary (log)	5,550	4.830788	1.021587	4.369448	4.61512	4.89784
Bonus (log)	215	7.706244	1.111697	7.130899	7.875499	8.430982
Total Equity Linked Compensation (log)	5,608	5.572004	1.651344	4.691348	5.075174	5.590987
Total Compensation (log)	5,990	5.947844	1.497178	5.267858	5.521461	5.843544
Lobbying Expenses (log)	6,034	6.988824	1.51436	6.063785	7.138867	8.128585
Personal Networks	6,119	37.21866	46.36408	6	18	53
Social Networks	6,119	93.42687	144.2409	9	32	120
Professional Networks	6,119	18.65534	9.398153	12	15	24
Firm Size	7,129	10.56051	1.454466	9.569172	10.36921	11.39397
Tobin's Q	7,129	7.424335	1.287932	6.460985	7.244148	8.249773
Board Size	7,129	12.0509	2.191355	11	12	13
Board independence	7,129	10.31791	2.0914	9	10	12
ROA	7,129	0.0936537	0.066950	0.048437	0.087624	0.133240

This table presents the descriptive statistics of the sample variables. Specifically, this table reports the number of observations, pooled mean, standard deviation, 25th percentile, median, and 75th percentile of the dependent variables, independent variables and control variables. The sample consists of 7,129 director-year observations from 2005-2014, reporting 278 individual companies. All continues variables are winsorised at 1% and 99%.

## 5.2.2 Correlation Matrix

The correlation coefficient measures the strength or linear association degree between variables. The result provides evidence of a linear association among the research constructs and the collected data, so conducting this study does not generate any multicollinearity issues or lack of identification. In addition, Variables Inflation Factor (VIF) is also calculated to address the potential multicollinearity issues. The VIF value for each model is less than 10, which indicates that this study is not sensitive to multicollinearity. Correlations among all variables applied in this empirical section are reported in Table 5.2.2.

The correlations show a positive relationship between total compensation and personal network (0.10), social network (0.05) and professional network (0.11). This suggests that all three types of director network might have similar effects on director compensation. In addition, the correlation between director total compensation and lobbying expenses is positive and significant (0.26) at a 5% significance level. This suggests that more expenses spent on lobbying activities would bring more benefit to director compensation in U.S. lobbying companies.

Table 5.2.2 Correlation Matrix - Impact of director network on director compensation

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Salary (log)	1.00												
2. Bonus (log)	0.13	1.00											
3. Total Equity Linked Compensation (log)	0.12	0.20	1.00										
4. Total Compensation (log)	0.18	0.44	0.90	1.00									
5. Lobbying Expenses (log)	0.09	0.15	0.30	0.26	1.00								
6. Personal Networks	0.05	0.12	0.09	0.10	0.02	1.00							
7. Social Networks	0.20	0.06	0.02	0.05	0.18	0.02	1.00						
8. Professional Networks	0.10	0.04	0.07	0.11	0.00	0.05	0.19	1.00					
9. Firm Size	0.32	0.61	0.14	0.33	0.25	0.11	0.32	0.06	1.00				
10. Tobin's Q	0.38	0.33	0.03	0.15	0.17	-0.14	0.08	0.15	0.46	1.00			
11. Board Size	0.12	0.11	-0.06	0.04	-0.07	0.15	0.10	0.42	0.39	0.19	1.00		
12. Board independence	0.09	-0.03	0.01	0.06	0.12	0.02	0.13	0.19	0.21	0.09	0.71	1.00	
13. ROA	0.11	-0.01	0.10	0.09	0.18	-0.13	-0.34	-0.15	-0.33	0.20	-0.24	-0.08	1.00

Pearson correlation coefficients among all the variables applied in this empirical section 1, including dependent variables terms of director compensation, independent variables of director network different type measure and all control variables. The statistics are computed on the sample consists of 7,129 director-year observations from 2005-2014, reporting 278 individual companies. \*\* All results are significant at 5% level.

### 5.2.3 Ordinary Least Square (OLS) Analysis

In this section, I examine the relationship between director network and director compensation in the U.S. lobbying companies. Because of the director- and company-level effects in determining director compensation, ordinary least square analysis with director- and company-level control variables are applied to examine the above relationships. Table 5.2.3 reports the pooled ordinary least square analysis to examine Hypothesis 1. By following Renneboog and Zhao (2011), the results are run separately for the dependent variable proxies of compensation terms with one of each director network type independent variable. Models 1 to 3 show the results of the impact of director networks on total compensation; Models 4 to 6 show the results of the impact of director networks on salary; Models 7 to 9 show the results of the impact of director networks on bonus; and Models 10 to 12 show the results of the impact of director networks on equity-linked compensation. In general, the findings provide partial support for the hypotheses developed in Section 3.4.1 based on the different director compensation terms.

In Model 1 to 3, the effects of director networks on total compensation are examined. It shows that personal network ( $\beta_1 = 0.000194$ ,  $p < 0.01$  in Model 1) and professional network ( $\beta_1 = 0.0000421$ ,  $p < 0.05$  in Model 3) are both positive and statistically significantly related to total director compensation, while social network ( $\beta_1 = -0.00127$ ,  $p < 0.01$  in Model 2) is found to be negatively and statistically significantly related to total director compensation. In the total compensation proxy, the results support Hypotheses 1a and 1c.

In Models 4 to 6, the effects of director networks on salary are examined. Similar results are found with total compensation. Director personal network ( $\beta_1 = 0.000142$ ,  $p < 0.01$  in Model 4) and professional network ( $\beta_1 = 0.0000322$ ,  $p < 0.05$  in Model 6) are both positively and statistically significant related to total director compensation, while social network ( $\beta_1 = -0.000529$ ,  $p < 0.05$  in Model 5) is found to be negatively and statistically significantly related to total director compensation. This compensation proxy also supports Hypotheses 1a and 1c.

In Models 7 to 9, the effects of director networks on bonus are examined. There is no statistically significant relationship between directors' personal and social networks and bonus. However, professional network ( $\beta_1 = -0.000337$ ,  $p < 0.01$  in Model 9) is found to be negatively and statistically significantly related to bonus.



Table 5.2.3: Influence of director network on Director compensation in lobbying companies

	Total Compensation				Salary			Bonus			Equity	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lobbying Expenses	0.0328**	0.0664***	0.0364**	0.0324***	0.0491***	0.0351***	-0.0713	-0.0258	-0.0155	0.0204*	0.0621***	0.0245*
	(2.15)	(4.10)	(2.39)	(2.89)	(4.11)	(3.14)	(-1.32)	(-0.41)	(-0.29)	(1.16)	(3.33)	(1.40)
Personal Networks	0.000194***			0.000142***			0.0000988			0.000263***		
	(3.18)			(3.26)			(0.62)			(3.77)		
Social Networks	-0.00127***			-0.000529**			-0.00179			-0.00157***		
	(-4.14)			(-2.37)			(-1.25)			(-4.49)		
Professional Networks	0.0000421**			0.0000322**			-0.000337***			0.0000593***		
	(2.09)			(2.21)			(-3.49)			(2.60)		
Firm Size	0.0550**	0.0605**	0.0552**	0.0558***	0.0584***	0.0556***	0.527***	0.507***	0.566***	0.0715***	0.0792***	0.0717***
	(2.29)	(2.52)	(2.29)	(3.18)	(3.33)	(3.16)	(8.05)	(7.48)	(8.93)	(2.63)	(2.92)	(2.64)
ROA	1.064**	1.027**	1.076**	0.0913	0.0797	0.100	2.978**	2.831**	1.651	1.211**	1.167**	1.238**
	(2.47)	(2.39)	(2.50)	(0.29)	(0.26)	(0.32)	(2.23)	(2.12)	(1.23)	(2.48)	(2.39)	(2.53)
Tobin's Q	0.00763	0.0161	0.00712	-0.0165	-0.0128	-0.0166	0.0128	0.0139	0.0163	0.0138	0.0231	0.0127
	(0.34)	(0.72)	(0.32)	(-1.03)	(-0.79)	(-1.03)	(0.20)	(0.22)	(0.27)	(0.54)	(0.90)	(0.50)
Board Size	0.0669***	0.0728***	0.0708***	0.0541***	0.0571***	0.0571***	-0.0319	-0.00198	-0.0469	0.0899***	0.0969***	0.0951***
	(2.96)	(3.22)	(3.13)	(3.30)	(3.48)	(3.48)	(-0.69)	(-0.04)	(-1.05)	(3.38)	(3.64)	(3.57)
Board Independence	-0.118***	-0.116***	-0.122***	-0.0681***	-0.0676***	-0.0709***	-0.0400	-0.0536	-0.0258	-0.144***	-0.141***	-0.149***
	(-5.25)	(-5.15)	(-5.41)	(-4.18)	(-4.15)	(-4.34)	(-1.01)	(-1.32)	(-0.67)	(-5.41)	(-5.31)	(-5.59)
Obs	5126	5126	5126	4762	4762	4762	165	165	165	4805	4805	4805
Adj R-squared	0.013	0.011	0.013	0.012	0.011	0.011	0.394	0.443	0.401	0.015	0.013	0.015

Table 5.2.3 reports the results of the effects of director network and corporate lobbying on director compensation. The dependent variable is the term of compensation proxies: total compensation, salary, bonus, and equity. The primary independent variable is the director network proxies, including personal network, social network and professional network. Statistical significance of the coefficients is designed as follows: \* indicate significance at the 10% level; \*\* significance at 5%; \*\*\* significance at 1%.

In Models 10 to 12, the effects of director network on equity-linked compensation are examined. Similar results are found for total compensation and salary. Director personal network ( $\beta_1 = 0.000263$ ,  $p < 0.01$  in Model 10) and professional network ( $\beta_1 = 0.0000593$ ,  $p < 0.01$  in Model 12) are both positively and statistically significantly related to equity-linked compensation, while social network ( $\beta_1 = -0.00157$ ,  $p < 0.01$  in Model 11) is found to be negatively and statistically significantly related to equity-linked compensation. This equity-linked compensation proxy supports Hypotheses 1a and 1c.

The results show that director personal network and professional network are positively related to director compensation terms. This suggests that higher connections from a similar education background, and extensive employment-related connections will help the directors to get more compensation in the U.S. lobbying companies. This is because the director network is defined as an effective way to reduce information asymmetry and to exchange ideas and knowledge. Directors need this kind of information to make the corporate strategic decision (Renneboog and Zhao, 2011; Fracassi and Tate, 2012; Renneboog and Zhao, 2013). In addition, personal and professional is also a reflection of director's quality and managerial power (Larcker et al; 2013), which means these directors have extensive experience of managing a company and good ability of making appropriate decisions for the company. When the company performs well, the directors have high chance to offer a higher compensation in return (Goergen et al., 2019). However, director social network is found negatively related to director compensation, which does not support the hypothesis 1b. This could be because the original definition of the social network. In this study, the social network is built up through the social activities, of which these directors could attend the same sport club or charities. Based on the corporate confidential policy, they may not allow to discuss the business content outside the business environment (Wang and Steiner, 2020). Thus, directors could not exchange the information through the social network, which could have fewer positive effects on their compensation.

In addition, the results also show a majority of positive significant relationships between lobbying expenses and director compensation terms (total compensation, salary and equity-linked compensation), which suggests a positive effect of lobbying expenses on director compensation. Based on agency theory and social capital theory, the more expenses spend in lobbying, the higher chance to get back a favourite policy for the company to reduce the other agency issue and agency cost. Then, when the company performs better under the right

lobbying decision made by directors, they could have a higher compensation in return. Although the results show a negative relationship between lobbying expenses and bonus, it is not statistically significant. The results show that corporate lobbying expenses do have some important impacts on determining director compensation.

The findings provide new empirical evidence of the director network effects on director compensation to support Brodmann et al.'s (2019) research given that directors in lobbying companies have higher compensation than their peers in non-lobbying companies. Additionally, the findings expand Renneboog and Zhao's (2011) research of investigating the relationship between director network and director compensation to the U.S. lobbying companies and also provide new evidence of lobbying effects on determining director compensation.

In summary for the results of the pooled ordinary least square analysis, except for bonus, director personal and professional network is positively and significantly linked with director compensation proxies, while social network is significantly negatively linked with director compensation proxies. As the sample for bonus is just 165 director-level observations, it may not provide reasonable results to explain the issue. Overall, the majority of director network terms are positively related to director compensation, which supports Hypotheses 1a and 1c. Moreover, as lobbying expenses are positively and significantly related to director compensation terms, the results suggest the importance of corporate lobbying in determining a director's compensation.

In order to find the relationship between director network along with lobbying network together and director compensation in the U.S. lobbying companies, Table 5.2.4 reports the coefficients from ordinary least square regression between the interaction terms of director network proxies with corporate lobbying expenses on director compensation proxies. The aim of this investigation is to find out the importance of corporate lobbying in the determination of director compensation. Models 1 to 3 show the results of the impact of the interaction term for director network and lobbying expenses on total compensation; Models 4 to 6 show the results of the impact of the interaction term for director network and lobbying expenses on salary; Models 7 to 9 show the results of the impact of the interaction term for director network and lobbying expenses on bonus; and Models 10 to 12 show the results of

Table 5.2.4: Influence of director network and corporate lobbying on Director compensation in lobbying companies

	Total Compensation				Salary		Bonus			Equity		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Personal Networks X Lobbying Expenses	0.000216*** (0.0000600)			0.000163*** (0.0000430)			0.0000718 (0.000158)			0.000276*** (0.0000688)		
Professional Networks X Lobbying Expenses		0.000796** (0.000285)			0.000186** (0.000207)			0.00209 (0.00121)			- 0.00114*** (0.000325)	
Social Networks X Lobbying Expenses			0.0000492* (0.0000200)			0.0000385** (0.0000145)			0.000345*** (0.0000926)			0.0000639** (0.0000225)
Firm Size	0.0722** (0.0227)	0.0899*** (0.0230)	0.0743** (0.0227)	0.0732*** (0.0165)	0.0810*** (0.0167)	0.0745*** (0.0165)	0.499*** (0.0619)	0.495*** (0.0606)	0.561*** (0.0604)	0.0823** (0.0255)	0.107*** (0.0259)	0.0846*** (0.0255)
ROA	1.191** (0.426)	1.255** (0.427)	1.221** (0.426)	0.212 (0.307)	0.236 (0.308)	0.234 (0.307)	2.543 (1.296)	2.689* (1.286)	1.532 (1.273)	1.290** (0.483)	1.385** (0.484)	1.336** (0.484)
Tobin's Q	0.00854* (0.0221)	0.0150* (0.0222)	0.00802* (0.0222)	-0.0151* (0.0161)	-0.0125* (0.0161)	-0.0151* (0.0161)	0.0127* (0.0643)	0.0160* (0.0627)	0.0170* (0.0605)	0.0144* (0.0256)	0.0221* (0.0257)	0.0133* (0.0256)
Board Size	0.0600** (0.0224)	0.0590** (0.0224)	0.0637** (0.0225)	0.0478** (0.0163)	0.0477** (0.0163)	0.0508** (0.0163)	-0.0159 (0.0446)	0.00656 (0.0456)	-0.0442 (0.0434)	0.0855** (0.0263)	0.0840** (0.0264)	0.0902*** (0.0264)
Board Independence	-0.111*** (0.0222)	-0.105*** (0.0223)	-0.115*** (0.0223)	-0.0616*** (0.0162)	-0.0600*** (0.0162)	-0.0643*** (0.0162)	-0.0515 (0.0388)	-0.0586 (0.0386)	-0.0277 (0.0378)	-0.139*** (0.0263)	-0.131*** (0.0264)	-0.144*** (0.0264)
Obs	5126	5126	5126	4762	4762	4762	165	165	165	4805	4805	4805
Adj R-squared	0.013	0.012	0.012	0.012	0.010	0.011	0.398	0.409	0.446	0.016	0.015	0.014

Table 5.2.4 reports the results of the effects of interacting director network and corporate lobbying on director compensation. The dependent variable is the term of compensation proxies: total compensation, salary, bonus, and equity linked compensation. The primary independent variable is the interaction term of director network proxies and corporate lobbying expenses, including personal network X lobbying expenses, social network X lobbying expenses and professional network X lobbying expenses. Statistical significance of the coefficients is designed as follows: \* indicates significance at the 10% level; \*\* significance at 5%; \*\*\* significance at 1%.

the impact of the interaction term for director network and lobbying expenses on equity-linked compensation.

In both the total compensation and salary models (Models 1 to 6), the interaction terms for director network proxies and lobbying expenses are all positively significantly related to total compensation ( $\beta_1=0.000216$ ,  $p<0.01$  in Model 1 for personal network and lobbying;  $\beta_1=0.000796$ ,  $p<0.05$  in Model 2 for professional network and lobbying;  $\beta_1=0.000492$ ,  $p<0.10$  in Model 3 for social network and lobbying) and salary ( $\beta_1=0.000163$ ,  $p<0.01$  in Model 4 for personal network and lobbying;  $\beta_1=0.000186$ ,  $p<0.05$  in Model 5 for professional network and lobbying;  $\beta_1=0.000385$ ,  $p<0.05$  in Model 6 for social network and lobbying). In the Bonus Model, a positive coefficient relationship is found between personal network X lobbying expenses (Model 7) and professional network X lobbying expenses (Model 8) with Bonus, but the effect is not statistically significant. However, social network X lobbying expenses ( $\beta_1=0.000345$ ,  $p<0.01$  in Model 9). In the equity-linked compensation models, there are two different signs of coefficient. With the exception of professional network X lobbying expenses, both personal network X lobbying expenses ( $\beta_1=0.000276$ ,  $p<0.01$  in Model 10) and social network X lobbying expenses ( $\beta_1=0.000639$ ,  $p<0.05$  in Model 12) are positively and statistically significantly linked to equity-linked compensation. However, the coefficient for professional network X lobbying expense and equity-linked compensation is statistically significantly negatively related.

The result shows that director network and corporate lobbying both have a complementary effect on determining director compensation. In lobbying companies, lobbying activities are defined as an important strategy to improve corporate performance and get favourable policies made by government. It is also a useful channel for directors to build up the connections with politicians or directors in other companies (Unsal et al., 2016). Both director's network and corporate lobbying are effective way to help the director access valuable and unpublished information for their corporate decision making. Higher director connections mean a higher chance of persuading political parties and politicians to make beneficial policies for the company and a higher chance to get the useful information for making decisions. The results are consistent with Nandy et al.'s research (2020), by contributing a new theoretical system of a combination of agency theory, social capital theory and stakeholder theory. Therefore, directors with extensive a director network will get more

compensation, and they can also get better compensation by doing lobbying through their networks.

In summary for the application of interaction terms for director network proxies and corporate lobbying on director compensation, except for the professional network interaction term with equity, all the other results show a positive coefficient between director compensation proxies and network and lobbying interaction terms. Briefly, the results suggest that both the director network and corporate lobbying are important to determine director compensation in the lobbying companies and the two determinants complement each other.

#### 5.2.4 Two-stage Least Square (2SLS) Analysis

As the pooled ordinary least square regression results just partially support the hypotheses, it is argued that there are some limitations in this study. Firstly, in the examination, I assume that the value is unbiased that  $E(\varepsilon_i)=0$ , and  $Cov(\varepsilon_i, \varepsilon_j)=0$ , which means the errors have zero mean and all errors are statistically independent of one another. However, the company-level unobserved heterogeneity is considered as another factor that would affect the findings of Hypotheses 1. In addition, I predict two causal relationship in Eq 1 for  $\beta_1>0$  for director network and  $\beta_2>0$  for corporate lobbying, wherein director's positional advantage within a network could affect their compensation in the U.S. lobbying companies. Moreover, the ordinary least square regression results may be also influenced by the randomly contributed missing data. Therefore, the results show in Table 5.2.3 and 5.2.4 can be weaker without persuasive instruments and appropriate consideration of endogenous issue. So, in this section, I address this with several specifications.

In the two-stage least square model, following Cao et al. (2018) and Karampatas et al. (2014), this study uses “distance between headquarters and Washington DC” as an instrument variable for corporate lobbying and “industry fraction, industry profitability and industry risk” as instrument variables for director compensation to address endogeneity issues. The validity of all the instrument variables is tested. The results of overidentifying restrictions of the model shows an acceptance of this model (p-value is significant at the 1% significance

level). In the first stage of all models, the F-test exceeds 10, which tests the significance of the instrument variables.

Table 5.2.5 reports the 2SLS regression analysis to examine the baseline model Eq 1 of Hypothesis 1, examining the relationship between director network and director compensation in lobbying companies. The results are run separately for the dependent variable proxies of compensation terms with one of the director networks proxies. Models 1, 4, 7 and 10 examine the relationship between director personal network and compensation proxies. The results show a positive and statistically significant link between director personal network and total compensation ( $\beta_1=0.0103$ ,  $p<0.01$  in Model 1), salary ( $\beta_1=0.0032$ ,  $p<0.05$  in Model 4), bonus ( $\beta_1=0.0123$ ,  $p<0.01$  in Model 7), and equity-linked compensation ( $\beta_1=0.0140$ ,  $p<0.01$  in Model 10). Generally, the results support the Hypotheses 1a and provide empirical evidences to answer the research question related to the relationship between director personal network and director compensation. The more personal network connections built up from the similar educational background a director has, the more compensation would be offered from the company. Director social network gets a similar result. Director social network is positively and statistically significantly related to total compensation ( $\beta_1=0.000502$ ,  $p<0.05$  in Model 2) and salary ( $\beta_1=0.000327$ ,  $p<0.10$  in Model 5), and equity-linked compensation though this last is not significantly positively related. However, director social network is negatively significantly related to bonus ( $\beta_1=-0.00949$ ,  $p<0.10$  in Model 8). The results mainly support the hypothesis 1b and provide evidence that the more social network a director has, the more compensation they would receive from these lobbying companies. Director professional network is also positively and statistically significantly related to total compensation ( $\beta_1=0.0587$ ,  $p<0.05$  in Model 3), salary ( $\beta_1=0.0330$ ,  $p<0.05$  in Model 6), and equity-linked compensation ( $\beta_1=0.0861$ ,  $p<0.10$ , in Model 12). However, the result shows a negative significant relationship between bonus and director professional network ( $\beta_1=-0.109$ ,  $p<0.05$  in Model 9). The findings mainly support the hypothesis 1c which propose a positive relationship between director professional network and director compensation in the lobbying companies. The results suggest that more professional network a director has, the more compensation they would like to get from these lobbying companies.

Table 5.2.5: Influence of director network on Director compensation in lobbying companies

	Total Compensation				Salary		Bonus			Equity		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lobbying Expenses	0.0401** (2.53)	0.0422** (2.43)	0.0435*** (2.65)	0.0407*** (3.52)	0.0404*** (3.18)	0.0370*** (3.17)	0.0460 (-0.71)	0.0351 (0.41)	0.0588 (0.75)	0.0315* (1.72)	0.0369* (1.75)	0.0406** (2.05)
Personal Networks	0.0103*** (1.69)			0.00332** (-0.76)			0.0123*** (1.77)			0.0140*** (1.93)		
Social Networks		0.000502** (-0.14)			0.000327* (-0.10)			-0.00949* (-1.65)			0.00244 (0.54)	
Professional Networks			0.0587** (1.07)			0.0330** (0.85)			-0.109** (-2.02)			0.0861* (1.21)
Firm Size	0.00957 (0.42)	0.0581** (2.17)	0.0196 (0.45)	0.0614*** (3.72)	0.0600** (2.49)	0.0421* (1.82)	0.385*** (4.58)	0.659*** (6.51)	0.290*** (2.65)	0.0214 (0.82)	0.0823** (2.55)	-0.0190 (-0.34)
ROA	0.00299* (0.25)	0.976* (1.61)	1.049** (2.25)	0.00840* (1.03)	0.135* (0.29)	0.0109* (1.29)	0.0000859 (0.01)	-1.347 (-0.40)	-0.0152 (-0.85)	0.0281 (1.36)	0.898 (1.22)	0.0269 (1.18)
Tobin's Q	0.0372* (1.96)	0.0102 (0.40)	-0.0427 (-0.80)	-0.0140 (-1.01)	-0.0145 (-0.70)	-0.0437 (-1.24)	0.192* (1.83)	0.0213 (0.28)	0.143* (1.74)	0.0459** (2.07)	0.0205 (0.70)	-0.0255 (-0.39)
Board Size	0.0523** (2.15)	0.0642* (1.72)	0.0381** (1.02)	0.0588*** (3.38)	0.0483* (1.53)	0.0380* (1.44)	-0.111 (-1.64)	-0.0960 (-1.53)	0.176* (1.45)	0.0729** (2.53)	0.0720* (1.56)	0.0432* (0.93)
Board Independence	-0.108*** (-4.57)	-0.114*** (-2.95)	-0.143*** (-4.34)	-0.0709*** (-4.22)	-0.0647** (-1.97)	-0.0810*** (-3.62)	0.00417 (0.08)	0.00307 (0.06)	-0.143** (-2.02)	-0.134*** (-4.74)	-0.124** (-2.55)	-0.176*** (-4.20)
Obs	5126	5126	5126	4762	4762	4762	165	165	165	4805	4805	4805
Adj R-squared	0.005	0.007	0.004	0.006	0.009	0.008	0.047	0.177	0.122	0.012	0.014	0.013

Table 5.2.5 reports the 2SLS regression results of the effects of director network and corporate lobbying on director compensation. The dependent variable is the term of compensation proxies: total compensation, salary, bonus, and equity linked compensation. The primary independent variable is the director network proxies, including personal network, social network and professional network. Statistical significance of the coefficients is designed as follows: \* indicates significance at the 10% level; \*\* significance at 5%; \*\*\* significance at 1%.



Moreover, the results also show a majority positive significant relationship between lobbying expenses and total compensation, salary and equity-linked compensation, which suggests a positive effect of lobbying expenses on director compensation. Although the results show a positive relationship between lobbying expenses and bonus, it is not statistically significant. The results provide extra explanation of the determinant of director compensation in the U.S. lobbying companies., which is expand Rennebog and Zhao's (2011) research and also expand Brodmann et al.'s (2019) research by providing director network effects of determining director compensation in the U.S. lobbying companies.

In summary, the two stage least square results support the ordinary least square results in Chapter 5.2.3, which is more persuasive with less assumptions in the model. Director personal, social and professional networks are significantly positively related to total compensation, salary and equity, which supports the hypotheses developed in Section 4.7.1. However, the bonus-related analysis still does not give evidence supporting the hypothesis, which could be a result of the limited observations in the sample companies.

#### 5.2.5 Robustness Check

In order to ensure the robustness of the results and to examine the relationship between director network and director compensation in the U.S. lobbying companies, this study conducts different robustness test by controlling the sample period of “Before-”, “In-” and “After-” the financial crisis. Here, the financial crisis refers to the 2007-2009 global financial crisis which involved the subprime mortgage lending crisis (Essen et al., 2013). Following this, it determines 2007 to 2009 as the “in Financial Crisis” period in this analysis, then the “Before Financial Crisis” is between 2005 and 2006 and the “After Financial Crisis” period is 2010 to 2014. Table 5.2.6 shows the pooled ordinary least square results of investigating the impact of director network on director compensation in lobbying companies before, in and after the financial crisis period. Models 1 to 3 show the results of the impact of director network on total compensation before the financial crisis. Models 4 to 6 show the results of the impact of director network on total compensation in the financial crisis period. Models 7 to 9 show the results of the impact of director network on total compensation after the financial crisis. In the comparison of the three periods, it shows that within the financial crisis period, both director networks and corporate lobbying had less effects on director

Table 5.2.6: Influence of director network on Director compensation in lobbying companies based on Financial Crisis period

	Total Compensation								
	Before Financial Crisis			In Financial Crisis			After Financial Crisis		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lobbying Expenses	0.0703**	0.169***	0.0867*	0.0543**	0.105***	0.0689**	0.0120**	0.0298*	0.0128*
	(1.24)	(2.80)	(1.53)	(1.57)	(2.84)	(2.01)	(0.66)	(1.54)	(0.70)
Personal Networks	0.000492**			0.000361**			0.000118*		
	(2.08)			(2.30)			(1.75)		
Social Networks		0.00377***			0.00169**			0.000641*	
		(3.38)			(2.48)			(1.78)	
Professional Networks			0.0000904*			0.0000142*			0.0000390*
			(0.50)			(0.16)			(1.92)
Firm Size	0.254***	0.267***	0.257***	0.108*	0.117**	0.113*	0.00914	0.0121	0.00833
	(2.98)	(3.16)	(3.00)	(1.84)	(1.99)	(1.93)	(0.33)	(0.44)	(0.30)
ROA	3.365**	3.502**	3.138*	1.656*	1.707*	1.634*	0.655	0.605	0.672
	(1.99)	(2.08)	(1.84)	(1.70)	(1.76)	(1.68)	(1.31)	(1.21)	(1.35)
Tobin's Q	-0.0769	-0.0413	-0.0665	-0.0667	-0.0604	-0.0646	0.0415*	0.0459*	0.0396
	(-0.88)	(-0.47)	(-0.75)	(-1.17)	(-1.06)	(-1.13)	(1.69)	(1.86)	(1.61)
Board Size	0.141*	0.153**	0.138*	0.0705	0.0745	0.0698	0.0572**	0.0598**	0.0596**
	(1.81)	(1.98)	(1.77)	(1.13)	(1.19)	(1.11)	(2.20)	(2.30)	(2.29)
Board Independence	-0.197**	-0.182**	-0.196**	-0.144**	-0.135**	-0.143**	-0.101***	-0.0998***	-0.103***
	(-2.51)	(-2.34)	(-2.49)	(-2.35)	(-2.21)	(-2.32)	(-3.91)	(-3.86)	(-3.99)
Obs	498	498	498	990	990	990	3638	3638	3638
Adj R-squared	0.066	0.068	0.057	0.020	0.015	0.013	0.010	0.010	0.011

Table 5.2.6 reports the results of the effects of director network and corporate lobbying on director compensation in different financial crisis related periods. The dependent variable is total compensation. The primary independent variable is the director network proxies, including personal network, social network and professional network. Statistical significance of the coefficients is designed as follows: \* indicates significance at the 10% level; \*\* significance at 5%; \*\*\* significance at 1%.

compensation than in the before financial crisis period and after the crisis period, which may be due to fast-changing policy during the financial crisis. So the director needs these networks to get more information to make strategic decisions and the lobbying of government to encourage policy change to increase their compensation.

### 5.2.7 Conclusion

In this section, the results of examining the effects of director network on director compensation in U.S. lobbying companies by using the baseline model Eq 1 have been presented. It uses the numbers of connections for different director network types, personal, professional and social, as the measurement to test the hypotheses developed in Section 3.3.1.

The analysis is based on a sample size of 278 companies with 7,129 director-level yearly observation from year 2005 to 2014. The majority of the results supported the hypothesis of a positive relationship between director networks and director compensation in lobbying companies. In summary, the directors with intensive networks will have a better opportunity to get better compensation in U.S. lobbying companies. In addition, higher corporate lobbying expenses would also benefit director compensation. The results show the important impact of corporate lobbying on determining director compensation. Moreover, the results also suggest that director networks and corporate lobbying have complementary effects in terms of determining director compensation. A detailed discussion of the results is provided in Section 6.2.

## **5.3 Hypothesis 2: Effects of Director Networks on Capital Structure in Corporate Lobbying Companies**

This empirical section is designed to examine the effects of director networks on capital structure in lobbying companies in the United States. The analysis starts with the descriptive statistics for all the variables tested in the baseline model Eq 2, followed by the correlation analysis. The results of pooled ordinary least square analysis, two-staged least square analysis and robustness analysis are then provided. A conclusion of this empirical study is also presented at the end of this section.

### 5.3.1 Descriptive Statistics

Table 5.3.1 reports the summary statistics for all variables in the sample lobbying companies, which helps to understand the overall data distribution in different variables. As mentioned in the previous chapter, three capital structure proxies are applied in this empirical section. The means for book leverage and market leverage are 0.258 and 0.182, while the mean for MLM is 0.912. The director network is measured as a centrality measurement in this empirical section, the means for degree, closeness, betweenness and eigenvector are 353.16, 0.254, 0.0002 and 0.0028 respectively, which is in line with El-Khatib et al. (2015) and Goergen et al. (2019). The average lobbying expenses in the sample companies is 1.513, with a standard deviation of 2.78. The mean and median values for Firm Size, Tangibility, Payout, capital expenses and market to book value are 9.57 (9.51), 0.13 (0.124), 0.133 (0.115), 0.048 (0.354), 1.752 (1.477), which are consistent with Huang and Shang (2019), and Dasklakis et al., (2017). Similar with first empirical section, the sample companies are mainly big companies and demonstrate normal operating performance. The average for board size and board independence are 11.278 and 9.937, which is line with Crespi-Cladera and Pascual-Fuster (2015).

Table 5.3.1 Descriptive Statistics - Impact of director network on capital structure

Variables	Obs	Mean	Std. Dev.	25 <sup>th</sup> Pctl	Median	75 <sup>th</sup> Pctl
Book Leverage	39,914	0.2575887	0.1593457	0.1397315	0.1397315	0.3543237
Market Leverage	36,990	0.1824797	0.1300564	0.0850746	0.15365	0.2554851
MLM	39,914	0.911906	0.1588614	0.8983158	0.9887937	0.9990932
Degree	39,914	353.1619	409.986	69	208	479
Closeness	39,914	0.2545933	0.0256303	0.2390349	0.2552502	0.2727243
Betweenness	39,914	0.000203	0.0003028	0.0000219	0.0000927	0.0002505
Eigenvector	39,914	0.002801	0.0065604	0.0001225	0.0005402	0.0022186
Lobbying Expenses (log)	38,695	1.512935	2.781876	-0.6931472	1.556037	3.62783
Firm Size	39,914	9.57128	1.652559	8.378377	9.512813	10.59394
Tangibility	36,873	0.1304087	0.0848173	0.0857132	0.1238126	0.171548
payout	36,810	0.1336573	0.4535382	0.0143862	0.1148762	0.1981958
Cap_ex	36,897	0.0476967	0.0452292	0.0176263	0.0354137	0.0654388
mkt_to_bk	36,990	1.752036	0.970231	1.157635	1.477449	2.017427
Missing_RD	39,914	0.4923836	0.4999483	0	0	1
Rg_Industry	39,914	0.1110137	0.314153	0	0	0
Board Size	39,914	11.27589	2.618235	10	11	12
Board independence	39,914	9.936238	2.546807	8	10	11

This table presents the descriptive statistics of the sample variables. Specifically, this table reports the number of observations, pooled mean, standard deviation, 25th percentile, median, and 75th percentile of the dependent variables, independent variables and control variables. The sample consists of 39,914 director-year observations from 2005-2015, reporting 607 individual companies. All continues variables are winsorised at 1% and 99%.

### 5.3.2 Correlation Matrix

Correlations among all variables applied in this empirical section are reported in Table 5.3.2, which aims to reveal potential multicollinearity problems. The correlation coefficient refers to the strength measure or linear association degree between the variables. In addition with the examination of Variance Inflation Factor (VIF), the results suggest that multicollinearity should not be an issue as all correlation coefficients between all the variables are well below the standard commonly used cut-off threshold of 0.7 and the VIF value is less than 10. All the director network centrality variables are positively correlated with capital structure variables, which suggests director network do have significant effects on directors' capital structure decision. In addition, the correlation between director network centrality measures and lobbying expenses is positive and significant (0.33, 0.37, 0.27 and 0.25) at the 5% significance level. This suggests that lobbying activities would bring more benefit to director networks in U.S. lobbying companies.

Table 5.3.2 Correlation Matrix -Impact of director network on capital structure

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Book Leverage	1.00																
2. Market Leverage	0.54	1.00															
3. MLM	0.25	0.20	1.00														
4. Degree	0.00	0.04	0.06	1.00													
5. Closeness	0.04	0.02	0.10	0.45	1.00												
6. Betweenness	0.01	0.02	0.03	0.54	0.51	1.00											
7. Eigenvector	0.01	0.03	0.03	0.68	0.50	0.56	1.00										
8. Lobbying Expenses (log)	0.01	0.01	0.05	0.33	0.37	0.27	0.25	1.00									
9. Firm Size	0.02	0.12	0.15	0.38	0.42	0.29	0.26	0.67	1.00								
10. Tangibility	-0.07	-0.30	-0.06	0.01	0.00	0.03	0.01	0.00	-0.19	1.00							
11. payout	0.03	-0.01	-0.02	0.02	0.04	0.01	0.02	0.09	0.07	0.02	1.00						
12. Cap_ex	0.13	0.15	-0.03	-0.08	-0.10	-0.05	-0.07	-0.01	-0.05	0.13	-0.03	1.00					
13. mkt_to_bk	-0.06	-0.42	0.00	0.06	0.07	0.03	0.05	-0.01	-0.19	0.46	0.02	-0.02	1.00				
14. Missing_RD	0.06	0.22	0.00	-0.09	-0.08	-0.08	-0.08	-0.05	0.15	-0.22	0.00	0.21	-0.28	1.00			
15. Rg_Industry	0.19	0.33	-0.15	-0.09	-0.09	-0.09	-0.07	0.07	0.06	-0.16	0.04	0.25	-0.21	0.41	1.00		
16. Board Size	-0.01	0.02	0.06	0.19	0.23	0.14	0.13	0.35	0.50	-0.09	0.09	-0.08	-0.11	0.07	0.05	1.00	
17. Board independence	0.00	0.03	0.05	0.21	0.27	0.15	0.14	0.37	0.50	-0.10	0.10	-0.08	-0.11	0.08	0.08	0.67	1.00

Pearson correlation coefficients among all the variables applied in this empirical section 2, including dependent variables terms of capital structure, independent variables of director network centrality measure and all control variables. The statistics are computed on the sample consists of 39,914 director-year observations from 2005-2015, reporting 607 individual companies. \*\* All results are significant at 5% level.

### 5.3.3 Ordinary Least Square (OLS) Analysis

In this section, I examine the effect of director network on capital structure in the U.S. lobbying companies. Because of the effects of other company level determinants of capital structure, the pooled ordinary least square analysis is applied to control these effects in testing my second hypothesis. Table 5.3.3 reports the pooled ordinary least square analysis of Eq 2, which investigates the impacts of director network on capital structure in lobbying companies. The results are run separately for the dependent variable proxies for capital structure with one of each of the director network centrality measure independent variables. Models 1 to 4 show the results of the impact of director network on capital structure by using book leverage proxy; Models 5 to 8 show the results of the impact of director network on capital structure by using market leverage proxy; Models 9 to 12 show the results of the impact of director network on capital structure by using MLM proxy. In general, the findings provide partial support for the hypotheses developed in Section 2.7.2.

Models 1 to 4 examine the effects of the director network centrality measure on book leverage. It shows that degree ( $\beta_1 = 0.00000$ ,  $p < 0.01$  in Model 1), closeness ( $\beta_1 = 0.447$ ,  $p < 0.01$  in Model 2) and betweenness ( $\beta_1 = 5.765$ ,  $p < 0.01$  in Model 3) are positively and statistically significantly related to book leverage, while the eigenvector centrality is found to be positive but not statistically significantly related to book leverage. The results support Hypotheses 2a, 2b and 2c, as higher network centrality, the director chooses the higher book leverage in capital structure decisions.

Models 5 to 8 examine the effects of the director network centrality measure on market leverage. Closeness ( $\beta_1 = 0.129$ ,  $p < 0.01$  in Model 6) and betweenness network ( $\beta_1 = 4.785$ ,  $p < 0.01$  in Model 7) are both positively and statistically significantly related to market leverage. Although a positive relationship between degree and market leverage and a negative relationship between eigenvector centrality are found, they are not statistically significant. The results strongly support Hypotheses 2b and 2c, and 2a but not significantly. This suggests that directors with higher network centrality prefer higher market leverage for capital structure decisions.

Models 9 to 12 examine the effects of director network centrality on MLM. There is a negative and statistically significant relationship between betweenness ( $\beta_1 = -9.860$ ,  $p < 0.01$  in

Table 5.3.3: Influence of director network on capital structure in lobbying companies

	Book Leverage				Market Leverage				MLM			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Degree	0.00000926*** (4.21)				0.00000631 (0.39)				- (-0.30)			
Closeness		0.447*** (12.28)				0.129*** (4.84)				0.255*** (6.85)		
Betweenness			5.765** (2.02)				4.785** (2.30)				-9.860*** (-3.38)	
Eigenvector				0.00930 (0.07)				-0.0168 (-0.18)				-0.452*** (-3.44)
Firm Size	0.00487*** (5.89)	0.00299*** (3.59)	0.00543*** (6.69)	0.00568*** (6.99)	0.00749*** (12.42)	0.00677*** (11.14)	0.00734*** (12.37)	0.00756*** (12.76)	0.0205*** (24.25)	0.0189*** (22.20)	0.0209*** (25.11)	0.0208*** (25.12)
Tangibility	-0.0975*** (-8.68)	-0.0970*** (-8.66)	-0.0977*** (-8.69)	-0.0969*** (-8.63)	-0.204*** (-24.89)	-0.204*** (-24.90)	-0.205*** (-24.96)	-0.204*** (-24.88)	-0.117*** (-10.21)	-0.117*** (-10.23)	-0.116*** (-10.09)	-0.117*** (-10.18)
payout	0.00991*** (5.59)	0.00992*** (5.61)	0.00987*** (5.57)	0.00981*** (5.53)	-0.00130 (-1.00)	-0.00127 (-0.98)	-0.00125 (-0.97)	-0.00131 (-1.01)	-0.00514*** (-2.84)	- (-2.80)	0.00524*** (-2.89)	0.00519*** (-2.86)
Cap_ex	0.398*** (20.37)	0.407*** (20.85)	0.396*** (20.27)	0.396*** (20.23)	0.334*** (23.40)	0.337*** (23.61)	0.334*** (23.43)	0.334*** (23.38)	0.0906*** (4.53)	0.0973*** (4.87)	0.0898*** (4.50)	0.0886*** (4.43)
mkt_to_bk	-0.00213** (-2.19)	- (-3.22)	-0.00184* (-1.90)	-0.00180* (-1.85)	-0.0405*** (-57.18)	-0.0409*** (-57.54)	-0.0405*** (-57.38)	-0.0405*** (-57.25)	0.00554*** (5.58)	0.00475*** (4.78)	0.00559*** (5.65)	0.00569*** (5.75)
Missing_RD	-0.0181*** (-9.48)	-0.0172*** (-9.02)	-0.0185*** (-9.70)	-0.0187*** (-9.81)	-0.00707*** (-5.07)	- (-4.79)	0.00666*** (-4.97)	0.00692*** (-5.12)	0.00713*** (5.42)	0.0106*** (5.90)	0.0115*** (5.25)	0.0102*** (5.22)
Rg_Industry	0.0826*** (28.74)	0.0844*** (29.40)	0.0822*** (28.60)	0.0819*** (28.52)	0.0902*** (43.02)	0.0909*** (43.32)	0.0905*** (43.13)	0.0901*** (43.04)	-0.0889*** (-30.28)	-0.0874*** (-29.77)	-0.0895*** (-30.49)	-0.0892*** (-30.42)
Board Size	-0.00904*** (-6.72)	- (-5.23)	- (-7.00)	- (-7.06)	-0.000662 (-0.67)	0.00000186 (0.00)	-0.000623 (-0.64)	-0.000700 (-0.71)	-0.00150 (-1.09)	-0.0000869 (-0.06)	-0.00161 (-1.17)	-0.00165 (-1.20)
Board independence	0.00772*** (5.56)	0.00547*** (3.91)	0.00811*** (5.86)	0.00820*** (5.92)	-0.00215** (-2.12)	- (-2.84)	-0.00219** (-2.17)	-0.00211** (-2.09)	0.000879 (0.62)	-0.000716 (-0.50)	0.00100 (0.71)	0.00104 (0.73)
Obs	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642
Adj R-squared	0.053	0.056	0.052	0.052	0.263	0.263	0.263	0.263	0.055	0.056	0.055	0.055

Table 5.3.3 reports the results of the effects of director network on capital structure in U.S. lobbying companies. The dependent variable is capital structure proxies (book leverage, market leverage and MLM). The primary independent variable is the director network proxies, including Degree, Closeness, Betweenness and Eigenvector Centrality. Statistical significance of the coefficients is designed as follows: \* indicates significance at the 10% level; \*\* significance at 5%; \*\*\* significance at 1%.



Model 11) and eigenvector ( $\beta_1 = -0.452$ ,  $p < 0.01$  in Model 12) and MLM. Meanwhile, closeness ( $\beta_1 = 0.255$ ,  $p < 0.01$  in Model 10) is positively and statistically significantly related to MLM. In the MLM capital structure proxy, because of the different calculation of capital structure, the results are complicated. It just supports Hypothesis 2b but not the other hypotheses.

Overall, the results show that the director centrality measure is positively related to book leverage (calculated as total debt divided by total assets) and market leverage (calculated as total debt divided by market value of total assets), which means a director with a high centrality network prefers higher book leverage and higher market leverage in capital structure choices. The results support Hypothesis 2 and answer the second research question with evidence of how director network affect capital structure in the U.S. lobbying companies. These results are similar to those of Huang and Shang (2019), who investigated the influence of corporate network on capital structure. The major difference of my research compared to theirs is the different measurements of network. In my thesis, I use the director centrality measure, and they use the company level social capital measurement to investigate the influence of network on capital structure. But I have got similar results for the network influence on capital structure choice. Arguably, a director with a higher centrality network can deal with more risky capital structure choices as they have an important position within their network and have high opportunity to access the valuable information for their capital structure decision making. More risk means more return and leads to better success for the company. In addition, my study is carried out in these companies that take part in lobbying activities in the U.S., which expands Huang and Shang (2019) to provide more evidence of the influence of director network on capital structure in the U.S. lobbying companies. When companies are doing lobbying with the government, they could get higher protection from bankruptcy (Sheikh and Wang, 2011). All this could be the reason why a director with a higher centrality network in lobbying companies prefers higher book leverage and market leverage in terms of capital structure choice.

In addition, the results of other financial control variables and board characteristic control variables that apply the capital structure-related literature and director network-related literature show similar results (Chadha and Sharma, 2015; Chen et al., 2019) in this empirical section. This suggests that the determinants of capital structure are similar among corporate lobbying companies.

In summary for the results of the pooled ordinary least square analysis, for the book leverage and market leverage measures of capital structure, the results show a positive and statistically significant relationship between the director network centrality measure and capital structure. By applying a different measurement of capital structure, MLM shows a mainly negative relationship with the director centrality measure. This could be as a result of the different method of calculating capital structure. Overall, the results of the book leverage and market leverage measure support Hypotheses 2a, 2b, 2c, and 2d developed in Section 3.3.2.

Table 5.3.4 reports the coefficients from ordinary least square regression between the interaction terms for director network centrality measures and corporate lobbying expenses with capital structure proxies. The aim of this investigation is to find out the influence of corporate lobbying on capital structure. Models 1 to 4 show the results of the impact of the interaction term for director network and lobbying expenses on book leverage; Models 5 to 8 show the results of the impact of the interaction term of director network and lobbying expenses on market leverage; Models 9 to 12 show the results of the impact of the interaction term for director network and lobbying expenses on MLM.

In Models 1, 5 and 9, Degree X Lobbying Expenses is negatively significantly related to book leverage ( $\beta_1 = -0.00000$ ,  $p < 0.10$  in Model 1), market leverage ( $\beta_1 = -0.00000$ ,  $p < 0.10$  in Model 5) and MLM ( $\beta_1 = -0.00000$ ,  $p < 0.05$  in Model 9). Closeness X Lobbying Expenses is also negatively significantly related to book leverage ( $\beta_1 = -0.0117$ ,  $p < 0.01$  in Model 2), market leverage ( $\beta_1 = -0.00910$ ,  $p < 0.01$  in Model 6) and MLM ( $\beta_1 = -0.0158$ ,  $p < 0.01$  in Model 10). The interaction term of betweenness and lobbying expenses is negatively significantly related to book leverage ( $\beta_1 = -0.644$ ,  $p < 0.10$  in Model 3) and MLM ( $\beta_1 = -0.6.243$ ,  $p < 0.01$  in Model 11). Eigenvector X lobbying expense is negatively significantly related to all the capital structure proxies.

The result shows that director network and corporate lobbying are complementary on determining capital structure. In lobbying companies, lobbying activities are defined as an important strategy to improve corporate performance and get favourable policies made by government. It is also an effective way to reduce information asymmetry in the capital structure decision making process (Cao et al., 2018). Through corporate lobbying, directors could access advanced information of potential policy change, based on which directors could make timely strategic change of capital structure. For example, the government's tax

Table 5.3.4: Influence of director network and corporate lobbying on Director compensation in lobbying companies

	Book Leverage				Market Leverage				MLM			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Degree X Lobbying Expenses	0.000000947* (1.93)				0.000000765** (2.14)				0.00000510*** (10.20)			
Closeness X Lobbying Expenses		0.0117*** (7.31)				0.00910*** (7.83)				0.0158*** (9.73)		
Betweenness X Lobbying Expenses			0.644* (0.99)				0.221 (0.47)				6.243*** (9.41)	
Eigenvector X Lobbying Expenses				0.00479* (0.16)				0.0233* (1.09)				0.268*** (8.95)
Firm Size	0.00260*** (3.63)	0.00578*** (7.12)	0.00217*** (3.21)	0.00193*** (2.95)	0.00516*** (9.89)	0.00763*** (12.87)	0.00449*** (9.10)	0.00441*** (9.25)	0.0195*** (26.73)	0.0210*** (25.29)	0.0184*** (26.67)	0.0177*** (26.59)
Tangibility	-0.104*** (-9.31)	-0.0968*** (-8.62)	-0.105*** (-9.37)	-0.106*** (-9.44)	-0.210*** (-25.66)	-0.204*** (-24.87)	-0.211*** (-25.82)	-0.211*** (-25.87)	-0.121*** (-10.56)	-0.116*** (-10.12)	-0.121*** (-10.58)	-0.124*** (-10.88)
payout	0.00931*** (5.25)	0.00978*** (5.52)	0.00928*** (5.24)	0.00927*** (5.23)	-0.00169 (-1.31)	-0.00132 (-1.02)	-0.00172 (-1.33)	-0.00172 (-1.33)	-0.00562*** (-3.11)	0.00510*** (-2.82)	0.00571*** (-3.16)	0.00581*** (-3.21)
Cap_ex	0.391*** (19.99)	0.396*** (20.23)	0.391*** (20.01)	0.391*** (19.99)	0.330*** (23.13)	0.334*** (23.39)	0.330*** (23.12)	0.330*** (23.14)	0.0847*** (4.25)	0.0911*** (4.56)	0.0874*** (4.38)	0.0833*** (4.17)
mkt_to_bk	-0.00227** (-2.35)	-0.00178* (-1.84)	-0.00235** (-2.44)	-0.00236** (-2.44)	-0.0409*** (-57.94)	-0.0405*** (-57.32)	-0.0409*** (-58.11)	-0.0409*** (-58.12)	0.00529*** (5.36)	0.00559*** (5.66)	0.00491*** (4.98)	0.00500*** (5.07)
Missing_RD	-0.0166*** (-8.75)	-0.0189*** (-9.89)	-0.0162*** (-8.60)	-0.0160*** (-8.50)	-0.00545*** (-3.94)	0.00723*** (-5.19)	0.00487*** (-3.54)	0.00478*** (-3.48)	0.0108*** (5.57)	0.0101*** (5.18)	0.0115*** (6.00)	0.0120*** (6.25)
Rg_Industry	0.0791*** (27.81)	0.0817*** (28.50)	0.0791*** (27.78)	0.0791*** (27.78)	0.0881*** (42.40)	0.0900*** (43.06)	0.0880*** (42.37)	0.0880*** (42.37)	-0.0919*** (-31.64)	-0.0888*** (-30.32)	-0.0923*** (-31.79)	-0.0923*** (-31.76)
Board Size	-0.00893*** (-6.65)	0.00956*** (-7.12)	0.00877*** (-6.55)	0.00873*** (-6.51)	-0.000267 (-0.27)	-0.000751 (-0.77)	-0.0000764 (-0.08)	-0.0000480 (-0.05)	-0.00165 (-1.21)	-0.00165 (-1.20)	-0.00106 (-0.77)	-0.00106 (-0.77)
Board independence	0.00753*** (5.44)	0.00828*** (5.98)	0.00737*** (5.34)	0.00732*** (5.30)	-0.00263*** (-2.61)	-0.00205** (-2.03)	0.00284*** (-2.81)	0.00287*** (-2.84)	0.000936 (0.66)	0.00105 (0.74)	0.000331 (0.24)	0.000306 (0.22)
Obs	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642
Adj R-squared	0.051	0.052	0.051	0.051	0.262	0.263	0.261	0.261	0.056	0.056	0.055	0.055

Table 5.3.4 reports the results of the effects of interacting director network and corporate lobbying on capital structure. The dependent variable is the term of capital structure proxies: book leverage, market leverage and MLM. The primary independent variable is the interaction term of director network centrality measures and corporate lobbying expenses, including Degree X lobbying expenses, closeness X lobbying expenses, betweenness X lobbying expenses and eigenvector X lobbying expenses. Statistical significance of the coefficients is designed as follows: \* indicates significance at the 10% level; \*\* significance at 5%; \*\*\* significance at 1%.

policy could affect the capital structure choice, but it may not be one of the main determinants of capital structure (Georgiou and Roberts, 2004). On the other hand, the director's network gains access to unpublished or private information, knowledge, ideas and even experiences, and directors can learn from each other. Based on Ripamonti (2020) and Lemmon and Zender (2019), information asymmetry plays an important role in determining capital structure. Both corporate lobbying and director network are significant in reducing information asymmetry (Cao et al., 2018; Wang and Steiner, 2020), which helps to make a better capital structure for company. In addition, the capital structure decisions and corporate lobbying activities are determined by the director. Therefore, director networks, including director lobbying network, could have complementary effects on determining capital structures in lobbying companies. The results contribute the major corporate lobbying, director network and capital structure by investigating the relationship between the research terms. The findings provide empirical evidence of how director network affect the capital structure decision in the U.S. lobbying companies.

In summary for the results from applying the interaction terms of the director network centrality measures and corporate lobbying on capital structure, almost all the results show a positive significant relationship, which suggests a complementary interaction relationship of director network and corporate lobbying on capital structure. Briefly, as director networks exchange information, ideas and knowledge, and lobbying activities helps reduce information asymmetry, both director networks and corporate lobbying could have impact on capital structure decision.

#### 5.3.4 Two-stage Least Square (2SLS) Analysis

Although the pooled ordinary least square regression results support the hypotheses, the assumption of actual value is unbiased, the errors have zero mean and the errors are statistically independent of one another brings the concern about the validity of the results. In addition, there is a concern about reverse causality. I predict two causal relationship in Eq 2 for  $\beta_1 > 0$  for director network and  $\beta_2 > 0$  for corporate lobbying, wherein director's positional advantage within a network could affect the capital structure in the U.S. lobbying companies. However, the results in support of my second hypotheses shown in Table 5.3.3 and 5.3.4 can be weaker in lack of persuasive instruments. In order to fix this problem, a two-stage

ordinary least square regression is applied to address the potential endogeneity issue and examine the effects of director networks on capital structures in lobbying companies.

In the two stage least square model, following Cao et al. (2018) and Miranda-Lopez et al. (2018), this study uses “distance between headquarters and Washington DC” as an instrument variable for corporate lobbying and a dummy variable of “MBA” (valued “1” if the director has an MBA degree; valued “0” otherwise) and “numbers of qualification” as instrument variables for director networks to address endogeneity issues. The validity of all the instrument variables is tested. The results of overidentifying restrictions for the model shows an acceptance of this model (the p-value is significant at the 1% significance level). In the first stage of all the models, the F-test exceeds 10, which tests the significance of the instrument variables.

Table 5.3.5 reports the 2SLS regression analysis to examine the baseline model mentioned in Section 4.7.2 of the impacts of director network on capital structure in lobbying companies. The results are run separately for the dependent variable proxies of capital structure with one for director network centrality measures. Models 1 to 4 show the results of the impact of the director network centrality measure on book leverage; Models 5 to 8 show the results of the impact of the director network centrality measure on market leverage; Models 9 to 12 show the results of the impact of the director network centrality measure on MLM.

Models 1 to 4 show a positive and statistically significant relationship between degree ( $\beta_1 = 0.00000$ ,  $p < 0.05$  in Model 1), closeness ( $\beta_1 = 0.726$ ,  $p < 0.10$  in Model 2), betweenness ( $\beta_1 = 50.57$ ,  $p < 0.10$  in Model 3) and eigenvector centrality ( $\beta_1 = 0.903$ ,  $p < 0.10$  in Model 4) and book leverage. These results support Hypotheses 2a to 2d in Section 2.7.2.

Models 5 to 8 show similar results are found to those for Models 1 to 4. Degree ( $\beta_1 = 0.00008$ ,  $p < 0.01$  in Model 5), closeness ( $\beta_1 = 0.584$ ,  $p < 0.10$  in Model 6), betweenness ( $\beta_1 = 70.20$ ,  $p < 0.50$  in Model 7) and eigenvector centrality ( $\beta_1 = 0.866$ ,  $p < 0.10$  in Model 8) are all positive and significantly related to market leverage. The results also support Hypotheses 2a to 2d in Section 2.7.2.

Models 9 to 12 examine the effects of the director network centrality measure on MLM. There is a negative and statistically significant relationship between degree ( $\beta_1 = -0.00016$ ,

Table 5.3.5: Influence of director network on capital structure in lobbying companies - 2SLS

	Book Leverage				Market Leverage				MLM			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Degree	0.0000968** (2.41)				0.0000834*** (2.92)				-0.000161*** (-4.10)			
Closeness		0.726* (1.54)				0.584* (1.74)				-1.297*** (-3.03)		
Betweenness			50.57* (1.29)				70.20** (2.49)				-175.0*** (-4.37)	
Eigenvector				0.903* (0.57)				0.866* (0.77)				-3.022** (-2.12)
Firm Size	-0.0150*** (-4.00)	-0.0150*** (-5.30)	-0.0117*** (-5.79)	-0.0119*** (-4.83)	-0.00653** (-2.38)	-0.00383* (-1.87)	-0.00286* (-1.95)	-0.00165 (-0.93)	0.0109*** (3.10)	0.00612** (2.35)	0.00495*** (2.66)	0.00276 (1.24)
Tangibility	-0.112*** (-3.28)	-0.141*** (-4.94)	-0.142*** (-4.72)	-0.156*** (-5.80)	-0.189*** (-7.82)	-0.215*** (-10.63)	-0.205*** (-9.50)	-0.226*** (-11.91)	-0.209*** (-6.30)	-0.163*** (-6.28)	-0.192*** (-6.27)	-0.144*** (-5.97)
payout	0.0160*** (3.83)	0.0142*** (3.67)	0.0168*** (3.83)	0.0147*** (3.77)	-0.0177*** (-5.95)	-0.0193*** (-7.04)	-0.0157*** (-4.97)	-0.0188*** (-6.83)	-0.0219*** (-5.38)	-0.0187*** (-5.36)	-0.0276*** (-6.14)	-0.0202*** (-5.79)
Cap_ex	0.167*** (4.80)	0.138*** (4.67)	0.135*** (4.44)	0.124*** (4.19)	0.189*** (7.64)	0.162*** (7.75)	0.172*** (7.84)	0.152*** (7.27)	-0.222*** (-6.54)	-0.176*** (-6.57)	-0.205*** (-6.58)	-0.164*** (-6.19)
mkt_to_bk	-0.00544** (-2.13)	-0.00332 (-1.49)	-0.000505 (-0.28)	-0.00136 (-0.77)	-0.0507*** (-27.92)	-0.0487*** (-30.81)	-0.0461*** (-35.66)	-0.0472*** (-38.02)	0.00968*** (3.89)	0.00645*** (3.19)	0.000438 (0.24)	0.00335** (2.14)
Missing_RD	-0.0307*** (-2.90)	-0.0223** (-2.44)	-0.0295** (-2.55)	-0.0221** (-2.35)	-0.00711 (-0.95)	0.000198 (0.03)	-0.0107 (-1.29)	0.000131 (0.02)	0.0532*** (5.17)	0.0395*** (4.75)	0.0670*** (5.68)	0.0414*** (4.91)
Rg_Industry	0.148*** (7.51)	0.124*** (8.62)	0.135*** (6.59)	0.119*** (7.93)	0.129*** (9.23)	0.108*** (10.56)	0.128*** (8.70)	0.104*** (9.82)	-0.137*** (-7.15)	-0.0985*** (-7.54)	-0.150*** (-7.21)	-0.0955*** (-7.12)
Board Size	0.00445*** (7.74)	0.00418*** (6.74)	0.00456*** (8.28)	0.00467*** (8.82)	0.00130*** (3.20)	0.00109** (2.49)	0.00134*** (3.39)	0.00149*** (3.97)	0.00164*** (2.92)	0.00216*** (3.84)	0.00164*** (2.91)	0.00127*** (2.68)
Board independence	0.0129*** (5.81)	0.0128*** (5.73)	0.0129*** (5.81)	0.0130*** (5.82)	0.00443*** (2.72)	0.00429*** (2.64)	0.00446*** (2.74)	0.00447*** (2.75)	-0.00195 (-0.86)	-0.00208 (-0.91)	-0.00202 (-0.89)	-0.00202 (-0.89)
Obs	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642	35642
Adj R-squared	0.011	0.013	0.01	0.02	0.227	0.323	0.267	0.329	0.012	0.013	0.012	0.016

Table 5.3.5 reports the results of the effects of director network on capital structure in U.S. lobbying companies. The dependent variable is capital structure proxies (book leverage, market leverage and MLM). The primary independent variable is the director network proxies, including Degree, Closeness, Betweenness and Eigenvector Centrality. Statistical significance of the coefficients is designed as follows: \* indicates significance at the 10% level; \*\* significance at 5%; \*\*\* significance at 1%.

$p < 0.01$  in Model 9), closeness ( $\beta_1 = -1.297$ ,  $p < 0.01$  in Model 10), betweenness ( $\beta_1 = -175.0$ ,  $p < 0.01$  in Model 11) and eigenvector ( $\beta_1 = -3.022$ ,  $p < 0.01$  in Model 12) and MLM. Similar to the ordinary least square regression results, the MLM-related analysis shows a very different results to the other two capital structure proxies. This could be because of the different calculation measure and method applied when identifying the variables.

In summary, except for the MLM capital structure measure which shows the opposite result to the director network centrality measure, both book leverage and market leverage support the hypotheses and show a positive relationship with the director network centrality measure. Generally, the results of 2SLS regression analysis reduces the limitation and technical assumption in the OLS regression model. The findings are more persuasive to answer my second research question. The findings show that directors with higher centrality measure prefer a higher debt in the corporate capital structure. It suggests that a higher debt capital structure of a company, the more opportunities that the company would have to invest in innovative and growth activities of a company (Lindner et al., 2018; Sheikh and Wang, 2011). In addition, the results suggest that the director with high network centrality has higher chance to issue new debt within their network, which helps the company in the emergency financing needs (Majeed and Samreen, 2021). Director network and corporate lobbying play an importance role of reducing information asymmetry in the director capital structure decision based on the Pecking order theory of hierarchical order of financing.

### 5.3.5 Robustness Check

To maintain the robustness of the results, I also conduct a different robustness test to examine the effects of director network on capital structure decision in the U.S. lobbying companies. In the robustness check, the sample lobbying companies are divided into two sub-sample groups, by controlling the sample period of financial crisis. Following Essen et al. (2013), 2008 and 2009 are determined as the “Financial Crisis” period in this analysis. In other words, “Before Financial Crisis” is the period from 2005 to 2007 and the “After Financial Crisis” period is from 2010 to 2015. Table 5.3.6 shows the pooled ordinary least square results of investigating the impact of director networks on capital structure (book leverage proxies are applied in the robustness check) in lobbying companies before and after the financial crisis. Models 1 to 4 show the results of the impact of director networks on book

leverage before the financial crisis. Models 5 to 8 show the results of the impact of director networks on book leverage after the financial crisis.

Table 5.3.6: Influence of director network on Director compensation in lobbying companies based on Financial Crisis period

	Book Leverage							
	Before Financial Crisis				After Financial Crisis			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Degree	0.0000190* (1.89)				0.00000271* (1.13)			
Closeness		0.0935* (0.99)				0.289*** (5.44)		
Betweenness			14.59*** (2.62)				3.361* (0.89)	
Eigenvector				0.132 (0.45)				0.144* (-0.88)
Firm Size	0.00519*** (3.45)	0.00562*** (3.66)	0.00525*** (3.63)	0.00617*** (4.38)	-0.00297*** (-3.54)	-0.00438*** (-5.17)	-0.00284*** (-3.48)	-0.00245*** (-2.99)
Tangibility	-0.290*** (-9.12)	-0.290*** (-9.10)	-0.289*** (-9.09)	-0.289*** (-9.09)	-0.0746*** (-5.48)	-0.0759*** (-5.58)	-0.0748*** (-5.49)	-0.0739*** (-5.43)
payout	0.00987*** (3.30)	0.00977*** (3.27)	0.00983*** (3.29)	0.00969*** (3.25)	0.0293*** (7.66)	0.0293*** (7.66)	0.0293*** (7.67)	0.0293*** (7.67)
Cap_ex	0.377*** (8.39)	0.376*** (8.35)	0.376*** (8.36)	0.375*** (8.34)	0.481*** (19.79)	0.482*** (19.87)	0.480*** (19.78)	0.480*** (19.76)
mkt_to_bk	-0.00861*** (-3.62)	-0.00846*** (-3.54)	-0.00858*** (-3.62)	-0.00816*** (-3.45)	0.00123 (1.07)	0.000519 (0.45)	0.00133 (1.16)	0.00141 (1.23)
Missing_RD	-0.00405 (-0.97)	-0.00457 (-1.10)	-0.00433 (-1.04)	-0.00491 (-1.18)	-0.0275*** (-11.66)	-0.0263*** (-11.13)	-0.0276*** (-11.72)	-0.0280*** (-11.86)
Rg_Industry	0.0758*** (11.81)	0.0758*** (11.78)	0.0761*** (11.86)	0.0753*** (11.75)	0.0785*** (22.21)	0.0797*** (22.53)	0.0785*** (22.20)	0.0782*** (22.15)
Board Size	-0.0141*** (-5.23)	-0.0140*** (-5.16)	-0.0140*** (-5.19)	-0.0143*** (-5.31)	-0.00381** (-2.11)	-0.00297 (-1.64)	-0.00386** (-2.13)	-0.00403** (-2.23)
Board independence	0.00942*** (3.42)	0.00927*** (3.33)	0.00937*** (3.40)	0.00966*** (3.51)	0.00424** (2.28)	0.00313* (1.67)	0.00430** (2.31)	0.00449** (2.41)
Obs	7142	7142	7142	7142	22188	22188	22188	22188
Adj R-squared	0.082	0.082	0.083	0.082	0.054	0.055	0.054	0.054

Table 5.2.6 reports the results of the effects of director network on capital structure before and after financial crisis periods. The dependent variable is book leverage. The primary independent variable is the director network centrality measure, including Degree, Closeness, Betweenness and Eigenvector Centrality. Statistical significance of the coefficients is designed as follows: \* indicates significance at the 10% level; \*\* significance at 5%; \*\*\* significance at 1%.

In general, the results are similar to the main results described above (See Table 5.3.3). There is a positive significant relationship between all the director centrality measures and book leverage. By comparing the coefficient figure between the “before” and “after” financial crisis periods, it shows that the “after financial crisis” coefficient figures are slightly higher than the “before financial crisis” period, which suggests increased importance of the director network effects on capital structure decision in these lobbying companies.

### 5.3.6 Conclusion



In this section, the results of examining the effects of director networks on capital structure in lobbying companies are shown by using the baseline model Eq 2. It uses the director network centrality measure, including degree, closeness, betweenness and eigenvector, to examine the hypotheses developed in Section 3.3.2. The analysis is based on a sample size of 607 companies with 39,914 director-level yearly observation from 2005 to 2015. The majority of the results supported the hypotheses indicating a positive relationship between director networks and capital structure in lobbying companies. In summary, high network centrality will lead to better capital structure to benefit the company's performance in U.S. lobbying companies. The results also show that director networks and corporate lobbying have a complementary effect on determining director compensation. A detailed discussion of the results will be provided in Section 6.3.

## **5.4 Conclusion**

This chapter explains the results obtained from the collected data for this study. In order to address the research gaps and answer the research questions, two empirical sections have been designed to examine the hypotheses.

The first empirical section answers the research question: "What is the relationship between director networks and director compensation in U.S. lobbying companies?" with the intention to achieve the research aim "To investigate the relationship between director networks and director compensation in U.S. lobbying companies". By applying different types of director networks, the results show an overall positive effect of different types of director networks on director compensation in US lobbying companies, which supports Hypothesis 1 developed in Section 3.3.1. In addition, the results also suggest the importance of corporate lobbying in determining director compensation in U.S. lobbying companies, as director networks and corporate lobbying complement each other in determining director compensation.

The second empirical section is to answer the research question: "How can director networks affect directors' decisions about capital structure in U.S. lobbying companies?" with the intention of achieving the research aim "To examine the influence of director networks on capital structure in U.S. lobbying companies". By applying the director network centrality measure, the results show a positive relationship between the director network centrality

measure and capital structure in U.S. lobbying companies, which partly supports Hypothesis 2 developed in Section 3.3.2. Moreover, the results show that the determinants of capital structure are similar to the existing capital structure literature. In addition, it also suggests director networks and corporate lobbying are substitutes for determining capital structure in lobbying companies in the U.S.

The next chapter will provide a discussion and analysis of the results obtained in this chapter, to provide empirical guidance for directors to help them to understand the importance of director networks and corporate lobbying in U.S. lobbying companies. Two empirical sections relating to the two research questions are discussed separately.

# Chapter 6 Discussion

## Chapter 6 Discussion

### 6.1 Introduction

The main research question of this study is focused on examining the effects of director networks in lobbying companies. More specifically, this study examines the relationship between director networks and director compensation and the effects of director networks on capital structure in lobbying companies in the United States. The results of the collected data for the two empirical sections were provided in the previous chapter. The aim of this chapter is to give an in-depth discussion of the results obtained in Chapter 5 and also to provide guidance for directors to help them understand the importance of director networks and corporate lobbying.

Table 6.1 Research Hypothesis results

Path	Hypothesis	Hypothesis supported
Director network	<i>Hypothesis 1a: Director with extensive personal network will get more compensation in the lobbying companies in the United States</i>	Yes
↓	<i>Hypothesis 1b: Director with extensive social network will get more compensation in the lobbying companies in the United States.</i>	No
Director compensation	<i>Hypothesis 1c: Director with extensive professional network will get more compensation in the lobbying companies in the United States.</i>	Yes
Director network	<i>Hypothesis 2a: High degree centrality directors will make better capital structure decision in the lobbying in the United States.</i>	Yes
↓	<i>Hypothesis 2b: High closeness centrality directors will make better capital structure decision in the lobbying in the United States.</i>	Yes
Capital structure	<i>Hypothesis 2c: High Betweenness centrality directors will make better capital structure decision in the lobbying in the United States.</i>	Yes
	<i>Hypothesis 2d: High Eigenvector centrality directors will make better capital structure decision in the lobbying in the United States</i>	Yes

### 6.2 Effects of Director Networks on Director Compensation in Corporate Lobbying Companies

By reviewing the corporate lobbying literature, director network literature and director compensation literature, it is found that there are no clear studies which investigate the effects of director networks on director compensation in U.S. lobbying companies, and there are

limited studies which examine the effects of corporate lobbying on director compensation in U.S. lobbying companies. From the company performance perspective, director networks play an important role in company performance, as well as director compensation.

Meanwhile, corporate lobbying, which could also be defined as a kind of director network, is also significantly related to company performance. However, in the literature on the influence of director networks on director compensation, researchers have not considered corporate lobbying as a kind of director network or they have not examined the similar relationship in the lobbying company set-up. In order to addressing these research gaps, this study aimed to find the influence of director networks on director compensation in U.S. lobbying companies.

Hypothesis 1 (1a, 1b, 1c) is developed to answer my first research question (see p. 24). Based on a sample size of 278 lobbying companies of 7,129 director year observations from 2005 to 2014, a general positive relationship is found between different director network types and director compensation in lobbying companies in the US. 12 individual models are applied, combining each of the director network types (personal, social and professional network) with one of the director compensation proxies (total, salary, bonus and equity-linked compensation), to test Hypothesis 1. The hypothesis results are presented in Table 6.1.

Personal network, which refers to a network built up through the same educational background, is positively and statistically significantly related with director compensation. This provides evidence to support H1a that directors with an extensive personal network will get more compensation in lobbying companies. This is consistent with prior research investigating the relationship between educational networks and CEO compensation, the results for which are typically positive (Butler and Gurun, 2012). Large personal networks may not perfectly show a director's quality but could capture what kind of education and/or training a director has had before (Bulter and Gurun, 2012). Arguably, the higher the degree a director has and the more training a director has attended, the more professional knowledge and skills a director should have to manage the company, and, in turn, make appropriate decisions for the company. Therefore, director compensation improves.

Contrary to expectations, there is a negative and statistically significant relationship between director social network and director compensation. Therefore, there is evidence to support H1b that directors with a large social network would have more compensation in U.S. lobbying companies. This could be due to the different measure applied (Hasan et al., 2017).

In this study, the social network refers to only these directors who are in the same clubs and charities; the educational networks are not included in the social network. Arguably, the director's social network is narrowed in this study, which may lead to a different result compared to prior studies.

Professional network, which refers to the network built up through the same directorship, has a positive and statistically significant relationship with director compensation. This provides evidence to support H1c that directors with extensive professional networks will get more compensation in lobbying companies. This is consistent with prior research examining the influence of director networks, which is typically positive about director compensation (Jensen and Murphy, 1990; Core et al., 1999; Horton et al., 2009; Renneboog and Zhao, 2011). The bigger the professional network a director has, the higher chance that two well-connected directors will be on each other's compensation committees, which would lead to collusion and, in turn, better director compensation (Renneboog and Zhao, 2011). In addition, if a director has a higher professional network, this means this director should be involved with lots of company boards previously or currently to build up these connections, which potentially shows the director's power (Conyon and Read, 2004). Higher director power could enable directors to influence board decisions for their own benefits (Inintoli et al., 2018). Arguably, if a director from a U.S. lobbying company has more professional connections, they have a high chance to influence the board to in favour of higher compensation for them.

To summarise the hypotheses-related discussion, the main results of this study show that director networks are positively and statistically significantly related to director compensation. This suggests that directors with a large director network size would have more compensation in U.S. lobbying companies. A bigger director network reflects director managerial power, work experience, industry reputation, past achievement and director quality (Renneboog and Zhao, 2011; Miranda-Lopez et al., 2018). Additionally, a director network is defined as an effective way to reduce information asymmetry to collect crucial, non-public information and exchange ideas and knowledge, which is beneficial for corporate strategic decision-making (Renneboog and Zhao, 2011; Larcker et al; 2013; Fracssi and Tate, 2012; Renneboog and Zhao, 2014). Within U.S. lobbying companies, directors with large networks have more channels to achieve their corporate lobbying targets. When they achieve specific lobbying goals for the company, they have high possibility to get higher

compensation in return. Directors can get access to superior information through lobbying or through their network to make timely strategic decisions to seek an increase in their compensation. The results show the importance of director networks in U.S. corporate lobbying companies in determining director's compensation. This gives directors a heightened sense of the importance of their network for the benefit of U.S. lobbying companies, which elevates their actual compensation. This study offers insights into how director networks benefit U.S. lobbying companies, which, in turn, enables directors to get higher compensation.

In order to address the research gap, this study investigates the relationship between director networks and director compensation in U.S. lobbying companies. As part of this, the corporate lobbying effects are also considered to determine director compensation in this study. All my results show that corporate lobbying expenses are positively and statistically significantly related to director compensation. The empirical evidence suggests that the more expenditure a company spends on corporate lobbying activities, the higher the compensation a director is given. The finding is consistent with the literature indirectly, because there is no clear research investigating the effects of corporate lobbying on director compensation prior to this. However, there are studies showing that corporate lobbying activities are positively related to company performance (Chen et al., 2015) and also, there are studies which find that company performance is positive related to director compensation (Crespi-Cladera and Pasual-Fuster, 2015). Moreover, through the director network aspect, corporate lobbying, as a kind of director network, is an effective way to collect timely information, which keeps directors updated about regulatory changes (Nandy et al., 2020). With this information, directors can make strategic future plans to achieve better company performance, and then get higher director compensation in return. The results show the importance of corporate lobbying activities in improving director compensation through corporate lobbying activities in U.S. lobbying companies. This gives directors a heightened sense of corporate lobbying, which elevates their actual compensation. This study offers insights into how corporate lobbying is defined as a kind of director network, which, in turn, enables directors to get higher compensation.

This study also examines the interaction influence of director networks and corporate lobbying activities to determine director compensation. The result shows that director networks and corporate lobbying both have a complementary effect on determining director

compensation. In lobbying companies, lobbying activities are defined as an important strategy to improve corporate performance and get favourable policies passed by government (Unsal et al., 2017). And it is also a kind of director network as well as being an effective channel for directors to build up their connections. The director's network is an effective way to help directors to get access to political parties or government politicians. Higher director connections mean a higher possibility of persuading political parties and politicians to pass policies which are beneficial for the company. At the same time, a large director network also helps directors to get access to valuable information, while this information is applied in the strategic decision-making process. Therefore, both director networks and corporate lobbying activities will improve company performance and then, in return, benefit director compensation. This gives the directors of U.S. lobbying companies a new insight into how their compensation could be determined through their network as well as the corporate lobbying decisions they make for the company.

### **6.3 Effects of Director Networks on Capital Structure in Corporate Lobbying Companies**

By reviewing the corporate lobbying literature, director network literature and capital structure literature, it is found that there are limited studies which investigate the effects of director networks on capital structure in U.S. lobbying companies. In order to address the research gap, this study aims to establish the influence of director networks on capital structure in U.S. lobbying companies.

Hypothesis 2 (2a, 2b, 2c and 2d) is developed to answer the second research question (see p.24). Based on a sample size of 607 lobbying companies with 39,914 director year observations from 2005 to 2015, a general positive relationship is found between different director network centrality measures and capital structure in U.S. lobbying companies. Twelve individual models are applied, combining each director network centrality measure (degree, closeness, betweenness and eigenvector centrality) with one of the capital structure proxies (book leverage, market leverage and MLM), to test Hypothesis 2. The hypothesis results are presented in Table 6.1.



The centrality measure for director networks is to understand the director's skills, power and their position within their network (Inintoli et al., 2018). Degree, closeness, betweenness and eigenvector centrality are all positively and statistically significantly related to capital structure. This provides evidence to support H2a, H2b, H2c and H2d that directors with high network centrality would make better capital structure choices in U.S. lobbying companies. This finding is indirectly consistent with the existing literature, because there is no clear empirical evidence that shows the effects of director networks on capital structure. However, there are studies that find the positive effects of director networks on company performance (Fracassi and Tate, 2012; Akbas et al., 2016), and also a positive relationship between capital structure and company performance (Linder et al., 2018; Gallo, 2015), which help to build an estimation of a positive relationship between director networks and capital structure through company performance. Therefore, this study is indirectly consistent with prior studies. Directors with high network centrality are believed to have more director power and skills to manage a company in a beneficial way. Thus, high network centrality directors could make better strategic decisions to benefit the company to maximise company value (Miranda-Lopez et al., 2018; Renneboog and Zhao, 2014). Director network centrality measures reflect the director's influential position in the network (Larcker et al., 2013). Arguably, these directors have more opportunities to get access to high quality information, and then apply the valuable information to make appropriate capital structure choices to make the company successful. In U.S. lobbying companies, high network centrality directors could easily get potential corporate regulation or taxation policy changes, and they may use information to adjust their capital structure decisions to benefit the company. Arguably, through director networks, high network centrality directors can collect useful information and apply it to make appropriate capital structure decisions for the company. Therefore, this study contributes to the literature by filling the research gap on director networks and capital structure.

To summarise the hypotheses-related discussion, the main results of this study show that director network is positively and statistically significantly related to capital structure. This suggests that directors with high network centrality would have higher leverage in terms of capital structure in U.S. lobbying companies. Higher book leverage and market leverage means more debts in the capital structure, which reduces the cost of capital and leads to more tax benefits (Chen et al., 2019). However, it also reflects that directors with higher network centrality measures prefer more risky capital structure decisions, as higher levels of debt

could lead to bankruptcy (Zhou et al., 2016). In other words, directors with a higher centrality network can deal with more risky capital structure choices as they have an important position within the network. More risk means more return, then they can make the company more successful. Meanwhile, as companies engage in lobbying activities, the company can get protection from bankruptcy from the government. All this could be the reason why a director with a higher centrality network in lobbying companies prefers higher book leverage and market leverage in terms of capital structure choice.

In order to address the research gap, this study investigates the effects of director network on capital structure in U.S. lobbying companies. Apart from this, the corporate lobbying effect is also considered to influence the capital structure in U.S. lobbying companies in this study. In this study, the interaction influence of director networks and lobbying activities is examined to determine capital structure. The result shows director networks and corporate lobbying have a complementary effect on determining director compensation. Lobbying activities are an important strategy to get favourable policies made by government, which defines as an effective way to know the information of future policy change. The government's future tax policy or financial regulations could affect the capital structure choice. On the other hand, the director's network gains access to unpublished or private information, knowledge, ideas and even experiences, which directors helps director make appropriate capital structure decisions. All information a director collects through their network, and through lobbying activities (a kind of network) could be affect their decision-making in terms of capital structure. Therefore, both director network and corporate lobbying could have complementary effects on determining the capital structure in lobbying companies. This gives directors an understanding of whether corporate lobbying could affect capital structure or not, which helps them to make capital structure decisions within the U.S. lobbying companies.

## **6.4 Conclusion**

In order to provide a better understanding of the aims and objectives of this thesis, this chapter has provided a brief discussion of the results obtain in Chapter 5 in the two empirical sections.

The first empirical section deals with how the director network would affect director compensation in U.S. lobbying companies. By examining the hypotheses developed in Section 3.4.1, the results show the importance of different types of director network on director compensation. The directors with extensive professional and personal network connections are more likely to have a higher compensation package as they have more channels to access unpublicised information, knowledge and ideas. In addition, the corporate lobbying activities also have positive impacts on director compensation. Both director network and corporate lobbying activities are complementary to each other in determining director compensation in U.S. lobbying companies. To extend Brodmann et al.'s (2019) research, my thesis provides extra explanations linking director networks to the reason why directors in lobbying companies get higher compensation compared to their peers in non-lobbying companies. Moreover, my thesis also extends Renneboog and Zhao's (2011) research to lobbying companies in terms of investigating the influence of director networks on director compensation.

The second empirical section deals with how the director network would affect the capital structure decision-making in U.S. lobbying companies. By examining the hypotheses developed in Section 3.4.2, the results show the importance of director network centrality measures on capital structure decisions in US lobbying companies. Directors with higher network centrality prefer higher book leverage and market leverage in capital structure decisions. This suggests that they could use their network to issue more debt for the company to reduce the cost of capital as well as to get tax benefits from them. However, due to the higher risk of bankruptcy for more debt issued for companies, these directors may find another way to reduce the risk, such as lobbying activities, which suggests director networks and corporate lobbying are substitutes in determining capital structure in lobbying companies in the U.S. To extend Huang and Shang's (2019) research on the relationship between capital structure and social capital, my thesis firstly applies a different measurement of social capital. In Huang and Shang's (2019) study, they apply a company level measurement of social capital, while I focus on the director centrality measure to investigate the influence of director networks on capital structure in U.S. lobbying companies. Secondly, they do not mention their sample companies in terms of whether they do lobbying activities or not. I extend their research by focusing on lobbying companies in the U.S.

The last chapter is the conclusion chapter for the empirical sections for the whole thesis, including the main contribution, limitations and suggestions for future research.

# Chapter 7 Conclusion

## **Chapter 7 Conclusion**

### **7.1 Introduction**

This chapter revisits the aims and objectives of this thesis. It also summarises the main research findings obtained from this thesis, and then outlines how the study contributes to academic literature and empirical practice. At the end of this chapter, it critically evaluates this thesis with the limitations of this study before indicating suggestions for future research.

### **7.2 Fulfilling the Research Aim and Objectives**

By evaluating the existing literature in Chapter 2, I identify the research gap and find that there is a need to clarify the relationship between director networks and director compensation and the effects of director network in decision-making of capital structure in U.S. lobbying companies. Thus, the first aim of the study is to investigate if corporate lobbying as an additional tool of director network can assist the directors to determine their compensation. The second aim is to examine if the information collected by directors from their network channels can help them to determine the capital structure in lobbying companies. The main objective of the study is to achieve the above aims of the study and to provide empirical guidance for directors to understand the importance of director networks and corporate lobbying together in their corporate decision-making process. The research model is supported by a theoretical framework developed by combining various aspects of agency theory, social capital theory, stakeholder theory and pecking order theory. To achieve the aims and objectives of this thesis, two research questions are split into two relevant hypotheses. Based on the literature, a series of econometric tests are conducted. As a synopsis of the thesis, Table 7.1 presents the objectives and indicates in which chapter these objectives have been addressed.

Table 7.1 Objectives and Chapters in which these objectives are addressed

Objectives	The Related Chapter where the objective is met
<b>Objective 1:</b> To provide critical literature of corporate lobbying, director network, director compensation and capital structure to identify the research gap, and to address the research questions	Chapter 2
<b>Objective 2:</b> To develop conceptual frameworks and associated hypothesis to address the research gap and research questions	Chapter 3
<b>Objective 3:</b> To evaluate empirically the proposed hypotheses	Chapter 4, 5
<b>Objective 4:</b> To discuss and link the results and findings to previous research, identify the academic and practical implications of key findings.	Chapter 6, 7

### 7.3 Summary of main Findings

This thesis aims to provide a new understanding of the importance of director network along with lobbying network in corporate decision-making (director compensation and capital structure) in the U.S. lobbying companies. A conceptual framework with two individual empirical sections is developed to examine the relationship between director network on director compensation and to explain the effects of director network on capital structure decision in the U.S. lobbying companies. In particular, the framework employed in this thesis attempts to address the following research questions: (1) What is the relationship between director networks and director compensation in U.S. lobbying companies? and (2) How can director networks affect directors' decisions about capital structure in U.S. lobbying companies?

In empirical section 1 (see Chapter 5.2), Hypothesis 1 is tested by using 7,129 director-level yearly observations in 278 U.S. lobbying companies from 2005 to 2014. Three main variables (director compensation, director network and corporate lobbying) are modelled as multiple items, as they are measured by more than one proxy. The data of this section are collected through the professional databases widely used in the prior studies. To understand the distribution and efficiency of the collected data, several tests have been done to evaluate the data. Table 5.2.1 shows the mean and standard deviation for all the variables used in Eq 1. Table 5.2.2 presents the correlations of all the variables, followed by a series of econometric

test shown in Table 5.2.3 to Table 5.2.6. This study finds that directors with more network connections are offered a high compensation compared with these directors with fewer network connections in the U.S. lobbying companies. The results indicate that more directors' networks refer to higher directors' quality and better managerial power of making appropriate decisions to benefit the company (Larcker et al., 2013), and, in return, when a company performs well, directors will get higher compensation (Goergen et al., 2019). In Renneboog and Zhao's (2011) research, they provide evidence that director network is positively related to director compensation in the U.K companies. My results support Renneboog and Zhao's (2011) research, but, differently, I extend their study to the lobbying company set-up in the U.S. I also examine the effects of corporate lobbying on determining director compensation in these lobbying companies, where corporate lobbying defines as another director network. It finds that corporate lobbying is also positively related to director compensation. When directors make the lobbying decision based on the corporate preference through their network, the company has higher chance to receive favourable feedback from the government (Unsal et al., 2016), and then directors would get a higher compensation based on their achievements for the company. This finding expands Brodmann et al.'s (2019) research by adding director networking effects along with lobbying network in explaining why directors in the lobbying companies get higher compensation than their peers in the non-lobbying companies. In addition, I conduct an interaction term analysis of director network and corporate lobbying to check how the two terms work together in determining director compensation in the U.S. lobbying companies. The results show that director network and corporate lobbying are complementary related to director compensation in the U.S. lobbying companies. This suggests that both director network and corporate lobbying are two effective ways for directors to collect complementary information for better corporate decision-making in the U.S. lobbying companies. The results support Nandy et al.'s. (2020) research and contribute to their study by applying a different combination of agency theory, social capital theory and stakeholder theory as the theoretical framework. Moreover, I conduct a robustness check to identify whether the results stand after controlling for some variables. The results remain unchanged under the subsample of different time period applied.

In empirical section 2 (see Chapter 5.3), to answer my second research question, a sample size of 39,914 director-level observations in 607 U.S. lobbying companies from 2005 to 2015 is applied to examine the effects of director network on capital structure decision in the U.S. lobbying companies. To best of my knowledge, few studies investigate the effects of director



network on capital structure in the lobbying companies. Based on the theoretical framework of combining agency theory, social capital theory and pecking order theory, two main variables (capital structure and director network) are developed with different proxies. Following the prior research, the data used in this test are collected from professional secondary databases. A series of evaluations are provided to check the distribution and the efficiency of collected data. Table 5.3.1 shows the descriptive statistics with mean and standard deviation for all tested variables. Table 5.3.2 reports correlation matrix of main variables in Eq 2. All the director network centrality variables are positively correlated with each other, which suggests that directors use more than one network centrality simultaneously. To test Hypothesis 2, ordinary least squares regression, two-stage least squares regression and other econometric analysis are applied. I find that directors with high network centrality would prefer a higher leverage in capital structure decision in the lobbying companies. This suggests that well-connected directors would prefer higher debts in the capital structure for the lobbying companies. This is because directors with high quality network would have better access to unpublished information and get a financing within their network easily. The findings support Huang and Shang's (2019) research and expand their research by applying a different measurement in director network in a lobbying company set-up in the U.S. In addition, I include the interaction term of corporate lobbying and director network centrality variables to examine the lobbying effects on capital structure decision-making in the U.S. lobbying companies. The coefficients of interaction terms of director centrality variables and lobbying are positive and statistically significant. This indicates that directors could use their network as well as corporate lobbying activities to collect valuable information to make better capital structure decision. The findings contribute the capital structure literature (such as Daskalakis et al., 2017) of providing extra director network determinants of capital structure. Moreover, a robustness test is provided to check whether the results maintain after controlling some variables. The results remain unchanged under the subsample of different time period applied.

## **7.4 Contribution**

The findings of this thesis give an immense contribution to the related academic literature along with having high impact in practice.

#### 7.4.1 Academic Contribution

Firstly, this study fills the gap in the academic literature related to director networks, corporate lobbying, director compensation and capital structure. It provides new evidence about the importance of the director network in determining director compensation and capital structure in U.S. lobbying companies, which is more focused on the non-lobbying companies in the existing literature. For example, to extend Renneboog and Zhao's (2011) research, I have conducted a similar investigation on the relationship between director networks and director compensation, but more focused on U.S. lobbying companies. From this perspective, my thesis contributes to the literature by introducing the importance of corporate lobbying as a kind of director network in determining director compensation. And also, to contribute to Brodmann et al.'s (2019) research of director compensation in the lobbying companies, except the lobbying effects on director compensation, I provide extra explanation of how a director network helps directors obtain more compensation in the lobbying companies. Moreover, compared to Huang and Shang's (2019) research, which examines the influence of social capital on capital structure, I apply a different measurement of director networks to examine the similar effects, and expand their study to the lobbying company set-up in the U.S.

Secondly, in the existing literature, prior researchers applied either simple connection measurements for director networks (Akbas et al., 2016) or director network centrality measures (Intintoli et al., 2018), whereas I apply both director network centrality measures and connection measures for different types of networks, which is new in the academic literature related to lobbying companies. However, the results remain the same.

Theoretically, this study establishes a new combination of agency theory, social capital theory, stakeholder theory and pecking order theory to explain the relationship between director networks and director compensation and the influence of director network on capital structure decision-making in U.S. lobbying companies. Agency theory helps to understand how an inappropriate corporate lobbying decision, irrational excessive director compensation, low quality director network and unsuitable capital structure could lead to agency issue and cause unexpected agency costs in such companies. However, director network along with lobbying network as a director's social capital offers a valuable recourse to the companies for the decision-making process and benefits all the stakeholders in the companies. Here,

stakeholder theory is applied to explain why a suitable director compensation is important in the lobbying companies and why directors should make the right decision for the company to meet other stakeholders' satisfaction. In order to make an appropriate capital structure, which is one of the most important corporate decisions for the company, to maximise the company value, directors should understand the corporate financial needs and decide the capital structure of a hierarchical order based on pecking order theory. This theoretical framework explains the effects of director network in the lobbying companies, which contributes to the theoretical literature with a new combination of different theories in director network studies and corporate lobbying studies.

#### 7.4.2 Practical Contribution

This study has heightened directors' sense of the importance of their network for the benefit of the company, and then the benefit for themselves in turn. Director networks reflect information exchanges, which help directors to make better decisions for the company to achieve better performance. This study offers insights into how director networks would benefit U.S. lobbying companies in deciding about the capital structure, and how directors would benefit from their director network in U.S. lobbying companies, especially in determining their compensation. In addition, corporate lobbying, which is defined as a kind of director network and a channel for information collection, also helps directors to make appropriate strategic decisions for capital structure. This also gives directors a heightened sense of corporate lobbying effects, which would improve company performance. Arguably, my thesis suggests that both director network and corporate lobbying help directors to gain access to valuable information for corporate decision-making.

This study provides a better view of director compensation and growth prospects, especially for lobbying companies. In the previous literature, the importance of corporate lobbying is normally defined through company performance. However, corporate lobbying effect is not linked up to discuss director compensation or capital structure. From this thesis, the decision-makers will be able to understand why both director networks and corporate lobbying are important in determining director compensation or capital structure, especially in the U.S. lobbying companies. Moreover, directors will have a better understanding of the importance of their network. Not only can directors benefit from networks, but also the company can gain benefit from the director's network, including director lobbying network. For the

decision-makers in the company, the board for example, they could have better knowledge of what kind of person would be suitable as a director in the company to lead the company to achieve better performance. Such findings will allow decision-makers to develop more transparent and all-inclusive models for companies. Other stakeholders, such as investors and creditors, will also have better understanding of the importance of appointing a well-connected director in the company and the importance of investing in a lobbying company. Well-connected directors have high chance to make the appropriate decisions to lead the company to achieve a great success, which would afford greater dividends to investors. Therefore, my study gives a new perspective for investors to making their decision. The lobbying company and the company led by well-connected directors have more channels to deal with the corporate financing issue, which reduces the creditors' risk of repayment. For creditors, my study could guide them when they give financing for these companies.

## **7.5 Limitations and Suggestion of Future Research**

First of all, due to limited access to the databases, the director network data are focused on the U.S. lobbying companies and manually collected from Bloomberg. However, the widely used database of director network information is BoardEx. These manually collected network-related data from Bloomberg would lead to some limitations for my findings. In addition, the sample companies are justified by the thesis and focused on the variables, which play an important role in defining the relationship between director network and director compensation and in examining the effects of director network on capital structure in the lobbying companies.

Future studies could expand the research by accessing a rich database to collect more direct network data and to consider other factors as control variables, which could affect the relationship between director network and director compensation and the influence of director network on capital structure in the lobbying. Moreover, to measure corporate lobbying, this study only applies lobbying expenses as the lobbying proxy in two empirical sections. Future research could expand this study by developing more lobbying proxies, such as lobbying bills and lobbying issues. However, with the robustness tests and similarity with the existing literature, I can confirm that the findings in this thesis are robust.

Secondly, this study is limited to the lobbying companies in the United States. The findings of this thesis may be affected by the regional restriction to the research setting. As different countries have different regulation and different corporate acceptance of lobbying activities, the lobbying effects could be different between countries. With an improvement in knowledge about lobbying activities, the study could be extended to other countries which practise lobbying.

Except the limitation mentioned above, empirical section 1 has other limitations. I use the number of director network connections to examine the relationship between director network and director compensation. This limits the director network to the size of network connections instead of considering the quality of such network. Future study could apply the director network centrality measure to investigate the same relationship in the U.S. lobbying companies. Similarly, in empirical section 2, I only use director network centrality measure to investigate the effects of director network on capital structure in the U.S. lobbying companies, but not to examine the effects of director network size. Future study could focus on the director network size to examine the similar relationship.

In addition, lobbying companies are treated as a special group with special lobbying effects in the corporate operation in this study. Future studies can focus on this group to examine the director network on other corporate decision-making activities, for example, the effects of director networks on corporate governance in lobbying companies, etc.

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