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STRUCTURAL HOLE THEORY, AUDIT COMMITTEE MEMBER GENDER,
AND FINANCIAL RESTATEMENTS

by

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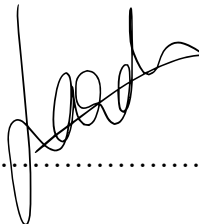
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Abstract

Audit committees ensure the independence of auditors from a firm's management in order to minimize principal-agent conflict. The strength and independence of an audit committee is important for the effectiveness of corporate governance. Audit committees provide oversight of financial reporting, internal control, the audit process, and compliance and it is their responsibility to create an open and trusting environment for transparent discussions between external auditors and management. Research indicates that financial restatements are costly for the company. It is found that restatements increase the cost of equity capital and debt financing for the restating firm (Park & Wu, 2009). Also, financial restatements can affect the future earnings of the firm negatively (Hribar & Jenkins, 2004) and increase information risk (Kravet & Shevlin, 2009). Given that restatements imply failures in financial reporting, the implication of these tends to be worse if initiated externally, as opposed to the firm's management. Female representation on audit committees, and female audit committee chairs, have been demonstrated to lower audit fees. This has been seen as a result of females' better communication skills, which in turn reduces the perception of audit risk by external auditors, their enhancement of the integrity of the financial reporting process, and more efficient and effective internal monitoring (Ittonen, Miettinen & Vahamaa, 2010). At the same time, the strength of a director's connections or social networks, known as "connectedness", can be linked to the efficiency of running the firm. Board connectedness has also been shown to decrease the cost of debt for companies. Research has shown that financial reporting quality is better if the board members are more connected (Park & Wu, 2009). Structural hole theory argues that highly connected people with strong social ties, known as "social brokers", are especially valuable due to their increased social capital. Therefore, I argue that it is not only the gender of the audit committee members that affects the probability of restatements, but also the social capital of these members. Given the prior research related to gender and connectedness, and the theoretical link to restatements provided by structural hole theory, I focus on how "connected" women on audit committees affect the probability of financial restatements.

Search Terms: Structural Hole Theory, gender, audit committee, financial restatements, connectedness.

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Chapter 1. Introduction

1.1. Overview

Financial restatements are extremely costly to firms, and their signal to the market can often be detrimental for companies. Being able to find factors and variables that could result in a decrease in financial restatements is, thus, extremely important. Further, there is substantial debate regarding the desirability of diverse boards and the underrepresentation of women in top management teams; for instance, the European Commission intends to implement gender quotas for boards of public firms in 2019 (Zillman, 2017).

Given existing literature and research on gender diversity and audit fees, with females on audit committees proving to reduce fees, and gender diversity on boards, I believe that there could be a link between connected females and financial restatement probability. Connected individuals, in general, if connected in the right structure, can fill what is known as a Structural Hole.

In this paper, I analyze U.S listed companies in order to assess whether female audit committee members bridge structural holes in order to improve the quality of audit committees in terms of reducing material misstatements in statutory financial reports. The thesis of my paper is that “connected females on audit committees, measured as both the degree of connection and betweenness and females as chairs of audit committees will reduce the probability of financial restatements”.

1.2. Thesis Organization

The first section of the paper will be a theoretical framework that goes into detail about the structural hole theory, gender diversity on audit committees and the effect of females on board effectiveness. Then, I will go through an analysis the development of my hypothesis and lastly present an overview of the data and methods that will be used to derive the final results of my thesis.

Chapter 2. Background and Literature Review

2.1. Structural Holes and Institutional Impact of Exclusion

Structural Hole theory, originally developed by Ronald Burt defines a network structure that is argued to create social capital. Social capital, a form of cultural capital, emphasizes the importance of social networks for the effectiveness of society as a whole. Burt's theory is based on the idea that an individual with connections to groups that are not connected to each other is in the best position to gain the most knowledge and benefit from comparative advantages (Burt, 1995). The Hole, thus, is this gap that exists between two groups with different sets of information. The positioning of an individual between these two groups fills the gap. With this knowledge that an individual gains from being connected across groups, this individual will be more likely to come up with better and more innovative ideas (Burt, 2004).

2.2. Gender and Audit Committees

Under the 2002 Sarbanes Oxley Act, a number of responsibilities were shifted from management to independent, internal audit committees. The audit committee must (1) provide oversight of the financial reporting process, (2) design, implement, and oversee the audit process, and (3) ensure that the system of internal controls is conducted with and in compliance with securities laws and regulations. According to KPMG (2018), the success of the audit committee depends on the quality of the audit committee chair (KPMG, 2018). They argue that the audit committee must exhibit personal traits such as leadership and vision in order to determine critical issues facing the company. The chair is also tasked with identifying committee members with specific skills to whom tasks should be delegated, which requires an understanding of cross functional teamwork and the personal skills of individual audit committee members. Moreover, the audit committee must include independent outside director to eliminate any agency problems and information asymmetry. Research has shown that gender diversity in the audit committee has influenced external auditing, therefore reducing audit fees (Ittonen, Miettinen & Vahamaa, 2010). With the acknowledgement that there are gender differences in terms of communication skills, integrity, and leadership styles, this may have significant consequences on corporate governance, therefore affecting the auditing process of a company. Audit effectiveness usually increases by some factors including, committee size, financial expertise, and gender diversity among audit committees

(Ittonen, Miettinen & Vahamaa, 2010). Research conducted in Australia, among 624 companies, shows that there is a positive correlation between female audits and the quality of external auditing (Aldamen, Hollindale & Ziegelmayr, 2016). They also found that Gender is the main characteristic that influences the quality of external audit, in terms of fees paid.

2.3. Gender Diversity and Board Effectiveness

Gender is believed to be one of the most important characteristics that influences board effectiveness. Psychology literature acknowledges that females are different than males in terms of cognitive functions, and thus they tend to act differently and influence corporate governance differently. For example, research shows that women are usually more risk averse and conservative with their decisions. Having women on audit committee who are both risk averse, and conservative means they are more likely to be careful with the information they disclose (Ittonen, Miettinen & Vahamaa, 2010). That means women are more likely to avoid decisions that will lead to losses. This highly relates to corporate governance and the auditing process because they are less likely to take risky decisions. Also, gender diversity, could enhance monitoring and oversight. The combination of risk averse and conservative female members could have an impact on the integrity of the financial reporting process. A successful audit committee should understand the importance of each role in the company, and the integration of management, audit and others. Besides, social connectedness or ‘centrality’, of audit committees plays a huge role on the board’s efficiency. Research has shown that connectedness among audit committees may improve the quality of financial reporting, to a degree that it could influence their ability to monitor and control financial restatements (Intintoli, Kahle & Zhao, 2015). One of the reasons why well-connected audit committee could influence the quality of financial reporting is because they have more access to better information set from different parties. Moreover, director connections could reduce information asymmetry between the board and external market and help facilitate better transmission of information across the board (Intintoli, Kahle & Zhao, 2015). Another significant type of centrality to this research is betweenness; director betweenness could also affect the quality of financial reporting, specifically financial restatement. Despite gender diversity, just like connectedness, director network helps facilitate the kind of information exchanged throughout the director network. Companies with better director network can control their annual

financial restatements (Omer, Thomas & Shelley, 2014). This network can also help with the time taken for information to be exchanged, allowing for more complete information to be received by the board before financial reporting occurs.

Chapter 3. Hypothesis Development

3.1. Structural Holes and the Probability of Restatements

Structural hole theory indicates that the proximity of individuals near the structural hole bridges information sets from diverse groups and yields the potential for new ideas. Therefore, I expect to find that highly connected audit committee members are better able to coordinate information across business functions and synthesize this information. There is, to date, no published research on nodality of audit committee members and the probability of material misstatements. Firstly, I examine the relationship of gender and material restatements empirically in my first hypothesis in null form and alternative form.

H1₀: Gender of audit committee members does not impact the probability of material restatement.

H1_a: Female audit committee members lower the probability of material restatement.

Taken together, the literature indicates that female board members make unique contributions. Further, the presence of female audit committee members appears to reduce the probability of restatement. According to the Structural hole theory, connectedness of individuals increases the likelihood of innovation. Therefore, we argue that previous research examining the relationship between female representation on boards and the likelihood of restatement, or between audit fees and female board representation, may suffer from an omitted variable bias, in that it does not incorporate aspects of nodality. My second hypothesis is stated in the null form and alternative form:

H2₀: The connectedness of female audit committee members does not impact the probability of material restatement.

H2_a: The connectedness of female audit committee members reduces the probability of material restatement.

Prior literature indicates that audit committee chairs are responsible for reviewing and implementing policies related to internal control effectiveness. Therefore, I argue that

the nodality of female audit committee chairs incrementally reduces the probability of material misstatement, which is my third hypothesis.

H3: The connectedness of female audit committee chairs does not impact the probability of material restatement.

H3a: The connectedness of female audit committee chairs reduces the probability of material restatement.

Chapter 4. Methodology and Data

4.1. Data

My data was obtained from several secondary data sources. Board characteristics and restatement data for each sample firm was collected from the Audit Analytics database and firm characteristics data from Standard and Poor’s Research Insights. Betweenness and centrality data was obtained from Zhang Associates.

The sample includes 7,123 restatements over the 2007-2014 time period. The sample contains female audit committee members: 13,573 and female audit committee chairs: 657. In total, I examine 7,123 restatements associated with 107,730 audit committee members and 11,018 audit committee chairs over the 2007-2014 time period.

4.2. Methods

For this research, I used a logistic panel multivariate regression to examine the incremental impact of gender and connectedness on the probability of financial restatements.

$$Pr(\text{Restatement}_{i,t}) = \alpha_0 + \alpha_1 \text{Female}_{i,t} + \alpha_2 \text{Betw}_{j,t} + \alpha_3 \text{Female} * \text{Betw}_{j,t} + \alpha_4 \text{FChair}_{i,t} + \alpha_5 \text{FChair} * \text{Betw}_{j,t} + \sum \text{Controls}_{i,t} + e$$

4.2.1. Variables

Listed in Table 1 below are the types, names, and descriptions of all the variables used in the regression model. Below that, in Table 2, is the statistical description of each variable.

Table 1: Description of dependent, independent and control variables used in the multivariate regression model.

Variable Type	Variable Name	Description
Dependent	Restatement	a dichotomous variable equal to 1 if firm i filed a material restatement in year t and 0 otherwise
Test	Female	a dichotomous variable equal to 1 if an audit committee member is female
Test	Betweenness	betweenness (nodality) of audit committee member j and other directors and management of S&P 1500 firms in year t

Test	Female*Between	interaction between female and betweenness in year t
Test	Female Chair	a dichotomous variable equal to 1 if an audit committee chair is female
Test	Female Chair*Between	Interaction between female chairs and betweenness in year t
Control	LNAT	natural log of assets for firm i in year t (size proxy)
Control	BIGN	a dichotomous variable equal to 1 if an audit committee member is an auditor Big Four
Control	LEV	Debt to assets ratio for firm i for year t (financial risk proxy)

Table 2: Descriptive statistics of variables.

Variable	Mean	Median	Std. Deviation	Min	Max
Restatement	0.0661	0	0.248	0	1
Female	0.126	0	0.332	0	1
Between	0.00218	0.000245	0.00939	0	0.4365115
Female Between	0.000125	0	0.000773	0	0.043852077
Female Chair	0.387	0	0.487	0	1
Female Chair Between	5.03623E-06	0	0.000104	0	0.0046
LNAT	6.58	7.105	3.296	1E-04	15.00033388
BIGN	0.74	1	0.438	0	1
LEV	0.365	0.193	3.14	0	200

Chapter 5. Results and Analysis

Because our dependent follows the binomial distribution (1 if restatement, 0 otherwise), we use logistic regression analysis to model the relationship between our dependent (financial restatements) and independent variables. These results are shown in Table 3 below. As the data shows, gender is incrementally irrelevant. Whether the individual is female, or male does not significantly impact the probability of restatements, indicating support for the H1 null hypothesis where the regression results show that there is no significant relationship between females on audit committees and a decrease in financial restatement probability.

It also appears that connectedness does not affect the likelihood of restatement as indicated by the significance values of betweenness in all the models used. As such, the interaction variable between female audit committee members and betweenness also does not show any significant relationship to restatement probability. This indicates support for the H2 null hypothesis.

There is also no relationship between having females as chairs of audit committees and restatement probability, as shown in the regression results below. This indicates support for the H3 null hypothesis and thus, a rejection of the alternative H3 hypothesis.

5.1. Logistic Regression Models

Table 3 below shows the results of the logistic regression models explained above.

Table 3: Logistic Regression Models Results.

Hypothesis	Variable	Model 1	Model 2	Model 3	Model 4	Model 5
	Intercept	-2.635***	-2.304***	-2.435***	-2.589***	-2.192***
Test Variables	Female	-0.024	-0.035	-0.019	-0.016	-0.039
	Betweenness	-4.123	-2.284	-2.895	-2.890	-2.690
	Female Between	-29.045	-4.785	-10.897	-11.119	-7.549
	Female Chair					-0.009
	FChair Between					87.587
	LNAT		0.011	0.010	0.008	0.007

Control Variables	LEV		-0.572***	-0.559***	-0.543***	-0.561***
	BGN		0.136***	0.136***	0.138***	0.138***

Chapter 6. Conclusion and Future Work

In this thesis, I examined the effect of certain independent variables on financial restatement (dependent variable). I studied whether female audit committee members channel structural holes in order to improve the quality of audit committees in terms of reducing material misstatements in statutory financial reports. Results have shown that connected females on audit committees in terms of betweenness do not have the ability to influence financial reporting that could result in restatement variation. It was also found that female audit committees have no relationship with financial restatement directly. Also, it shows that there is no relationship between gender diversity and financial restatement probability. However, other studies have shown that audit committees including females, may reduce audit fees.

The limitations we faced during this research is that we only used S&P 1500 companies in the US. This could be improved in the future by using more sophisticated and complex models of regression or look into more variables that could influence the quality of financial reporting in terms of financial restatement. Other ways to take this research further is to examine other companies in more than one country combined.

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Vita

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