Does the Number of Interlocking Directors Influence a Firm's Financial Performance? An Exploratory Meta-Analysis

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Many scholars suggest when a firm is connected to other firms by interlocking directors, its financial performance should improve. However, some scholars suggest that when directors have other commitments, this could reduce their abilities to monitor or help their companies. As expected, extant empirical studies have produced mixed results of the relationship. An exploratory meta-analysis of 10 samples (n = 12,519) provided little evidence of a systematic estimate of interlocking directors/ financial performance relationship. Thus, this initial meta-analysis suggests that a mere count of interlocking directors may not have an influence on a firm's financial performance.

INTRODUCTION

When two firms share a common director, the director is often referred as an interlocking director; the tie or connection that he/she creates is also referred as a board interlock (Burt, 1980; Mizruchi, 1996). Interlocking directors are an important topic in organizational studies. They are found to be meaningful mechanisms, and rather than random activities (Hallock, 1997). Many scholars argue that interlocking directors are a creditable and relatively low-cost source for firms to manage environmental uncertainty (Useem, 1984), can gain access to diverse and unique information (Beckman & Haunschild, 2002; Haunschild & Beckman, 1998), learn new corporate practices (Davis, 1991; Palmer, Jennings, & Zhou, 1993), and serve as a signal of the quality of the firm (Certo, 2003; Higgins & Gulati, 2003; Kang, 2008). In the U.S., many large firms are connected with one another through interlocking directors (Spencer Stuart Board Index, 2015).

Interlocking directors, as expected, have been one of the most often used measures of interfirm networks. Researchers in general suggest that interlocks can influence a firm's strategies, structures, and performance. Despite its prominence, earlier studies provide only mixed support for its influence (Palmer, Barber, & Zhou, 1995; Fligstein, 1995; Mizruchi, 1996). One of the biggest criticisms is that interlocking directors fail to predict corporate financial performance. Many researchers propose that interlocks help firms secure resource and thus improve financial performance (Casciaro & Piskorski, 2005; Westphal, Boivie, & Chng, 2006). Based on resource dependence theory, a firm with interlocks should have access to information otherwise not available to them. This should translate to higher financial performance. Results have been inconsistent. Some found positive effects on financial performance (Pennings, 1980; Burt, 1983), while others found negative effects (Fligstein and Brantley, 1992).

In related reviews, relationships between board composition and financial performance are described as conflicting (Finkelstein & Hambrick, 1996; Johnson, Daily, & Ellstrand, 1996). Prior meta-analyses such as Dalton, Johnson, and Ellstrand's (1998) found that there are no substantive relationships between

board composition and financial performance. In a later publication, they did find a positive relationship between number of directors and financial performance (Dalton, Johnson, & Ellstrand, 1999).

Since there has been no consensus regarding the direction of the relationship between interlocking directors and financial performance, I seek to provide meta-analyses to reconcile the mixed findings. A meta-analysis can account for sampling errors and provides more reliability in concluding prior studies (Hunter & Schmidt, 2004). I identified 10 relevant empirical studies with 10 unique samples (n = 12,519) to conduct a systematic review of the relationship.

INTERLOCKING DIRECTORS AND FINANCIAL PERFORMANCE

Early studies indicated that interlocks are a result of corporate control, inter-corporate cohesion, and resource dependence (Mizruchi, 1980). Schoorman, Bazerman, and Atkin (1981) suggested interlocking directors are fairly common because they provide horizontal coordination among competitors, vertical coordination among suppliers and customers, expertise, and enhancement of reputation. However, a very important question for strategy researchers is: *So what?* Do interlocks affect organizational strategy and ultimately, organizational performance? As Mizruchi (1996) put it, "If interlocks are to be worth studying, it is essential that they be shown to have consequences for the behavior of firms" (p. 280). I provide a brief review of some rational for both perspectives on the board interlock-financial performance link.

Arguments for the Positive Effect of Interlocks on Financial Performance

Different theories have been applied to explain the relationships between interlocking directors and financial performance. Resource dependence theory has been the primary basis for the perspective that interlocking directors are associated with better financial performance. The core thesis is that interlocks help organizations obtain needed resources and information to improve their corporate performance (Pfeffer & Salancick, 1978; Casciaro & Piskorski, 2005; Westphal, Boivie, & Chng, 2006). In this vein, a board interlock is a measure of a firm's ability to secure critical resources. For instance, Lang and Lockhart (1990) found firms interlocked with financial institutions increased with financial dependence. Hillman, Cannella, and Paetzold (2000) found that firms are more likely to appoint resourceful outside directors during times of environmental uncertainty. Carpenter and Westphal (2001) showed that outside directors can contribute to the decision process if they are connected to strategic related firms. Interlocking directors can facilitate a firm's borrowing (Mizsuchi, 1996), alliance formation (Gulati & Westphal, 1999), and have been associated with effective capital acquisition (Stearns & Mizruchi, 1993).

Resource dependency theory also posits that interlocking directorates serve as carrier of information (Useem, 1984). Directors that also sit on other firms' boards are more likely to have access to diverse strategies and insider information that is otherwise not accessible to outsiders. They are likely to provide better counsel and advice. Westphal (1999) showed a positive relation between advice provided by outside directors and the firm's financial performance. This perspective is consistent with the survey results from the 2012 Spencer Stuart Board Index that board directors consider their role in discussing corporate strategy one of their top priorities in governance issues.

In summary, based on resource dependency theory, interlocking directors facilitate coordination between organizations and reduce environmental uncertainty (Pfeffer & Salancick, 1978). Thus, interlocking directors are a mean of transferring critical information and best practices (Hillman & Dalziel, 2003). Interlocks also serve to reduce opportunism by increasing the flow of information between organizations (Phan, Lee, & Lau, 2003).

Social network theory also has been applied in studies on interlocking directors. It proposes that firms that are embedded in the director network can leverage social relations and in return, facilitate economic exchanges, resulting in better firm performance (Granovetter, 1985). In this view, interlocks serve as a mechanism for firms to connect with one another. Firms that are embedded in the director network can reap the benefits of social capital that are not available to firms outside of the network. Studies have

found that interlocking directors are associated with a firm's future performance (Horton, Millo & Serafeim, 2012).

Another perspective is from market for directors. A director that sits on multiple boards can signal his/her quality, such as monitoring and advising (Ferris, Jagannathan, & Pritchard, 2003; Kaplan & Reishus, 1990). Thus, as the number of interlocking directors increases in a firm, it can be viewed as the quality of the board also increases. In this vein, the positive board quality should lead to a better financial performance. In conclusion, there are many studies that advocate for the benefits of interlocking directors.

Arguments for the Negative Effect of Interlocks on Financial Performance

As previously mentioned, scholars have not yet reached a consensus on the positive relationship between interlocking directors and financial performance. Meeusen and Cuyvers (1985) and Fligstein and Brantley (1992) both found interlocks associated with reduced financial performance. One argument is that costs are associated with directors serving on multiple boards, and they are referred as *busy directors* (Core, Holthausen, & Larcker, 1999). The view is that busy directors have limited time and attention for the boards they serve (Li & Ang, 2000). Researchers found that firms that have outside directors with multiple directorships are associated with weak governance (Fich & Shivdasani, 2006). This view predicts that busy directors can have a negative influence on firm performance (Core et al., 1999; Jiraporn, Singh, & Lee, 2008).

Another argument is that an interlocking directorate that is embedded in the director network may become more committed to his/her elite network than to his/her boards (Burris, 1992). In this view, directors that are connected to different boards can be influenced by the norms and values of the network (Koenig & Gogel, 1981; Windolf & Beyer, 1996). This may lead to the tendency that the directors are more concerned with the social cohesion, rather than their director duties.

Third, assuming interlocking directors transmit information and practices, it is not only the good practices that are diffused, but also the bad practices. For instance, interlocking directors have been shown to spread options backdating (Armstrong & Larcker, 2009; Bizjak, Lemmon, & Whitby, 2009). When bad practices are spread, firm performance will eventually suffer. Finally, firms that are interlocked with firms that are accused of questionable practices may suffer from reputational penalties as well. Kang (2008) showed that firms that are interlocked with firms that are accused of financial reporting fraud are more likely to experience a decline in reputation. In this vein, interlocks may not necessarily diffuse the practice, but rather, they diffuse the perception of reputations.

Based on the above arguments, it is not surprising that scholars still cannot reach an agreement on the direction of the relation between board interlock and financial performance.

Measures of Financial Performance and Time as Moderators

Different studies have used different measure of a firm's financial performance. Some studies used accounting based measure (e.g. return on assets and return on sales), while others used market-based measure (e.g. market-to-book value). It is possible that depending on the measure a study used, the result can be different. Thus, I use the measure of financial performance as a moderator, separating my studies into two groups: accounting based and market-based measure. In addition, time can influence the result. Studies are either cross-sectional or longitudinal in nature. It may be possible that depending on how the study is conducted over time or at a given time point, the result can be influenced. Thus, I also used time as a moderator, splitting my studies into two groups, cross sectional or longitudinal.

METHODS

Sample

For meta-analyses, it was unnecessary that the study focuses on interlocking directors and financial performance; we only need a correlation between these two variables. Thus, I used several search techniques to identify useful studies. First, I searched different database (e.g. ABI/Inform, EBSCO, JSTORE) and Google Scholar using different keywords (e.g. interlocking directors, interlocking

directorates, overlapping directors, multiple directorship) to conduct a comprehensive review of extant literature. Second, I used the same keywords to search unpublished dissertations and theses on ProQuest Dissertation and Theses. Third, I manually reviewed references from review articles related to interlocking directors to identify any missing articles from the computerized search. Finally, I identified studies that have correlation coefficient for interlocking directors and financial performance. As there are different ways to measure interlocking directors, I made a decision to capture interlocking directors as the number of interlocking directors (a count variable, instead of a dummy variable, for instance). The number of interlocks as a count variable is essentially a measure of degree centrality as well.

This process resulted in 10 studies with a total of 10 samples (n = 12,519). My studies are listed in Appendix A. The coding menu is shown in Appendix B.

Meta-Analytic Procedures

I estimated the average correlations among variables weighted by sample size as suggested by Hunter and Schmidt (1990). I obtained these statistics from correlation coefficients reported between the number of board interlocks and a firm financial performance. Hunter and Schmidt's (1990) procedures provide simple estimates of the true population correlation ρ between any two measures (i.e., $\overline{r}$) as well as the proportion of observed variance in r (S_r^2), due to random sampling error (s_e^2) versus residual variation (s_e^2).

RESULTS

The results are reported in Table 1. The overall $\overline{r}$ between number of board interlocks and financial performance is positive but relatively small (0.0285).

TABLE 1
RESULTS OF META-ANALYSIS

	UNCORRECTED	CORRECTED	
r-mean	0.0285	0.0285	
SD-true	0.0183	0.0183	
10%CV	0.0051	0.0051	
90%CV	0.0518	0.0518	
%-acc	70.63%	70.63%	
SD-corr	0.0337	0.0337	
SD-artifact	0.0283	0.0283	
var-obs/total	0.0011	0.0011	
var-error	0.0008	0.0008	
var-true	0.0003	0.0003	
Q-statistic	**14.1583**	**Number of Correlations (K)**	**10**
		Combined N	**12,519**

For the homogeneity analysis, as we can see in the table above, Q statistics is 14.1583. The critical value for 9 degree of freedom (K-1) at P=0.05 is 16.9. Therefore, I cannot reject the null hypothesis. It shows that the observed variance in effect size is not statistically significant from those expected by sampling errors.

I further conducted moderator analyses. For my first moderator, I divided my 10 studies into two groups: studies that used accounting based measure (e.g. return on assets or return on sales) for financial performance and studies that used market-based measure (e.g. book-to-market value) for financial performance. There are 6 studies that used accounting measure and 4 studies used market-based measure. After I ran the analysis, QB=2.4599 (df=1) and p(QB)=0.1168. This means that the difference is not statistically significant at P=0.1. QW=0.0949 and P(QW)> 0.05, meaning that homogeneous variances overall.

I then used time as my moderator. My studies are divided into 2 groups: cross-sectional or longitudinal studies. There are 6 longitudinal studies and 4 cross-sectional studies. After I ran the analysis, QB=1.6355 (df=1) and p(QB)=0.2009. This means that the difference is not statistically significant at P=0.1. QW=2.3041 and P(QW)> 0.05, meaning that homogeneous variances overall.

The results for interlocking directors and financial performance show little evidence of a systematic estimate of the relationship. The moderator analyses relying on different indicators are also invariant.

DISCUSSION

A Meta-analysis is an effective method to estimate a relationship between two variables in a true population. It is achieved by examining multiple studies across different contexts. In this case, the meta-analysis indicates that there is little relationship between interlocking directors and financial performance.

Mizruchi (1996) suggested that interlocks may be both a predictor and an outcome of firm performance. Thus, the conflicting results are likely due to causal ordering. In my meta-analysis, I did not find a substantive relationship between interlocking directors and financial performance. The moderators did not yield statistical significant results either. This may indicate that the number of board interlocks do not influence a firm's financial performance.

Limitations of the Study

My meta-analysis has several limitations. First, a meta-analysis, unlike an experiment, cannot establish a cause and effect relationship. Thus, I cannot explicitly state that interlocking directors do/do not influence financial performance. I can only say that I cannot show a systematic relationship in my analysis. Thus, causality should not be inferred. A cause and effect relationship can only be identified in a controlled experiment. Second, I decided to use the number of interlocks as a measure of degree of connectedness. There are other ways to measure interlocks, for instance, the presence of interlock (dummy variable) and centrality measures (betweenness, closeness, and eigenvector). It is possible that other ways of measuring interlocks can yield a different result. Third, though data examined in my meta-analysis were obtained from multiple primary studies, I cannot assure that every study measures the construct accurately. In other words, I have no control over the completeness of the studies. However, I have examined each single article in detail and made sure that the construct and measurements are clear and comparable. Finally, I have only examined 10 studies. If more studies are included in the meta-analysis, the result may be different.

Future Research

One direction for future investigations is to determine the interlock-financial performance relation in a dyad level. Simply putting the number of interlocks overlooks the relationship between specific two parties. In other words, interlocks are essentially a two-way relation, so it should be treated at a dyad level. Researchers should not treat interlocks in isolation. For instance, the current practice is to count the number of interlocks on a board and investigate its influence on financial performance (or diffusion of strategy). I propose, that researchers treat an interlock at the dyad level. When one firm (ego) is interlocked with another firm (alter), does its financial performance improve as a result of connecting to that specific alter? For instance, Haunschild and Beckman (1998) showed that information from similar interlocked firms is more influential than from dissimilar ones. Connelly and his colleagues (Connelly, Johnson, Tihanyi, & Ellstrand, 2011) were able to show that firms interlocked with different alters

resulted in different strategic decisions. For the future research, scholars should look into whether alter-specific attributes lead to different level of financial performance.

Conversely, future research can also consider the boundary condition of interlocks on firm performance. It is plausible that the relation between interlocking directors and financial performance is a function of a firm's degree of resource dependence (resource constraints). For instance, interlocks may improve firm performance when the firm is dependent on other organizations and have little excess resources. When a firm is more independent and have plenty of excess resources, interlocks may have a *negative* influence on firm performance. In this view, a combined resource dependence- contingency theory may be worth exploring.

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APPENDIX A

STUDIES USED IN META-ANALYSIS LISTED BY PUBLICATION YEAR

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APPENDIX B

CODING MENU

Codebook for Interlock Meta-Analysis	
Hierarchy	**Description and coding rules**
First Level	***No coding needed***
1. The Paper	The characteristics of the paper
2. The Setting & Sample Characteristics	The setting in which the study took place and characteristics of the sample
3. Moderators	These are used to split the sample
4. Statistical Outcome/ Effect Sizes	r and n
Second Level	
1. The Paper	**The characteristics of the paper**
1.1 The title of the paper	No abbreviation please
1.2 The last name of the first author	Only the last name of the first author
1.3 The name of the journal	No abbreviation please (unless it's a commonly known journal, e.g. AMJ, AMR, SMJ, ASQ)
1.4 The year of the publication/ writing	Enter the year or 0=unknown;
1.5 Type of the paper	0= working paper; 1= journal article; 2=book/book chapter; 3=dissertation; 4=MA thesis; 5=conference paper; 6= others (specify); 7= can't tell;
1.6 Published paper	0= unpublished; 1=Published;
2. The Setting & Sample Characteristics	**The setting in which the study took place and characteristics of the sample**
2.1 Study number	Give numbers to your study if there is more than 1 study in your paper. Use (first author's last name)1, (first author's last name)2 so on (e.g. Tihanyi1). 0= only 1 study;
2.2 Year(s) the study take place	Example: 1990-1992
2.3 Longitudinal study	0= cross-sectional; 1=longitudinal study;
2.4 Type of study	0=archival; 1=survey; 2=both archival and survey; 3=others (specify);
2.5 Data source	Please specify
2.6 Companies	0=public/ non business; 1= business (firms); 2= individuals (directors); 3= others (specify)
2.7 Level of analysis	0= focus on each individual company (egocentric); 1= focus on the dyad relations between companies; 2= focus on individual director (egocentric); 3= focus on dyad relations between 2 director; 4=others (specify)

3. Moderators	**These are used to split the sample**
3.1 Financial performance	Not sure=0; Accounting-based (ROA, ROE, or ROS)=1; Market-based (like Jensen's alpha, Treynor measure, or Sharpe measure)=2;
3.2 Country	Name of the country/ countries/ region(s)
3.3 Board size	Mean of the sample (raw number and specify unit)
3.4 Outside directors	Mean of the sample (raw number and specify unit)
3.5 Firm size	Mean of the sample (raw number and specify unit)
3.6 Firm age	Mean of the sample (raw number and specify unit)
3.7 CEO also a chair	Mean of the sample (raw number and specify unit)
3.8 Managers ownership	Mean of the sample (raw number and specify unit)
3.9 Ownership concentration	Mean of the sample (raw number and specify unit)
3.10 Blockholder ownership (institutional owners, family owners etc.)	Mean of the sample (raw number and specify unit)
3.11 Director ownership	Mean of the sample (raw number and specify unit)
4. Statistical Outcome/ Effect Sizes	**r and n**
4.1 Size (n)	Sample size
4.2 r for FP and presence of interlock	r for financial performance and interlock measures
4.3 r for FP and number of interlocks	r for financial performance and interlock measures

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