

**“What do interlocks do” revisited – a bibliometric analysis**

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Title: “What do interlocks do” revisited – a bibliometric analysis

Abstract

Purpose: It has been over twenty years since the landmark publication of Mizruchi (1996) and his examination of “what do interlocks do?”. Since then, the nature of interlocks and subsequent research on the subject has evolved. This paper aims to revisit the literature on interlocking directorates through a quantitative bibliometric analysis.

Design/methodology/approach: This study undertakes a bibliometric analysis of literature citing the Mizruchi (1996) in order to examine the state of research following up on “what do interlocks do”. This study examines 718 publications using keyword and co-word analysis, along with a thematic analysis to revisit the research that has followed Mizruchi’s topic of what do interlocks do.

Findings: This study finds that the topics of the corporate elite, capitalist economy, and corporate governance have remained prominent themes in the field. Research areas that are emerging in the field of interlocking directorates include gender diversity, globalisation and advancing theoretical frameworks.

Originality: This paper provides a quantitative bibliometric analysis to revisit the extant literature on “what do interlocks do”, examining a high number of articles to identify area which could be developed to advance research in the field.

Keywords

Interlocking directorates; bibliometric analysis; boards of directors; literature review

1. Introduction

The analysis of boards of directors, through the lens of interlocking directorates, has received increasing interest from both academic researchers and policy makers alike in recent decades (Adams, 2017). Interlocking directorates refers to the case where a director who is affiliated with one company also sits on the board of directors of other companies.

Two theoretical frameworks have emerged to examine the boards of directors and patterns of interlocks: agency theory and resource dependency theory (Johnson *et al.*, 1996). Resource dependency theory states that inter firm ties, such as director interlocks, provide firms with access to essential sources of advice and information (Pfeffer and Salancik, 1978). From the perspective of the agency theory however, the boards of directors are responsible for monitoring the managers (agents) of firms on behalf of the shareholders or owners (principals) (Hillman and Dalziel, 2003).

A further approach that has been used to understand director interlocks is social capital, in combination with human capital theory (Booth-Bell, 2018). Social capital is defined as “an investment in social relations with expected returns” (Lin, 2001, p. 6). The topic of social capital in relation to interlocking directorates discusses the resources that each director can bring to the boards, a function of directors’ social and human capital. Studies have suggested that firms should select those “resource-rich directors” (Boyd, 1990) and that some directors with specific occupations, such as those in the finance sector, can be beneficial to firms (Mizruchi and Stearns, 1994).

In 1996, Mark Mizruchi (1996) wrote a detailed literature review of the state of interlocking directorates research. This paper provided a critique of the literature, addressing “what do interlocks do” and the subsequent “so what” question. Mizruchi (1996) describes “what do interlocks do” assessing how and why interlock links form. He provides five explanations for

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why interlock ties form: collusion, co-optation and monitoring, legitimacy, career advancement, and social cohesion. Collusion in this context refer to a link established between organisations to obtain an (often illegal) market advantage; however, given the increase in antitrust legislation regarding boards of directors, such as the Clayton Act in the USA, collusion is a less frequently utilised explanation of interlock ties. Co-optation and monitoring are aligned with the resource-dependency explanation for interlocks, where firms form ties to deal with uncertainty and maintain stability. The legitimacy explanation for interlock ties focuses on the appointment of a director to enhance the outlook (or legitimacy) of the firm. Career advancement and social cohesion refer to director level explanations for the establishment of interlock ties, where directors seek multiple appointments to enhance their career, and social cohesion refers to a small set of elite directors with high level of interlock ties – the so called “inner circle”.

The subsequent “so what” question addresses the potential outcomes and consequences of interlock ties. At the firm level, it highlights how behaviours, such as strategies, structure, and performance could be influenced by a firm’s embeddedness in the interlocking directorate network. This work has emerged as a seminal reference for research analysing board of directors and interlock patterns as it provides a thorough explanation of the field and core concepts. In this paper, we revisit the issue of what do interlocks do using a bibliometric analysis.

Several research questions on interlocking directorates have been pursued since Mizruchi’s review. A topic that has received high level of attention is the impact of interlocking directorates on firm performance, testing the hypothesis from resource dependency theory (Hillman *et al.*, 2009). Resource dependency theory would argue that interlocks serve as a mechanism for firms to manage and reduce environmental uncertainty, resulting in a positive impact on firm performance (Zona *et al.*, 2018). However, empirical work does not

unequivocally support this hypothesis. Rather there is a lack of consensus on the impact of interlocking directorates on performance, where there is evidence of both a positive (Martin *et al.*, 2015; Perez-Calero *et al.*, 2016) and negative impact (Crocì and Grassi, 2014; Santos *et al.*, 2012).

In recent years, the research on interlocking directorates has grown substantially, given that corporate network data is more readily accessible, and increasingly large datasets are available (Heemskerk *et al.*, 2018). Researchers can easily access vast amounts of interlocking director information through several databases and public registers of companies (Garcia-Bernardo and Takes, 2018). Along with the rise in available data, there have been advances in the methodological techniques to examine board of director patterns.

This resurgence in interlocking directorates has given rise to a range of new research avenues, beyond the core topics of collusion, monitoring, and the corporate elite proposed by Mizruchi. There have been attempts to review the interlocking directorates literature (Drago and Aliberti, 2019; Lamb and Roundy, 2016). This paper aims to contribute to this stream of literature, **(and complement existing reviews)**, by providing a quantitative analysis to examine the themes emerging from Mizruchi's seminal review on interlocking directorates, **and provide a set of areas that present avenues for future investigation in order to advance research in the field.**

2. Data & Methods

There are several approaches to identify the literature tackling interlocking directorate research. The first would be to search for articles with a link to a specific set of terms related to interlocking directorates **(an approach observed in Lamb and Roundy, 2016)**. The second is to identify a seminal, landmark publication and analyse the subsequent articles citing the landmark publication. This paper takes the latter approach.

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We make use of the Scopus database to search and extract the publication data for articles that cite Mizruchi (1996). Scopus offers extensive coverage of literature, with strong coverage for business and economics research (Levine-Clark and Gil, 2008). Scopus has been utilised in various citation analysis and literature reviews (Valenzuela *et al.*, 2017). The Scopus database identifies 718 publications citing Mizruchi (1996) from its publication to 2018.

The methodological approach utilised in this paper is a bibliometric analysis; an established technique to provide a systematic, transparent, and detailed overview of a research field (Saggese *et al.*, 2016; Zupic and Čater, 2015). A quantitative bibliometric analysis contrasts to other approaches, as it allows for a much wider range of articles to be considered, other approaches tend to limit the number of articles examined to below 100. This quantitative approach also means that there is no need to drop articles in the sampling process, somewhat reducing the risk of review subjectivity.

Firstly, an exploration of keywords is undertaken by plotting the most frequently mentioned keywords in a tree map. This is followed by a network analysis of the keywords, where a co-word network is defined by the keywords as points or nodes in the network. The keywords are then linked if they are listed by the same publication. Co-word analysis has been used in various empirical settings to provide additional insights on a field of research (Keupp *et al.*, 2012).

A further thematic keyword analysis is operationalised through the use of the approach developed by Cobo *et al.* (2011). They propose a two-step analysis technique to detect and map themes in a research field. The first is to detect the research themes by building an equivalence index, which assesses how close two keywords are to each other; the equivalence between keywords i and j is $e_{ij} = c_{ij}^2 / c_i c_j$. c_{ij} is number of publications where keywords i and j co-occur and c_i and c_j are the number of occurrence of keywords i and j respectively. Equivalent keywords can then be grouped together to identify research themes.

The second step is to create a thematic visualisation. To visualise these themes, the centrality and density of the themes needs to be calculated. The centrality and density metrics were first proposed by Callon *et al.* (1983) and are referred to as Callon's centrality and Callon's density. Callon's centrality measures the degree of interaction of a theme with other themes. It is defined as $c = 10\sum e_{kh}$, where k is a keyword belonging to a theme and h is a keyword belonging to another theme. Therefore, this metric can be used to describe a theme's importance to the development of other themes and the overall research field. Callon's density is defined as $d = 100\sum e_{kh}/w$, where i and j are keywords belonging to the same theme, and w is the number of keywords in the theme. Therefore, Callon's density provides a measure of the internal strength of a theme. It is often used as a measure of a theme's development, where a theme with high internal strength is well developed. Callon's centrality and density metrics can then be used to map the research themes in two-dimensional space, with a theme's density across the y-axis, and centrality across the x-axis. The plot can then be split into four quadrants, reflecting the characteristics of the research theme:

1. Upper left quadrant (low centrality/high density): These are specialised and niche themes; they are well developed with strong internal ties, yet weak links to other themes in the research field.
2. Upper right quadrant (high centrality/high density): These themes are both well developed and have strong links to other themes; they are described as "motor themes".
3. Lower left quadrant (low centrality/low density): These themes have weak internal and external strength, indicating they are weakly developed and marginal. Themes in this quadrant may be either emerging or disappearing themes.
4. Lower right quadrant (high centrality/low density): These themes have strong links to other themes, but are weakly developed themselves. They are described as transversal and basic themes.

The analysis of the data was completed using *bibliometrix* (Aria and Cuccurullo, 2017).

3. Results

The resurgence of interest in interlocking directorates is demonstrated in figure (1); we observe a sharp increase in the work citing Mizruchi since 2007.

Insert Figure 1 about here.

Figure (2) provides an analysis of the most active authors; unsurprising Mizruchi is amongst them. However, Westphal and Davis surpass Mizruchi, as they are most active in the area of interlocking directorates. Westphal writes chiefly in the field of strategic management (Carpenter and Westphal, 2001; Westphal and Zhu, 2019); examining how directors are selected and drive corporate governance change within organisations (Westphal and Fredrickson, 2001). Davis works on similar topics to Westphal (Davis 2005; Davis 1996), along with the role of the corporate elite in interlocking directorates system (Davis *et al.*, 2003). Other key authors in the field include Heemskerk and Takes; their work examines the structure and network properties of global and national corporate networks (Heemskerk, 2013; Heemskerk *et al.*, 2013; Heemskerk and Takes, 2016).

Insert Figure 2 about here.

However, there are some notable omissions from figure (2), where key authors that have made substantial contributions to interlocking directorates research are not presented here, such as Adams and Hillman, who are also important figures in interlocking directorates research (see Adams and Mehran, 2012; Hillman, 2005). A potential explanation is that these key authors do not connect with Mizruchi’s seminal work, rather drawing on alternative surveys in the field, that are separate from the work of Mizruchi. For instance, the surveys on interlocking directorates provided by Hermalin and Weisbach, (2001), and updated by Adams *et al.* (2010)

make no reference to Mizruchi (1996). Neither do they refer to the work of key authors identified in this figure (2), (such as Davis, Heemskerk and Takes). A potential explanation for this is that they do not ask “what do interlocks do”, rather what determines their makeup and what determines their actions, along with a focus on the contributions from economics and finance. In some cases, work examining firms and boards of directors make use of alternative literature reviews of the field published at a similar time, such as Johnson *et al.* (1996). This reflects a potential limitation of the sampling approach utilised in this paper.

A cursory examination of the keywords of the publications is examined through the tree map presented in figure (3). This shows the top twenty keywords most frequently mentioned, where the larger the square and the lighter the colour are, the more times it was mentioned.

Insert Figure 3 about here.

Figure (3) highlights that social network analysis is the dominant methodological approach utilised to understand interlocking directorates. Corporate governance is a frequently mentioned keyword; this is expected, given Mizruchi's landmark review focused on corporate governance issues such as the spread of managerial practices, monitoring, and control (Benton, 2017). The topics of corporate governance and interlocking directorates are closely linked, and many issues tackled within interlocking directorate research are also pursued by corporate governance scholars. One key topic in interlocking directorates research is the notion of “elites”; the rise of corporate elites has been of scholarly interest for decades, far earlier than Mizruchi's review. This addresses the role of a set of highly connected or “elite” individuals in the capitalist, political system. Domhoff (1984) suggests that interlock ties act as a mechanism to solidify the connections amongst the corporate elite. Burris (2005) further notes that social ties amongst the corporate elite facilitate political cohesion within the business

community. A unified business community can result in a unified group able to better coordinate to influence favourable policy changes (Domhoff, 1967).

In more recent years, there has been some debate into whether there has been a fracturing of the corporate elite (Benton and Cobb, 2019; Chu and Davis, 2016; Domhoff, 2015). Mizruchi (2013) outlines this thesis for the USA based on historical evidence, noting that cohesive subgroups of the past and unified elite have been in decline. He argues that this is due to decisive triumphs by a unified corporate America in the 1970s and 1980s that reduced the necessity of cohesion; where their goals are no longer unified rather fractured and based on self-interest. However, some argue that this fracturing has been overstated; Cronin (2017) finds that the Business Roundtable still represents a powerful organisational entity, suggesting that groups of the corporate elite still persist.

Related to the literature on the corporate elite; legitimacy, reputation, and prestige are also key aspects of director interlocks, both in terms of the causes of interlock ties, and how interlock subsequently shape firm behaviour and performance (Jahan *et al.*, 2020; Knoben and Bakker, 2019). Within interorganisational literature, many have highlighted the preference of firms to appoint prominent directors and establish ties with prestigious firms (Acharya and Pollock, 2012; Flickinger *et al.*, 2016), this has been identified as particularly important for younger firms (Gulati and Higgins, 2003). Many have noted that prominent directors are a source of vital experience, with extensive human and social capital that can bring notable firm benefits (Haynes and Hillman, 2010; Oehmichen, Schrapp, *et al.*, 2017). Jiang *et al.* (2020) note that declining or struggling firms also tend to appoint prestigious directors, not only for their experience, but as a signal to outside parties in an attempt to increase perceived performance.

Although much of the literature focuses on benefits of linking to prestigious directors or firms, other have noted the implications of being associated to firms performing poorly or involved

in a scandal via interlock ties. For instance, Kang, (2008) notes that in the US, firms interlocked with firm accused of financial fraud are highly likely to experience a reputational penalty. Oehmichen, Braun, *et al.* (2017) add to this debate, noting that the appointment of prestigious directors can bring both costs and benefits to a firm. More specifically they note that the costs and benefits are related to the institutional context that a firm is embedded in, and the structure of the corporate elite. This highlights that the legitimacy explanation for interlocks noted by Mizruchi (1996) remains highly relevant.

Figure (3) indicates topics that have gained increased interest in more recent years, in particular the topic of gender. Gender diversity on boards of directors and more importantly the role of female directors have gained increased attention, chiefly due to an increase in pressure from policy agencies for gender equality (Terjesen and Sealy, 2016). Further work has examined the interplay between gender diversity and firm performance (Ali and Shabir, 2017). Whilst the interplay between female representation on boards and firm performance, along with issues of representation more generally has received widespread attention (Reddy and Jadhav, 2019), the interlock perspective, more specifically drawing on network analysis, is surprisingly rare in studies on women's board representation (Öberg, 2020).

In terms of interlocking directors, a selection of studies has examined the role women directors play in the network, in particular, Seierstad and Opsahl (2011) identified that a consequence of the gender quota in Norway. They note that this resulted in the rise of a small group of women holding a large number of directorships (and with central positions within the Norwegian corporate interlock network); these women have been referred to as "golden skirts". Hillman *et al.* (2007) provide an investigation into how interlocks ties impact female representation on US boards. They note the likelihood of female representation on a board is higher when the firm is linked through director ties to another firm with higher female representation on its board.

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The term performance holds a key position in figure (3), reflecting the high level of empirical studies examining the impact of a firm’s embeddedness in an interlock network and firm performance, often drawing on the resource dependency theory. There is scope for this stream of literature to further connect with additional literature and theoretical frameworks on inter firm and inter organisational network more broadly. For instance, Gulati *et al.*, (2011) proposes three mechanisms to explain how network resources contribute to firm performance: reach, richness, and receptivity. Reach refers to the extent of how wide-ranging and heterogeneous the organisation's network connections are, where the greater the diversity, the greater the reach. Richness is the value a firm can derive from the attributes of network partners, i.e. the ability to orchestrate network ties and integrate with own resources to create greater value. Receptivity is the extent to which a firm can channel, leverage, and utilise network resources. Drawing on this framework allows to further examine the relationship between the interlock network and firm performance, as these aspects are often not directly examined in empirical analysis of firm interlock networks.

A notable methodological challenge that often arises in the examination of how a firm’s position or centrality increases (or decreases) performance is the endogeneity issue (Larcker *et al.*, 2013). This issue refers to that whilst a firm may appoint a director with multiple directorships to improve performance, an alternative explanation is that prominent directors are matched to high performing firms (Kim and Higgins, 2007; Omer *et al.*, 2014). That is, well-connected directors accept positions at highly performing firms. This highlights a need for future research to further unpack causality and directly tackle this issue.

Figure (4) presents a co-word network, where the nodes in the network are keywords, and the linkages between them are the number of times the same articles mentions both keywords; an established approach to map research trends (Chen *et al.*, 2016). In this study, the keywords must share at least two articles to be connected. The community detection algorithm proposed

by Newman and Girvan (2004) is utilised to identify clusters of keywords in the network. These clusters are shown by the node shapes (and colours) in the network. The size of the nodes and their labels is by degree centrality; that is the number of links each keyword has to others in the network.

Insert Figure 4 about here.

We observe that three key clusters or groups have emerged; the first is shown by the (green) squares in the network. This cluster is characterised by individual level topics, with a focus on human capital, leadership, and cooperation. At the centre of this cluster, and the overall network, is SNA, Social Network Analysis, reflecting its prominence as the methodological tool to understand features of the interlocking directorate system.

The second cluster is represented by the (pink) circles in the network. Several country and regional keywords characterise this cluster, focusing on global, and political economy themes. This is reflected in the central positions of “capitalism” and “Europe” within this cluster. Interlocking directorates have been used to address research questions on the cohesion of the capital class (Barnes and Ritter, 2001). More specifically, the interlocking directorates framework has been utilised to examine the emergence of the “inner circle”, an elite set of directors within the capitalist class (Useem, 1986).

The third group is represented by the (purple) triangles; this cluster is characterised by corporate governance keywords with links to performance, this reflects the central theme of corporate governance in the interlocking directorates literature. Other topics in this cluster include social online network, which is connected to quantitative network analysis keywords, suggesting that these social online network data potentially act as a platform to test novel and sophisticated quantitative models.

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There are other groupings, represented by the separate components in the network; these deal with themes such as resource dependency theory and local policy related areas. This suggests there may be a need for these niche areas to better connect with the wider interlocking directorates research field. The peripheral position of theoretical frameworks indicates that this is an issue that requires attention within the interlocking directorates research. This indicates following the publication of the Mizruch’s review, there has been a focus on solely using social network theory and methodological tools from social network analysis, rather than advancing theories of resource dependency and agency theory in explaining the causes and consequences of interlock ties.

Figure (5) provides the results from the thematic analysis mapping approach outlined by Cobo *et al.* (2011). The algorithm is applied to keywords that are observed a minimum of five times in the data. The larger the bubble is, the larger the thematic cluster. The themes are plotted according to their Callon’s centrality and density scores, where eight thematic clusters are identified. They are labelled by cluster numbers, and keywords belonging to each thematic cluster can be found in table (1). These thematic groupings reinforce the patterns observed in the keyword network presented in figure (5).

Insert Figure 5 about here.

Insert Table 1 about here.

The top left quadrant indicates themes that are highly developed, with a strong internal density, yet are often referred to as niche. This includes clusters 3 and 6; cluster 3, refers to topics at the individual level, where it contains keyword social network, along with human capital, and leadership. This indicates that this individual level of analysis is well developed yet lacks external ties to other themes. The niche characteristic of this theme may reflect that the use of

individual level social networks is an established field in social network analysis, yet is still growing and emerging in the field of interlocking directorates, only steadily establishing linkages to other themes, as observed from its partial overlap into the right quadrant.

Cluster 6 contains corporate governance, along with complex networks. This reflects the use of the interlocking directorate networks in corporate governance setting, applying advanced techniques from complex networks (examples include Takes *et al.*, 2018). This approach to interlocking directorates is developed yet niche topic area.

In the top right quadrant, we observe that cluster 4 is a clear motor theme in the field. Cluster 4 is characterised by empirical analysis, including examples from social network analysis, industry analysis, and the examination of online social network data. Therefore, empirical examples can provide additional insights to applications in conceptual related themes. An additional motor theme, although to a lesser extent, is the cluster 5 cluster, which contains topics on governance, societies, and institutions. This theme provides an analysis of governance issues in terms of institutions (Davis, 2005); insights regarding the dynamics of institutions can inform on several related areas in the field.

The bottom left quadrant is cluster 2 (containing only the finance keyword) and cluster 8 (containing management and planning keywords). The themes in this quadrant have low density and centrality and are either emerging or disappearing themes. The theme of finance in the field of interlocking directorates is an emerging theme, where there has been an increase in the contributions to the field from finance journal (as documented by Adams *et al.*, 2010). Whether management emerging or disappearing in the field of interlocking directorates is debateable. Many articles in the field are published in management journals (as noted by Caiazza and Simoni, 2019); if the theme is disappearing, then this could suggest that management topics have become stagnated in the field, with empirical application moving to

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other areas, such as diversity or finance. However, this may indicate that the topic is still emerging, and that given the breadth of management studies, interlocking directorates is still emerging in this discipline.

Within the broader field of management, several topics and research questions on interlocking directorates have been addressed. Amongst them is the spill over patterns drawing on resource dependency theory that practices, ideas, and processes flow through interlock ties. The diffusion of practices through interlocks has been examined frequently in the extant literature, with several studies noting that more diverse boards that are more central in the interlock system are more receptive to the flow of knowledge and practices via interlock ties (Heyden *et al.*, 2015; Oehmichen, Heyden, *et al.*, 2017; Shropshire, 2010). Although a large part of the literature highlights the benefits a firm can reap from practice and knowledge spill overs arising from interlock ties, there are risks. Hernandez *et al.* (2014) notes that key strategic knowledge can be leaked through these ties and can result in firms or even competitors gaining access to strategic knowledge (through indirect ties). They note that firms pursue the pruning of their inter firm network ties as a safeguard to act as defence against the leakage of strategic knowledge.

The bottom right quadrant has themes with weak internal linkages, indicating it is not well developed, yet has external links to other themes in the research field, therefore important for the wider interlocking directorate research field. These themes are described as basic, general, or transversal. It contains clusters 1 and 7; as noted in Table (1) cluster 1 contains keywords related to network analysis in a corporate setting, with keywords Europe, Corporate strategy, corporate networks, and globalisation. These themes are observed in many other themes in the research field, where corporate networks are often used in the analysis of interlocking directorate systems. This reflects that network analysis of interlocks is a transversal theme, yet important for the field as a whole, along with the potential to inform on the wider field of social

network analysis. The theme of globalisation indicates following the work of Mizruchi, the question of “what do interlocks do” is no longer restricted to a single country setting. The role of globalisation of the interlocking directorates phenomena has been examined in a variety of empirical settings (Cárdenas, 2015; Stephen, 2014); often focusing on whether there is a transnational corporate elite (Heemskerk and Takes, 2016).

Cluster 7 contains the United States, decision making, and innovation. The United States is important for the field as it is where we observe the majority of empirical applications. Decision making and innovation are less developed themes yet can be used in a variety of contexts. Both the United States and Europe are in this quadrant, where there are a large number of empirical analysis. This suggests that there is a need to expand and better develop the topic of globalisation and interlocking directorates, developing areas such as the global corporate elite and the international structure of interlock network.

The tree map, co-word network, and thematic analysis present a number of overlapping and salient themes in the area of interlocking directorates following the work of Mizruchi.

There are several transversal themes that are viewed as somewhat basic and transversal, representing fertile areas for further research, including innovation, and finance. The topic of performance and interlocking directorates does not emerge as a theme by itself from the thematic mapping presented in figure (5) yet is present in the tree map. A potential explanation why interlock and performance, (which has received a high level of attention) is absent from the thematic mapping, is that performance is not examined in isolation of other topics. Other aspects are examined also, such as the spread of knowledge or practices, or the gender diversity of the board and interlock ties. The wider topic of corporate governance is examined across many areas, as indicated in figure (5), where various forms of the term corporate governance are present in both motor themes and basic themes.

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6 **4. Discussion**
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9 This study has found that many of the key areas identified by Mizruchi (1996) in his seminal
10 review have remained salient topics that have remained motor themes in the field of
11 interlocking directorates. These include examining the corporate elite; with this topic
12 expanding to investigate whether this is a transnational phenomenon. As demonstrated by
13 figures (4) and (5), corporate governance has remained a staple topic within the field of
14 interlocking directorates, reflecting its broad and complex nature. Along with corporate
15 governance, analysis of the capitalist political economy has remained a constant and prominent
16 theme within the field of interlocking directorates, with a dominant position in the co-word
17 network. Key themes in the field with an opportunity to shift from basic to motor, include those
18 that examine the rise of a global interlock structure in the modern global economy.
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32 The bibliometric analysis highlights some issues unique to interlocking directorates which are
33 not widely addressed in the current literature. The analysis highlights that social network
34 analysis is the dominant methodological technique to address research questions pertaining to
35 interlocking directorates. Advances in social network analysis, such as the development of
36 sophisticated modelling techniques continue to be applied to interlocking directorates (Kim *et*
37 *al.*, 2016). One of the issues in network studies of interlocks is the matter of agency in the
38 analysis; studies often examine the formation of interlock ties as a result of individual level
39 director choices or as organisational level strategic decisions, and rarely both (Valeeva *et al.*,
40 2020). The agency regarding the formation of the interlock ties is assumed to lie solely with
41 one group, however, in reality it is often a combination of the two. There has been some work
42 to resolve this issue; proposed by the broken tie hypothesis (Palmer, 1983). This is used to
43 inform on how an interlock tie was formed; if an interlock tie is broken (the director retires),
44 and it needs to be reconstructed instantaneously, this indicates it was a firm strategic decision,
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where the director played a role in accessing resources for the firm. If the tie is not reconstructed, this indicates the director's position was a result of individual relationships, and the director's own social capital (Stearns and Mizruchi, 1986). However, there has been relatively little work developing this hypothesis, and it is not frequently utilised in empirical work.

The use of the broken tie hypothesis would also help unpack the link between firm centrality in the interlock system and firm performance, as there is a lack of consensus on the issue, along with the potential for endogeneity issues. The broken tie hypothesis would help to understand the causality of interlock ties, and aid in addressing endogeneity issues when examining performance.

This study has highlighted several avenues for future research in the field of interlocking directorates. One area to expand is the number of empirical applications outside of the traditional US and European settings; there are limited comparative and institutional analysis in other regions, especially emerging economies. This is an important area given the increased number of works attempting to explain the phenomena of the global corporate elite; therefore, it is essential that research do not neglect emerging economies. Additionally, as noted by Caiazza *et al.* (2018), any comparison between country level interlock studies needs to fully acknowledge the differences in legal, historical, and cultural institutions.

Current literature examining corporate governance patterns in emerging economies has focused on several aspects, where interlocking directorates could add further insights in future research. In the case of Asian emerging markets, the institutional environment is characterised by the weak contract enforcement, dynamic institutions (due to continual changes to regulatory environment) and ownership concentration (where the ownership structure is often one dominate majority shareholder), with high managerial ownership, resulting in a lack of board

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independence (Oehmichen, 2018). This feature of the corporate structure poses a challenge to agency theory (Filatotchev *et al.*, 2013), often applied within interlocking directorates research, as ownership is far more concentrated than observed in typical European and American settings, and agency contracts are far more costly to enforce due to the weak institutional context (Wright *et al.*, 2005). When the agency perspective is applied within developed economies setting, there is often a focus on conflicts between the owners (principals) and managers (agents). However, this is not the case in many emerging economies setting, most conflicts deal with principal-principal conflicts, those between majority and minority owners (Morck *et al.*, 2005). In addition to concentration, ownership patterns in these settings also differ on other basis, where ownership is often categorised into the following types: foreign ownership, family ownership, and state ownership (Oehmichen, 2018). This too is often not accounted for in the theoretical frameworks used to understand the interplay between corporate governance and interlocking directorates.

In Asian emerging markets, the notion of the corporate elite differs widely to the Western context that is frequently examined in the literature. The elite is an informal elite that is able to influence country policy, consisting of powerful families, political allies to militaries and various others (Oehmichen, 2018). In a firm context, they are able to (as owners or board member) substantially shape firm strategy. Therefore, examining the corporate elite utilising an interlocking directorates approach would allow for an insightful contrast to existing work, comparing the inner circle to the more informal elite. This approach could also contribute on the stream of work drawing on interlocking directorates approach to examine whether there is a fracturing of the corporate elite, as we would expect the Asian emerging market case to provide a tightening of the corporate elite, contrasting to the US case.

Given the differences between the Western case and Asian emerging markets, where institutional voids play a key role, there is a need to revisit the theoretical frameworks

underpinning the formation of interlock ties in these settings. This would aid our understanding of the antecedents and consequences of interlock ties in settings outside of the typical European and American cases. Examining interlocking directorates outside of the typical Western setting would also aid in refining and developing theoretical framework to enhance research investigating interlocks at a global, transnational level.

A further avenue for future research is to expand the development of finance topics within the field of interlocking directorates, where it has been identified as an emerging theme in figure (5). Existing topics in finance could be identified and examine how insights from interlocking directorates research could provide further insights. One example of this approach is the examination of the role of director interlocks in merger and acquisition activity (Field and Mkrtchyan, 2017).

Gender and diversity has emerged as a topic for development, where there is an increase in the work on the impact of female directors. In particular, there is scope to better investigate the link between gender and the corporate elite, a topic that has only recently begun to draw scholarly attention (Cousin *et al.*, 2018). Zenou *et al.* (2012) provide an examination of the origin of female directors network compared to male directors; they argue that female directors are associated with in business network, whereas male directors have closely associated from attending elite schools and higher level of interlock ties. This emphasises the need to account for gender in examination of the elite; for instance, how would accounting for this phenomena impact the fracturing thesis proposed by Mizruchi (2013)?

There is scope to further interrogate and investigate the broader topic of diversity, examining other forms of diversity, rather than focusing chiefly on gender. There have been limited efforts to examine the interplay between ethnic diversity in the boardroom and firm level outcomes. Much of the research, and emerging topics within the interlocks research following the work

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of Mizruchi, mirrors the trends already occurring (somewhat) in the broader areas of corporate governance (such as the increased focus on the issue of diversity).

To summarise, following the analysis of the literature on “what do interlocks do”, the main avenues and directions to forward existing research on interlocking directorates be categorised into three core areas. These three areas represent topics which will advance of understanding of director interlocks.

- 1) Gender diversity and director interlocks: The interlocking directorates framework can be applied to further enhance our understanding of corporate governance topics and diversity. The interlock perspective would allow to go beyond examining board diversity and firm performance alone. More specifically to examine the interplay between elite or inner circle, the impact of gender diversity legislation on network structure, the social capital of female directors, and the specific role they play within the interlocking directorates network.
- 2) Expansion of interlocking directorates into other institutional contexts: This is a key avenue for future research, to utilise interlocking directorates to add to the literature examining corporate governance patterns in emerging economies (such as the principal-principal conflict debate). Empirical work could also help understand the characteristics of the corporate elite in emerging economies.
- 3) Development of the theoretical frameworks: The analysis highlights that there is scope to advance theory on interlocking directorates, more specifically to test and adapt theoretical approaches so they are not restricted to specific institutional contexts, rather can be better applied to explain global, transnational interlock ties (and emerging economies). The development of theoretical frameworks (such as the broken tie hypothesis) can be extended in order clarify the causality of interlock ties, in particular in relation to firm performance (in order to address the endogeneity issues).

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3 A potential limitation of this work is utilising Mizruchi (1996) as the boundary for the
4 bibliometric analysis. Whilst this approach allows us to revisit the work following up on the
5 review and following the topic of “what do interlocks do”, there are authors and publications
6 within the interlocks literature that make no reference to Mizruchi (1996), indicating that there
7 are a subset of article in the field of interlocking directorates that are not captured in this
8 sampling approach. Regardless of this limitation, this study has provided an overview of the
9 work following Mizruchi’s review, highlighting salient themes within interlocking directorate
10 research, along with potential areas for development.
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Table 1 Keywords belong to each thematic cluster

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Corporate networks, Business, Capitalism, Network Analysis Interlocking directorates, Corporate strategy, Globalization, Europe, North America, Knowledge	Finance	Human, Leadership Organization, Social network, Conceptual framework, United Kingdom, Commerce	Social Networking (online), Electric network analysis, Industry, Social network analysis
Cluster 5	Cluster 6	Cluster 7	Cluster 8
Governance approach, Societies and institutions	Industrial management, Corporate governance, Complex networks	United States, decision making, innovation	Management, Planning

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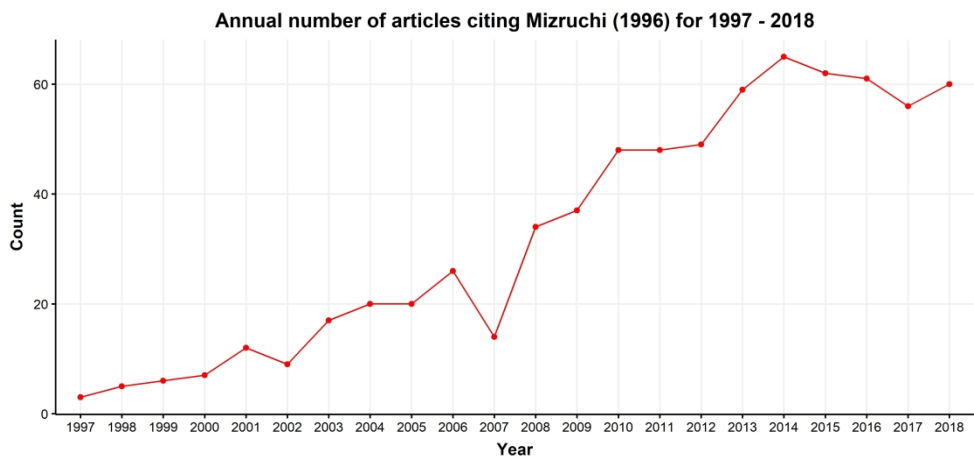


Figure 1 Annual number of articles citing Mizruchi (1996)
254x127mm (450 x 450 DPI)

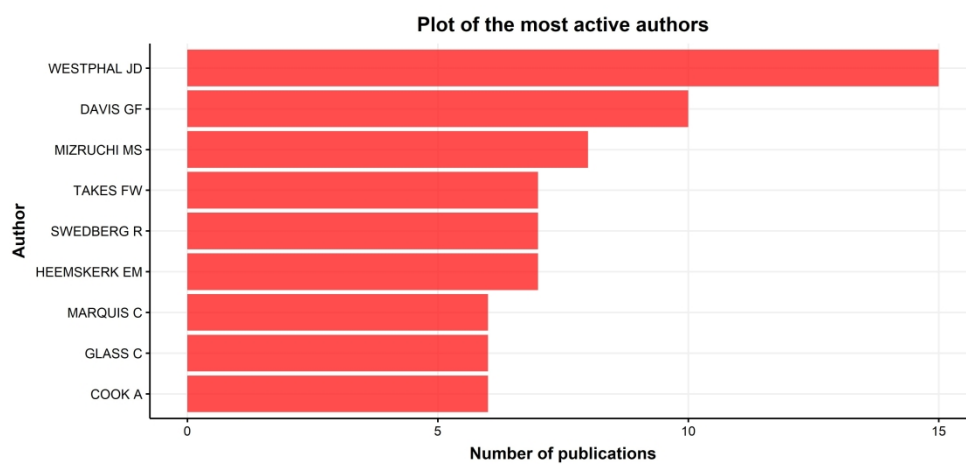


Figure 2 Plot of most active authors (1997 - 2018)

254x127mm (450 x 450 DPI)

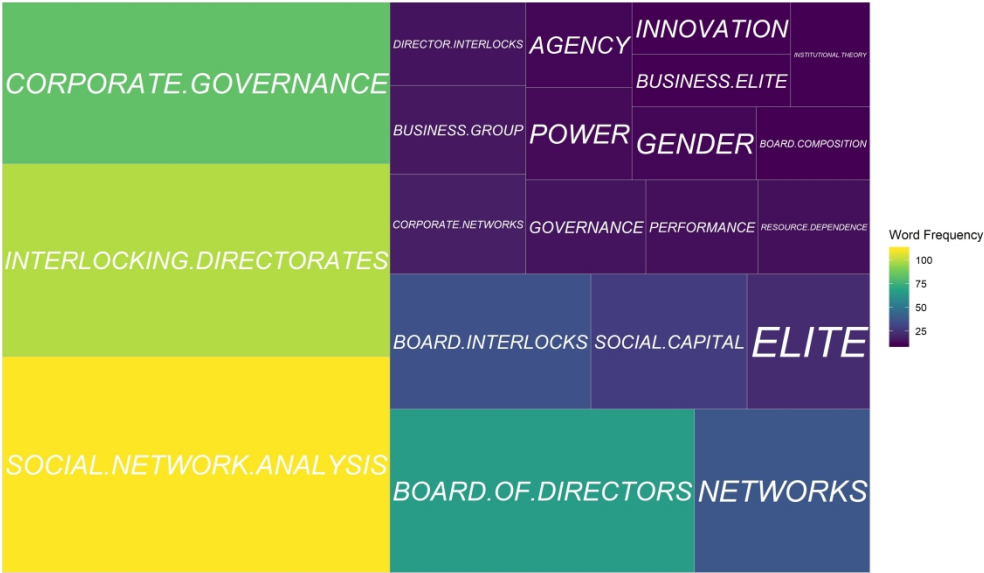


Figure 3 Tree map of top twenty keywords
304x177mm (450 x 450 DPI)

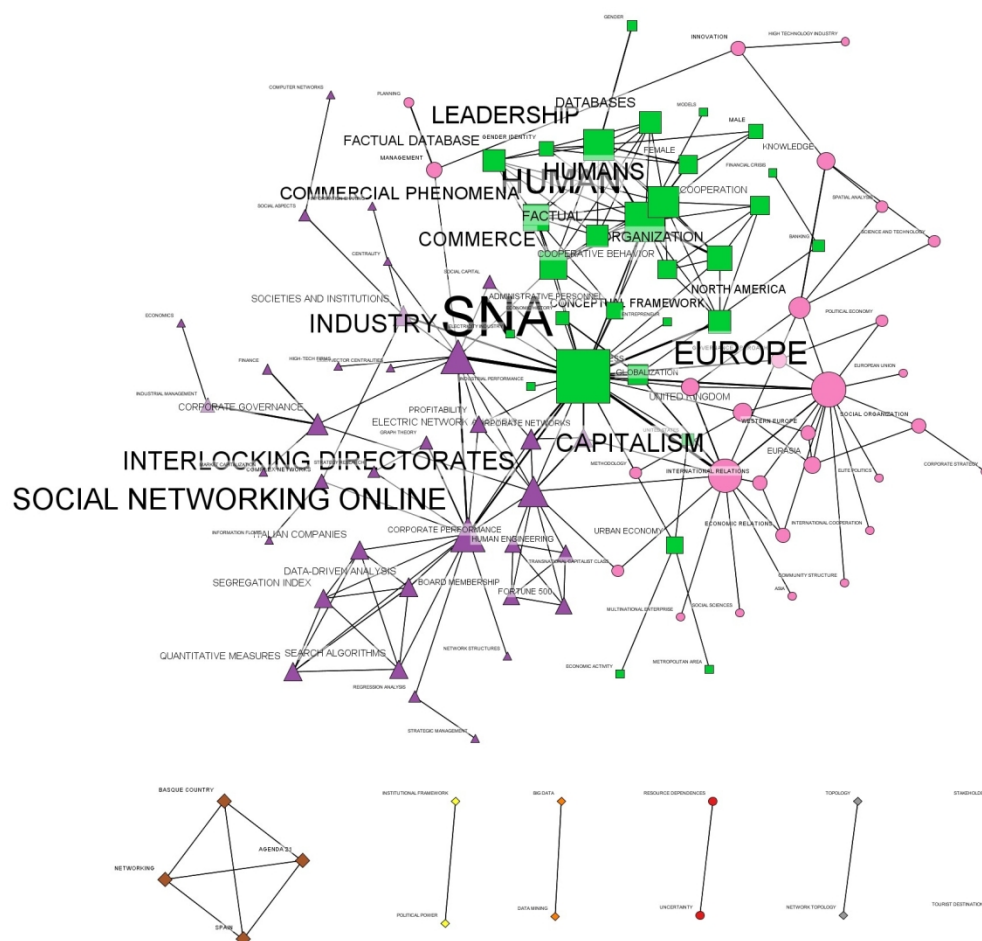


Figure 4 Co-word Network

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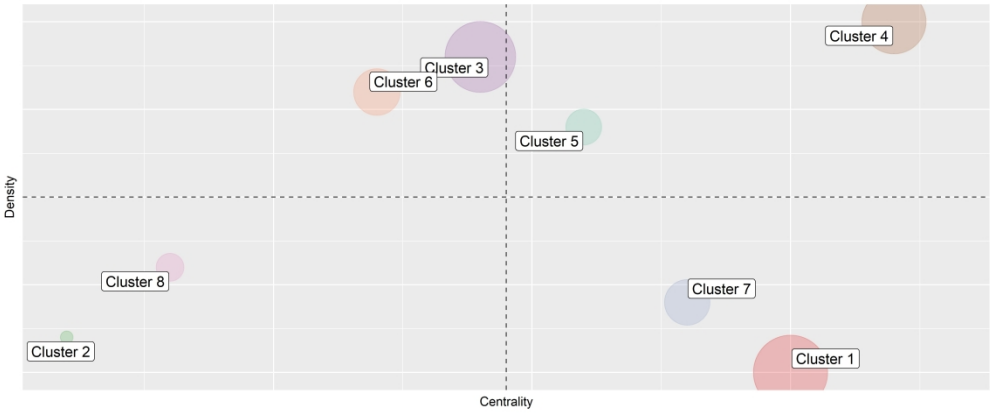


Figure 5 Thematic Mapping Diagram
304x127mm (450 x 450 DPI)