


## Article

# The Old Boys Club in New Zealand Listed Companies

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† Deceased; this paper is dedicated to the honor of Bill Wilson.

**Abstract:** The board of directors plays an important role in implementing corporate governance in the firm, as directors have a fiduciary duty to the firm's shareholders. The effectiveness of directors is a key determinant of corporate value and they need to bring a range of skills and experience to the boardroom. This skill and experience cannot be developed solely within the firm, and most boards incorporate non-executive directors who are or have been directors of other firms. Current research on the benefits of interlocking directorships is mixed between the claim that they bring outside feedback to the table and open decision makers' minds, and those who think outside directors are a waste of money and can reduce company performance. This paper investigates the extent of interlocking directorship in New Zealand and how it affects corporate performance. Our findings of largely no significant impact on firm performance are consistent with the management control theory of director interlocks; the exceptions support the class hegemony theory that links interlocking directorship with a negative firm performance.

**Keywords:** interlocking directorship; board of directors; company performance; New Zealand



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## 1. Introduction

The board of directors is an important institution for implementing corporate governance in the enterprise. Common functions of the board include both monitoring managers and participating in strategic decision-making. The board's responsibility in decision-making is to help managers select, formulate, implement, and control corporate strategy. An effective corporate strategy necessitates all the company's participants to use their ability and resources to combine their own productivity with outside opportunities to resist external environmental uncertainty (Baysinger and Hoskisson 1990). Consequently, the board sees the need to interlock with other companies' boards. They help each other to resolve their resource shortage and create relationships of resource dependency with each interlocking company (Mizruchi 1996). Hence, interlocking directorates are widespread in business. Interlocking directors, as members of a board, are active in board meetings. They can bring outside resources to reduce environmental uncertainty by helping a board to accomplish its work in corporate strategic decision-making.

Despite the obvious advantages, controversy surrounds the idea of interlocking directors in industry, and a consensus has yet to be achieved. Questions remain on how interlocking directors can impact on corporate performance. Some scholars believe that interlocking directors can deploy outside resources and improve company performance. Haunschild and Beckman (1998) considered that interlocking directors can bring outside feedback to the table and open decision makers' minds. Their contributions expand the board's understanding of information about the external environment and establish strategic cooperative relationships with companies in other fields, thereby improving company performance. Peng (2004) argued that interlocking directors can provide their individual

ability and experience and help the board to make decisions. They use their experience in other fields to guide the board's decision-making and increase company performance. [Simmons \(2012\)](#) found that interlocking directors can call on external resources and reduce environmental uncertainty. As a result, they can raise company performance.

On the other hand, some scholars feel that interlocking directors can bring about some adverse impacts, waste company resources, and harm company performance. [Au et al. \(2000\)](#) believed that, although interlocking directors have individual expertise and other fields of experience, they may make some negative suggestions and lead decision-makers astray, even to the extent of affecting the formulation of corporate optimizing strategies and performance. These suggestions may lead decision-makers to abandon optimizing projects and select suboptimal projects that may lead to negative performance. [Fich and Shivdasani \(2006\)](#) found that interlocking directors have weaker performance in terms of workload. Interlocking directors usually have at least two directorships. Attending large numbers of meetings reduces the ability of interlocking directors to work and causes company performance to decline. [Shropshire \(2010\)](#) found that interlocking directors are not completely independent or fair in their work. They may consider their personal benefits and cream off their best advantages in these directorships. Their behavior may therefore reduce the company's performance.

Over the past decade, empirical studies of interlocking directors have concentrated on large countries and economic communities in the United States ([Kang 2008](#); [Burt 2006](#); [Ortiz-de-Mandojana et al. 2012](#)), the United Kingdom ([Kaczmarek et al. 2014](#)), Australia ([Chen et al. 2009](#); [Kiel and Nicholson 2006](#); [Vidovich and Currie 2012](#)) and Europe ([Buch-Hansen 2014](#); [Croci and Grassi 2014](#); [Heemskerk 2011](#); [Heemskerk et al. 2013](#)). Some smaller economies, however, have been ignored and interlocking directorship in these countries have not been explored adequately. For instance, New Zealand lacks a comprehensive investigation of interlocking directorships.

New Zealand is a small and isolated economy, which lacks physical and financial resources. These conditions mean that interlocking directors prevail on boards in the country. The extant literature describes the extent and network of interlocking directorship in New Zealand ([Firth 1987](#); [Roy et al. 1994](#)), and the nature of the financial capital ownership of interlocking directors ([Murray 2005](#)). More recently, [Roudaki and Bhuiyan \(2015\)](#) reported that New Zealand firms are highly interlocked and that such interlocking resulted to negative firm performance. The New Zealand Exchange (NZX)'s Listing Rules were revised in October 2012 to stipulate a minimum of two independent directors and that the majority of the board members should consist of independent directors (the narrow interlock director).<sup>1</sup> This paper investigates the overall interlocking status of New Zealand directorships and the impact of interlocking directorships on corporate performance from 2007 to 2013, considering the rule change in 2012.

The rest of the paper is organized as follows. Section 2 reviews the literature. Section 3 develops and presents the research hypotheses. Section 4 describes the data and variables used in our analysis. Section 5 presents the empirical results and Section 6 concludes.

## 2. Literature Review

Interlocking directorships are widespread among businesses and, as board members, the interlocked directors are active in board meetings. [Allen \(1974\)](#) provided five explanations for the relation of the company to interlocking directors: (1) the size of the firm is related to the number of interlocking directors sitting on the board of other companies; (2) financial corporations are more easily interlocked than non-financial corporations; (3) the frequency of interlocking is related to the number of financial corporations that can bring external capital to reduce the uncertainty of the financial environment; (4) company performance is related to the number of the corporate interlocking directorships; and (5) the existence of local economic benefit is related to the number of interlocking directorates in the local region.

Fennema and Schijf (1979) provided reasons for the existence of interlocking directors on the board. They based their reasons on four theories that have been propagated in the literature, namely, the resource dependency theory, the finance control theory, the management control theory, and the class hegemony theory. We elaborate on the postulations of each of these theories in the following sub-sections and highlight selected research findings contained in the literature that support the theories. It is therefore not the intention of our work to prove or disprove any of the four theories, as others have already done so to explain why interlocking directorships exist. Rather, we report on the state of director interlocks in New Zealand and how they have affected firm performance.

Empirical studies have paid attention to how interlocking directors have affected corporate performance and strategy since the 1980s. Mizruchi and Stearns (1988) found that interlocking directors can affect corporate performance and help the company achieve its strategy. The interlocking directors can bring external resources related to their ability and experience. This helps to solve any resource shortages and reduces environmental uncertainty, thereby improving corporate performance and achieving the company's strategy (Mizruchi and Stearns 1988).

Markoczy et al. (2020) theorized that interlocking female directors are ambivalent between desiring social support versus experiencing identity threat-based career concerns. They suggest that experiences may motivate male versus female interlocking directors in different ways to reduce or potentially facilitate female representation on focal boards. On the other hand, Hernández-Lara and Gonzales-Bustos (2019) found that director interlocks determine their effects on innovation, which has a positive influence when independent and extra-industry directors hold multiple directorships, but has a negative effect on intra-industry and women interlocking directors.

de Sousa Barros et al. (2020) showed that firms that have more ties with other firms through board interlocks (higher degree centrality) are more likely to perform mergers and acquisitions. Su and Liu (2019) explored interlocking director networks based on social network analysis among listed Chinese firms and examined the effect of interlocking director networks on corporate risk-taking. They found that, when interlocking director networks have a high centrality, network members are more likely to imitate risk-taking behaviors. In addition, Infantes et al. (2020) found that geographic, institutional, and industrial distances reduce the presence of interlocking directors between the headquarters and their affiliated firms.

### 2.1. Resource Dependency Theory

A lack of resources is one of the factors that restrict a company's development, and resource shortages have an impact on the competitiveness of a company. Starting with Pfeffer and Salancik (1978, 2003) original work on resource dependence theory (RDT), RDT has been applied to explain how firms reduce environmental interdependence and uncertainty. They argued that organizations survive to the extent that they are effective. They claimed that the key to organizational survival is the ability to acquire and maintain resources and that organizations must transact with other elements in their environment to acquire needed resources.

In line with this theory, Boyd (1990) found that interlocking directors are a channel for the company to obtain outside resources and opportunities and reduce the negative effects of environmental uncertainty. He argued that companies can mutually utilize their resources to increase their ability to control the environment in their respective fields. Hillman et al. (2000) found that some factors (board size, firm size, the field of diversification of the company, etc.) are considered by corporate boards when they recommend the appointment of interlocking directors. In general, companies with a large size and a large board prefer to appoint directors who are also on the board of companies with large resources, which alleviates environmental uncertainty. Companies operating in diverse fields have had extensive attention paid to them because they can more easily resolve the risk of resource uncertainty and balance resource utilization in the business. As

such, it can be argued that interlocking directorships help to mitigate resource shortages and increase competitiveness, which promotes the company's development. In addition, [Valeeva et al. \(2020\)](#) argued that board interlocks are studied either as a means to overcome the resource dependence of corporations or as a group cohesion mechanism of business elites. According to this theory, one would expect increased director interlocks to have a positive impact on firm performance.

## 2.2. Finance Control Theory

In general, the most important resource for many companies is capital. To achieve its corporate strategy, the company needs adequate funds to expand production and improve its production efficiency. To secure capital, companies are eager to establish relationships with banks and financial institutions. The interlocking directorship is a good way to solve capital shortages and reduce financial risk. In [Hilferding \(1968\)](#) theoretical model, he defined finance capital as "capital at the disposition of the banks and used by industrialists." He related the development of finance capital to monopolization in industry, which requires increasing funding for investments. [Helmets et al. \(1975\)](#) documented that there exists a network with a high stability and attributed their findings to the network of interlocking corporates, which is a network of influence with respect to finance control.

Further evidence was provided by [Davis \(1996\)](#) that non-financial companies are willing to establish interlocking directorships with banks and financial institutions and that having such directorships allows them to reduce their financial risk more easily. For example, if a company has a problem of short-term debt repayment, the company should be able to solve this financial crisis due to the presence of an interlocking directorship ([Davis 1996](#)). On the other hand, banks and financial institutions use directorships to find new investment targets and to increase their profit. [Davis and Mizruchi \(1999\)](#) reported that banks and financial institutions desire interlocking directorships to gain control of the company and benefit from any advantages that they might confer. They also utilize such directorships to boost their reputation and enlarge their business. As such, support for this theory would transpire when greater director interlocks lead to increased firm performance.

## 2.3. Management Control Theory

According to the theory of management control, as advanced by [Berle and Means \(1968\)](#), the Board of Directors is appointed by management. It serves at best as an advising institution, but often directors are chosen for prestige reasons only. According to the theorists of management control, the network of interlocking directorates has very little to do with control. In some studies, interlocking directors are regarded as having no effect on boards and companies. [Mace \(1979\)](#) documented that, in cases where boards do not exercise effective control over management and are reduced to merely making suggestions, interlocking directors are no more than symbolic of the interlocking company's strength. As with the rest of the board, interlocking directors have little influence on the company's direction. Consequently, interlocking directors may not carefully prepare their proposals at board meetings, thereby having little effect on the companies. [Richardson \(1987\)](#) agreed with this opinion and suggested that senior managers should decide on the type of information that should be released to interlocking directors, as management may not fully trust interlocking directors. For this theory to hold, one should find director interlocks to have no significant impact on firm performance.

## 2.4. Class Hegemony Theory

[Bates \(1975\)](#) proposed that the basic premise of the theory of hegemony is that "man is not ruled by force alone, but also by ideas". Within the context of political leadership, Bates argued that hegemony is based on consent by the diffusion and popularization of the world view of the ruling class. This concept is often treated to be synonymous with cultural leadership, where the sphere in which a social group exercises hegemony over

the entire society. Some scholars liken interlocking directors to a social network group. [Koenig and Gogel \(1981\)](#) found that the regime of interlocking directors puts well-known businesspeople into companies to assist in crafting a united approach to business conduct and ethics, which is good for corporate cooperation. [Clarke \(1998\)](#) agreed with this opinion and reported that one of the interlocking directors' roles is to set a code of ethics for their companies. Although boards cannot decide on corporate strategies on their own, they can participate in the decision-making process by giving managers suggestions and regulate their behavior through a code of ethics for decision-making within a reasonable range. [Caiazza et al. \(2019\)](#) deemed interlocking directorates as an expression of hegemonic power exercised by the elites of a society. Applying this theory, [Yusoff et al. \(2016\)](#) reported that financial hegemony negatively affects the financial value of the firm. [Nam and An \(2018\)](#) posited that interlocking directors opportunistically use a well-developed social network to maintain their influential position and ultimately adversely affect firm performance.

### 3. Hypothesis Development

According to [Allen \(1974\)](#), interlocking directorship is positively related to corporate performance, and can even be thought of as a strategic achievement. This line of thinking is consistent with the resource dependency theory, which credits interlocking directors for bringing in external resources to help a company resolve its resource shortages and reduce environmental uncertainty. This can therefore improve corporate performance and achieve the company's strategy ([Kaczmarek et al. 2014](#); [Ong et al. 2003](#)). Others feel that interlocking directors are not completely independent nor fair in their work, and that attending large numbers of meetings reduces their ability to work ([Fich and Shivdasani 2006](#); [Shropshire 2010](#)).

In practice, however, the results are obscure as different countries have different results. For instance, in Asia, when studying boards in China, [Peng \(2004\)](#) found that outside directors do make a difference to sales growth but have little impact on the firm's ROE. Additionally, [Xie et al. \(2020\)](#) showed that Chinese entrepreneurs that obtain foreign experience from interlocking partners can significantly promote their firm's international growth when investing in the same country. [Ong et al. \(2003\)](#), on the other hand, investigated interlocking relationships in Singapore and documented a positive correlation between interlocking and corporate performance measured by return on assets (ROA), return on equity (ROE), and return on sales (ROS). In Indonesia, [Pertiwi and Yulianto \(2020\)](#) showed that the average performance of companies (based on their ROA) with interlocking directors is higher than those without. Additionally, [Dayanandan et al. \(2019\)](#) concluded that, in India, the lack of caste diversity in boards, CEOs, and interlocks is associated with lower firm value.

In Europe, [Kaczmarek et al. \(2014\)](#) found that interlocking directors in financial and utility companies in the United Kingdom led to reduced corporate performance because of their busyness. This problem cancels out the potential benefits of interlocking from the resource-dependence perspective. They measure corporate performance by Tobin's Q and the firm's market-to-book ratio. [Crocì and Grassi \(2014\)](#) investigated interlocking directorships in Italy and reported a negative relation with corporate performance when measured by Tobin's Q and return on assets (ROA).

In Latin America, [Pombo and Gutiérrez \(2011\)](#) investigated interlocking directors in Colombia and reported their positive influence on firm performance based on return on assets (ROA), return on equity (ROE), and Tobin's Q. Quite surprisingly, they also found that busy interlocking directors have a positive effect on firm performance. They attributed this positive effect to the quality of the interlocking directors based on their "specific knowledge and management experience". Meanwhile, others, such as [Santos et al. \(2012\)](#), reported a nonlinear relation between interlocking directorship and corporate performance in Brazil in 2001, 2003 and 2005. They captured corporate performance by return on assets (ROA) and return on equity (ROE). [Braun et al. \(2019\)](#) reported that, in



Chile, firms connected to banks, through business networks and interlocking directorates, had better access to credit, higher valuations, and better chances of surviving.

On the other hand, [Kiel and Nicholson \(2003\)](#) found interlocking directorships in Oceania to have a significant positive relationship with corporation performance in Australia when it is measured by the market-based Tobin's Q and weakly positive when measured by the accounting-based return on assets (ROA). The current study adds to the literature of interlocking directorships in another country in Oceania, that of New Zealand.

Interlocking directorship in New Zealand has received attention from researchers since 1987. [Firth \(1987\)](#) found that corporate interlocking directorships are widespread in New Zealand. The degree of corporate interlocking was as great as that experienced in Australia, Canada, the United Kingdom, and the United States. [Firth \(1987\)](#) included all the companies listed on the New Zealand Stock Exchange from 1972 to 1984 and examined the board size, distribution of multiple directorships per director, distribution of corporate interlocking, distribution of director interlocking, and industry of the company. He concluded that there is a high level of interlocking in New Zealand.

In contrast, [Roy et al. \(1994\)](#) reported that interlocking directorship decreased in New Zealand from 1984 to 1993. They provided results for 1987, 1990, and 1993 and compare them with Australian figures. They found that the mean of board sizes in New Zealand is lower than the corresponding mean in Australia. The average number of directorships held is similar in both countries and there is also a similar percentage of directors holding multiple directorships. Roy et al. therefore surmised that there was a low level of interlocks in New Zealand over that period.

[Firth \(1987\)](#) reported that corporate interlocking directors were widespread on the boards of New Zealand companies in the period from 1972 to 1984. The degree of corporate interlocking was comparable to that of the United Kingdom and the United States during that period. According to his expectations, the number of interlocking directorships should have increased significantly after 1984. However, [Roy et al. \(1994\)](#) found that the number of interlocking directorships in New Zealand companies dropped between 1984 and 1993. They concluded that, "if Firth's explanation had been valid, we should have observed further increases in interlocks post-1984 when, in fact, we find conclusive evidence of the opposite trend". The present paper provides evidence of interlocking directorships in New Zealand from 2007 to 2013.

The demand for interlocking directors in New Zealand grew steadily after 1994. Consequently, the number of interlocking directorships is expected to increase year by year in New Zealand. [Healy \(2003\)](#) reported a large amount of foreign capital flowing into the New Zealand financial market, and that most this inflow came from the contribution of interlocking directors. This changed the ownership structure of New Zealand's companies. In 2003, foreign companies held 54% of the equity in New Zealand listed companies, while local companies held 15% ([Healy 2003](#)). This indicates that interlocking directors are important to New Zealand's companies, bringing large external resources to them. The widespread presence of interlocking directors on the boards of New Zealand companies and the number of interlocking directorships has increased over time. [Afkhami Rad \(2014\)](#) found that corporate boards in New Zealand have been paying increasing attention to interlocking directorships after the 2012 NZX Listing Rules were published. This implies that corporate boards are increasingly aware of the phenomenon of interlocking directors and that the number of interlocking directorships is likely to increase over time.

[Boyle and Ji \(2013\)](#) found New Zealand directors to be busy, serving on several boards of New Zealand-domiciled companies. The number of boards on which they served is similar to the number held by their United Kingdom and Australian counterparts. This indicates that there is a limit to the number of sought-after directors in New Zealand, thus implying that the concentration of directors in the network of New Zealand boards is likely to be higher over time.

Actions by interlocking directors can have an impact on the company's performance. [Boyle and Ji \(2013\)](#) found that New Zealand directors have a heavy workload. They attend

an average of 11 board meetings per company each year. The large workload may lead to a reduction in work efficiency, negatively affecting the company's performance. Thus, we expect the following hypothesis to hold:

**Hypothesis 1 (H1).** *Corporate performance is negatively associated with interlocking directorships on the board of a listed company in New Zealand.*

#### 4. Data, Variables, and Model

##### 4.1. Data

We follow the methodology employed by [Firth \(1987\)](#) and [Roy et al. \(1994\)](#). Firth provided results from interlocking directorships in New Zealand for the years 1972, 1974, and 1982. Roy et al., on the other hand, studied companies with interlocking relationships in 1987, 1990, and 1993. The argument is that there are not many differences from one year to another, but the differences may likely be more pronounced over a longer period. Our goal is to provide an update to the interlocking literature in New Zealand beyond what is already documented, and to capture any impact from the introduction of more stringent listing rules by the New Zealand Stock Exchange in 2012.

Data were collected from the New Zealand Exchange (NZX) listed companies for the years 2007, 2010, and 2013. Information on interlocking directorships came from the annual reports of each company on the NZX Report Service Website. Information on other variables was extracted from Data Stream. Following the methodology of [Roy et al. \(1994\)](#) and [Firth \(1987\)](#), the current study identified interlocking directorships in 143 companies listed on the New Zealand Exchange starting from 2013 and working backwards. After excluding 42 companies for the reasons stated below, 101 companies remained in our final sample:

1. Sixteen companies did not clearly indicate the other directorships of their directors in their annual report; or
2. The website did not provide annual reports for 26 of the companies for either 2010 or 2007.

A summary of our data selection process and the final list of companies selected is provided in Appendix A. From each company's annual report, we extracted information on the ticker code of the company, names of directors, position held by the directors on the board, the date of the director's joining the board, the number of directorships each director holds, and the company's accounting data, namely, total assets, total liabilities, revenues, profit before-tax, and shareholder equity for the financial years of 2007, 2010, and 2013.

All information on interlocking directors came from annual reports of the listed firms. The following steps were used to manually determine the total number of directorships for each director. First, we examined the company's statement of corporate governance contained in the annual report for their board composition and director independence. This section usually lists the number and identity of independent directors on the board. Second, we identified the interlocking directors by reading their profiles and disclosures in the annual reports. Last, the board size and total number of directorships per company was tabulated and the number of directorships per director was then determined. Directors who serve on at least two boards were considered interlocking directors. This paper examined how the presence of interlocking directors within a firm affects its corporate performance.

Table 1 shows the distribution of the number of board directorships, in both listed and non-listed firms, that each director of an NZX-listed company held in the years 2007, 2010, and 2013. The total number of directors and the total number of directorships increased in the period from 2007 to 2013. The highest total of directorships was 1743 directorships held by 407 directors in 2013. This table reveals that the overall level of interlocking directorships in New Zealand increased during this period. The average number of directorships per director also increased from 4.11 in 2007 to 4.28 in 2013. Not surprisingly, the percentage of directors who had only one directorship decreased from 27% in 2007 to 23.3% in 2013.

These observations are consistent with those of [Firth \(1987\)](#) and [Roy et al. \(1994\)](#), but the average number of directorships per director was considerably higher over time. The greater concentration of directorships among a limited number of directors implies that the number of interlocking directorships in New Zealand increased over the period from 2007 to 2013. These figures indicate that the increased level of interlocking directorships over time led to “busier” directors, albeit spread out over both listed and non-listed firms.

Table 2 shows the distribution of the number of directorships that directors of NZX-listed firms held in other NZX-listed companies in 2007, 2010, and 2013. Both the total number of directors and the total number of directorships among NZX-listed firms rose significantly from 2007 to 2013. The number of directors increased from 36 to 46 during this time, with the total number of directorships growing from 88 to 109. The percentage of directors who had only one interlocking directorship (had membership of two boards) increased from 61.1% in 2007 to 65.2% in 2013. On the other hand, the average number of NZX-listed directorships per director remained stable from 2.44 in 2007 to 2.37 in 2013. The standard deviation held steady at around 2.00. These statistics are consistent with the 2012 listing rules of having a greater number and proportion of independent directors on the boards of listed firms.

## 4.2. Variables

### 4.2.1. Performance Variables

We tested our hypothesis using four financial measures of corporate performance, namely, the return on equity (ROE), Tobin’s Q, stock returns, and the return on assets (ROA). These measures capture the firms’ accounting and market performance. The ROE and ROA, as accounting-based measures of corporate performance, are heavily dependent on corporate capital structure and their connection with current corporate operations ([Adam and Goyal 2008](#)). A problem concerning accounting measures is that they are historical and lag the actual actions, in general. On the other hand, they are useful for experiencing a more backward and inward-looking focus ([Kiel and Nicholson 2003](#)). ROA and ROE are measured based on their book values:

$$\text{ROA} = \frac{\text{Profit After Tax}}{\text{Total Assets}} \quad (1)$$

$$\text{ROE} = \frac{\text{Profit After Tax}}{\text{Total Shareholder Equity}} \quad (2)$$

Tobin’s Q, as a market-based measure of corporate performance, is widely used in the empirical literature. Tobin’s Q represents the market value of a company and is used to estimate the efficiency of corporate assets used from investors’ perception ([Haslam et al. 2010](#)). Tobin’s Q is a sought-after measure of corporate performance owing to it reflecting the current overall value of the company, in comparison with accounting measures ([Kaczmarek et al. 2014](#)). We compute its value as:

$$Q = \frac{\text{Market Value of Equity} + \text{Book Value of Debt}}{\text{Book Value of Assets}} \quad (3)$$

Stock returns, as a stock market-based measure of corporate performance, reflects the current value of the firm. It is considered a more forward-looking indicator for evaluating a company’s potential value ([Devers et al. 2007](#)). Stock returns are computed as:

$$\text{Stock Returns} = \frac{P_t - P_{t-1} + D_t}{P_{t-1}} \quad (4)$$

where  $P_t$  = stock price in period  $t$ ,  $P_{t-1}$  = stock price in the previous period  $t - 1$ , and  $D_t$  = dividends paid in period  $t$ .



#### 4.2.2. Key Variables

The key variables used in our analysis include the interlocking directorships, board size, market value, total assets, and debt ratio. According to Ong et al. (2003), the board interlocking measure used should be the total number of directorships held by all members of the board. Nicholson et al. (2004) agreed with this measure of board interlocking, which was the approach applied in the current study. Previous studies (e.g., Kiel and Nicholson 2003) showed that board size is positively associated with board interlocking and corporate performance. We therefore included board size as one of our control variables. In the empirical literature, the most common measure of firm size is market value and total assets (Crocchi and Grassi 2014; Ong et al. 2003). We focused on market value as the measure of firm size, but still included total assets as a robustness check, as total assets is more historical and traditional than market value. We controlled for financial leverage using the debt ratio, as studies have shown that it is related to the potential value of a firm in the future (Ong et al. 2003).

#### 4.3. Multivariate Regression Model

We performed a multivariate regression to test the impact of all interlocking relationships on firm performance as follows:

$$Firm\_Performance = \beta_0 + \beta_1 Interlock + \beta_2 Board\_Size + \beta_3 Firm\_Size + \beta_4 Leverage + \beta_5 Yr2007 + \beta_6 Yr2013 \quad (5)$$

where *Firm\_Performance* is measured by ROE, Tobin's Q, stock returns, or ROA; and *Interlock* is the level of interlocking directorship measured by the total number of directorships (in both listed and non-listed firms) held by all members of the board. The following serve as control variables: *Board\_Size* is the number of board members serving on a corporate board; *Leverage* is the company's debt ratio; and *Yr2007* and *Yr2013* serve as dummy variables for the years 2007 and 2013.

### 5. Results and Discussion

#### 5.1. Interlocking Directorship in New Zealand

As shown in Tables 1 and 2, while the total number of directorships held by NZX-listed directors increased over time from 4.1 in 2007 to 4.3 in 2013, the average number of NZX-listed directorships held by each director remained stable at 2.4. This suggests that the change in listing rules in 2012 pertaining to the minimum number and proportion of independent directors on the board of a listed firm led to a more even distribution of directorships. It also indicates that the concentration of directors on the boards of NZX-listed firms did not change much over time, even though directors, in general, became busier due to their involvement in the boards of non-listed firms.

**Table 1.** Distribution of directorship per director. This table shows the distribution of the number of board directorships (listed and non-listed firms) that each director of an NZX-listed company held in the years 2007, 2010, and 2013.

Number of Board Memberships	2007				2010				2013			
	Number of Directors	Total Number of Directorships	Percent	Cumulative Percent	Number of Directors	Total Number of Directorships	Percent	Cumulative Percent	Number of Directors	Total Number of Directorships	Percent	Cumulative Percent
1	103	103	27.0%	27.0%	106	106	25.7%	25.7%	95	95	23.3%	23.3%
2	62	124	16.2%	43.2%	62	124	15.0%	40.8%	53	106	13.0%	36.4%
3	52	156	13.6%	56.8%	59	177	14.3%	55.1%	55	165	13.5%	49.9%
4	39	156	10.2%	67.0%	56	224	13.6%	68.7%	62	248	15.2%	65.1%
5	37	185	9.7%	76.7%	36	180	8.7%	77.4%	38	190	9.3%	74.4%
6	24	144	6.3%	83.0%	32	192	7.8%	85.2%	32	192	7.9%	82.3%
7	15	105	3.9%	86.9%	13	91	3.2%	88.3%	21	147	5.2%	87.5%
8	14	112	3.7%	90.6%	15	120	3.6%	92.0%	16	128	3.9%	91.4%
9	8	72	2.1%	92.7%	10	90	2.4%	94.4%	4	36	1.0%	92.4%
10	7	70	1.8%	94.5%	7	70	1.7%	96.1%	4	40	1.0%	93.4%
11	4	44	1.0%	95.5%	3	33	0.7%	96.8%	6	66	1.5%	94.8%
12	4	48	1.0%	96.6%	4	48	1.0%	97.8%	5	60	1.2%	96.1%
13	1	13	0.3%	96.9%	4	52	1.0%	98.8%	4	52	1.0%	97.1%
14	2	28	0.5%	97.4%	1	14	0.2%	99.0%	5	70	1.2%	98.3%
15	1	15	0.3%	97.6%	2	30	0.5%	99.5%	-	-	-	-
16	4	64	1.0%	98.7%	1	16	0.2%	99.8%	1	16	0.2%	98.5%
17	-	-	-	-	-	-	-	-	1	17	0.2%	98.8%
18	-	-	-	-	-	-	-	-	1	18	0.2%	99.0%
19	-	-	-	-	-	-	-	-	1	19	0.2%	99.3%
21	1	21	0.3%	99.0%	-	-	-	-	-	-	-	-
22	1	22	0.3%	99.2%	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	1	23	0.2%	99.5%
26	-	-	-	-	-	-	-	-	1	26	0.2%	99.8%
29	1	29	0.3%	99.5%	-	-	-	-	1	29	0.2%	100.0%
30	2	60	0.5%	100.0%	-	-	-	-	-	-	-	-
33	-	-	-	-	1	33	0.2%	100.0%	-	-	-	-
Total	382	1571	100%	100.0%	412	1600	100%	100.0%	407	1743	100%	100.0%
Mean no. directorships		4.11				3.88				4.28		
Min. no. directorships		1				1				1		
Max. no. directorships		30				33				29		
Med. no. directorships		12.18				9.00				12.00		
Std. Dev. of directorships		1.98				2.20				2.62		

**Table 2.** Distribution of NZX-listed directorships per director. This table shows the distribution of the number of directorships that directors of NZX-listed firms held in other NZX-listed companies in 2007, 2010, and 2013.

Number of NZX-Listed Board Directorships	Number of Directors	2007			Number of Directors	2010			Number of Directors	2013		
		Total Number of Directorships	Percent	Cumulative Percent		Total Number of Directorships	Percent	Cumulative Percent		Total Number of Directorships	Percent	Cumulative Percent
2	22	44	61.1%	61.1%	31	62	72%	72%	30	60	65.2%	65.2%
3	13	39	36.1%	97.2%	10	30	23%	95%	15	45	32.6%	97.8%
4	-	-	-	-	1	4	2%	98%	1	4	2.2%	100.0%
5	1	5	2.8%	100.0%	1	5	2%	100%	-	-	-	-
Total	36	88	100%	100%	43	101	100%	100%	46	109	100%	100%
Mean no. directorships		2.44				2.35				2.37		
Min. no. directorships		2				2				2		
Max. no. directorships		5				5				4		
Med. no. directorships		3.00				3.18				3.00		
Std. Dev. of directorships		2.01				1.93				2.00		

### 5.2. The Effect of Interlocking Directorships on Corporate Performance in New Zealand

Table 3 provides the descriptive statistics of the variables used in our regression analysis, while Table 4 presents the correlation matrix among these variables. The mean values of most variables reported in Table 3 increased during the period from 2007 to 2013. These include the total number of interlocking directorships, market value, total assets, debt ratio, Tobin's Q, stock returns, and ROA. ROE decreased from 16.19% to 11.95% during this period, whereas board size remained largely stable at slightly above six directors per firm.

**Table 3.** Descriptive statistics. This table shows the descriptive statistics of the interlocking directorships per company, all corporate performance measures, and control variables used in the analysis in 2007, 2010, and 2013.

Variables	Mean			Median			Standard Deviation		
	2007	2010	2013	2007	2010	2013	2007	2010	2013
Interlocking Directorship (Per Company)	15.57	15.83	17.11	6	13	15	10.76	10.51	10.82
Board Size	$26.76 \times 10^8$	$28.09 \times 10^8$	$35.53 \times 10^8$	$2.23 \times 10^8$	$1.66 \times 10^8$	$2.37 \times 10^8$	$103.26 \times 10^8$	$129.14 \times 10^8$	$162.3 \times 10^8$
Market Value (NZD)	$7.71 \times 10^8$	$9.72 \times 10^8$	$10.94 \times 10^8$	$1.84 \times 10^8$	$2.07 \times 10^8$	$2.22 \times 10^8$	$14.88 \times 10^8$	$19.13 \times 10^8$	$20.44 \times 10^8$
Total Asset (NZD)									
Debt Ratio (%)	45.90	47.43	55.59	42.16	46.06	45.15	26.90	27.98	52.47
Tobin's Q	36.28	31.89	40.76	1.19	0.87	0.99	173.10	162.88	218.19
ROE (%)	16.19	5.20	11.95	9.53	5.69	10.32	108.27	275.49	163.93
Stock Return (%)	952.84	695.00	1044.83	202.72	146.97	264.42	3324.18	2141.75	2472.80
ROA (%)	4.85	−1.83	10.44	7.04	3.75	6.42	20.59	39.52	44.15
Variables	Minimum			Maximum					
	2007	2010	2013	2007	2010	2013			
Interlocking Directorship (Per Company)	2	2	1	51	65	54			
Board Size	3	3	3	13	13	12			
Market Value (NZD)	$6.5 \times 10^5$	$11.1 \times 10^5$	$4.5 \times 10^5$	$64.33 \times 10^9$	$91.17 \times 10^9$	$114.82 \times 10^9$			
Total Asset (NZD)	$5.01 \times 10^5$	$1.13 \times 10^5$	$0.79 \times 10^5$	$8.25 \times 10^9$	$11.3 \times 10^9$	$12.58 \times 10^9$			
Debt Ratio (%)	0.49	−0.05	−6.13	137.80	179.71	373.38			
Tobin's Q	0.13	0.20	0.01	1374.48	1276.93	1825.17			
ROE (%)	−1253.61	−1253.61	−668.03	972.63	2353.13	1420.17			
Stock Return (%)	0.01	0.01	0.01	32,039.47	19,293.08	15,359.90			
ROA (%)	−131.61	−367.87	−113.61	45.90	40.28	255.70			

**Table 4.** Correlation matrix. This table shows the Pearson's correlation of the variables used in the analysis. \*\* and \* denote statistical significance at the 1% and 5% levels, respectively.

2007									
Variables	Interlocking Directorship	Board Size	Market Value	Total Assets	Debt Ratio	Tobin's Q	ROE	Stock Returns	ROA
Interlocking Directorship	1								
Board Size	0.233 **	1							
Market Value	0.089 *	0.250 **	1						
Total Assets	0.271 **	0.252 **	0.061 *	1					
Debt Ratio	0.215 **	0.076 *	0.275 **	0.066 *	1				
Tobin's Q	0.011 *	0.187 *	0.632 **	(0.098) *	0.146 *	1			
ROE	(0.151) *	(0.107) *	0.033 *	0.037 *	0.101 *	0.012 *	1		
Stock Returns	0.060 *	0.287 **	(0.035) *	0.005 *	(0.070) *	(0.046) *	(0.002) *	1	
ROA	(0.092) *	0.185 *	0.028 *	0.171 *	−0.446 **	0.017 *	(0.009) *	0.089 *	1
2010									
Interlocking Directorship	1								
Board Size	0.340 **	1							
Market Value	0.220 **	0.363 **	1						
Total Assets	0.318 **	0.493 **	(0.012) *	1					
Debt Ratio	0.126 *	0.018 *	0.252 **	0.101 *	1				
Tobin's Q	0.115 *	0.333 **	0.668 **	(0.091) *	0.169 *	1			
ROE	0.025 *	0.059 *	0.012 *	0.00004 *	0.089 *	0.012 *	1		
Stock Returns	(0.012) *	0.258 **	(0.048) *	(0.008) *	(0.059) *	(0.052) *	0.008 *	1	
ROA	0.140 *	0.226 *	0.030 *	0.077 *	(0.256) **	0.030 *	0.540 **	0.072 *	1

Table 4. Cont.

Variables	2007								
	Interlocking Directorship	Board Size	Market Value	Total Assets	Debt Ratio	Tobin's Q	ROE	Stock Returns	ROA
2013									
Interlocking Directorship	1								
Board Size	0.259 **	1							
Market Value	0.163 *	0.369 **	1						
Total Asset	0.231 **	0.451	(0.025) *	1					
Debt Ratio	0.118 *	(0.167) *	0.096 *	(0.037) *	1				
Tobin's Q	0.062 *	0.220 **	0.573	(0.092) *	0.058 *	1			
ROE	(0.009) *	(0.081) *	0.004 *	(0.015) *	0.099 *	0.007 *	1		
Stock Returns	(0.099) *	0.260 **	(0.061) *	0.060 *	(0.055) *	(0.071) *	(0.003) *	1	
ROA	0.007 *	0.225 **	0.360 **	(0.034) *	−0.301 **	0.511 **	0.248 **	(0.020) *	1

Table 4 reveals that interlocking directorship is significantly correlated with ROA, ROE, Tobin's Q, and stock returns at the 95% confidence level. The negative correlation of interlocking directorship with ROE and stock returns in two of the three years investigated indicates that interlocking directorships is negatively associated with corporate performance when measured through the lens of ROE and stock returns. It is noted that these two measures of corporate performance are both negatively correlated with interlocking directorships post-2012 when the stock exchange became more concerned with busy directors among listed firms. These results are consistent with our hypothesis.

Table 5 presents the results of the regression models for the impact of interlocking directorships on corporate performance while controlling for board size, firm size, leverage, and year dummies. The findings in Panel A of the table, which uses total assets to proxy for firm size, show that corporate performance is negatively, but not significantly, associated with interlocking directorships when measured by ROE and stock returns. For robustness, in Panel B, which captures firm size according to the market value of the firms, the results show corporate performance to be negatively associated with interlocking directorships when performance is measured by ROE, Tobin's Q, and stock returns. It is noted that the results are stronger when firm size is proxied by its market value rather than by total assets, which is based on book value, a historical measure. When performance is measured by stock returns and firm size is controlled by the firm's market value, interlocking directorship has a stronger negative association with firm performance, but still not statistically significant in the traditional sense. The models represented by Tobin's Q, stock returns, and ROA have a goodness-of-fit, as revealed by their F-statistics, at above the 99% confidence level. The adjusted R-squared values of these three models range from a conservative 0.067 to 0.36.<sup>2</sup> The findings of a negative, though not significant, association between firm performance and interlocking directorships are in line with our hypothesis.

For additional robustness, we performed further regression analyses for each of the years 2007, 2010, and 2013, reflecting the impact of interlocking directorships on corporate performance over time. In Panel A of Table 6, which uses total assets to control for firm size, interlocking directorship contributes negatively to firm performance when measured by ROE (in 2007 and 2013), Tobin's Q (in 2007), stock returns (in 2010 and 2013), and ROA (in 2007). We note that interlocking directorship is negatively related to corporate performance (significant at the 10% level), when measured by stock returns (a market value metric), in 2013, the year after the implementation of the new listing rules (restrictions on board governance) on the NZX.



**Table 5.** Impact of interlocking directorships on corporate performance. Panel A shows the results from the multivariate regression models on the impact of interlocking directorships on corporate performance that includes controlling for firm size according to total assets and other firm characteristics such as board size, leverage, and year dummies for 2007 and 2013. Corporate performance is measured by ROE, Tobin's Q, stock returns, and ROA. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Panel B shows the results from the multivariate regression models on the impact of interlocking directorships on corporate performance that includes controlling for firm size according to market value and other firm characteristics such as board size, leverage, and year dummies for 2007 and 2013. Corporate performance is measured by ROE, Tobin's Q, stock returns, and ROA. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A								
ROE			Tobin's Q		Stock Returns		ROA	
Variables	Coefficients	t-Statistic	Coefficients	t-Statistic	Coefficients	t-Statistic	Coefficients	t-Statistic
Intercept	−5.097	(0.107)	−192.099	−4.463 ***	−1745.753	−2.757 ***	−14.172	(1.702) *
Interlocking Directorship	−0.596	(0.526)	0.246	0.242	−17.443	(1.163)	0.106	0.537
Board Size	−0.417	(0.061)	34.109	5.549 ***	466.108	5.156 ***	3.946	3.320 ***
Total Assets (NZD)	$1.03 \times 10^{-9}$	0.150	$-2.41 \times 10^{-8}$	−3.896 ***	$-1.35 \times 10^{-7}$	(1.477)	$-8.73 \times 10^{-10}$	(0.729)
Debt Ratio (%)	0.450	1.477	0.599	2.186 **	−1.938	(0.480)	−0.282	−5.315 ***
Year2007	11.717	0.424	2.208	0.089	246.395	0.674	5.311	1.104
Year2013	3.628	0.131	13.341	0.534	496.542	1.350	15.322	3.169 ***
R-Square	0.009		0.118		0.089		0.147	
Adjusted R-Square	−0.015		0.097		0.067		0.126	
F-Statistic	0.368		5.616 ***		4.103 ***		7.237 ***	

Panel B								
ROE			Tobin's Q		Stock Returns		ROA	
Variables	Coefficients	t-Statistic	Coefficients	t-Statistic	Coefficients	t-Statistic	Coefficients	t-Statistic
Intercept	−6.384	(0.132)	−17.660	(0.482)	−1965.183	−3.080 ***	−3.843	(0.465)
Interlocking Directorship	−0.568	(0.509)	−0.915	(1.084)	−19.683	(1.339)	0.050	0.260
Board Size	−0.129	(0.019)	5.988	1.178	485.818	5.489 ***	2.334	2.034 **
Market Value (NZD)	$3.34 \times 10^{-11}$	0.037	$8.32 \times 10^{-9}$	12.029 ***	$-2.88 \times 10^{-8}$	−2.394 **	$5.54 \times 10^{-10}$	3.552 ***
Debt Ratio (%)	0.449	1.448	0.061	0.261	−0.238	(0.058)	−0.317	−5.997 ***
Year2007	11.534	0.418	5.654	0.271	272.612	0.750	5.412	1.149
Year2013	3.760	0.135	4.538	0.216	494.554	1.353	14.845	3.133 ***
R-Square	0.009		0.377		0.099		0.180	
Adjusted R-Square	−0.015		0.363		0.078		0.160	
F-Statistic	0.364		25.537 ***		4.655 ***		9.236 ***	

**Table 6.** Impact of interlocking directorships on corporate performance over time. Panel A shows the impact of interlocking directorships on corporate performance over three separate years, 2007, 2010, and 2013, that includes controlling for firm size according to total assets and other firm characteristics such as board size, and leverage. Corporate performance is measured by ROE, Tobin's Q, stock returns, and ROA. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Panel B shows the impact of interlocking directorships on corporate performance over three separate years, 2007, 2010, and 2013, that includes controlling for firm size according to market value and other firm characteristics such as board size, and leverage. Corporate performance is measured by ROE, Tobin's Q, stock returns, and ROA. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A								
ROE			Tobin's Q		Stock Returns		ROA	
Variables	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
2007								
Intercept	49.578	1.206	−114.089	(1.755) *	−1920.360	(1.554)	7.133	1.023
Interlocking Directorship	−1.881	(1.752) *	−0.474	(0.279)	9.088	0.281	−0.171	(0.941)
Board Size	−5.784	(0.962)	20.564	2.163 **	542.670	3.002 ***	2.192	2.149 **
Total Assets (NZD)	$7.55 \times 10^{-9}$	0.987	$-1.82 \times 10^{-8}$	(1.503)	$-1.65 \times 10^{-7}$	(0.719)	$2.47 \times 10^{-9}$	1.907 *
Debt Ratio (%)	0.573	1.401	0.939	1.453	−11.689	(0.951)	−0.353	−5.098 ***
R-Square	0.057		0.078		0.096		0.277	
Adjusted R-Square	0.018		0.040		0.058		0.246	
F-Statistic	1.458 **		2.033 ***		2.544 ***		9.176 ***	

Table 6. Cont.

Panel A								
Variables	ROE		Tobin's Q		Stock Returns		ROA	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
2010								
Intercept	−106.583	(0.918)	−271.319	−4.491 ***	−1340.334	(1.553)	−17.445	(1.115)
Interlocking Directorship	0.034	0.012	0.595	0.396	−16.437	(0.765)	0.431	1.105
Board Size	11.922	0.682	42.977	4.722 ***	413.578	3.182 ***	4.384	1.860 *
Total Assets (NZD)	$-7.18 \times 10^{-9}$	(0.419)	$-3.13 \times 10^{-8}$	−3.509 ***	$-1.76 \times 10^{-7}$	(1.384)	$-7.24 \times 10^{-10}$	(0.314)
Debt Ratio (%)	0.907	0.898	1.121	2.132 ***	−2.985	(0.398)	−0.382	−2.810 ***
R-Square	0.013		0.236		0.099		0.130	
Adjusted R-Square	−0.028		0.204		0.061		0.094	
F-Statistic	0.317		7.408 ***		2.623 ***		3.584 ***	
2013								
Intercept	37.617	0.552	−214.681	−2.484 **	−1015.294	(1.033)	−11.180	(0.652)
Interlocking Directorship	−0.077	(0.047)	0.358	0.174	−40.086	(1.710) *	0.042	0.103
Board Size	−6.813	(0.640)	41.596	3.081 ***	451.556	2.940 ***	6.070	2.267 **
Total Assets (NZD)	$1.87 \times 10^{-9}$	0.204	$-2.65 \times 10^{-8}$	(2.274) **	$-5.78 \times 10^{-8}$	(0.436)	$-3.42 \times 10^{-9}$	(1.479)
Debt Ratio (%)	0.274	0.840	0.435	1.053	0.911	0.194	−0.224	−2.733 ***
R-Square	0.014		0.106		0.099		0.141	
Adjusted R-Square	−0.027		0.069		0.062		0.106	
F-Statistic	0.351		2.851 ***		2.650 ***		3.949 ***	
Panel B								
Variables	ROE		Tobin's Q		Stock Returns		ROA	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
2007								
Intercept	47.449	1.120	1.851	0.035	−2099.941	(1.659) *	7.617	1.054
Interlocking Directorship	−1.640	(1.558)	−0.810	(0.608)	3.308	0.105	−0.090	(0.500)
Board Size	−5.017	(0.824)	3.945	0.512	556.046	3.055 ***	2.285	2.198 **
Market Value (NZD)	$3.34 \times 10^{-10}$	0.299	$1.06 \times 10^{-8}$	7.483 ***	$-3.06 \times 10^{-8}$	(0.915)	$2.31 \times 10^{-10}$	1.209
Debt Ratio (%)	0.540	1.269	−0.130	(0.242)	−8.636	(0.679)	−0.376	−5.178 ***
R-Square	0.049		0.404		0.099		0.260	
Adjusted R-Square	0.009		0.379		0.061		0.230	
F-Statistic	1.225		16.271 ***		2.632 ***		8.452 ***	
2010								
Intercept	−103.486	(0.889)	−46.885	(0.920)	−1343.137	(1.552)	−15.328	(0.977)
Interlocking Directorship	−0.097	(0.034)	−1.081	(0.865)	−19.237	(0.906)	0.408	1.059
Board Size	10.613	0.636	10.942	1.499	391.307	3.155 ***	4.026	1.790 *
Market Value (NZD)	$-8.24 \times 10^{-10}$	(0.341)	$7.98 \times 10^{-9}$	7.557 ***	$-2.45 \times 10^{-8}$	(1.367)	$1.60 \times 10^{-11}$	0.049
Debt Ratio (%)	0.961	0.924	0.094	0.206	−1.188	(0.154)	−0.388	−2.765 ***
R-Square	0.012		0.4		0.098		0.129	
Adjusted R-Square	−0.029		0.437		0.061		0.093	
F-Statistic	0.302		20.396 ***		2.611 ***		3.557 ***	
2013								
Intercept	38.541	0.557	8.036	0.106	−1458.148	(1.482)	18.662	1.144
Interlocking Directorship	−0.051	(0.032)	−0.766	(0.432)	−39.543	(1.722) *	−0.106	(0.279)
Board Size	−6.749	(0.646)	2.610	0.228	516.488	3.478 ***	0.861	0.350
Market Value (NZD)	$2.41 \times 10^{-10}$	0.216	$7.67 \times 10^{-9}$	6.241 ***	$-2.69 \times 10^{-8}$	(1.692) *	$1.04 \times 10^{-9}$	3.944 ***
Debt Ratio (%)	0.264	0.799	0.047	0.131	2.159	0.460	−0.276	−3.549 ***
R-Square	0.014		0.330		0.124		0.244	
Adjusted R-Square	−0.027		0.302		0.087		0.213	
F-Statistic	0.352		11.815 ***		3.391 ***		7.755 ***	

In Table 6, Panel B, where firm size is controlled by the firms' market value for added robustness, we report that interlocking directorship has a negative impact on corporate performance over all three years and all four performance measures, except for stock returns in 2007 and ROA in 2010. These results are stronger than those described in Panel A and, interestingly, are also significant (at the 10% level) when measured by stock returns in 2013. Again, the results are most pronounced in 2013.

### 5.3. Discussion of Results

The results of Tables 5 and 6 reveal that interlocking directorships among directors of listed firms in New Zealand negatively impacted corporate performance (measured by several alternative metrics) over time, viz. 2007, 2010, and 2013. In particular, the findings are more pronounced (significant at the 10% level) in the year after the NZX imposed stricter listing rules on board governance. As such, our hypothesis that corporate performance is negatively associated with interlocking directorships on the board of a listed company in New Zealand cannot be rejected.

It should be noted that our findings are not consistent with the resource dependency theory as propagated by Pfeffer and Salancik (1978, 2003), who expected firm performance to increase due to increased director interlocks. Hilferding (1968) finance control theory postulates that interlocking directorships serve to solve capital shortages and reduce financial risk. As such, a higher incidence of director interlocks would be expected to improve firm performance. Clearly, our results run counter to such an expectation and, thus, do not support the finance control theory.

As discussed earlier, according to Berle and Means (1968) management control theory, interlocking directorships should have no impact on firm performance. The findings reported in this study are largely consistent with this theory, as interlocking directorship is shown to have no significant contribution to firm performance when measured by the firm's ROE, Tobin's Q, stock returns, and ROA under the pooled sample (Table 5).

However, when broken down into three separate years (2007, 2010, and 2013), the results presented in Table 6 show that the impact of interlocking directorship on firm performance is significantly negative when performance is measured by ROE (in 2007) and when firm size is controlled by total assets. Significant negative performance is also manifested when it is measured by stock returns (in 2013) when firm size is controlled by either total assets or its market value. These negative results are consistent with the class hegemony theory of director interlocks that was advanced by Bates (1975) and the empirical findings of Yusoff et al. (2016) and Nam and An (2018).

## 6. Conclusions

The extant literature has shown that interlocking directorships have a significant role to play in exercising corporate power in a modern enterprise. Studies have documented that it can bring external feedback and productive managerial experience of other firms into a company (Haunschild and Beckman 1998; Peng 2004). For example, interlocking directorships can reduce environmental uncertainty and create resource dependency between two companies (Simmons 2012). They are good for achieving cooperative strategies and establishing long-term cooperative relationships. An interlocking director can also help the board to solve problems and formulate better corporate policies (Clarke 1998). The resource dependency and financial control theories of director interlocks advocate that an increase in the number of interlocking directors would lead to better firm performance. Our findings do not support these two theories.

Controversy may surround interlocking directors, as they may not be completely independent nor fair in their work. They may consider their personal benefits and work in their own interest in these directorships (Shropshire 2010). Moreover, having to attend large numbers of meetings reduces the ability of interlocking directors to work (Fich and Shivdasani 2006) and, thus, may negatively affect corporate performance. Researchers have long argued on whether interlocking directors have a positive, negative or no impact on corporate performance. With a few exceptions, the findings of this paper are largely consistent with the management control theory of interlocking directors having no effect on corporate performance.

This paper examines interlocking directorships among listed firms in New Zealand over the years 2007, 2010, and 2013. The year 2013 was particularly significant as it was the year after new listing rules, that included more stringent board governance, came into play in 2012. The present study documents that the overall level of interlocking directorships

in New Zealand increased. However, the number of listed directorships held by directors of listed firms remained steady over the period. This means that directors of listed firms became busier in their taking on roles in non-listed firms, while at the same time meeting the more stringent board governance requirements of 2012.

This study investigates the impact of interlocking directorships on the corporate performance of NZX-listed firms and finds that interlocking directorships largely have no impact on corporate performance after controlling for various firm-specific characteristics such as board size, firm size, leverage, and year dummies. The exceptions report that interlocking directors have a significant negative impact on firm performance when measured by ROE (in 2007) and when firm size is controlled by total assets. Significant negative performance is also revealed when measured by stock returns (in 2013) and regardless of whether firm size is controlled by total assets or market value. The negative findings are supportive of the class hegemony theory of director interlocks described earlier.

Our results of no significant impact of director interlocks are robust to alternative specifications of performance and firm size with the exceptions noted above. In short, an increased level of director interlocks would likely result in no significant impact on firm performance or, worse, lead to a negative impact. These findings present a dilemma to policymakers. While it is prudent to have more stringent governance requirements for listed firms, policymakers should be mindful of any unintended consequences when directors restrict their membership on the boards of listed companies even as they take on more directorships on non-listed firms. In short, they become busier. The implication for investors is that they would do well to take heed of firms with “busy” directors on the board of their companies.

The current research is limited to data up to one year after the introduction of the new listing requirements for firms in New Zealand in 2012. Future research could investigate whether the findings reported in this study continue to hold in the longer term. Researchers could also look at whether similar results are prevalent in other economies. Policymakers should explore how to ensure that the restrictions of limited board directorships apply across the board to all firms, listed or unlisted, and not only to listed companies. Such a policy would pose a formidable challenge due to the limited pool of qualified and available directors.

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## Appendix A

**Table A1.** Data Selection Process.

Company Selection Criteria		Number of Companies
Companies with interlocking directorships in 2013		143
Less: Companies that did not clearly indicate the other directorships of their directors in their annual report		16
Less: Companies whose websites did not provide annual reports for either 2007 or 2010		26
Remaining companies		101
Names of Final Selection of NZX-Listed Companies with Interlocking Directorships		
1. Abano Healthcare Group Limited	52. New Talisman Gold Mines Limited	
2. Acurity Health Group Ltd	53. NZ Windfarms Limited	
3. Auckland International Airport Limited	54. New Zealand Oil and Gas Limited	
4. Air New Zealand Limited	55. The New Zealand Refining Company Limited	
5. Allied Farmers Limited	56. NZX Limited	
6. Australia and New Zealand Banking Group Limited	57. Opus International Consultants Limited	
7. AMP limited	58. Precinct Properties New Zealand Limited	
8. APN Media (NZ) Limited	59. Property for Industry Limited	
9. Argosy Property Limited	60. Pyne Gould Corporation Limited	
10. The a2 Milk Company Limited	61. PGG Wrightson	
11. Augusta Capital Limited	62. Promisia Integrative Limited	
12. AWF Group Limited	63. Port Of Tauranga Limited	
13. Briscoe Group Limited	64. Postie Plus Group Limited	
14. Barramundi Limited	65. Pumpkin Patch Limited	
15. Cavalier Corporation Limited	66. Rakon Limited	
16. CDL Investment New Zealand limited	67. Rubicon Limited	
17. Contact Energy limited	68. Restaurant Brands New Zealand Limited	
18. The Colonial Motor Company Limited	69. Renaissance Corporation Limited	
19. Delegat's Group Limited	70. Ryman Healthcare Limited	
20. Diligent Board Member Services INC	71. Sanford Limited	
21. Dorchester Pacific Limited	72. Scott Technology Limited	
22. Ebos Group Limited	73. Smiths City Group Limited	
23. Fletcher Buiding limited	74. Seeka Kiwifruit Industries Limited	
24. Finzsoft Solutions Limited	75. SKYCITY Entertainment Group Limited	
25. Fisher & Paykel Healthcare Corporation Limited	76. Skellerup Holdings Limited	
26. Freightways Limited	77. Sky Network Television Limited	
27. Fonterra Co-operative Group Limited	78. South Port New Zealand Limited (NS)	
28. Foley Family Wines Limited	79. Smartpay Holdings Limited	
29. Goodman Property Trust	80. Steel & Tube Holdings Limited	
30. Guinness Peat Group Plc	81. Speirs Group Limited	
31. Goodman Field Limited	82. Telecom Corporation of New Zealand Limited	
32. Hellaby Holdings Limited	83. Tenon Limited	
33. Hallenstein Glasson Holdings Limited	84. Tourism Holding Limited	
34. Infratil Limited	85. Telstra Corporation Limited	
35. Kingfish Limited	86. TrustPower Limited	
36. Kiwi Income Property Trust	87. TRS Investments Limited	
37. Kirkcaldie & Stains Limited	88. TeamTalk Limited	
38. Livestock Improvement Corporation Limited	89. Turners Auctions Limited	
39. Lyttelton Port Company Limited (NS)	90. Turners & Growers Limited	
40. Millennium & Copthorne Hotels New Zealand Limited	91. Tower Limited	
41. Meridian Energy Limited	92. Vector Limited	
42. Metlifecare Limited	93. Vetilot Limited	
43. Mainfreight Limited	94. Vital Healthcare Property Trust	
44. Mercer Group Limited	95. Veritas Investments Limited	
45. Michael Hill International Limited	96. Westpac Banking Corporation	
46. Mowbray Collectables Limited	97. Wellington Drive Technologies Limited	
47. Mighty River Power Limited	98. Wool Equities Limited	
48. Methven Limited	99. The Warehouse Group Limited	
49. NPT Limited	100. Windflow Technology Limited	
50. Nuplex Industries Limited	101. Xero Limited	
51. Northland Port Corporation (NZ) Limited		

## Notes

- <sup>1</sup> NZ Stock Exchange (2012). NZX listing rules. Author. An examination of shareholder-stakeholder governance tension, 245.



- <sup>2</sup> While R-squared values at the lower range of the spectrum may appear low, they are in fact quite typical of research using cross-sectional financial data.

## References

- Adam, Tim, and Vidhan K. Goyal. 2008. The investment opportunity set and its proxy variables. *Journal of Financial Research* 31: 41–63. [CrossRef]
- Afkhami Rad, Salman. 2014. The Relationship between Corporate Governance Practices and Cost of Capital in Large Listed Companies of New Zealand and Singapore. Ph.D. thesis, University of Waikato, Hamilton, New Zealand. Available online: <http://researchcommons.waikato.ac.nz/handle/10289/8656> (accessed on 1 June 2021).
- Allen, Michael Patrick. 1974. The structure of interorganizational elite cooptation: Interlocking corporate directorates. *American Sociological Review* 39: 393–406. [CrossRef]
- Au, Kevin, Mike W. Peng, and Denis Wang. 2000. Interlocking directorates, firm strategies, and performance in Hong Kong: Towards a research agenda. *Asia Pacific Journal of Management* 17: 29–47. [CrossRef]
- Bates, Thomas R. 1975. Gramsci and the theory of hegemony. *Journal of the History of Ideas* 36: 351–366. [CrossRef]
- Baysinger, Barry, and Robert E. Hoskisson. 1990. The composition of boards of directors and strategic control: Effects on corporate strategy. *Academy of Management Review* 15: 72–87. [CrossRef]
- Berle, Adolf Augustus, Jr., and Gardiner C. Means. 1968. *The Modern Corporation and Private Property*. New York: Auflage.
- Boyd, Brian. 1990. Corporate linkages and organizational environment: A test of the resource dependence model. *Strategic Management Journal* 11: 419–30. [CrossRef]
- Boyle, Glenn, and Xu Ji. 2013. New Zealand corporate boards in transition: Composition, activity and incentives between 1995 and 2010. *Pacific Accounting Review* 25: 235–58. [CrossRef]
- Braun, Matías, Ignacio Briones, and Gonzalo Islas. 2019. Interlocking directorates, access to credit, and business performance in Chile during early industrialization. *Journal of Business Research* 105: 381–88. [CrossRef]
- Buch-Hansen, Hubert. 2014. Interlocking directorates and collusion: An empirical analysis. *International Sociology* 29: 249–67. [CrossRef]
- Burt, Ronald S. 2006. *Interlocking Directorates behind the S&P Indices*. Chicago: University of Chicago Graduate School of Business. Available online: <http://faculty.chicagobooth.edu/ronald.burt/research/files/IDS&P.pdf> (accessed on 1 June 2021).
- Caiazza, Rosa, Albert A. Cannella Jr., Phillip H. Phan, and Michele Simoni. 2019. An institutional contingency perspective of interlocking directorates. *International Journal of Management Reviews* 21: 277–93. [CrossRef]
- Chen, Rongrong, Maria Cadiz Dyball, and Sue Wright. 2009. The link between board composition and corporate diversification in Australian corporations. *Corporate Governance: An International Review* 17: 208–23. [CrossRef]
- Clarke, Thomas. 1998. Research on corporate governance. *Corporate Governance: An International Review* 6: 57–66. [CrossRef]
- Croci, Ettore, and Rosanna Grassi. 2014. The economic effect of interlocking directorates in Italy: New evidence using centrality measures. *Computational and Mathematical Organization Theory* 20: 89–112. [CrossRef]
- Davis, Gerald F. 1996. The significance of board interlocks for corporate governance. *Corporate Governance: An International Review* 4: 154–59. [CrossRef]
- Davis, Gerald F., and Mark S. Mizruchi. 1999. The money center cannot hold: Commercial banks in the US system of corporate governance. *Administrative Science Quarterly* 44: 215–39. [CrossRef]
- Dayanandan, Ajit, Han Donker, and John Nofsinger. 2019. The role of caste for board membership, CEO, and interlocking. *Pacific-Basin Finance Journal* 54: 29–41. [CrossRef]
- de Sousa Barros, Thiago, Julián Cárdenas, and Wesley Mendes-Da-Silva. 2020. The effect of interlocking directorates on mergers and acquisitions in Brazil. *Journal of Management and Governance*, 1–29. [CrossRef]
- Devers, Cynthia E., Albert A. Cannella Jr., Gregory P. Reilly, and Michele E. Yoder. 2007. Executive compensation: A multidisciplinary review of recent developments. *Journal of Management* 33: 1016–72. [CrossRef]
- Fennema, Meindert, and Huibert Schijf. 1979. Analysing interlocking directorates: Theory and methods. *Social Networks* 1: 297–332. [CrossRef]
- Fich, Eliezer M., and Anil Shivdasani. 2006. Are busy boards effective monitors? *The Journal of Finance* 61: 689–724. [CrossRef]
- Firth, Michael. 1987. Multiple directorships and corporate interlocks in New Zealand firms. *Journal of Sociology* 23: 274–81. [CrossRef]
- Haslam, S. Alexander, Michelle K. Ryan, Clara Kulich, Grzegorz Trojanowski, and Cate Atkins. 2010. Investing with prejudice: The relationship between women's presence on company boards and objective and subjective measures of company performance. *British Journal of Management* 21: 484–97. [CrossRef]
- Haunschild, Pamela R., and Christine M. Beckman. 1998. When do interlocks matter? Alternate sources of information and interlock influence. *Administrative Science Quarterly* 25: 815–44. [CrossRef]
- Healy, Joseph. 2003. Corporate governance & wealth creation in New Zealand. *Dunmore Press* 34: 345–56.
- Heemskerck, Eelke M. 2011. The social field of the European corporate elite: A network analysis of interlocking directorates among Europe's largest corporate boards. *Global Networks* 11: 440–60. [CrossRef]
- Heemskerck, Eelke M., Fabio Daolio, and Marco Tomassini. 2013. The Community Structure of the European Network of Interlocking Directorates 2005–2010. *PLoS ONE* 8: e68581. [CrossRef]
- Helmers, Marguerite H., Robert J. Mokken, Rene C. Plijter, and Frans N. Stokman. 1975. *Graven Naar Macht: Op zoek naar de kern van de Nederlandse Economie*. Amsterdam: Van Gennep. (In German)

- Hernández-Lara, Ana B., and Juan P. Gonzales-Bustos. 2019. The impact of interlocking directorates on innovation: The effects of business and social ties. *Management Decision* 57: 2799–815. [CrossRef]
- Hilferding, Rudolf. 1968. *Das Finanzkapital: Eine Studie über die jüngste Entwicklung des Kapitalismus*. Frankfurt: Europäische Verlagsanstalt. (In German)
- Hillman, Amy J., Albert A. Cannella, and Ramona L. Paetzold. 2000. The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. *Journal of Management Studies* 37: 235–56. [CrossRef]
- Infantes, Paula M., Bartolomé Pascual-Fuster, and Rafel Crespí-Cladera. 2020. Interlocking Directors in Headquarters-Affiliate Relationship of Business Groups. Available online: <https://ssrn.com/abstract=3664626> (accessed on 1 June 2021).
- Kaczmarek, Szymon, Satomi Kimino, and Annie Pye. 2014. Interlocking directorships and firm performance in highly regulated sectors: The moderating impact of board diversity. *Journal of Management & Governance* 18: 347–72.
- Kang, Eugene. 2008. Director interlocks and spillover effects of reputational penalties from financial reporting fraud. *Academy of Management Journal* 51: 537–55. [CrossRef]
- Kiel, Geoffrey C., and Gavin J. Nicholson. 2003. Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. *Corporate Governance: An International Review* 11: 189–205. [CrossRef]
- Kiel, Geoffrey C., and Gavin J. Nicholson. 2006. Multiple directorships and corporate performance in Australian listed companies\*. *Corporate Governance: An International Review* 14: 530–46. [CrossRef]
- Koenig, Thomas, and Robert Gogel. 1981. Interlocking corporate directorships as a social network. *American Journal of Economics and Sociology* 40: 37–50. [CrossRef]
- Mace, Myles L. 1979. Directors: Myth and reality-ten years later. *Rutgers Law Review* 32: 293.
- Markoczy, Livia, Sunny L. Sun, and Jigao Zhu. 2020. Few women on boards: What's identity got to do with it? *Journal of Business Ethics* 165: 311–27. [CrossRef]
- Mizruchi, Mark S. 1996. What do interlocks do? An analysis, critique, and assessment of research on interlocking directorates. *Annual Review of Sociology* 32: 271–98. [CrossRef]
- Mizruchi, Mark S., and Linda B. Stearns. 1988. A longitudinal study of the formation of interlocking directorates. *Administrative Science Quarterly* 35: 194–210. [CrossRef]
- Murray, Georgina. 2005. Interlocking directorates: Australian and New Zealand comparisons. *Journal of Australian Political Economy* 47: 5–26.
- Nam, Hyun-Jung, and Yohan An. 2018. The effect of interlocking directors' network on firm value and performance: Evidence from Korean-listed firms. *Global Economic Review* 47: 151–73. [CrossRef]
- Nicholson, Gavin J., Malcolm Alexander, and Geoffrey C. Kiel. 2004. Defining the social capital of the board of directors: An exploratory study. *Journal of Management & Organization* 10: 54–72.
- Ong, Chin-Huat, David Wan, and Kee-Sing Ong. 2003. An exploratory study on interlocking directorates in listed firms in Singapore. *Corporate Governance: An International Review* 11: 322–34. [CrossRef]
- Ortiz-de-Mandojana, Natalia, J. Alberto Aragn-Correa, Javier Delgado-Ceballos, and Vera Fern-Vlchez. 2012. The effect of director interlocks on firms' adoption of proactive environmental strategies. *Corporate Governance: An International Review* 20: 164–78. [CrossRef]
- Peng, Mike W. 2004. Outside directors and firm performance during institutional transitions. *Strategic Management Journal* 25: 453–71. [CrossRef]
- Pertiwi, Meilinda Brielyan, and Arief Yulianto. 2020. Board Interlocking and Firm Performance: Evidence from Indonesia. *Management Analysis Journal* 9: 26–34. [CrossRef]
- Pfeffer, Jeffrey, and Gerald R. Salancik. 1978. *The External Control of Organizations: A Resource Dependence Perspective*. Champaign: Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship, University of Illinois, Urbana.
- Pfeffer, Jeffrey, and Gerald R. Salancik. 2003. *The External Control of Organizations: A Resource Dependence Perspective*. Stanford: Stanford University Press.
- Pombo, Carlos, and Luis H. Gutiérrez. 2011. Outside directors, board interlocks and firm performance: Empirical evidence from Colombian business groups. *Journal of Economics and Business* 63: 251–77. [CrossRef]
- Richardson, R. Jack. 1987. Directorship interlocks and corporate profitability. *Administrative Science Quarterly* 7: 367–86. [CrossRef]
- Roudaki, Jamal, and Borhan Uddin Bhuiyan. 2015. Interlocking directorship in New Zealand. *Australasian Accounting, Business and Finance Journal* 9: 45–58. [CrossRef]
- Roy, Matthew R., Mark A. Fox, and Robert T. Hamilton. 1994. Board size and potential corporate and director interlocks in Australasia 1984–1993. *Australian Journal of Management* 19: 201–17. [CrossRef]
- Santos, Rafael Liza, Alexandre di Miceli Da Silveira, and Lucas Ayres Barros. 2012. Board interlocking in Brazil: Directors' participation in multiple companies and its effect on firm value and profitability. *Latin American Business Review* 13: 1–28. [CrossRef]
- Shropshire, Christine. 2010. The role of the interlocking director and board receptivity in the diffusion of practices. *Academy of Management Review* 35: 246–64.
- Simmons, Charlene. 2012. Will you be on our board of directors? We need help. Media corporations, environmental change, and resource dependency theory. *Journalism & Mass Communication Quarterly* 89: 55–72.
- Su, Kun, and Heng Liu. 2019. The effect of interlocking director network on corporate risk taking: Lessons from China. *Entrepreneurship Research Journal* 9: 20170130. [CrossRef]

- Valeeva, Diliara, Eelke M. Heemskerk, and Frank W. Takes. 2020. The duality of firms and directors in board interlock networks: A relational event modeling approach. *Social Networks* 62: 68–79. [[CrossRef](#)]
- Vidovich, Lesley, and Jan Currie. 2012. Governance networks: Interlocking directorships of corporate and non-profit boards. *Non-Profit Management and Leadership* 22: 507–23. [[CrossRef](#)]
- Xie, Zaiyang, Runhui Lin, Jie Wang, Weiwei Hu, and Ling Miao. 2020. Vicarious learning: How entrepreneurs enhance a firm's international competitiveness through learning from interlocking director network partners. *Frontiers in Psychology* 11: 689. [[CrossRef](#)]
- Yusoff, Wan Sallha, Mohd Fairuz Md Salleh, Azlina Ahmad, and Norida Basnan. 2016. Financial Hegemony, Diversification Strategies and the Firm Value of Top 30 FTSE Companies in Malaysia. *Asian Social Science* 12: 14. [[CrossRef](#)]