DIRECTOR CHARTER AND FIRM PERFORMANCE: EVIDENCE FROM CANADA

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DEDICATION

To my Grama Barb and my recently passed Grampa George who helped foster my curiosity.

ABSTRACT

This paper examines the relation between director certification and firm performance, innovation and earnings management of companies listed on the Standard & Poor's/Toronto Stock Exchange (S&P/TSX) Composite Index from 2010-2017. Using a panel regression, 2SLS and the Heckman model, I find that director certification has no significant relation to financial performance, innovation levels or earnings management. Additionally, industry regulation does not appear to impact the relationship between chartered directors and firm performance. Furthermore, there is a weak positive relationship between chartered directors and financial performance in firms with multiple complex operations compared to those that are less complex operations. This overall insignificance of chartered directors on firm performance holds for a variety of robustness checks.

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CHAPTER 1: INTRODUCTION

The rapid change in the economic and competitive environment in which firms operate requires directors to be flexible, innovative, efficient, reactive and proactive in order to fulfill their role as advisor's to management and monitors of the firm.

Given the importance of board composition, relationships with shareholders, and increased responsibilities and legal liabilities in an era post Sarbanes-Oxley, the spotlight turns to education of directors, in particular, non-executive directors. There has been increased pressure to accommodate diversity and broaden recruitment base. In 2014 the Ontario Securities Commission's proposed that Toronto Stock Exchange (TSX)-listed companies disclose their annual targets for the representation of women on their boards, the number of women in these positions, and their policies on the representation of women on their boards. Also, TSX-listed companies would be expected to report their "consideration" of the representation of women with regards to director selection and executive officer appointments. Finally, the proposal suggested TSX-listed companies report their term limits for directors. The growing importance of board composition and inclusion of directors with unconventional backgrounds and ways of thinking highlight the need for director education and training as an essential basic element of corporate governance for publicly listed firms. There has also been a call from researchers promoting, informing, educating and training directors as a means of increasing their effectiveness and the overall firm competitiveness (Gill et al., 2005; Jackson et al., 2003; McIntyre & Murphy, 2009).

Despite the importance of director education and training, it is often overlooked by companies, as the 1999 report by the TSX find that not only did most boards not have a formal orientation program for new directors, they preferred recruits to learn as they go and offered little support towards external education programs (Corbin, 1999). This report was a follow up to the

Dey Report (Dey, 1994) which heralded a new era of increased attention to the responsibilities of Canadian boards as stewards of shareholder value. It contained fourteen recommendations on corporate governance, one of which was having an orientation for new directors. The TSX requires listed companies to disclose how their board of director practices compare to those fourteen recommendations; however, this rule may lead to a mere checklist instead of an adequately designed metric to report the effectiveness of a board (McIntyre & Murphy, 2008).

In response to the need for director training, education and certification, a number of universities and other educational institutions (such as the Institute of Corporate Directors, Directors College and Institute of Governance) offer specialized programs designed to meet the needs of directors and organizations. Courses in Canada typically range from three days to four months and are taught by university professors and expert practitioners (McIntyre & Murphy, 2009). Several important topics are covered in these courses including: responsibilities, legal duties and accountabilities of directors, monitoring financial strategy, risks and disclosure and the board's role in enhancing human performance, governance, conflict and risk management, financial due diligence and the role of the audit committee, board development and performance measure, board ethics, relationships with management and staff, and human resource leadership and compensation (McIntyre & Murphy, 2009). McIntyre and Murphy (2009) provide evidence that there is emphasis among training providers on offering relatively more courses on financial literacy, building policy capacity and addressing the key competencies for director effectiveness.[1]

As the courses available to directors' increase, so too should the research on the impact those courses have on firm performance. Research that investigates whether certification and

[1] McIntyre and Murphy (2009) describe all of the external education programs offered in Canada, Australia and the UK.

training are important for good governance and ultimately for company performance will increase our understanding of composition of effective boards. Research investigating director certification is important for all boards, because effective board governance depends on both the competencies that directors possess and the training that they have received which helps them master board issues and develop skills needed to participate on the board effectively.

Research argues that training and education should increase effectiveness and ethical behaviour (Gill et al., 2005; May et al., 2014; McIntyre & Murphy, 2009). However, the impact of CEO education on firm performance is still being debated (Chen, 2014; Gottesman & Morey, 2010; King et al., 2016). Thus, in theory director training and certification should improve firm performance, but this may not be the case in practice. Therefore, the first goal of this study is to add to the mixed results within the corporate governance literature on the relationship between education and training and firm performance.

There has also been no extensive research examining if director specific training and certification actually impacts firm performance. Thus, the second goal of this paper is to fill this gap in the literature. Specifically, this paper attempts to show empirically the relation that director certification has on firm performance by investigating its impact on the firm's financial performance, innovation, earnings management and ultimately firm value.

Furthermore, this paper adds support to Ecker et al. (2013) who recommend using size instead of industry classifications when estimating the Jones Model for non-U.S. samples. The results of the Sized-Jones Model in my study results in coefficients and descriptive statistics that are similar to the classic Jones Model without the deterioration of the sample size.

This paper also finds that counter to my hypotheses, chartered directors are not consistently related to firm performance in a significant manner. Using panel regression with

firm and year fixed effects, 2SLS and the Heckman model, I find no significant relation between chartered directors and financial performance, innovation or earnings management. Furthermore, I show that the differences in industry regulation do not appear to impact the relationship between chartered directors and firm performance. I also show that chartered directors are positively related to ROA and stock return performance for firms that have complex operations. Finally, the general insignificance of director certification on firm performance holds for a number of robustness checks.

These results lead to two recommendations. The first being that director certification programs should increase both the length of their programs as well as the emphasis on how the training will improve firm performance in an attempt to improve the overall corporate governance of firms and ultimately firm performance. Second, until director specific training has been shown to be associated with enhanced firm performance, there should not be policy changes mandating director certification.

CHAPTER 2: LITERATURE REVIEW

2.1 Director Education's Role in Board Performance

In this section, I present a review of the literature on director education, board performance and firm performance.

Murphy and McIntyre (2007) create a model where both board of director characteristics and functionality may independently influence the performance of the board and in turn firm performance. There are several studies on the impact of board characteristics on firm performance (Adams et al., 2018; Agrawal & Knoeber, 1996; Ahmed & Duellman, 2007; Hermalin & Weisbach, 1998). However, there has been less research devoted to the board functionality component which includes components such as directors being reflexive, adaptive and flexible, having mutual respect and intragroup trust and having a clearly articulated agenda. The lack of research in this area is most likely a product of the difficulty in measuring and collecting data on this information.

Furthermore, director education and training can have an impact on both board characteristics and board functionality. Through increasing both the number and depth of the directors' skills, training can improve the characteristics of boards. But director training should also improve board functionality.[2] Thus, director training and education should lead to increased board performance. In fact, Murphy and McIntyre (2007) argue that with director training, boards can undertake more activities such as environmental scanning, participating in succession planning, extending their network of contacts and providing feedback and guidance to the CEO and ultimately increase firm performance.

[2] For instance, the ICD-Rotman Directors Education Program has a module that examines the fundamental board tasks and responsibilities as well as how to manage group dynamics (*ICD-Rotman Directors Education Program curiculum overview*, 2020). For a complete review of the curriculum of the ICD-Rotman Directors Education Program, see Table A1.

2.2 Education as an Investment in Human and Social Capital

In terms of board skills, Adams et al. (2018) find that the primary difference amongst boards is the skill sets available to the board. They show that firms with greater skill diversity do not perform better which they argue is due to a lack of common ground resulting from the increased skill diversity (Adams et al., 2018). These results are consistent with similarity/attraction theory which states that when individuals hold similar views there is a higher likelihood of mutual attraction along with a decrease in conflict (Murphy & McIntyre, 2007). This lack of improved performance is likely a result of requiring such a large number of attributes by directors that no one director will possess (Whitehead, 2013). Thus, boards are composed of individuals with varying attributes and skills with little overlap, in an attempt of meeting all the required skills. Director training should result in a commonality of skills across all directors on a board; thus, a common ground should be reached more readily despite having different backgrounds and differing strength levels in those skills. As such, director training and education is an important step in improving firm and board performance.

In addition to the human capital of skills, knowledge and experience, social capital is an equally important asset for directors to have (Withers et al., 2012).[3] Director's social capital can enhance trust resulting in reciprocation that reduces transaction costs, facilitates exchange of knowledge and information as well as provides the ability to alter the firm's external environment (Kim & Cannella, 2008).

Furthermore, Kim (2007) finds that social capital has a significantly positive impact on firm performance as measured by Tobin's Q.[4] An important but overlooked aspect of director

[3] Withers et al. (2012) define social capital as the prestige and connections one has; which presumably can be developed through networking at various events.
[4] Kim (2007) measures social capital as affiliations with economic associations, government institutions and elite education.

education and training is the social network it builds for the directors that attend. Some of the training courses have time set aside specifically for networking, illustrating the importance that the educational institutes place on networking and building the social capital along with the human capital.

2.3 Impact of Education on Firm Performance

In reviewing the literature, I examine the impact of education within several contexts such as financial performance, firm innovation and earnings management as well as other management decisions.

In terms of organizational performance, the Upper Echelons Theory (Hambrick & Mason, 1984) argues that managerial backgrounds can at least partially predict organizational outcomes. Hambrick and Mason (1984) also argue that education indicates both a knowledge and skill base and that it may impact firm performance. Numerous studies have shown this impact, but the evidence on formal education and training at the executive level appears to be mixed. While a number of studies find a positive relationship between more and better education on performance (Bamber et al., 2010; Bantel & Jackson, 1989; Becker, 1970; Call et al., 2017; Cheng et al., 2010; Erin et al., 2019; Papadimitri et al., 2020), others illustrate either a negative relationship or no significant positive relationship (Chen, 2014; Gottesman & Morey, 2010; Miller & Xu, 2019). In addition, several other studies show mixed results depending on the type of education (Gottesman & Morey, 2006; King et al., 2016), while some studies show that education makes a difference in decisions made by executives (Bertrand & Schoar, 2003; Palmer & Barber, 2001; Plaksina et al., 2019).

Prior research has not come to a consensus on the impact that additional or better quality education has on financial performance. Cheng et al. (2010) finds that Chinese chairpersons that

have an undergraduate degree or above are associated with improved EPS, ROA and annual stock returns. Similarly, Erin et al. (2019) finds a positive relationship between financial education and ROA in Nigerian stocks; however, they only control for company size and do not address endogeneity concerns which potentially influences their results. Gottesman and Morey (2006); King et al. (2016) find that the type of education affects financial performance results, specifically MBA's are associated with better performance and Ph.D.'s and undergraduate degrees have no significant impact. Gottesman and Morey (2006) argue that one potential cause for this result is that the time between graduation and starting their CEO tenure is lengthy enough to diminish the benefit of a certain education. This reasoning aligns with Lester et al. (2008) who finds that human and social capital can deteriorate over time. Whereas, King et al. (2016) reason that a Ph.D. may matter more in an output-oriented industry. Hence, it is possible that director certification matters more for some industries and less for others. Furthermore, Darmadi (2013) finds a limited albeit a positive relationship between financial performance and the amount and quality of CEO and board education in Indonesia.

Next, I review the literature on the impact of education on firm innovation. Similar to financial performance, the empirical findings in the innovation literature is also mixed. Some research shows that education may increase innovation levels (Bantel & Jackson, 1989; Becker, 1970; Kimberly & Evanisko, 1981). However, in a more recent study, Miller and Xu (2019) find that CEO's with an MBA significantly reduce research and development expenditure. This result is consistent with Hambrick and Mason (1984) who argue that individuals who pursue MBA's are less innovative and that business schools are not equipped to develop innovativeness amongst its students.

Additionally, I review the literature regarding earnings management and education and the empirical results are mixed. For example, Bamber et al. (2010) finds that managers with an MBA tend to guide earnings expectations upwards but are more accurate. Call et al. (2017) shows that the education level in the area of which a firm operates has a positive relationship with accrual quality and a negative relationship with restatements. Contrarily, Miller and Xu (2019) find that CEO's with an MBA are positively related to higher discretionary accruals.

Finally, I review the literature on education at the executive level and management decision making. For example, Wang et al. (2017) find that Taiwan boards that are more educated tend to hold more cash than less educated boards. In contrast, Bertrand and Schoar (2003) find that managers with an MBA are more likely to follow an aggressive strategy and are more likely to respond to Tobin's Q than cash flow. In addition, education quality also appears to impact executive decisions. For example, Lucey et al. (2013); Palmer and Barber (2001) find little evidence that elite secondary and undergraduate education impacts M&A activity. However, Palmer and Barber (2001) find that CEO's with an MBA are more likely to complete diversifying acquisitions. Additionally, Plaksina et al. (2019) finds that elite education quality is associated with lower M&A activity, especially if the CEO has previously received awards. Also, they find that elite education is not associated with better M&A announcement returns.

CHAPTER 3: HYPOTHESIS DEVELOPMENT

In this section, I provide my three main hypotheses on the relation that chartered directors have on firm performance as well as two additional exploratory hypotheses which involve moderating variables. The three main hypotheses are summarized in Table 1.

Table 1

Summary of the Three Main Hypotheses

Hypothesis	Measure of Firm Performance	Dependent Variable	Predicted Coefficient of Chartered Directors
1	Financial Performance	Tobin's Q	+
		ROA	+
		Annual Stock Return	+
2	Innovation	R&D / Sales	+
3	Earnings Management	Discretionary Accruals	-

3.1 Hypothesizing the Relationship of Chartered Directors and Financial Performance

As mentioned, increasing social capital is one benefit of attending director training. Hillman (2005) find that firms with former politicians on their boards have a significant increase in their market capitalization, illustrating that having a social network with others that are in positions to help the firm are beneficial to firm value.

Empirically, the overall effect of education on financial performance is mixed; as research shows that the effect of MBA's on financial performance is positive, but other degrees have no significant relationship (Gottesman & Morey, 2006; King et al., 2016). One explanation Gottesman and Morey (2010) provide for their insignificant results is that the skills learned in the CEO's education do not impact firm performance once they become a CEO. This is consistent with why Jackson et al. (2003) calls for board development that focuses on adding value to the company and showing directors how the development will improve the firm's financial

performance. McIntyre and Murphy (2009) shows that there is an emphasis placed on financial literacy within Canadian director certification programs which should ensure that chartered directors understand how to and are able to apply their certification towards improving the firm's financial performance.

Furthermore, the Einstellung effect occurs when the first idea that comes to an individual's mind inhibits alternative solutions to be considered; where the first idea that comes to mind is triggered by a similar problem that has been experienced (Bilalić et al., 2008). Because director certification programs in Canada are taught by university professors and expert practitioners, chartered directors are exposed to a multitude of different perspectives. Additionally, the wider selection of topics in Canadian director certification courses compared to those in the United Kingdom and Australia (McIntyre & Murphy, 2009) allows chartered directors to be exposed to numerous optimal and sub-optimal decisions to problems they are likely to face in the future. Thus, chartered directors should experience a reduction in the seriousness of Einstellung effect and as a result they should be more likely to identify the optimal solution. Therefore, firms with more chartered directors should make more optimal solutions, resulting in improved financial performance, thus leading to my first hypothesis:

Hypothesis 1: The percentage of directors who possess director training will be positively related to firm value as measured by Tobin's Q, ROA and annual stock returns.

3.2 Hypothesizing the Relationship of Chartered Directors and Innovation

Individuals who hold multiple directorships can gain additional knowledge and skills from one directorship and apply it to another especially when the directorships are in the same industry where the industry knowledge is more easily applicable. Gu and Zhang (2016) find that firms with directors who hold multiple directorships within the same industry have increased

innovation due to the advising role of directors. Additionally, firms with a higher percentage of directors with technology expertise have increased innovation (Li et al., 2019). Both of these studies illustrate that an increase in director specific knowledge has a positive impact on firm value via innovation.

In terms of education specifically, education may be an indicator of a person's values and cognitive preferences (Hambrick & Mason, 1984) and thus, more educated individuals should be able to generate and implement innovative solutions (Bantel & Jackson, 1989). For example, Bantel and Jackson (1989) shows that more educated top management teams at banks are more innovative. Furthermore, Kimberly and Evanisko (1981) shows that the education level of hospital administrators is a positive predictor of innovation levels.

Therefore, because director certification should increase the knowledge of directors, director training should positively impact firm innovation leading to my second hypothesis:

Hypothesis 2: The percentage of directors who possess director training will be positively related to firm innovation.

3.3 Hypothesizing the Relationship of Chartered Directors and Earnings Management

Prior literature shows that boards with greater financial expertise tend to have less earnings management. For example, Xie et al. (2003) find that audit committees that have more directors with corporate or financial backgrounds are associated with firms that are less likely to partake in earnings management. Similarly, Bedard et al. (2004) find that there is a negative relationship between aggressive earnings management and the presence of both a financial expert and governance expert on the audit committee. Additionally, Krishnan and Visvanathan (2008) find that accounting expertise contributes to better monitoring which results in an enhanced quality of financial reporting. The market also values financial expertise on the audit committee,

as there is a positive market reaction when new directors with financial expertise are appointed to the audit committee (Davidson et al., 2004).

In addition to financial literacy, education in general plays an important role in reducing earnings management. Bamber et al. (2010) shows that education type is important in voluntary financial disclosures. Specifically, they find that managers with an MBA degree guide expectation upward but are more accurate whereas those with legal backgrounds favour downward guidance and those with accounting and finance backgrounds demonstrate conservatism. Education has also been shown to improve voluntary disclosure on other aspects as well. For example, Lewis et al. (2014) find that firms with a CEO that hold an MBA are more likely to voluntary disclose environmental information. Furthermore, Call et al. (2017) studies the average education level of the geographical area that firms operate in and finds that higher average education levels are associated with better earnings quality.

Additionally, more qualified directors are more likely to serve on committees (Fedaseyeu et al., 2018). This provides evidence that directors that have more education are more likely to be in a position that has greater influence on earnings management. Therefore, because chartered directors are more educated and more likely to be on the audit committee I hypothesize:

Hypothesis 3: The percentage of directors who possess director training will be inversely related to earnings management.

3.4 Hypothesizing the Moderating Effect of Industry on Chartered Directors

There has been a multitude of research examining industry classification and firm performance (Goddard et al., 2009; Hawawini et al., 2003; McGahan & Porter, 2005; McNamara et al., 2005; Ruefli & Wiggins, 2003). While there is no consensus in the literature on the extent

that industry affects firm performance, the findings overwhelmingly show that industry effects do matter.

For instance, Lev (1969) finds that firms adjust their financial ratios to that of the industry average when there is a difference between their ratio and the industry average the period before. Furthermore, Hao et al. (2011) find that returns of less profitable firms are more sensitive to industry level news, especially when the news is positive compared to more profitable firms within an industry.

Furthermore, the differences in regulation for different industries also matters. For instance, there is a positive relationship between board monitoring and advising with industry regulation (Becher & Frye, 2011; Pugliese et al., 2014). Furthermore, He and Yang (2014) show that industry regulation moderates the relationship between audit committee composition and earnings management.

Given the effect industry has on determining firm performance and the differences in regulatory levels across different industries, it is expected that industry will moderate the relationship of chartered director and firm performance and hence:

Hypothesis 4: The regulatory differences between industries will impact the relationship between chartered directors and firm performance.

3.5 Hypothesizing the Moderating Effect of Firm Complexity on Chartered Directors

Diversifying a firm greatly impacts financial performance, innovation and even earnings management. However, the empirical findings in the literature on the effect of international diversification on firm performance is mixed (Hitt et al., 2006). Studies such as Elsas et al. (2010) find a positive relationship between firm complexity and performance in banks. Other

studies find more of a curvilinear relationship such as an inverted U shape (Hitt et al., 1997) and a S-shape in Japanese firms (Lu & Beamish, 2004).

Furthermore, innovation is important in diversification. For example, Hitt et al. (1997) finds that innovation is positively related to diversification while Kotabe et al. (2002) finds that innovation moderates the effect of international diversification on both operational and financial performance. In terms of earnings management, Vasilescu and Millo (2016) find a negative relationship between industrial diversification and earnings management, but no significant relationship between geographic diversification and earnings management.

The more complex the firm, a greater breadth of knowledge and expertise is required of the board to effectively monitor and advise management. Prior literature finds that there is a positive relationship between firm complexity and education (Berry et al., 2006; Hitt et al., 2006; Tihanyi et al., 2000). For example, Berry et al. (2006) finds that CEO's of more complex firms are more likely to be both more and better educated than CEO's at less complex firms. This increase in education in more complex firms is important because effective governance makes a large difference in more complex firms. For example, Chen and Chen (2012) find that in complex firms, better governance is associated with more efficient fund allocation. Additionally, 16-21% of the diversification discount can be attributed to poor corporate governance (Hoechle et al., 2012). Similarly, Tong (2011) finds that firm diversification decreases the value of cash for firms with poor corporate governance, but has no effect on firms with higher levels of corporate governance.

Board characteristics also differ relative to the complexity level of a firm. For example, Lehn et al. (2009) finds an inverse relationship between board size and firm complexity. They argue this occurs because more complex firms require quicker decision making by the board.

Following this reasoning of complex firms needing quicker decision making, it would be expected that more diverse firms have more homogenous boards (Knight et al., 1999); however, Kim and Rasheed (2014) finds boards that are more heterogeneous in tenure and functional experience are better for complex and diversified firms. They also find that education diversity amongst directors does not impact firm performance of unrelated diversification.

Because of the increased need of complex firms to have more educated and effective boards, complex firms should benefit more from chartered directors than less complex firms; leading to my fifth hypothesis:

Hypothesis 5a: There is a positive relationship between chartered directors and financial performance for more complex firms.

Hypothesis 5b: There is an inverse relationship between chartered directors and earnings management for more complex firms.

CHAPTER 4: DATA

The sample contains publicly traded firms that are listed on the Standard & Poor's/Toronto Stock Exchange (S&P/TSX) Composite Index for the period ranging from January 1, 2010 to December 31, 2017. Accounting and stock return data is retrieved from Compustat. Corporate governance data are hand collected from annual proxy circular statements which are retrieved from the SEDAR website.

My sample consists of 1,853 firm-year observations. Observations that have missing chartered director data are dropped. Therefore, my final sample consists of 365 unique firms for a total of 1,834 firm-year observations. The number of firms per year ranges from 209 in 2010 to 240 in 2014. Since the financial performance and innovation dependent variables are measured at time *t+1* and all independent variables are measured at time *t*, firms trading at time *t* but not *t+1* are dropped. Finally, stock returns are winsorized at the 5% and 95% while all other continuous variables are winsorized at the 1% and 99% level.[5]

[5] Stock returns are winsorized at the 5% and 95% level because winsorizing stock returns at 1% and 99% did not remove outliers.

CHAPTER 5: METHODOLOGY

5.1 Measures of Financial Performance

To examine the relation between chartered directors and firm performance, a panel regression with firm and year fixed effects is used with the standard errors corrected for firm-level clustering. I estimate the following equation to examine the relationship with firm performance:

$$FP_{i,t+1} = \beta \text{Charter}_{i,t} + \gamma X_{i,t} + \varepsilon_{i,t} \quad (1),$$

where $FP_{i,t+1}$ is financial performance as measured by Tobin's Q, ROA and annual stock returns for firm i at time $t+1$. $\text{Charter}_{i,t}$ is the percentage of chartered directors in firm i at time t and $\varepsilon_{i,t}$ is an error term.

The vector X is composed of firm and board characteristics shown to affect firm performance. Following Agrawal and Knoeber (1996); Baulkaran (2014); Hermalin and Weisbach (1991), I use financial leverage (total debt/total assets), institutional blockholder ownership, managerial shareholdings, board independence, firm size (log of assets), average board tenure and board size as control variables. Additional control variables include: female directors (Carter et al., 2003), industry related experience (Dass et al., 2014; Kor & Sundaramurthy, 2009), average age of the board (Johnson et al., 2013), financial literacy (Xie et al., 2003), individual blockholder ownership, five year revenue growth and CEO duality.[6]

5.2 Measures of Innovation

To examine the relation between director certification and firm innovation, a panel regression with firm and year fixed effects is used with standard errors that are corrected for firm-level clustering. I estimate (2) to examine the effects on firm innovation.

[6] Please refer to Table A2 for a more detailed description of the variables used.

$$\text{Innovation}_{i,t+1} = \beta\text{Charter}_{i,t} + \gamma X_{i,t} + \varepsilon_{i,t} \quad (2),$$

where $\text{Innovation}_{i,t+1}$ is measured as R&D plus capital expenditures scaled by sales for firm *i* at time *t+1* (Gu & Zhang, 2016; Li et al., 2019).[7] The vector X is composed of the control variables common in innovation literature (Gu & Zhang, 2016; Li et al., 2019). Specifically, I control for Tobin`s Q and profitability (ROA) (Chandy & Tellis, 2000; Thornhill, 2006) in addition to the vector of control variables included in (1) and are defined in Table A2. $\varepsilon_{i,t}$ is an error term.

5.3 Measures of Earnings Management

Two models are used to examine the relation between director certification and earnings management. The first is the Jones Model (Jones, 1991) using a cross section regression for each industry-year combination as proposed by Subramanyam (1996). The Modified Jones Model (Dechow et al., 1995; Jones, 1991; Yu, 2008) is preferred to the Jones Model because it is designed to remove the tendency of the Jones Model to measure discretionary accruals with error when discretion is exercised over revenues; however, the Jones Model is used due to limited data available for the net receivables of the firm's in my sample. Additionally, despite the popularity of the Jones Model in the literature, there has been criticism of it. For example, Dechow et al. (1995) notes that the Jones Model's estimates of earnings management are biased towards zero. Therefore, in addition to the Jones Model, I use the Jones Model that includes an intercept term in addition to using size-year combinations for the cross-section regression (Ecker et al., 2013; Kothari et al., 2005) as opposed to industry-year combinations (henceforth referred to as the Sized-Jones Model).

[7] I also scaled R&D plus capital expenditures by assets as an additional measure of innovation and led to similar results. The natural logarithm of 1 plus the number of patents filed for was also examined; however, due to the majority (89%) of my sample having no patents filed for, the results were not reported.

5.3.1 Jones Model

In estimating the Jones Model, I follow the literature using discretionary accruals as a proxy for earnings management (Dechow et al., 1995; Jones, 1991; Subramanyam, 1996). I first run the following cross-section regression for each individual combination of industry (based off the first two digits of the SIC code) and year, provided there are at least 11 observations (10 observations plus the event firm-year observation) for all 7 years (2011-2017) in my sample, in order to estimate the coefficients α_1 α_2 and α_3 in the equation below.

$$TA_{i,t} = \alpha_1 \left(\frac{1}{A_{i,t-1}}\right) + \alpha_2(\Delta REV_{i,t}) + \alpha_3(PPE_{i,t}) + \varepsilon_{i,t} \quad (3),$$

where $TA_{i,t}$ is total accruals (Net Income less Cash Flow from Operations) in year *t* for firm *i* scaled by lagged total assets for firm *i*. $A_{i,t-1}$ is total assets at time *t-1* for firm *i*, $\Delta REV_{i,t}$ is revenues at time *t* for firm *i* less revenues at time *t-1* for firm *i* scaled by lagged total assets for firm *i*, and $PPE_{i,t}$ is gross property, plant and equipment at time *t* for firm *i* scaled by total assets at time *t-1* for firm *i*.

I then use the values of $\hat{\alpha}_1$, $\hat{\alpha}_2$ and $\hat{\alpha}_3$ to calculate nondiscretionary accruals with the following model:

$$NDA_{i,t} = \hat{\alpha}_1 \left(\frac{1}{A_{i,t-1}}\right) + \hat{\alpha}_2(\Delta REV_{i,t}) + \hat{\alpha}_3(PPE_{i,t}) \quad (4),$$

where $NDA_{i,t}$ is the nondiscretionary accruals for firm *i* at time *t*; therefore, I can derive discretionary accruals as:

$$DA_{i,t} \equiv \varepsilon_{i,t} = TA_{it} - NDA_{i,t} \quad (5),$$

where DA is discretionary accruals for firm *i* at time *t*. Since the variables are all scaled by lagged total assets, discretionary accruals is measured as a percentage of firm *i*'s assets (Yu, 2008).

Managers may manipulate earnings in both a positive and negative direction depending on the situation they face; therefore, following the literature (Bergstresser & Philippon, 2006; Yu, 2008), I use the absolute value of discretionary accruals since I am interested in the total effect of earnings manipulations. I then estimate the relation between director certification and discretionary accruals with the following firm and year fixed effects panel regression with standard errors that are corrected for firm-level clustering:

$$DA_{i,t} = \beta Charter_{i,t} + \gamma X_{i,t} + \varepsilon_{i,t} \quad (6),$$

where vector X is composed of characteristics of the firm and board that may affect earnings management. Specifically, it is the same vector of control variables included in (2) (Ahmed & Duellman, 2007; Ali & Zhang, 2015; Xie et al., 2003; Yu, 2008).

5.3.2 Sized-Jones Model

Ecker et al. (2013) find that for non-U.S. samples, using lagged assets perform at least as well as industry classification with less sample attrition. Therefore, instead of using each unique industry and year combination, I follow Ecker et al. (2013) and use size (lagged total assets) instead of industry classification for the cross sectional regression. Specifically, I sort my sample into deciles for each year based off the lagged total assets. I then rerun (3) with the addition of an intercept term (Ecker et al., 2013; Kothari et al., 2005) for each individual size decile and year combination. I then rerun (4) – (6) with these new estimated values in order to estimate the effect that chartered directors have on earnings management.

5.4 Industry Interaction Measures

To examine the moderator effect of industries, I create dummy variables for each two digit SIC industry. Wholesale and retail trade are combined into a single industry. Additionally, since there are no firms in the agriculture, forestry and fishing industry, or the public

administration industry, those industry dummy variables are not included in the regressions. I then rerun (1) and only the Sized-Jones Model version of (6) using the same methodology as described above, except now I also include both the interaction term between chartered directors and each industry dummy along with each industry dummy.[8]

5.5 Firm Complexity Interaction Measures

To examine the role of firm complexity as a moderator, I create two different firm complexity measures similar to Berry et al. (2006). The first is a dummy variable that is equal to one if the firm operates in multiple business segments and zero otherwise. To create the second dummy variable, I first start by creating a business segment Herfindahl variable that is equal to one less the firm's business segment sales Herfindahl index (Berry et al., 2006). I then create a Herfindahl dummy variable that is equal to 1 if the firm's business segment Herfindahl variable is greater than zero, and zero if the business segment Herfindahl is equal to zero.[9] I then rerun (1) and (6) using the same methodology as described above, except now I also include the interaction term between chartered directors and both firm complexity dummy variables in addition to both firm complexity dummy variables.[10]

[8] When I estimate the moderating effect that industry has on earnings management using the Jones Model, there are no results for the construction or service industry. This occurs because the Jones Model requires at least 11 observations for each combination of industry and year, otherwise the observations are dropped for the entire industry in order for the Jones Model to run. Therefore, I only use the Sized-Jones Model.
[9] I also use geographic segments in the Herfindahl variable since only 77% of geographic Herfindahl variable is equal to 0. The results are consistently similar to those used with the business segments.
[10] I run separate regressions for both firm complexity measures.

CHAPTER 6: DEALING WITH ENDOGENEITY CONCERNS

Endogeneity is a potential problem due to both the joint-endogeneity problem (Hermalin & Weisbach, 2003) and sample selection bias (García Lara et al., 2009).

Joint endogeneity is a potential concern since chartered directors should improve firm performance, but firms with better performance are also likely to attract chartered directors because board positions at firms with better performance are seen as more attractive positions for directors (Masulis & Mobbs, 2014). Using a one-year lead dependent variable in the panel regressions partially addresses this problem; however, since there is a strong correlation between firm performance measures at time t and $t+1$, this does not fully address the joint-endogeneity issue (Hermalin & Weisbach, 2003).

In terms of the sample selection bias, directors choose whether or not they become chartered based on numerous underlying circumstances affecting the decision (Hambrick & Mason, 1984). Therefore, the decision to become chartered cannot be treated as randomly assigned (Heckman, 1979). Furthermore, firms select the directors they nominate for board positions based on a variety of underlying circumstances. As such, the decision for boards to have a varying degree of chartered directors cannot be treated as random either.

These two biases can be thought of in a similar context to that of García Lara et al. (2009) where I hypothesize a positive relationship between chartered directors and firm performance because chartered directors are better; however, the alternative hypothesis predicts that firms with worse firm performance nominate chartered directors as a method of trying to improve the markets perception of the firm, firm performance or a combination of the two.

To address these problems, I use the two-stage least squares (2SLS) test as well as the Heckman selection model (Heckman, 1979) in addition to the panel regression. In this section, I describe the method used for both the 2SLS and the Heckman model.

6.1 Two-Stage Least Squared (2SLS)

To address the potential joint endogeneity problem, I use a 2SLS technique. My instrument is a dummy variable that is equal to one if firms explicitly state that they will pay for at least some continuing director education training and zero otherwise.[11] Firms that offset partial or full costs of continuing education remove a potential barrier keeping directors from becoming certified. Additionally, firms that bear continuing education costs for their directors may send a message that continuing education is important, leading to an expectation that directors partake in continuing education. As such, firms that bear some or all of the costs for continuing education should have a higher percentage of their board that is certified compared to firms that do not bear any costs for continuing education.

In order for this instrument to be valid, it must be correlated with the percentage of the board that is chartered and it must be uncorrelated with the dependent variables. As shown in Panel A of Table A3, the fitted value of my instrument is not significantly correlated with any of the financial performance or innovation dependent variables. Furthermore, Panel B of Table A3 illustrates that my instrument is positively and significantly correlated with the percent of the board that is chartered; however, the correlation is not high and as such I only treat it as a weak instrument.

For further robustness, Column I in Table A4 presents the first stage regression results of chartered directors on firms funding continuing director education. Column II presents the same

[11] The data for this is hand collected from annual proxy circular statements.

regression results but with the inclusion of firm characteristics as control variables. Both models use firm and year fixed effects panel regression. The governance variables are not used as control variables in Column II because the inclusion of them may cause overidentification of the model. As illustrated in Table A4, funding director education is positive and significant for both models, providing further evidence for treating funding director education as a weak instrument.

6.2 Heckman Model

To address the potential sample selection bias, I use the Heckman model with the exclusion restriction as the instrument used in the 2SLS tests. While similar in their purpose, the exclusion restriction in the Heckman model should predict whether an observation appears in the sample and is incorporated to compute the Inverse Mills Ratio (IMR) (Certo et al., 2016). To this end, funding director education should predict whether directors who are chartered work for a specific firm for similar reasons mentioned in the prior section.

The first step in the Heckman model is a probit regression where the dependent variable is a dummy variable that equals one if the firm has at least one chartered director and 0 otherwise. Column III in Table A4 provides the probit results with the funding director education dummy as the independent variable. Column IV in Table A4 provides the probit results with the inclusion of the exogenous firm characteristics as control variables. As shown in both Column III and Column IV, funding director education is positive and highly significant for all models illustrating that it does a good job predicting whether firms will have a chartered director or not, providing evidence that it is a good choice for the exclusion restriction within the Heckman model.

CHAPTER 7: RESULTS

7.1 Descriptive Statistics

Table 2 presents the descriptive statistics for my sample. The mean percent of directors that hold a charter designation in my sample is 12.1%. The mean Tobin's Q_{t+1} is 1.15, the mean ROA_{t+1} is 1.6% and annual stock returns at time *t+1* has a mean of -2.2%. Innovation levels at time *t+1* are 27.5%. Furthermore, both earnings management models produce similar discretionary accruals of 0.04 for the Jones Model and 0.039 for the Sized-Jones Model; however, the Sized-Jones Model has 103 more observations than the Jones Model providing evidence that Sized-Jones Model is similar to the Jones Model without as much sample deterioration.

Table 2

Descriptive Statistics

Variable	N	Mean	Median	Std. Dev.
Dependent Variables				
Q_{t+1}	1719	1.152	0.970	0.817
ROA_{t+1}	1719	0.016	0.027	0.098
SR_{t+1}	1704	-0.022	-0.014	0.323
$Innovation_{t+1}$	1346	0.275	0.125	0.49
Jones Model DA_t	1172	0.040	0.027	0.041
Sized-Jones Model DA_t	1275	0.039	0.028	0.039
Variable of Interest				
Charter	1834	0.121	0.080	0.158
Control Variables				
Financial Literacy	1834	0.656	0.670	0.249
Female Directors	1719	0.140	0.125	0.117
Average Board Tenure	1719	7.791	7.430	3.422
Average Age of Directors	1719	60.939	61.080	3.520
Industry Related Experience	1834	0.660	0.670	0.220
Board Size	1719	9.611	9.000	2.832
CEO Dual	1719	0.139	0.000	0.346
Board Independence	1719	0.780	0.800	0.125
Leverage	1719	0.246	0.228	0.169
Size	1719	8.514	8.211	1.634
5-year Revenue Growth	1719	0.318	0.124	1.108
ROA_t	1719	0.025	0.030	0.082
Q_t	1719	1.244	1.036	0.902
Individual Ownership	1719	0.028	0.000	0.107

Variable	N	Mean	Median	Std. Dev.
Institutional Ownership	1719	0.120	0.000	0.180
Insider Shareholdings	1719	0.015	0.000	0.057
Jones Model				
TA	1263	-0.064	-0.057	0.075
Inverse of Total Assets	1661	0.000	0.000	0.001
REV	1520	0.000	0.000	0.000
PPE	1511	0.770	0.837	0.599
Sized-Jones Model				
TA	1366	-0.064	-0.057	0.075
Inverse of Total Assets	1765	0.000	0.000	0.001
REV	1624	0.000	0.000	0.000
PPE	1615	0.741	0.789	0.595

Note. Detailed variable definitions are provided in Table A2. All continuous variables are winsorized at the 1% level at both ends of the distribution. The variables under (Sized) Jones Model are the variables used to calculate the discretionary accruals using the (Sized) Jones Model.

In terms of corporate governance variables, the mean board size is 9.61 directors (median is 9) with a mean age of 60.9 (median is 61) and a mean tenure length of 7.79 years (median is 7.43). Also, 65.6% (median of 67%) of the directors in my sample are financially literate while 2.8% (median is 0%) of the shares outstanding are owned by individual blockholders, 12% (median is 0%) of the shares are held by institutional blockholders and 1.5% (median of 0%) are held by management.

The variables under the Jones Model and Sized-Jones Model section in Table 2 provide the descriptive statistics for the variables used to calculate the discretionary accruals under the respective models. Again, it is important to note that the descriptive statistics for the variables under both models are very similar while the Sized-Jones Model consistently has a larger sample size.

Table 3 presents means and medians for firms with at least one chartered director and for firms that have no chartered directors along with the test for differences across sub-samples. There are statistically significant differences in both the mean and median of the majority of the variables used. Of particular importance, Tobin's Q_{t+1} has a statistically smaller mean of 9.1%

for firms with chartered directors than without, while there is no statistical or economic difference in ROA_{t+1}. The annual stock $returns_{t+1}$ is not statistically significantly different (mean difference of 0.9% and median difference of 0.3%) for firms with chartered directors and those without chartered directors. Innovation levels at time *t+1* are significantly smaller (mean difference of -8%) for firms with chartered directors. Discretionary accruals under both the Jones Model and Sized-Jones are significantly smaller (mean difference of -0.005 for Jones Model and -0.004 for Sized-Jones Model) for firms with chartered directors.

Table 3

Difference in the Variables' Means and Medians for Firms with and Without Chartered Directors

	Firms with Chartered Directors			Firms without Chartered Directors			Difference	
Variable	N	Mean	Median	N	Mean	Median	Mean	Median
Dependent Variables								
Q_{t+1}	965	1.112	0.936	754	1.203	1.026	-0.091**	-0.090**
ROA_{t+1}	965	0.016	0.028	754	0.016	0.025	-0.000	0.003
SR_{t+1}	966	-0.018	-0.013	738	-0.027	-0.016	0.009	0.003
$Innovation_{t+1}$	755	0.240	0.106	591	0.320	0.145	-0.080***	-0.039***
Jones Model DA_t	686	0.038	0.025	486	0.043	0.031	-0.005**	-0.006**
Sized-Jones Model DA_t	748	0.038	0.027	527	0.042	0.029	-0.004*	-0.002*
Variable of Interest								
Charter	1021	0.216	0.167	813	0.000	0.000	0.216***	0.167***
Control Variables								
Financial Literacy	1021	0.664	0.690	813	0.645	0.643	0.019	0.047
Female Directors	965	0.158	0.143	754	0.117	0.111	0.041***	0.032***
Average Board Tenure	965	7.755	7.380	754	7.837	7.560	-0.082	-0.180
Average Age of Directors	965	61.113	61.200	754	60.716	60.895	0.396**	0.305**
Industry Related Experience	1021	0.662	0.670	813	0.658	0.670	0.003	0.000
Board Size	965	9.753	9.000	754	9.428	9.000	0.325**	0.000**
CEO Dual	965	0.106	0.000	754	0.182	0.000	-0.076***	0.000***
Board Independence	965	0.799	0.833	754	0.755	0.750	0.044***	0.083***
Leverage	965	0.255	0.240	754	0.234	0.208	0.021**	0.032**
Size	965	8.604	8.407	754	8.400	7.933	0.205***	0.474***
5-year Revenue Growth	965	0.254	0.122	754	0.401	0.132	-0.147***	-0.010***
ROA_t	965	0.024	0.029	754	0.026	0.031	-0.002	-0.001
Q_t	965	1.189	0.982	754	1.314	1.102	-0.125***	-0.121***

	Firms with Chartered Directors			Firms without Chartered Directors			Difference	
Variable	N	Mean	Median	N	Mean	Median	Mean	Median
Individual Ownership	965	0.030	0.000	754	0.027	0.000	0.003	0.000
Institutional Ownership	965	0.109	0.000	754	0.134	0.065	-0.025***	-0.065***
Insider Shareholdings	965	0.011	0.000	754	0.019	0.000	-0.008***	0.000***
Jones Model								
TA	735	-0.063	-0.055	528	-0.066	-0.061	0.003	0.006
Inverse of Total Assets	891	0.000	0.000	629	0.000	0.000	-0.000***	-0.000***
REV	891	0.000	0.000	629	0.000	0.000	-0.000*	-0.000*
PPE	814	0.758	0.815	559	0.791	0.875	-0.033	-0.060
Sized-Jones Model								
TA	797	-0.062	-0.055	569	-0.067	-0.061	0.005	0.006
Inverse of Total Assets	973	0.000	0.000	687	0.000	0.000	-0.000*	-0.000*
REV	953	0.000	0.000	671	0.000	0.000	-0.000	0.000
PPE	895	0.733	0.755	617	0.753	0.826	-0.020	-0.071

Note. All variable definitions are provided in Table A2. The variables under (Sized) Jones Model are the variables used to calculate the discretionary accruals using the (Sized) Jones Model. Firms with chartered directors include any firms with one or more chartered directors. Firms without chartered directors include any firms with zero chartered directors. A t-test is used to test if the means of the two groups are equal to each other. A Wilcoxon signed rank test is used to test if the medians of the two groups are equal to each other. *p<.1. **p<.05. ***p<.01

In terms of corporate governance variables, boards with at least one chartered director have a significantly larger percent of female directors (mean difference of 4.1%), average age (mean difference of 0.396), board size (mean difference of 0.325), board independence (mean difference of 0.044), leverage (mean difference of 2.1%) and firm size (mean difference of 0.2). There is also a lower percent of CEO duality (mean difference of -7.6%) and five year-revenue growth (mean difference of -14.7%) for firms with chartered directors. Additionally, neither financial literacy (mean difference of 1.9%) or industry experience (mean difference of 0.3%) is significantly different in firms with and without chartered directors. In terms of share ownership; there is no difference in individual blockholder ownership, but there is a decrease in both institutional blockholder (mean difference of -2.5%) and insider holdings (mean difference of -0.8%). Again, both the Jones Model and Sized-Jones Model variables are similar in size, except

the significance levels vary dramatically for the inverse of total assets even though the economic significance is unchanged.

Table 3 provides evidence that there are significant differences in firms that have and do not have chartered directors; however, the coefficients are not all consistent with my hypotheses.

7.2 Results of Chartered Directors' Relationship with Financial Performance

7.2.1 Financial Performance Results

Table 4 provides the results of the panel regression, 2SLS and Heckman model for the financial performance measures. Panel A of Table 4 shows that chartered directors are inversely related to Tobin's Q in all three models; though it is only statistically significant in the Heckman model. The insignificant lambda in the Heckman model does not indicate an absence of selection bias (Certo et al., 2016); therefore, the results of the Heckman model illustrate that chartered directors have a significant inverse relationship with Tobin's Q after controlling for selection bias. However, due to the lack of significance in the other two models, especially using the 2SLS, I cannot conclude that chartered directors have a significant inverse relation to Tobin's Q. Panels B and C in Table 4 provide further evidence that chartered directors are not related with financial performance as it provides the results when the dependent variable is ROA and annual stock returns, respectively. The coefficients for chartered directors are negative when using both panel regression and the Heckman model in Panel B, but when using 2SLS it becomes positive; though all are statistically insignificant. Panel C in Table 4 illustrates that when using panel regression, 2SLS and the Heckman model, chartered directors are negatively and insignificantly related to annual stock returns.

Table 4

Financial Performance Regression Results

Variable	Panel Regression	2SLS	Heckman Model
Panel A: Dependent Variable: Tobin's Q			
Charter	-0.233	-5.751	-0.451***
	(-1.25)	(-0.42)	(-2.83)
Financial Literacy	-0.064	0.148	0.155
	(-0.39)	(0.25)	(1.60)
Female Directors	0.310	1.133	0.781**
	(1.29)	(0.54)	(2.03)
Average Board Tenure	-0.007	-0.017	0.008
	(-0.67)	(-0.58)	(1.00)
Average Age of the Board	-0.004	-0.011	-0.004
	(-0.37)	(-0.48)	(-0.58)
Industry Related Experience	0.039	-0.372	-0.275**
	(0.20)	(-0.34)	(-1.98)
Board Size	-0.039***	-0.044*	0.011
	(-3.38)	(-1.93)	(0.88)
CEO Dual	-0.040	0.116	-0.108
	(-0.57)	(0.28)	(-1.15)
Board Independence	-0.040	0.243	0.334
	(-0.14)	(0.29)	(0.79)
Leverage	0.198	-0.279	-0.192
	(0.58)	(-0.23)	(-1.26)
Size	-0.191***	-0.202	-0.284***
	(-2.64)	(-1.61)	(-12.41)
5-year Revenue Growth	0.014	0.011	0.013
	(1.13)	(0.62)	(0.46)
Individual Ownership	0.030	-0.650	0.262
	(0.02)	(-0.25)	(1.17)
Institutional Ownership	0.079	0.207	0.003
	(0.36)	(0.51)	(0.02)
Insider Shareholdings	-0.358	-0.566	1.449**
	(-0.39)	(-0.46)	(2.46)
Constant	3.537***	4.550	3.475***
	(4.52)	(1.54)	(3.97)
IMR (Lambda)	-	-	0.020
	-	-	(0.05)
N	1719	1719	1719
Adj. R^2	0.099	-	-
Panel B: Dependent Variable: ROA			
Charter	-0.033	1.327	-0.031
	(-0.93)	(0.43)	(-1.50)
Financial Literacy	-0.014	-0.066	0.021
	(-0.42)	(-0.49)	(1.61)
Female Directors	0.009	-0.194	0.105**
	(0.22)	(-0.40)	(2.08)
Average Board Tenure	-0.002	0.001	0.003**
	(-0.93)	(0.12)	(2.40)
Average Age of the Board	0.003	0.004	0.001
	(1.37)	(0.74)	(1.49)
Industry Related Experience	0.005	0.106	-0.037**
	(0.18)	(0.44)	(-2.02)

Variable	Panel Regression	2SLS	Heckman Model
Board Size	-0.005**	-0.004	-0.001
	(-2.18)	(-0.86)	(-0.64)
CEO Dual	0.029	-0.010	-0.018
	(1.37)	(-0.10)	(-1.46)
Board Independence	-0.007	-0.076	0.067
	(-0.16)	(-0.43)	(1.21)
Leverage	-0.023	0.095	-0.006
	(-0.63)	(0.36)	(-0.28)
Size	-0.032*	-0.029	-0.007**
	(-1.95)	(-0.95)	(-2.24)
5-year Revenue Growth	0.002	0.003	-0.015***
	(0.54)	(0.61)	(-3.98)
Individual Ownership	0.059	0.227	0.046
	(0.37)	(0.51)	(1.55)
Institutional Ownership	-0.070*	-0.102	0.025
	(-1.89)	(-1.12)	(1.34)
Insider Shareholdings	0.116	0.167	0.098
	(1.04)	(0.91)	(1.27)
Constant	0.233	-0.016	-0.067
	(1.46)	(-0.02)	(-0.58)
IMR (Lambda)	-	-	0.028
	-	-	(0.58)
N	1719	1719	1719
Adj. R^2	0.101	-	-
Panel C: Dependent Variable: Stock Returns			
Charter	-0.107	-0.608	-0.070
	(-1.01)	(-0.09)	(-1.06)
Financial Literacy	0.062	0.082	0.039
	(0.67)	(0.29)	(0.97)
Female Directors	-0.300*	-0.224	0.030
	(-1.93)	(-0.21)	(0.19)
Average Board Tenure	-0.010*	-0.010	-0.000
	(-1.76)	(-0.81)	(-0.10)
Average Age of the Board	-0.002	-0.002	0.001
	(-0.29)	(-0.23)	(0.36)
Industry Related Experience	-0.073	-0.109	-0.088
	(-0.89)	(-0.22)	(-1.51)
Board Size	-0.010	-0.011	-0.000
	(-1.58)	(-1.33)	(-0.07)
CEO Dual	0.005	0.019	-0.014
	(0.07)	(0.09)	(-0.35)
Board Independence	0.138	0.162	0.200
	(0.92)	(0.43)	(1.14)
Leverage	0.454***	0.410	0.096
	(3.58)	(0.68)	(1.51)
Size	-0.182***	-0.183***	0.004
	(-4.69)	(-4.28)	(0.46)
5-year Revenue Growth	-0.001	-0.001	0.001
	(-0.05)	(-0.06)	(0.09)
Individual Ownership	-0.490	-0.553	0.132
	(-1.15)	(-0.58)	(1.41)
Institutional Ownership	0.115	0.127	0.082
	(0.93)	(0.60)	(1.37)
Insider Shareholdings	-0.011	-0.030	0.432*
	(-0.02)	(-0.05)	(1.76)

Variable	Panel Regression	2SLS	Heckman Model
Constant	1.519***	1.614	-0.332
	(3.47)	(1.19)	(-0.91)
IMR (Lambda)	-	-	-0.015
	-	-	(-0.10)
N	1702	1702	1719
Adj. R^2	0.282	-	-

Note. Detailed variable definitions are provided in Table A2. The t-statistics are in parenthesis. Stock Returns are winsorized at the 5% level at both ends of the distribution. All other continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. All dependent variables are measured at time *t+1*. The IMR (Lambda) is the Inverse Mills Ratio from the probit regression in the first stage of the Heckman model. The Panel regression is a firm and year fixed effects panel regression with the standard errors corrected for clustering at the firm-level. Funds Director Education is a dummy variable equal to one if the firm explicitly states in their proxy circular that they fund continuing director education and equals zero otherwise and acts as the instrumental variable in 2SLS and the exclusion variable in the Heckman model.
*p<.1. **p<.05. ***p<.01

In terms of control variables, average board size is significantly negative when the dependent variable is ROA and Tobin's Q, but is insignificant for annual stock returns. Cheng et al. (2010) also find mixed results on the effect board size has as a control; though the direction in which board size effects their financial performance dependent variables is inconsistent. Size is negative and significant in all three panel regression models. This is contrary to Cheng et al. (2010); Erin et al. (2019) who find size to be significantly positive and King et al. (2016) who find size to be an insignificant control. Leverage is a significant positive control on annual stock returns but is insignificant on Tobin's Q and insignificantly negative on ROA. This differs from Cheng et al. (2010) who finds leverage to be consistently negative though the significance varies and Gottesman and Morey (2010) who find leverage to be consistently significant and negative. Board tenure is negatively and marginally significant to stock returns which is consistent with Volonté and Gantenbein (2016) who find tenure to be negatively related to firm performance. Female directors are negatively related to stock returns at a marginal significance level but are insignificantly related to Tobin's Q and ROA. This is consistent with the mixed results in the prior literature on firm performance and female directors (Joecks et al., 2013). I attribute the

differences in control variables mostly to the sample used as well as the inclusion of additional control variables in my models.

Overall, Table 4 provides evidence that chartered directors are not significantly related to financial performance either positively or negatively.

7.2.2 Results of Financial Performance with Industry as a Moderator

Table 5 provides the results of the panel regressions that include industry interaction terms for all three financial performance dependent variables. In the mining industry, chartered directors are insignificantly related with Tobin's Q, ROA and annual stock returns. Within the construction industry, chartered directors are positively and significantly related to Tobin's Q and ROA but are negatively and significantly related to stock returns. Chartered directors are positively and insignificantly related to Tobin's Q and ROA but are negatively and insignificantly related to stock returns within the manufacturing industry. Within the transportation industry, chartered directors are related to a decrease in Tobin's Q at a marginal significance level and are negatively related to ROA and annual stock returns at an insignificant level. In the trade industry, chartered directors are associated with a decrease in Tobin's Q at a marginal significance level, a significant decrease in ROA and an insignificant decrease in annual stock returns. Chartered directors within the financial and service industries are not significantly related to any of the financial performance measures.

Table 5

Financial Performance Regression Results with Industry as a Moderator

Variable	Tobin's Q_{t+1}	ROA_{t+1}	Stock $Returns_{t+1}$
Charter * Other Industries	-	-	-
	-	-	-
Charter * Mining	-0.139	-0.015	0.016
	(-0.76)	(-0.58)	(0.25)
Charter * Construction	3.403***	0.177***	-0.247**
	(2.68)	(2.65)	(-2.35)
Charter * Manufacturing	0.586	0.071	-0.059
	(0.98)	(0.93)	(-0.48)

Variable	Tobin's Q_{t+1}	ROA_{t+1}	Stock $Returns_{t+1}$
Charter * Transportation	-0.628*	-0.028	-0.098
	(-1.69)	(-1.32)	(-1.17)
Charter * Trade	-2.633*	-0.206***	-0.132
	(-1.81)	(-2.65)	(-0.95)
Charter * Financials	-0.259	-0.011	-0.093
	(-0.80)	(-0.30)	(-1.08)
Charter * Services	0.607	0.074	-0.274
	(0.46)	(0.78)	(-0.81)
Mining	-0.709***	-0.057***	-0.167***
	(-2.76)	(-2.77)	(-4.01)
Construction	-2.019***	-0.064**	0.087
	(-5.34)	(-2.17)	(1.26)
Manufacturing	-0.502**	-0.016	-0.059
	(-1.99)	(-0.66)	(-1.29)
Transportation	-0.191	0.019	-0.034
	(-0.76)	(0.89)	(-0.76)
Trade	0.041	0.045*	-0.033
	(0.11)	(1.83)	(-0.74)
Financials	-0.570**	0.002	-0.044
	(-2.22)	(0.08)	(-1.01)
Financial Literacy	0.022	0.009	0.044*
	(0.16)	(0.72)	(1.83)
Female Directors	-0.137	-0.028	-0.155**
	(-0.37)	(-0.85)	(-2.32)
Average Board Tenure	0.008	0.003**	-0.001
	(0.76)	(2.49)	(-0.62)
Average Age of the Board	-0.006	0.000	0.001
	(-0.53)	(0.34)	(0.38)
Industry Related Experience	0.060	-0.012	-0.062**
	(0.32)	(-0.80)	(-2.12)
Board Size	0.023*	-0.001	0.004
	(1.67)	(-0.41)	(1.20)
CEO Dual	0.110	-0.003	-0.003
	(1.16)	(-0.32)	(-0.13)
Board Independence	-0.257	-0.014	0.104
	(-0.87)	(-0.49)	(1.61)
Leverage	-0.274	-0.043**	0.047
	(-1.22)	(-2.49)	(1.03)
Size	-0.236***	-0.004	0.000
	(-7.30)	(-0.91)	(0.07)
5-year Revenue Growth	-0.026	-0.004	-0.015
	(-1.63)	(-1.07)	(-1.43)
Individual Ownership	-0.357	0.003	0.071
	(-1.15)	(0.11)	(1.65)
Institutional Ownership	-0.251	-0.009	0.020
	(-1.41)	(-0.57)	(0.59)
Insider Shareholdings	0.553	0.037	0.248*
	(0.92)	(0.71)	(1.90)
Constant	4.005***	0.088	-0.161
	(5.18)	(1.34)	(-1.18)
N	1719	1719	1702
Adj. R2	0.306	0.161	0.248

Note. Detailed variable definitions are provided in Table A2. The t-statistics are in parenthesis. Stock Returns are winsorized at the 5% level at both ends of the distribution. All other continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t.* The dependent variables are all measured at time *t+1*. A panel regression with firm and year fixed effects and standard errors corrected for clustering at the firm-level is used. Industry is the moderator. Firms with the two digit SIC codes of 10-14 are in Mining, 15-17 in Construction, 20-39 in Manufacturing, 40-49 in Transportation, 50-59 in Trade, 60-67 in Financials, 70-89 in Services. Firms not in the Mining, Construction, Manufacturing, Transportation, Trade, Financials or Services industry are included in the Other Industries dummy variable. There are no observation with 2 digit SIC codes of 01-09 or 90-99.
*p<.1. **p<.05. ***p<.01

Overall, the results do not support my hypothesis that industry regulation impacts the relationship between chartered directors and financial performance. There is some consistency in the results amongst different industries, as chartered directors have a negative relationship with stock returns in all industries other than the mining industry.

7.2.3 Results of Financial Performance with Firm Complexity as a Moderator

Table 6 provides the results of the panel regressions with firm complexity as the moderator. Panel A in Table 6 illustrates that for both measures of firm complexity, chartered directors are not significantly associated with Tobin's Q. Panel B in Table 6 provides evidence that when firms operate in multiple business segments, a 10% increase in chartered directors is associated with a significant increase of 0.98% in ROA compared to firms that operate in a single business segment; furthermore, when the Herfindahl Index dummy is used instead, chartered directors are significantly related to an increase of 1.01% in ROA. Panel C of Table 6 shows similar results to that of Panel B in that, for firms operating in multiple business segments a 10% increase in chartered director is associated with a 3.59% increase in annual stock returns the following year compared to firms that operate in a single business segment and an increase of 3.86% when firm complexity is measured with the Herfindahl Index dummy.

Table 6

Financial Performance Regression Results with Firm Complexity as a Moderator

Variable	Business Segments	Herfindahl Index
Panel A: Dependent Variable: Tobin's Q		
Charter	-0.263	-0.258
	(-1.23)	(-1.20)
Charter*Business Segments	0.132	-
	(0.50)	-
Business Segments	-0.020	-
	(-0.20)	-
Charter*Herfindahl Index	-	0.143
	-	(0.51)
Herfindahl Index	-	-0.028
	-	(-0.28)
Financial Literacy	-0.061	-0.063

Variable	Business Segments	Herfindahl Index
	(-0.37)	(-0.39)
Female Directors	0.313	0.306
	(1.30)	(1.27)
Average Board Tenure	-0.007	-0.007
	(-0.68)	(-0.68)
Average Age of the Board	-0.004	-0.004
	(-0.38)	(-0.38)
Industry Related Experience	0.043	0.040
	(0.21)	(0.20)
Board Size	-0.039***	-0.040***
	(-3.39)	(-3.40)
CEO Dual	-0.039	-0.042
	(-0.55)	(-0.60)
Board Independence	-0.043	-0.045
	(-0.15)	(-0.15)
Leverage	0.205	0.262
	(0.59)	(0.77)
Size	-0.193***	-0.189**
	(-2.61)	(-2.57)
5-year Revenue Growth	0.015	0.016
	(1.14)	(1.23)
Individual Ownership	0.020	0.023
	(0.01)	(0.01)
Institutional Ownership	0.079	0.082
	(0.35)	(0.37)
Insider Shareholdings	-0.346	-0.353
	(-0.38)	(-0.39)
Constant	3.560***	3.513***
	(4.48)	(4.44)
N	1719	1718
Adj. R2	0.098	0.099
Panel B: Dependent Variable: ROA		
Charter	-0.055	-0.055
	(-1.54)	(-1.52)
Charter*Business Segments	0.098**	-
	(2.43)	-
Business Segments	-0.011	-
	(-0.82)	-
Charter*Herfindahl Index	-	0.101**
	-	(2.36)
Herfindahl Index	-	-0.011
	-	(-0.85)
Financial Literacy	-0.013	-0.013
	(-0.37)	(-0.38)
Female Directors	0.012	0.011
	(0.28)	(0.27)
Average Board Tenure	-0.002	-0.002
	(-0.99)	(-0.99)
Average Age of the Board	0.003	0.003
	(1.36)	(1.36)
Industry Related Experience	0.007	0.007
	(0.27)	(0.27)
Board Size	-0.006**	-0.006**
	(-2.25)	(-2.25)
CEO Dual	0.029	0.029

Variable	Business Segments	Herfindahl Index
	(1.39)	(1.38)
Board Independence	-0.008	-0.008
	(-0.19)	(-0.20)
Leverage	-0.018	-0.015
	(-0.50)	(-0.42)
Size	-0.033**	-0.033**
	(-2.02)	(-2.01)
5-year Revenue Growth	0.002	0.002
	(0.55)	(0.56)
Individual Ownership	0.051	0.051
	(0.32)	(0.32)
Institutional Ownership	-0.070*	-0.070*
	(-1.88)	(-1.87)
Insider Shareholdings	0.125	0.125
	(1.14)	(1.14)
Constant	0.251	0.249
	(1.56)	(1.55)
N	1719	1718
Adj. R2	0.102	0.102
Panel C: Dependent Variable: Stock Returns		
Charter	-0.189	-0.191
	(-1.61)	(-1.63)
Charter*Business Segments	0.359**	-
	(2.19)	-
Business Segments	-0.048	-
	(-1.02)	-
Charter*Herfindahl Index	-	0.386**
	-	(2.24)
Herfindahl Index	-	-0.050
	-	(-1.07)
Financial Literacy	0.068	0.068
	(0.74)	(0.75)
Female Directors	-0.290*	-0.290*
	(-1.87)	(-1.88)
Average Board Tenure	-0.010*	-0.010*
	(-1.81)	(-1.81)
Average Age of the Board	-0.002	-0.002
	(-0.30)	(-0.30)
Industry Related Experience	-0.063	-0.063
	(-0.78)	(-0.77)
Board Size	-0.011*	-0.011*
	(-1.65)	(-1.66)
CEO Dual	0.008	0.008
	(0.11)	(0.11)
Board Independence	0.132	0.131
	(0.88)	(0.87)
Leverage	0.472***	0.473***
	(3.69)	(3.70)
Size	-0.189***	-0.189***
	(-4.80)	(-4.81)
5-year Revenue Growth	-0.000	-0.000
	(-0.03)	(-0.03)
Individual Ownership	-0.517	-0.519
	(-1.19)	(-1.19)
Institutional Ownership	0.115	0.115

Variable	Business Segments	Herfindahl Index
	(0.93)	(0.92)
Insider Shareholdings	0.023	0.025
	(0.05)	(0.05)
Constant	1.583***	1.587***
	(3.57)	(3.58)
N	1702	1702
Adj. R2	0.283	0.283

Note. Detailed variable definitions are provided in Table A2. The *t*-statistics are in parenthesis. Stock Returns are winsorized at the 5% level at both ends of the distribution. All other continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variables are all measured at time *t+1*. A panel regression with firm and year fixed effects and standard errors corrected for clustering at the firm-level is used. Business Segments and Herfindahl Index are the measures of firm complexity.
*p<.1. **p<.05. ***p<.01

Overall, these results weakly support my hypothesis that chartered directors improve financial performance in more complex firms.

7.3 Results of Chartered Directors Relationship with Innovation

Table 7 provides the results of the panel regression, 2SLS and Heckman model when the dependent variable is innovation. After controlling for selection bias via the Heckman model, chartered directors have a significantly positive relation with innovation; however, the panel regression and 2SLS method provide evidence that chartered directors are insignificantly related to innovation. Average board tenure is negative and significant in the panel regression which is consistent with the literature (Bantel & Jackson, 1989; Miller & Xu, 2019). Overall, Table 7 provides support that chartered directors do not influence the following years innovation levels.

Table 7

Innovation Regression Results

Variable	Panel Regression	2SLS	Heckman Model
Charter	0.004	-4.857	0.203**
	(0.02)	(-0.07)	(2.35)
Financial Literacy	-0.094	0.393	-0.175***
	(-0.97)	(0.05)	(-3.44)
Female Directors	-0.202	0.623	-0.557***
	(-1.33)	(0.05)	(-3.05)
Average Board Tenure	-0.014**	-0.020	-0.016***
	(-2.36)	(-0.22)	(-3.51)
Average Age of the Board	0.002	-0.004	-0.004

Variable	Panel Regression	2SLS	Heckman Model
	(0.19)	(-0.05)	(-1.12)
Industry Related Experience	-0.102	-0.399	0.272***
	(-1.12)	(-0.09)	(3.86)
Board Size	0.020	0.016	-0.013*
	(1.50)	(0.25)	(-1.80)
CEO Dual	-0.055	-0.015	0.007
	(-1.20)	(-0.02)	(0.16)
Board Independence	0.217	0.433	-0.205
	(0.71)	(0.13)	(-1.00)
Leverage	0.021	-0.425	-0.401***
	(0.13)	(-0.06)	(-4.73)
Size	0.013	0.080	0.041***
	(0.31)	(0.08)	(3.16)
5-year Revenue Growth	0.006	0.003	0.012
	(0.55)	(0.08)	(0.63)
ROA	0.200	0.042	-1.168***
	(1.01)	(0.02)	(-6.31)
Q	0.037	0.032	0.149***
	(1.20)	(0.40)	(7.66)
Individual Ownership	0.177	-0.656	0.020
	(0.33)	(-0.05)	(0.17)
Institutional Ownership	0.192	0.214	-0.072
	(1.08)	(0.54)	(-0.83)
Insider Shareholdings	0.003	0.294	-0.450
	(0.00)	(0.06)	(-1.50)
Constant	-0.155	-0.094	0.457
	(-0.18)	(-0.06)	(1.17)
IMR (Lambda)	-	-	0.031
	-	-	(0.19)
N	1341	1341	1506
Adj. R^2	0.018	-	-

Note. Detailed variable definitions are provided in Table A2. The t-statistics are in parenthesis. All continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variable is innovation and is measured at time *t+1*. The IMR (Lambda) is the Inverse Mills Ratio from the probit regression in the first stage of the Heckman model. The Panel regression is a firm and year fixed effects panel regression with the standard errors corrected for clustering at the firm-level. Funds Director Education is a dummy variable equal to one if the firm explicitly states in their proxy circular that they fund continuing director education and equals zero otherwise and acts as the instrumental variable in 2SLS and the exclusion variable in the Heckman model.
*p<.1. **p<.05. ***p<.01

7.4 Results of Chartered Directors Relationship with Earnings Management

7.4.1 Earnings Management Results

Table 8 provides the results of the panel regression, 2SLS and Heckman model when the dependent variables are the Jones Model and Sized Jones Model discretionary accruals. The chartered director's coefficient on the Jones Model discretionary accruals is positive, but at an

insignificant level when using panel regression, 2SLS and the Heckman model. The chartered director's coefficient is also positive for all three models when the discretionary accruals are measured via the Sized-Jones Model but is only significant when using panel regression.

Table 8

Earnings Management Regression Results

	Jones Model DA			Sized-Jones Model DA		
Variable	Panel Regression	2SLS	Heckman Model	Panel Regression	2SLS	Heckman Model
Charter	0.015	0.090	0.008	0.057***	0.546	0.010
	(0.73)	(0.20)	(0.73)	(3.23)	(0.77)	(1.09)
Financial Literacy	-0.015	-0.019	-0.010	-0.025*	-0.058	-0.006
	(-0.89)	(-0.65)	(-1.61)	(-1.83)	(-1.13)	(-0.93)
Female Directors	0.030	0.023	0.009	0.009	-0.065	-0.018
	(0.98)	(0.45)	(0.35)	(0.35)	(-0.56)	(-0.73)
Average Board Tenure	-0.002	-0.002	0.000	-0.002*	-0.001	0.000
	(-1.28)	(-1.28)	(0.09)	(-1.93)	(-0.33)	(0.16)
Average Age of the Board	0.002	0.002	0.000	0.002	0.003	-0.000
	(1.51)	(1.21)	(0.09)	(1.61)	(1.19)	(-0.95)
Industry Related Experience	0.005	0.006	0.001	0.012	0.038	-0.010
	(0.29)	(0.31)	(0.11)	(0.89)	(0.83)	(-1.03)
Board Size	-0.001	-0.001	-0.000	0.001	0.001	0.001
	(-0.95)	(-0.71)	(-0.51)	(0.49)	(0.59)	(1.45)
CEO Dual	0.004	0.002	-0.004	0.018	0.006	0.004
	(0.30)	(0.10)	(-0.67)	(1.39)	(0.23)	(0.65)
Board Independence	-0.018	-0.026	0.028	-0.020	-0.063	-0.030
	(-0.65)	(-0.45)	(0.78)	(-0.82)	(-0.85)	(-0.92)
Leverage	0.014	0.020	-0.007	-0.012	0.024	-0.015
	(0.64)	(0.51)	(-0.57)	(-0.55)	(0.49)	(-1.34)
Size	0.001	0.001	-0.005*	-0.004	-0.004	-0.005*
	(0.15)	(0.08)	(-1.92)	(-0.56)	(-0.37)	(-1.92)
5-year Revenue Growth	0.005	0.005	0.005***	0.009***	0.008***	0.004**
	(1.65)	(1.58)	(3.28)	(4.12)	(2.96)	(2.21)
ROA	-0.095**	-0.093*	-0.145***	-0.086***	-0.071*	-0.105***
	(-2.04)	(-1.95)	(-7.48)	(-2.63)	(-1.85)	(-5.30)
Q	-0.003	-0.002	0.002	-0.006	-0.002	0.000
	(-0.63)	(-0.31)	(0.73)	(-1.57)	(-0.19)	(0.10)
Individual Ownership	0.031	0.041	0.003	0.105	0.146	-0.020
	(0.38)	(0.39)	(0.17)	(1.26)	(1.39)	(-1.28)
Institutional Ownership	0.016	0.019	0.011	-0.006	0.007	0.007
	(0.64)	(0.70)	(1.18)	(-0.28)	(0.22)	(0.81)
Insider Shareholdings	-0.004	-0.014	0.074*	0.108	0.114	0.141***
	(-0.04)	(-0.14)	(1.72)	(0.89)	(0.98)	(3.72)
Constant	-0.031	-0.037	0.070	0.002	-0.072	0.170***
	(-0.33)	(-0.34)	(1.40)	(0.02)	(-0.36)	(3.78)
IMR (Lambda)	-	-	0.005	-	-	-0.037*
	-	-	(0.23)	-	-	(-1.85)
N	1172	1172	1315	1275	1275	1419
Adj. R2	0.062	-	-	0.099	-	-

Note. Detailed variable definitions are provided in Table A2. The *t*-statistics are in parenthesis. All continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variables are the Jones Model discretionary accruals and the Sized-Jones Model discretionary accruals measured at time *t*. The IMR (Lambda) is the Inverse Mills Ratio from the probit regression in the first stage of the Heckman model. The Panel regression is a firm and year fixed effects panel regression with the standard errors corrected for clustering at the firm-level. Funds Director Education is a dummy variable equal to one if the firm explicitly states in their proxy circular that they fund

Variable	Jones Model DA			Sized-Jones Model DA		
	Panel Regression	2SLS	Heckman Model	Panel Regression	2SLS	Heckman Model

continuing director education and equals zero otherwise and acts as the instrumental variable in 2SLS and the exclusion variable in the Heckman model.
*p<.1. **p<.05. ***p<.01

The control variables in the panel regressions have similarities but also differences in their relationship to firm performance compared to other studies. Consistent with the literature, financial literacy is negatively associated to discretionary accruals (Bedard et al., 2004; Krishnan & Visvanathan, 2008; Xie et al., 2003); however, this relationship is only marginally significant when using the Sized-Jones Model. Average board tenure is negative and marginally significant in the Sized-Jones Model which is contrary to Miller and Xu (2019). Five year revenue growth is positive and significant for the Sized-Jones Model discretionary accruals, contrary to the literature which measures revenue growth differently (Ahmed & Duellman, 2007; Miller & Xu, 2019); but similar to the findings of Yu (2008). ROA is negative for both dependent variables similar to the sample of all firms in Yu (2008) but differing from the results of Ali and Zhang (2015).

Overall, the evidence points towards the conclusion that chartered directors do not influence earnings management in general. Hence, we examine whether there is a difference among industry groupings.

7.4.2 Results of Earnings Management with Industry as a Moderator

Table 9 provides the panel regression results when the industry interaction terms are included. The dependent variable is the Sized-Jones Model discretionary accruals. The Jones Model discretionary accruals are not used as a dependent variable because there must be at least eleven observations for each industry-year combination, otherwise the entire industry is dropped from the sample thus resulting in no observations for the construction or service industry.

Table 9

Earnings Management Regression Results with Industry as a Moderator

Variable	Sized Jones Model DA
Charter * Other Industries	-
	-
Charter * Mining	0.001
	(0.08)
Charter * Construction	0.070
	(0.82)
Charter * Manufacturing	-0.005
	(-0.36)
Charter * Transportation	0.009
	(0.64)
Charter * Trade	0.015
	(0.50)
Charter * Financials	-0.020
	(-0.85)
Charter * Services	-0.034
	(-0.95)
Mining	-0.007
	(-1.16)
Construction	-0.041*
	(-1.69)
Manufacturing	-0.010
	(-1.47)
Transportation	-0.014**
	(-2.20)
Trade	-0.002
	(-0.18)
Financials	-0.009
	(-1.25)
Financial Literacy	-0.003
	(-0.72)
Female Directors	0.004
	(0.31)
Average Board Tenure	0.000
	(0.08)
Average Age of the Board	0.000
	(0.04)
Industry Related Experience	-0.004
	(-0.68)
Board Size	0.001
	(1.03)
CEO Dual	0.008*
	(1.84)
Board Independence	-0.000
	(-0.01)
Leverage	-0.006
	(-0.61)
Size	-0.007***
	(-5.32)
5-year Revenue Growth	0.006**
	(2.08)

ROA	-0.079***
	(-3.05)
Q	0.000
	(0.00)
Individual Ownership	-0.017**
	(-2.02)
Institutional Ownership	0.001
	(0.12)
Insider Shareholdings	0.035
	(1.27)
Constant	0.110***
	(4.35)
N	1275
Adj. R^2	0.153

Note. Detailed variable definitions are provided in Table A2. The *t*-statistics are in parenthesis. All continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variable is the Sized-Jones Model discretionary accruals measured at time *t*. A panel regression with firm and year fixed effects and standard errors corrected for clustering at the firm-level is used. Industry is the moderator. Firms with the two digit SIC codes of 10-14 are in Mining, 15-17 in Construction, 20-39 in Manufacturing, 40-49 in Transportation, 50-59 in Trade, 60-67 in Financials, 70-89 in Services. Firms not in the Mining, Construction, Manufacturing, Transportation, Trade, Financials or Services industry are included in the Other Industries dummy variable. There are no observation with 2 digit SIC codes of 01-09 or 90-99.
*p<.1. **p<.05. ***p<.01

Chartered directors are insignificantly related to earnings management in every industry. Overall, Table 9 does not support my hypothesis that industry regulation impacts the relationship between chartered directors and earnings management.

7.4.3 Results of Earnings Management with Firm Complexity as a Moderator

Table 10 provides the results of the panel regressions for both earnings management models with the addition of the two firm complexity moderators. The coefficient for chartered directors is insignificant and negative for both firm complexity interaction terms when the discretionary accruals are measured with both the Jones Model and the Sized-Jones Model.

Table 10

Earnings Management Regression Results with Firm Complexity as a Moderator

	Jones Model DA		Sized-Jones Model DA	
Variable	Business Segments	Herfindahl Index	Business Segments	Herfindahl Index
Charter	0.020	0.020	0.058***	0.057**

Variable	Jones Model DA		Sized-Jones Model DA	
	Business Segments	Herfindahl Index	Business Segments	Herfindahl Index
	(0.79)	(0.78)	(2.59)	(2.58)
Charter*Business Segments	-0.023	-	-0.004	-
	(-0.78)	-	(-0.14)	-
Business Segments	-0.007	-	-0.015*	-
	(-0.75)	-	(-1.83)	-
Charter*Herfindahl Index	-	-0.023	-	-0.003
	-	(-0.75)	-	(-0.09)
Herfindahl Index	-	-0.007	-	-0.015*
	-	(-0.75)	-	(-1.84)
Financial Literacy	-0.014	-0.014	-0.025*	-0.025*
	(-0.84)	(-0.84)	(-1.85)	(-1.85)
Female Directors	0.030	0.030	0.010	0.010
	(0.98)	(0.98)	(0.40)	(0.41)
Average Board Tenure	-0.002	-0.002	-0.002*	-0.002*
	(-1.25)	(-1.25)	(-1.96)	(-1.96)
Average Age of the Board	0.002	0.002	0.002*	0.002*
	(1.53)	(1.53)	(1.71)	(1.71)
Industry Related Experience	0.005	0.005	0.012	0.012
	(0.30)	(0.30)	(0.94)	(0.94)
Board Size	-0.001	-0.001	0.001	0.001
	(-0.86)	(-0.86)	(0.56)	(0.56)
CEO Dual	0.004	0.004	0.019	0.019
	(0.30)	(0.30)	(1.40)	(1.40)
Board Independence	-0.020	-0.020	-0.021	-0.021
	(-0.72)	(-0.72)	(-0.87)	(-0.87)
Leverage	0.013	0.013	-0.010	-0.010
	(0.60)	(0.60)	(-0.46)	(-0.46)
Size	0.002	0.002	-0.004	-0.004
	(0.24)	(0.24)	(-0.53)	(-0.53)
5-year Revenue Growth	0.005*	0.005*	0.009***	0.009***
	(1.65)	(1.65)	(4.09)	(4.09)
ROA	-0.096**	-0.096**	-0.087***	-0.087***
	(-2.06)	(-2.06)	(-2.64)	(-2.64)
Q	-0.003	-0.003	-0.006	-0.006
	(-0.61)	(-0.61)	(-1.55)	(-1.55)
Individual Ownership	0.040	0.040	0.116	0.116
	(0.47)	(0.47)	(1.33)	(1.32)
Institutional Ownership	0.016	0.016	-0.005	-0.005
	(0.63)	(0.63)	(-0.25)	(-0.25)
Insider Shareholdings	-0.006	-0.005	0.107	0.108
	(-0.06)	(-0.06)	(0.89)	(0.89)
Constant	-0.038	-0.038	-0.004	-0.004
	(-0.40)	(-0.40)	(-0.05)	(-0.05)
N	1172	1172	1275	1275
Adj. R2	0.061	0.061	0.100	0.100

Note. Detailed variable definitions are provided in Table A2. The *t*-statistics are in parenthesis. All continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variables are the Jones Model discretionary accruals and the Sized-Jones Model discretionary accruals measured at time *t*. A panel regression with firm and year fixed effects and standard errors corrected for clustering at the firm-level is used. Business Segments and Herfindahl Index are the measures of firm complexity.
*p<.1. **p<.05. ***p<.01

Overall, Table 10 provides insignificant evidence that chartered directors are associated with reduced earnings management for more complex firms.

CHAPTER 8: DISCUSSION

Overall, chartered directors do not consistently impact firm performance. There are no consistent significant results with panel regression, 2SLS or the Heckman model. Additionally, there is weak evidence to support chartered directors having a more significant association to financial performance for more complex firms. Furthermore, chartered directors' relation to firm performance is significantly different depending on the industry. Yet, industry regulation does not appear to impact the relationship between chartered directors and firm performance.

These results are similar to that of Gottesman and Morey (2006); King et al. (2016) in that I find inconclusive evidence that more education is significantly associated with firm performance. The results also weakly support that increased education is positively associated with earnings management and inversely related to market value via stock price when no moderator is used (Miller & Xu, 2019). The results in this study are different from the multitude of studies that find a significantly positive relationship between education and financial performance (Cheng et al., 2010; Erin et al., 2019) and innovation (Bantel & Jackson, 1989; Becker, 1970) and accrual quality (Bamber et al., 2010; Call et al., 2017). My results are unique from these papers in that those papers look at more formal education such as MBA, Ph.D. and master's degree whereas this paper examines the effect of director specific training and certification.

The type of directors obtaining their charter could potentially explain the results. It is possible that there are two groups of individual seeking to become of chartered directors. The first is that of long-serving directors with significant on the job training and experience being directors and hence, formalizing their existing knowledge by obtaining the chartered director

certification does not significantly add to their existing training and board experience and hence, becoming a chartered director does not influence firm performance.

The second group of individuals are those seeking certification in order to increase the likelihood on being nominated as directors. However, they have limited skill and experience advising as well as monitoring managers. In both cases the impact on gaining certification by becoming a chartered director is not strong enough to affect firm performance in the short-term.

For the long-term directors, director certification probably does not drastically alter their abilities. For individuals with little experience, director certification is unlikely to make a big enough difference to offset the lack of experience or ability they possess. Because director certification is unlikely to significantly influence the ability of these two extreme groups, the impact those directors had on firm performance before becoming chartered is likely similar to that of their impact after becoming chartered. Furthermore, the group of directors which are neither long-term directors nor new directors likely makes up the majority of directors and thus have the ability to influence firm performance more than either the long-term or inexperienced directors. Thus, because this middle group of directors has not yet likely become chartered at a significant level, director certification is not significantly related to improved firm performance.

Another potential reason for the insignificant relationship is the difficulty in disentangling directors' backgrounds from director certification. It is possible that directors do not pursue certification until later in their careers and thus, previous experiences and on-the-job training are likely to influence both the time it takes and the degree to which directors will apply what is learned through the certification process. These informal educational experiences may also influence the decision of whether a director pursues certification or not. These experiences are not only difficult to control for, but the same experience can have different impacts on

different individuals. Therefore, disentangling a directors' background from whether they are chartered or not is a task beyond the scope of this paper.

Furthermore, the time it takes for a firm to realize the benefits of directors becoming chartered may be long-term and is beyond the scope of this study. It is unlikely that the firm will have a significant improvement in performance immediately after directors become chartered for three reasons. First, chartered directors may make decisions in the best interest of the firm's long-term future instead of focusing on its short-term success. Thus, using a one-year lead dependent variable and having a sample that only consists of eight years may not fully capture the benefits of having chartered directors. Secondly, the board or management may resist changes suggested by chartered directors for a variety of reasons, especially if the proposed changes are counter to the firm's norms. Finally, charter directors may serve a monitoring role rather an advising role and hence, growth and performance are unaffected as a result.

Alternatively, time may play a different role in the insignificant relationship. Gottesman and Morey (2010) rationalize the insignificance of education due to the time between completion of the CEO's education and coming into their role. This is consistent with the literature which shows that skills and social capital can depreciate (Almeida & Carneiro, 2009; Lester et al., 2008; Lillard & Tan, 2012). For example, Lillard and Tan (2012) find that the effects of training on earnings depreciates between 1-1.3% per year dependent on the type of training. One interpretation of this result is that there is a depreciation in the skill gained by the training and that earnings follow this decay. Similarly, Lillard and Tan (2012) finds the persistence of professional and managerial training is 11-12 years. Considering the median tenure of directors is eight years in this sample, the benefits of the director certification likely depreciates

significantly over time making the deterioration of skills a potential explanation for the lack of significance of director certification on firm performance.

Despite the curriculum, it appears that the mission of director certification courses in Canada is not to develop directors in order to enhance firm performance, as programs such as the ICD-Rotman's Director Education Program state that their program is designed to "help experienced directors overcome these challenges… [to] assist them in fulfilling their role" (*ICD-Rotman Directors Education Program curiculum overview*, 2020). Because director certification is focused on developing the unique skill set required by directors, it appears that the training focuses on fulfilling monitoring roles rather than advising roles of directors which may have differing effects on firm performance. Along this line of argument, Lamo et al. (2011) reasons that specialized education reduces an individual's ability to deal with economic changes. Similarly, Pedro Domingos states that knowledge "… is a double-edged sword. It allows you to do some things, but it also makes you blind to other things that you could do" (Epstein, 2019, p. 179). Therefore, it is potentially the case that director certification is too specific and thus actually enhances the Einstellung effect. On the other hand, the more one has invested into their social capital the less likely an erroneous decision will be made in an uncertain environment (Nitzan & Paroush, 1980). Taken together, this illustrates why director certification does not significantly improve or hurt firm performance. Investing in social capital via director training is an investment in social capital which reduces the likelihood of making errors during the decision-making process. The investment into director training increases the specialized skills and knowledge of the directors and thus, potentially reducing the ability to deal with economic changes and increases the Einstellung effect. Thus, firms that have a higher percent of their

boards with director certification may avoid mistakes in decision making but they may also not be making optimal decisions because of it.

8.1 Explaining the Relation Between Chartered Directors and Financial Performance

Industry regulation does not appear to impact the relationship between chartered directors and financial performance. Chartered directors do not have a consistent relationship with the three financial performance measures across the three regulated industries of mining, transportation and financials (He & Yang, 2014). Additionally, chartered directors are not consistently related to financial performance across the non-regulated industries either. Thus, while it appears that industries impact chartered director's relationship with financial performance, it is not due to the regulatory levels of the industries.

In more complex firms, chartered directors are significantly related to an improved ROA and better annual stock returns compared to less complex firms. One potential reason for this is that chartered directors are better able to maximize the firm's assets across multiple business segments resulting in a greater ROA and as a result, greater stock returns compared to firms that operate in a single business segment.

8.2 Explaining the Relation Between Chartered Directors and Innovation

Chartered directors are not significantly related to innovation levels. One potential reason for this is the lack of innovation in my sample. Less than 400 observations have any level of R&D expenditure and over 1,500 observations have not applied for a single patent. Because of this, my innovation measure is carried mostly by CAPX. Because the CAPX variable is a measure of funds used to purchase additional property, plant and equipment there is not a theoretical reason that chartered directors should significantly impact the purchasing of PPE at a different rate than those firms without chartered directors. In conclusion, the insignificant

coefficient of chartered directors on innovation levels is more a statement on the lack of innovation in my sample than it is on the role that chartered directors have on innovation.

8.3 Explaining the Relation Between Chartered Directors and Earnings Management

Chartered directors are not significantly associated with earnings management. When industries are used as a moderator, chartered directors are insignificantly associated with earnings management in every industry. Furthermore, chartered directors in more complex firms are not associated with reduced discretionary accruals relative to less complex firms. As such, even when industries and firm complexity are used as a moderator, chartered directors make no significant impact on earnings management.

One potential reason that chartered directors are insignificantly related to earnings management is the choice of the model used. As Dechow et al. (1995) states, the Jones Model estimate of earnings management is biased towards zero. Additionally, Ecker et al. (2013) argues that detecting earnings management is dependent on the normal accruals model used because some earnings management will only affect variables in one model and not another.

Another potential reason for the lack of significance of chartered directors on earnings management is a high financial literacy rate. Table 2 illustrates that nearly two thirds of directors are financially literate. Additionally, Table 3 illustrates that there is not a significant difference in the financial literacy rates amongst boards with and without chartered directors. When the earnings management panel regressions are estimated without including financial literacy as a control variable the results are similar to the results when it is included. Thus, it is unlikely that the high financial literacy rate is the reason that chartered directors are not significantly related to discretionary accruals.

One important aspect of this paper is the use of the Jones Model and the Sized-Jones Model. Overall, both models produce relatively similar coefficients; however, the Sized-Jones Model consistently produces more significant results. One potential reason for this is the larger sample size that results from not having to drop observations due to a lack of observations in a particular industry.

In summary, director certification is not consistently associated with earning management levels at a significant level. This result holds even when industry and firm complexity is used as a moderator.

CHAPTER 9: ROBUSTNESS

In this section, I explore additional circumstances providing further evidence that chartered directors make no significant impact on firm performance. To start, I test if chartered directors are associated with firm performance when using a propensity score matching approach. I then estimate conditional panel regressions conditioned on firms having at least one chartered director. Following that, I examine if attaining critical mass of chartered directors is associated with firm performance. I further test whether chartered directors are related to financial distress and forced CEO turnover. Finally, I examine the relationship between chartered directors and riskiness.

9.1 Propensity Score Matching

In order to control for differences in firm characteristics between firms with and without chartered directors, a propensity score matching approach is used. To start, I estimate a logit model where the dependent variable is Charter Dummy and the independent variables are the control variables stated in (1) and defined in Table A2.[12] Then each firm with at least one chartered director is matched with its nearest neighbor control firm; where the control firms are those with no chartered directors. Following Nekhili et al. (2016) a maximum propensity score (caliper) of 3% without replacement is imposed to avoid bad matching in order to estimate the average treatment effect of the treated for the dependent variables used in the panel regressions.

For all the dependent variables, the average treatment effect of the treated is insignificant. This result provides further evidence that chartered directors are not significantly related to a firm's financial performance, innovation levels or earnings management.

[12] Similar results are found when a probit model is used instead of a logit model.

9.2 Conditional Regression Results

One potential reason that chartered directors are insignificantly related to firm performance is the large number of observations with no chartered directors. Because of this, *Charter* is censored at 0% which potentially biases the estimates. Therefore, in order to test if this is the case, I re-estimate (1), (2) and (6) with the condition of having at least one chartered director.

The results of the conditional regressions are presented in Table A5. When the regressions are conditioned, chartered directors have a significant negative relation to Tobin's Q, a positively significant relation to innovation and Sized-Jones Model discretionary accruals and an insignificant coefficient on ROA, annual stock returns and the Jones Model discretionary accruals. These results are similar to the results the Heckman Models. The only differences between the two models is that in the Heckman Model, the coefficient of chartered directors on stock returns is negative – though both are insignificant, and the relation of chartered directors to the Sized-Jones Model discretionary accruals is insignificant.

Based on these results, when there is at least one chartered director on the board, chartered directors have a stronger relation to firm performance even after controlling for self-selection bias; however, there is still insignificant evidence that chartered directors are significantly related to overall firm performance, hence I examine critical mass next.

9.3 Critical Mass of Chartered Directors

It is possible that on boards with one chartered director, that director may act as a token and not be able to impact firm performance. Therefore, I examine the effect that reaching a critical mass has on the relation between chartered directors and firm performance.

Following the literature, having at least three chartered directors is considered achieving critical mass (Jia & Zhang, 2013; Torchia et al., 2011). In order to test whether critical mass is important, three dummy variables are created similar to Torchia et al. (2011). The first and second dummy variables equals one if there are exactly one and two chartered directors respectively, and zero otherwise. The third dummy variable is the critical mass dummy variable that equals one if there are at least three chartered directors and zero otherwise. A panel regression with firm and year fixed effects and standard errors corrected for clustering at the firm-level is then used. Table A6 provides the regression results.

Other than the significant and positive coefficient of achieving critical mass on the Sized-Jones Model discretionary accruals, the number of chartered directors is not significantly related to any measure of firm performance. Therefore, the lack of significant results of chartered directors on firm performance is not due to a failure of attaining a critical mass.

9.4 Chartered Directors Effect on Financial Distress

Even though there is no significant association between chartered directors and the other financial performance measures, there may be an association to financial distress for two reasons. First, as shown in Table 3, there is a significantly higher leverage ratio for firms with chartered directors compared to firms without chartered directors. This higher leverage ratio can either benefit the firm's financial performance, or it can make it harder for the firm to meet its financial obligations. Secondly, the average annual stock returns for firms in my sample both with and without chartered directors is negative. Therefore, the lack of significant financial results of firms with chartered directors may have been a product of the sample period. Therefore, as a robustness check, I examine whether chartered directors are inversely related to financial distress.

Following Mangena et al. (2020), two measures are used to determine if a firm is in financial distress. The first is a dummy variable equal to one if a firm's earnings before interest, tax, depreciation and amortization (EBITDA) is less than its interest expense for two consecutive years, and zero otherwise. The second measure is a dummy variable that is equal to one if a firm has negative market value growth for two consecutive years, and zero otherwise. In order for a firm to be classified as financially distressed, both dummy variables must equal one (Mangena et al., 2020; Opler & Titman, 1994). A logit model is then used that has the dependent variable being a dummy if a firm is in financial distress or not, the independent variable of interest is *Charter* and the same set of control variables from (1) are included.

Only 24 observations in my sample are classified as financially distressed; of which, 19 are in the mining industry, three are in the manufacturing industry and two are in the financial industry. Overall, chartered directors have a positive but insignificant coefficient, supporting the rest of the findings of chartered directors not having a significant association with financial performance.

9.5 Forced CEO Turnover and Chartered Directors

Another area in which chartered directors may make an impact is in forced CEO turnover. It is expected that chartered directors are better at making hiring decisions; however, it is possible that the CEO hiring was either made prior to the director becoming chartered, or when the board had fewer chartered directors. It is also possible that chartered directors are better able to identify whether or not a CEO should remain in charge, thus forcing the turnover quicker. Therefore, it is unknown whether or not chartered directors should be associated with more or less forced CEO turnovers.

To classify whether or not a CEO turnover is forced, I hand collect data from the firm's proxy statements and news releases. I then follow Hazarika et al. (2012) by excluding turnovers that were a result from takeovers, M&A activity, spinoffs or interim appointments. I then classify a turnover as forced if the CEO was a) fired or forced out of their position b) the CEO is under 60-years old and the news announcement does not mention that the CEO died, left for health reasons or accepted a different position on the board or at a different firm or c) the CEO "retires" but leaves within four months of the announcement (Hazarika et al., 2012, p. 47). I also read press articles regarding the turnovers to reduce the likelihood of a misclassification. In total, there are 192 CEO changes in my sample, 50 of which are classified as forced.

I run a probit regression with the dependent variable being forced CEO turnover, the variable of interest is *Charter* and the same vector of control variables from (1) are included. The results show that chartered directors have a negative, but insignificant relation to forced CEO turnover.

This insignificant relation only says that boards with more chartered directors are not associated with differing amounts of forced CEO turnover compared to boards with fewer chartered directors. Of more importance is if this forced CEO turnover is a moderator of financial performance. It should follow that chartered directors are more educated and as such, should be better at succession planning. In some instances, the CEO of a firm may precede chartered directors thus limiting the effect the chartered directors have. As such, forced CEO turnover may act as a moderator as it allows the board to hire a person they want. Therefore, I run a panel regression with firm and year fixed effects and standard errors corrected for firm-level clustering to examine the relationship that chartered directors have on the financial performance measures when forced CEO turnover is a moderator. As shown in Table A7, there

is no significant difference in the relation of chartered directors on financial performance when a firm experiences a forced CEO turnover compared to when they do not.[13] This provides further support that chartered directors are not significantly related to financial performance.

9.6 Chartered Directors and Firm Riskiness

Because the sample consists of firms listed on the S&P/TSX Composite Index, the firms are smaller in size compared to those listed in the United States which increases the noise surrounding financial measures. In order to minimize the noise I follow Baulkaran (2014) and use three risk measures as dependent variables: idiosyncratic risk, total risk and market risk (beta).

To calculate idiosyncratic risk and beta, a market model is used with monthly returns for a minimum of three year and maximum of five years. Beta is calculated by regressing the firm's monthly stock returns on the market's monthly returns.[14] Idiosyncratic risk is calculated as the variance of the residuals from the market model. Total risk is measured as the standard deviation of the stocks monthly stock returns for a minimum of three years and a maximum of five years. Both the idiosyncratic risk and total risk measures are calculated as December's month end value annualized. December's month end beta is used as the beta for the year. To examine the relationship between chartered directors and riskiness, a panel regression with firm and year fixed effects and standard errors corrected for clustering is used. All three riskiness measures are measured at time $t+1$ and the independent variables are measured at time t. Table A8 provides the regressions results showing that chartered directors are insignificantly related to all three measures of riskiness.

[13] Similar results are found when CEO turnover is used as a moderator in place of forced CEO turnover.
[14] Monthly stock and market return data is collected from the Canadian Financial Markets Research Centre.

It is possible that chartered directors only matter for firms at either end of the extremes. To examine this, a high and low riskiness dummy variable are created for all three riskiness measures that equals one if the observation is in the top or bottom tercile of each riskiness measure, respectively. I then rerun (1) and (6) with the inclusion of both the high and low riskiness measure and the interaction term with chartered directors. Table A9 provides the regressions results.

As shown in Panel A of Table A9, when beta is in the top and bottom tercile, chartered directors have a positive and significant relationship with Tobin's Q. As shown in Panel B, when idiosyncratic risk is in the top or bottom tercile chartered directors have a marginally significant positive relationship with Sized-Jones model discretionary accruals. Panel C shows that when total risk is in the top tercile chartered directors have a marginally significant negative relationship with Sized-Jones model discretionary accruals.

Taken together, Tables A8 and A9 show that chartered directors are not consistently significantly related to improved firm performance. The insignificance between chartered directors and firm performance is thus not a result of using noisy dependent variables. Additionally, chartered directors are insignificantly related to firm performance in the top and bottom terciles of riskiness showing that even in potentially extreme circumstances, chartered directors do not significantly matter.

CHAPTER 10: CONCLUSION

Director certification offers directors the opportunity to enhance their knowledge and skills in a director-specific setting. Not only should this training enhance director's human capital, but it should also increase their social capital. Thus, director certification should be significantly associated with increased firm performance. This paper examines to what extent director certification actually accomplishes this. In doing so, this paper contributes to the mixed findings within the corporate governance literature on the effect of training and education. Additionally, it fills in the gap in the literature by looking at director specific training instead of more formal education. Finally, this paper provides further support for using size and year classifications when using the Jones Model (Ecker et al., 2013).

The findings of this paper show that director certification is not significantly related to improved firm performance as measured by financial performance, innovation or earnings management. Firm and year fixed effects panel regression, 2SLS and the Heckman model all result in no consistently significant improvements in firm performance. Industry regulation does not appear to impact the relationship between chartered directors and firm performance. Furthermore, in more complex firms there is weak evidence that chartered directors are associated with improved financial performance but insignificant evidence on the relation that chartered directors have on earnings management.

These results lead to two key recommendations. The first recommendation is that director certification programs must increase the length of the programs in addition to providing a greater emphasis on how the training will improve firm performance. The findings of this paper illustrate a lack of significant improvement in firm performance by chartered directors, which considering some programs are only a few days in length is not surprising. As such, these

programs must increase the amount of training provided in order to serve the purpose of improving corporate governance and ultimately firm performance. Furthermore, the current focus on improving the monitoring role of directors without also striving to improve the advising role is one potential reason for the lack of significant results. Currently, some firms are paying the membership costs of all their directors in director certification programs. But if there is continued lack of results from directors who are certified and the programs are not becoming more intensive and offering an increased focus on the advising role, it is possible that firms will save money and stop paying the membership dues. As such, it is important for these programs to increase the length of training provided in addition to providing a greater emphasis on how the training can improve firm performance. The second recommendation is that until director specific training has been shown to be associated with enhanced firm performance, there should not be policy changes mandating director certification. Mandating a designation that has been shown to not be significantly associated with improvement is not in the best interest of firms or shareholders. A mandate requiring directors to be certified also minimizes the incentives for the director certification programs to modify in search of improvement. Therefore, until there is significant evidence that these programs are associated with improved firm performance, there should not be a mandate for directors to become chartered.

While this study uses both 2SLS and the Heckman Model to address the endogeneity issues, it is possible that endogeneity is not fully addressed which in turn leads to the insignificant results. Another limitation of this study is not having the dates of when directors became chartered. Having this data would allow an investigation into the hypothesis of skill and education deterioration. Finally, not separating the chartered data by the institution from which

the director received their chartered designation limits a more robust study into if there are differences in institutions.

The role of director-specific training and certification on firm performance should continue to be explored in a similar fashion as that of financial literacy. Some potentially interesting questions regarding director certification include: Do chartered directors on the audit committee play a more important role on earnings managements compared to the overall percent of the board with certification? What effect does board certification have on CEO compensation? Do females or outsiders moderate the effect that chartered directors have on firm performance? Are other countries director training programs similar in their effectiveness to that of Canada? Do different director certification programs have different impacts on firm performance?

REFERENCES

Adams, R. B., Akyol, A. C., & Verwijmeren, P. (2018). Director skill sets. *Journal of Financial Economics, 130*(3), 641-662. https://doi.org/10.1016/j.jfineco.2018.04.010

Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis, 31*(3), 377-397. https://doi.org/10.2307/2331397

Ahmed, A. S., & Duellman, S. (2007). Accounting conservatism and board of director characteristics: An empirical analysis. *Journal of Accounting and Economics, 43*(2), 411-437. https://doi.org/10.1016/j.jacceco.2007.01.005

Ali, A., & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics, 59*(1), 60-79. https://doi.org/10.1016/j.jacceco.2014.11.004

Almeida, R., & Carneiro, P. (2009). The return to firm investments in human capital. *Labour Economics, 16*(1), 97-106. https://doi.org/10.1016/j.labeco.2008.06.002

Bamber, L. S., Jiang, J., & Wang, I. Y. (2010). What's my style? The influence of top managers on voluntary corporate financial disclosure. *The Accounting Review, 85*(4), 1131-1162. https://doi.org/10.2308/accr.2010.85.4.1131

Bantel, K. A., & Jackson, S. E. (1989). Top management and innovations in banking: Does the composition of the top team make a difference? *Strategic Management Journal, 10*(S1), 107-124. https://doi.org/10.1002/smj.4250100709

Baulkaran, V. (2014). A quiet revolution in corporate governance: An examination of voluntary best practice governance policies. *International Review of Finance, 14*(3), 459-483. https://doi.org/10.1111/irfi.12017

Becher, D. A., & Frye, M. B. (2011). Does regulation substitute or complement governance? *Journal of Banking and Finance, 35*(3), 736-751. https://doi.org/10.1016/j.jbankfin.2010.09.003

Becker, M. H. (1970). Sociometric location and innovativeness: Reformulation and extension of the diffusion model. *American Sociological Review, 35*(2), 267-282. https://doi.org/10.2307/2093205

Bedard, J., Chtourou, S. M., & Courteau, L. (2004). The effect of audit committee expertise, independence, and activity on aggressive earnings management. *AUDITING: A JOURNAL OF PRACTICE & THEORY, 23*(2), 13-35. https://doi.org/10.2308/aud.2004.23.2.13

Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics, 80*(3), 511-529. https://doi.org/10.1016/j.jfineco.2004.10.011

Berry, T. K., Bizjak, J. M., Lemmon, M. L., & Naveen, L. (2006). Organizational complexity and CEO labor markets: Evidence from diversified firms. *Journal of Corporate Finance, 12*(4), 797-817. https://doi.org/10.1016/j.jcorpfin.2005.04.001

Bertrand, M., & Schoar, A. (2003). Managing with style: The effect of managers on firm policies. *The Quarterly Journal of Economics, 118*(4), 1169-1208. https://doi.org/10.1162/003355303322552775

Bilalić, M., McLeod, P., & Gobet, F. (2008). Why good thoughts block better ones: The mechanism of the pernicious Einstellung (set) effect. *Cognition, 108*(3), 652-661. https://doi.org/10.1016/j.cognition.2008.05.005

Call, A. C., Campbell, J. L., Dhaliwal, D. S., & Moon, J. R. (2017). Employee quality and financial reporting outcomes. *Journal of Accounting and Economics, 64*(1), 123-149. https://doi.org/10.1016/j.jacceco.2017.06.003

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review, 38*(1), 33-53. https://doi.org/10.1111/1540-6288.00034

Certo, S. T., Busenbark, J. R., Woo, H. s., & Semadeni, M. (2016). Sample selection bias and Heckman models in strategic management research. *Strategic Management Journal, 37*(13), 2639-2657. https://doi.org/10.1002/smj.2475

Chandy, R. K., & Tellis, G. J. (2000). The incumbent's curse? Incumbency, size, and radical product innovation. *Journal of Marketing, 64*(3), 1-17. https://doi.org/10.1509/jmkg.64.3.1.18033

Chen, H.-L. (2014). Independent directors human capital and firm internationalization. *Asian Economic and Financial Review, 4*(10), 1378-1388.

Chen, S.-S., & Chen, I. J. (2012). Corporate governance and capital allocations of diversified firms. *Journal of Banking & Finance, 36*(2), 395-409. https://doi.org/10.1016/j.jbankfin.2011.07.013

Cheng, L. T. W., Chan, R. Y. K., & Leung, T. Y. (2010). Management demography and corporate performance: Evidence from China. *International Business Review, 19*(3), 261-275. https://doi.org/10.1016/j.ibusrev.2009.12.007

Corbin, R. M. (1999). *Report on corporate governance, 1999: Five years to the Dey*. Toronto Stock Exchange. https://ecgi.global/sites/default/files//codes/documents/5years.pdf

Darmadi, S. (2013). Board members' education and firm performance: Evidence from a developing economy. *International Journal of Commerce and Management, 23*(2), 113. https://doi.org/10.1108/10569211311324911

Dass, N., Kini, O., Nanda, V., Onal, B., & Wang, J. (2014). Board expertise: Do directors from related industries help bridge the information gap? *The Review of Financial Studies, 27*(5), 1533-1592. https://doi.org/10.1093/rfs/hht071

Davidson, W. N., Xie, B., & Xu, W. (2004). Market reaction to voluntary announcements of audit committee appointments: The effect of financial expertise. *Journal of Accounting and Public Policy, 23*(4), 279-293. https://doi.org/10.1016/j.jaccpubpol.2004.06.001

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review, 70*(2), 193-225.

Dey, P. J. (1994). Guidelines for better governance. *CGA Magazine*, *28*(7), 24-27.

Ecker, F., Francis, J., Olsson, P., & Schipper, K. (2013). Estimation sample selection for discretionary accruals models. *Journal of Accounting and Economics, 56*(2-3), 190-211. https://doi.org/10.1016/j.jacceco.2013.07.001

Elsas, R., Hackethal, A., & Holzhäuser, M. (2010). The anatomy of bank diversification. *Journal of Banking and Finance, 34*(6), 1274-1287. https://doi.org/10.1016/j.jbankfin.2009.11.024

Epstein, D. (2019). *Range: Why generalists triumph in a specialized world*. Penguin Random House LLC.

Erin, O., Arumona, J., Onmonya, L., & Omotayo, V. (2019). Board financial education and firm performance: Evidence from the healthcare sector in Nigeria. *Academy of Strategic Management Journal, 18*(4), 1-14.

Fedaseyeu, V., Linck, J. S., & Wagner, H. F. (2018). Do qualifications matter? New evidence on board functions and director compensation. *Journal of Corporate Finance, 48*, 816-839. https://doi.org/10.1016/j.jcorpfin.2017.12.009

García Lara, J. M., García Osma, B., & Penalva, F. (2009). Accounting conservatism and corporate governance. *Review of Accounting Studies, 14*(1), 161-201. https://doi.org/10.1007/s11142-007-9060-1

Gill, M., Flynn, R. J., & Reissing, E. (2005). The governance self-assessment checklist: An instrument for assessing board effectiveness. *Nonprofit Management and Leadership, 15*(3), 271-294. https://doi.org/10.1002/nml.69

Goddard, J., Tavakoli, M., & Wilson, J. O. S. (2009). Sources of variation in firm profitability and growth. *Journal of Business Research, 62*(4), 495-508. https://doi.org/10.1016/j.jbusres.2007.10.007

Gottesman, A. A., & Morey, M. R. (2006). Manager education and mutual fund performance. *Journal of empirical finance, 13*(2), 145-182. https://doi.org/10.1016/j.jempfin.2005.10.001

Gottesman, A. A., & Morey, M. R. (2010). CEO educational background and firm financial performance. *Journal of Applied Finance, 20*(2), 70.

Gu, Y., & Zhang, L. (2016). Busy directors and corporate innovation. *Journal of Business and Educational Leadership, 6*(1), 49-62.

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *The Academy of Management Review, 9*(2), 193-206. https://doi.org/10.2307/258434

Hao, S., Jin, Q., & Zhang, G. (2011). Relative firm profitability and stock return sensitivity to industry-level news. *The Accounting Review, 86*(4), 1321-1347. https://doi.org/10.2308/accr-10042

Hawawini, G., Subramanian, V., & Verdin, P. (2003). Is performance driven by industry- or firm-specific factors? A new look at the evidence. *Strategic Management Journal, 24*(1), 1-16. https://doi.org/10.1002/smj.278

Hazarika, S., Karpoff, J. M., & Nahata, R. (2012). Internal corporate governance, CEO turnover, and earnings management. *Journal of Financial Economics, 104*(1), 44-69. https://doi.org/10.1016/j.jfineco.2011.10.011

He, L., & Yang, R. (2014). Does industry regulation matter? New evidence on audit committees and earnings management. *Journal of Business Ethics, 123*(4), 573-589. https://doi.org/10.1007/s10551-013-2011-9

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica, 47*(1), 153-161. https://doi.org/10.2307/1912352

Hermalin, B. E., & Weisbach, M. S. (1991). The effects of board composition and direct incentives on firm performance. *Financial Management, 20*(4), 101-112. https://doi.org/10.2307/3665716

Hermalin, B. E., & Weisbach, M. S. (1998). Endogenously chosen boards of directors and their monitoring of the CEO. *The American Economic Review, 88*(1), 96-118.

Hermalin, B. E., & Weisbach, M. S. (2003). Boards of directors as an endogenously determined institution: A survey of the economic literature. *Economic Policy Review - Federal Reserve Bank of New York, 9*(1), 7-26.

Hillman, A. J. (2005). Politicians on the board of directors: Do connections affect the bottom line? *Journal of Management, 31*(3), 464-481. https://doi.org/10.1177/0149206304272187

Hitt, M. A., Hoskisson, R. E., & Kim, H. (1997). International diversification: Effects on innovation and firm performance in product-diversified firms. *The Academy of Management Journal, 40*(4), 767-798. https://doi.org/10.2307/256948

Hitt, M. A., Tihanyi, L., Miller, T., & Connelly, B. (2006). International diversification: Antecedents, outcomes, and moderators. *Journal of Management, 32*(6), 831-867. https://doi.org/10.1177/0149206306293575

Hoechle, D., Schmid, M., Walter, I., & Yermack, D. (2012). How much of the diversification discount can be explained by poor corporate governance? *Journal of Financial Economics, 103*(1), 41-60. https://doi.org/10.1016/j.jfineco.2011.03.025

ICD-Rotman Directors Education Program curiculum overview. (2020). Retrieved November 30 from https://www.icd.ca/Courses/ICD-Rotman-Directors-Education-Program/Curriculum-Overview.aspx

Jackson, S., Farndale, E., & Kakabadse, A. (2003). Executive development: Meeting the needs of top teams and boards. *Journal of Management Development, 22*(3), 185-265. https://doi.org/10.1108/02621710310464823

Jia, M., & Zhang, Z. (2013). Critical mass of women on BODs, multiple identities, and corporate philanthropic disaster response: Evidence from privately owned Chinese firms. *Journal of Business Ethics, 118*(2), 303-317. https://doi.org/10.1007/s10551-012-1589-7

Joecks, J., Pull, K., & Vetter, K. (2013). Gender diversity in the boardroom and firm performance: What exactly constitutes a "Critical Mass?". *Journal of Business Ethics, 118*(1), 61-72. https://doi.org/10.1007/s10551-012-1553-6

Johnson, S. G., Schnatterly, K., & Hill, A. D. (2013). Board composition beyond independence: Social capital, human capital, and demographics. *Journal of Management, 39*(1), 232-262. https://doi.org/10.1177/0149206312463938

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193-228. https://doi.org/10.2307/2491047

Kim, K.-H., & Rasheed, A. A. (2014). Board heterogeneity, corporate diversification and firm performance. *Journal of Management Research, 14*(2), 121-139.

Kim, Y. (2007). The proportion and social capital of outside directors and their impacts on firm value: Evidence from Korea. *Corporate Governance: An International Review, 15*(6), 1168-1176. https://doi.org/10.1111/j.1467-8683.2007.00638.x

Kim, Y., & Cannella, A. A. (2008). Toward a social capital theory of director selection. *Corporate Governance: An International Review, 16*(4), 282-293. https://doi.org/10.1111/j.1467-8683.2008.00693.x

Kimberly, J. R., & Evanisko, M. J. (1981). Organizational innovation: The inflence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *Academy of Management Journal (pre-1986), 24*(4), 689-713.

King, T., Srivastav, A., & Williams, J. (2016). What's in an education? Implications of CEO education for bank performance. *Journal of Corporate Finance, 37*, 287-308. https://doi.org/10.1016/j.jcorpfin.2016.01.003

Knight, D., Pearce, C. L., Smith, K. G., Olian, J. D., Sims, H. P., Smith, K. A., & Flood, P. (1999). Top Management Team Diversity, Group Process, and Strategic Consensus. *Strategic Management Journal, 20*(5), 445-465.

Kor, Y. Y., & Sundaramurthy, C. (2009). Experience-Based human capital and social capital of outside directors. *Journal of Management, 35*(4), 981-1006. https://doi.org/10.1177/0149206308321551

Kotabe, M., Srinivasan, S. S., & Aulakh, P. S. (2002). Multinationality and firm performance: The moderating role of R&D and marketing capabilities. *Journal of International Business Studies, 33*(1), 79-97. https://doi.org/10.1057/palgrave.jibs.8491006

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics, 39*(1), 163-197. https://doi.org/10.1016/j.jacceco.2004.11.002

Krishnan, G. V., & Visvanathan, G. (2008). Does the SOX definition of an accounting expert matter? The association between audit committee directors' accounting expertise and accounting conservatism. *Contemporary Accounting Research, 25*(3), 827-858. https://doi.org/10.1506/car.25.3.7

Lamo, A., Messina, J., & Wasmer, E. (2011). Are specific skills an obstacle to labor market adjustment? *Labour Economics, 18*(2), 240-256. https://doi.org/10.1016/j.labeco.2010.09.006

Lehn, K. M., Patro, S., & Zhao, M. (2009). Determinants of the size and composition of US corporate boards: 1935-2000. *Financial Management, 38*(4), 747-780. https://doi.org/10.1111/j.1755-053X.2009.01055.x

Lester, R. H., Hillman, A., Zardkoohi, A., & Cannella, A. A. (2008). Former government officials as outside directors: The role of human and social capital. *The Academy of Management Journal, 51*(5), 999-1013. https://doi.org/10.5465/AMJ.2008.34789675

Lev, B. (1969). Industry averages as targets for financial ratios. *Journal of Accounting Research, 7*(2), 290-299. https://doi.org/10.2307/2489971

Lewis, B. W., Walls, J. L., & Glen W. S, D. (2014). Difference in degrees: CEO characteristics and firm environmental disclosure. *Strategic Management Journal, 35*(5), 712-722. https://doi.org/10.1002/smj.2127

Li, Y., Liu, Y., & Xie, F. (2019). Technology directors and firm innovation. *Journal of Multinational Financial Management, 50*, 76-88. https://doi.org/10.1016/j.mulfin.2019.04.001

Lillard, L. A., & Tan, H. W. (2012). Private Sector Training: Who gets it and what are its effects? In S. W. Polachek & K. Tatsiramos (Eds.), *35th Anniversary Retrospective: Research in Labor Economics* (Vol. 35, pp. 247-308). Emerald Group Publishing Limited. https://doi.org/10.1108/S0147-9121(2012)0000035035

Lu, J. W., & Beamish, P. W. (2004). International diversification and firm performance: The S-Curve hypothesis. *The Academy of Management Journal, 47*(4), 598-609. https://doi.org/10.2307/20159604

Lucey, B. M., Plaksina, Y., & Dowling, M. (2013). CEO social status and acquisitiveness. *Qualitative Research in Financial Markets, 5*(2), 161-177. https://doi.org/10.1108/QRFM-11-2011-0029

Mangena, M., Priego, A. M., & Manzaneque, M. (2020). Bank power, block ownership, boards and financial distress likelihood: An investigation of Spanish listed firms. *Journal of Corporate Finance, 64*, 101636. https://doi.org/10.1016/j.jcorpfin.2020.101636

Masulis, R. W., & Mobbs, S. (2014). Independent director incentives: Where do talented directors spend their limited time and energy? *Journal of Financial Economics, 111*(2), 406-429. https://doi.org/10.1016/j.jfineco.2013.10.011

May, D. R., Luth, M. T., & Schwoerer, C. E. (2014). The influence of business ethics education on moral efficacy, moral meaningfulness, and moral courage: A quasi-experimental study. *Journal of Business Ethics, 124*(1), 67-80. https://doi.org/10.1007/s10551-013-1860-6

McGahan, A. M., & Porter, M. E. (2005). Comment on 'Industry, Corporate and Business-Segment Effects and Business Performance: A Non-Parametric Approach' by Ruefli and Wiggins. *Strategic Management Journal, 26*(9), 873-880. https://doi.org/10.1002/smj.480

McIntyre, M. L., & Murphy, S. A. (2008). Board of director performance reporting. *Corporate governance (Bradford), 8*(2), 165-178. https://doi.org/10.1108/14720700810863797

McIntyre, M. L., & Murphy, S. A. (2009). Director education programs in Canada, Australia and the UK: A comparative study. *International Journal of Business Governance and Ethics, 4*(4), 349-371. https://doi.org/10.1504/IJBGE.2009.023788

McNamara, G., Aime, F., & Vaaler, P. M. (2005). Is performance driven by industry- or firm-specific factors? A response to Hawawini, Subramanian, and Verdin. *Strategic Management Journal, 26*(11), 1075-1081. https://doi.org/10.1002/smj.496

Miller, D., & Xu, X. (2019). MBA CEOs, short-term management and performance. *Journal of Business Ethics, 154*(2), 285-300. https://doi.org/10.1007/s10551-017-3450-5

Murphy, S. A., & McIntyre, M. L. (2007). Board of director performance: a group dynamics perspective. *Corporate governance (Bradford), 7*(2), 209-224. https://doi.org/10.1108/14720700710739831

Nekhili, M., Chakroun, H., & Chtioui, T. (2016). Women's leadership and firm performance: Family versus nonfamily firms. *Journal of Business Ethics, 153*(2), 291-316. https://doi.org/10.1007/s10551-016-3340-2

Nitzan, S., & Paroush, J. (1980). Investment in human capital and social self protection under uncertainty. *International Economic Review, 21*(3), 547-557. https://doi.org/10.2307/2526351

Opler, T. C., & Titman, S. (1994). Financial distress and corporate performance. *The Journal of Finance, 49*(3), 1015-1040. https://doi.org/10.1111/j.1540-6261.1994.tb00086.x

Palmer, D., & Barber, B. M. (2001). Challengers, elites, and owning families: A social class theory of corporate acquisitions in the 1960s. *Administrative Science Quarterly, 46*(1), 87-120. https://doi.org/10.2307/2667126

Papadimitri, P., Pasiouras, F., Tasiou, M., & Ventouri, A. (2020). The effects of board of directors' education on firms' credit ratings. *Journal of Business Research, 116*, 294-313. https://doi.org/10.1016/j.jbusres.2020.04.059

Plaksina, Y., Gallagher, L., & Dowling, M. (2019). CEO social status and M&A decision making. *International Review of Financial Analysis, 64*, 282-300. https://doi.org/10.1016/j.irfa.2019.06.006

Pugliese, A., Minichilli, A., & Zattoni, A. (2014). Integrating agency and resource dependence theory: Firm profitability, industry regulation, and board task performance. *Journal of Business Research, 67*(6), 1189-1200. https://doi.org/10.1016/j.jbusres.2013.05.003

Ruefli, T. W., & Wiggins, R. R. (2003). Industry, corporate, and segment effects and business performance: A non-parametric approach. *Strategic Management Journal, 24*(9), 861-879. https://doi.org/10.1002/smj.350

Subramanyam, K. R. (1996). The pricing of discretionary accruals. *Journal of Accounting and Economics, 22*(1), 249-281. https://doi.org/10.1016/S0165-4101(96)00434-X

Thornhill, S. (2006). Knowledge, innovation and firm performance in high- and low-technology regimes. *Journal of Business Venturing, 21*(5), 687-703. https://doi.org/10.1016/j.jbusvent.2005.06.001

Tihanyi, L., Ellstrand, A. E., Daily, C. M., & Dalton, D. R. (2000). Composition of the top management team and firm international diversification. *Journal of Management, 26*(6), 1157-1177. https://doi.org/10.1016/S0149-2063(00)00076-3

Tong, Z. (2011). Firm diversification and the value of corporate cash holdings. *Journal of Corporate Finance, 17*(3), 741-758. https://doi.org/10.1016/j.jcorpfin.2009.05.001

Torchia, M., Calabrò, A., & Huse, M. (2011). Women directors on corporate boards: From tokenism to critical mass. *Journal of Business Ethics, 102*(2), 299-317. https://doi.org/10.1007/s10551-011-0815-z

Vasilescu, C., & Millo, Y. (2016). Do industrial and geographic diversifications have different effects on earnings management? Evidence from UK mergers and acquisitions. *International Review of Financial Analysis, 46*, 33-45. https://doi.org/10.1016/j.irfa.2016.04.009

Volonté, C., & Gantenbein, P. (2016). Directors' human capital, firm strategy, and firm performance. *Journal of Management & Governance, 20*(1), 115-145. https://doi.org/10.1007/s10997-014-9304-y

Wang, M.-J., Su, X.-Q., Wang, H.-D., & Chen, Y.-S. (2017). Directors' education and corporate liquidity: Evidence from boards in Taiwan. *Review of Quantitative Finance and Accounting, 49*(2), 463-485. https://doi.org/10.1007/s11156-016-0597-6

Whitehead, P. (2013). *Non-Executive director: A task for which no one is qualified*. Retrieved January 15 from https://www.ft.com/content/33ec6b3e-9099-11e2-a456-00144feabdc0

Withers, M. C., Hillman, A. J., & Cannella, A. A. (2012). A multidisciplinary review of the director selection literature. *Journal of Management, 38*(1), 243-277. https://doi.org/10.1177/0149206311428671

Xie, B., Davidson, W. N., & DaDalt, P. J. (2003). Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance, 9*(3), 295-316. https://doi.org/10.1016/S0929-1199(02)00006-8

Yu, F. (2008). Analyst coverage and earnings management. *Journal of Financial Economics, 88*(2), 245-271. https://doi.org/10.1016/j.jfineco.2007.05.008

Table 10 (Continued)

APPENDIX

Table A1

Summary of the ICD-Rotman Directors Education Program Curriculum

Module	Title	Topics Covered	Specifics Covered	Length
I	Guiding Strategic Direction and Risks	Fundamental board tasks	Director`s legal duties and responsibilities Overseeing strategic decisions Managing group dynamics Decision making	3 days
II	Monitoring Financial Strategy, Risks and Disclosure	Responsibility of overseeing financial performance, health and disclosure	Organizing and running audit committees Improving personal effectiveness in board meetings	3 days
III	Guiding Human Performance	Enhancing human performance	Appointing, evaluation, compensation and renewal of executives Structuring boards with proper skills and experiences	3 days
IV	Assessing Enterprise Risk and Directing Extreme and Unique Events	Employing enterprise risk Management framework	Mergers and acquisitions Technology investments Operations crises Finance irregularities Human capital failure Governance Breakdown	3 days

Table A2

Detailed Description of Variables Used

Variable	Definition
	Dependent variables
Q_{t+1}	$\frac{\text{Market Value of Equity}_{t+1} + \text{Long Term Debt}_{t+1} + \text{Short Term Debt}_{t+1}}{\text{Total Assets}_{t+1}}$
ROA_{t+1}	$\frac{\text{Net Income}_{t+1}}{\text{Total Assets}_{t+1}}$ EBITDA was also used in replace of net income with similar results.
SR_{t+1}	$\frac{\text{Fiscal Year Closing Stock Price}_{t+1} - \text{Fiscal Year Closing Stock Price}_{t}}{\text{Fiscal Closing Stock Price}_{t}}$
$Innovation_{t+1}$	$\frac{\text{R\&D Expense}_{t+1} + \text{Capital Expenditures}_{t+1}}{\text{Total Revenue}_{t+1}}$
Jones Model DA	To calculate the $TA_{i,t}$ a minimum of 11 observations (10 plus the event firm-year observation) are required for each industry year combination for every year of 2011-2017, otherwise all observations for that industry are dropped. $TA_{i,t} = \alpha_1\left(\frac{1}{A_{i,t-1}}\right) + \alpha_2(\Delta REV_{i,t}) + \alpha_3(PPE_{i,t}) + \varepsilon_{i,t}$ The estimated coefficients are then used to calculate: $NDA_{i,t} = \hat{\alpha}_1\left(\frac{1}{A_{i,t-1}}\right) + \hat{\alpha}_2(\Delta REV_{i,t}) + \hat{\alpha}_3(PPE_{i,t})$ thus, the Jones Model discretionary accruals are estimated as: $DA_{i,t} \equiv \varepsilon_{i,t} = TA_{i,t} - NDA_{i,t}$
Sized-Jones Model DA	The sample is sorted into deciles for each year based off the lagged total assets. The same methodology that was used to calculate the Jones Model DA is then used; except that instead of using industries, the size deciles are used, and a constant term is added to the $TA_{i,t}$ regression.
	Variable of interest
Charter	Research assistants went through the Proxy statements and coded each director with a dummy variable that equaled 1 if the director had any of the following designations: ICD.D, Fellow of the C.D. Howe Institute, Fellow of the Institute of Corporate Directors, UK Institute of Directors, Fellow of Canada's Institute of Corporate Directors; and 0 otherwise. For each firm and year, the following equation was used to calculate the Charter variable: $\frac{\sum \text{Dummy Variable}}{\text{Total Number of Directors}}$

Variable	Definition
	Control variables
Financial Literacy	Research assistants went through the Proxy statements and coded each director with a dummy variable. It equaled 1 if the director had any of the following: Experience as a professional accountant, corporate controller or financial professional (CFA, CPA, CFO, FCA, VP Finance, Finance department) with an understanding of financial transactions and corporate finance. For each firm and year, the following equation was used to calculate the Financial Literacy variable: $\frac{\sum \text{Dummy Variable}}{\text{Total Number of Directors}}$
Female Directors	$\frac{\sum \text{Female Directors}}{\text{Total Number of Directors}}$
Average Board Tenure	$\frac{\sum_{i=1}^{n} Director's\ Board\ Tenure}{Total\ Number\ of\ Directors}$
Average Age of Directors	$\frac{\sum_{i=1}^{n} \text{Director's Age}}{\text{Total Number of Directors}}$
Industry Related Experience	Research assistants went through the Proxy statements and coded each director from the with a dummy variable. It equaled 1 if the director had any of the following: experience in any position in a company in the same field, or lawyers, accountants and bankers that specialize in that sector; 0 otherwise. For each firm and year, the following equation was used to calculate the Industry Related Experience variable: $\frac{\sum \text{Dummy Variable}}{\text{Total Number of Directors}}$
Board Size	Number of directors on the board.
CEO Dual	Dummy variable equal to one if the CEO is also the chairperson; 0 otherwise
Board Independence	Research assistants went through the Proxy statements and coded each director with a dummy variable. It equaled 1 if the director was stated as an independent director and 0 otherwise. For each firm and year, the following equation was used to calculate the Board Independence variable: $\frac{\sum \text{Dummy Variable}}{\text{Total Number of Directors}}$
Leverage	$\frac{\text{Long Term Debt + Short Term Debt}}{\text{Total Assets}}$
Size	$\ln \text{Total Assets}$
5-year Revenue Growth	5-year geometric growth in sales
ROA_t	$\frac{\text{Net Income}_t}{\text{Total Assets}_t}$
Q_t	$\frac{\text{Market Value of Equity}_t + \text{Long Term Debt}_t + \text{Short Term Debt}_t}{\text{Total Assets}_t}$
Individual Ownership	Percentage of shares owned by individual block holders. Ontario Securities Commission only requires disclosure only when owning 10% or more of a firm's outstanding shares.

Variable	Definition
Institutional Ownership	Percentage of shares owned by institutional block holders. Ontario Securities Commission requires disclosure only when owning 10% or more of a firm's outstanding shares
Insider Shareholdings	Percentage of shares owned by management
	(Sized) Jones model
TA	$\frac{\text{Net Income - Cash Flow from Operations}}{\text{Total Assets}_{t-1}}$
Inverse of Total Assets	$\frac{1}{\text{Total Assets}_{t-1}}$
REV	$\frac{\text{Total Revenue}_t\text{-Total Revenue}_{t-1}}{\text{Total Assets}_{t-1}}$
PPE	$\frac{\text{Gross Property, Plant and Equipment}_t}{\text{Total Assets}_{t-1}}$
	Moderating Variables
Industry	Firms with the two digit SIC codes of 10-14 are in Mining, 15-17 in Construction, 20-39 in Manufacturing, 40-49 in Transportation, 50-59 in Trade, 60-67 in Financials, 70-89 in Services. There are no observations with 2 digit SIC codes of 01-09 or 90-99.
Business Segments	Dummy variable equaling 1 if the firm operates in multiple business segments; 0 otherwise
Herfindahl Index	Using: $1 - \sum_{i=1}^{\text{number of segments}} [\frac{(\text{Business Segment Sales}_i)^2}{(\text{Company Sales})^2}]$ a dummy variable is constructed equaling 1 if the above equation is greater than 0; 0 otherwise

Table A3

Instrument Correlation Table

Panel A: Exclusion Restriction					
Variable	Funds Director Education hat	Tobin's Q	ROA	Stock Returns	Innovation
Funds Director Education hat	1	-	-	-	-
Tobin's Q	-0.035	1	-	-	-
ROA	-0.028	0.256***	1	-	-
Stock Returns	0.015	0.187***	0.316***	1.000	-
Innovation	-0.026	0.048*	-0.193***	-0.152***	1
Panel B: Inclusion Restriction					
Variable	Funds Director Education	Charter			
Funds Director Education	1	-			
Charter	0.168***	1			

Note. Detailed variable definitions are provided in Table A2. Stock returns are winsorized at the 5% level at both ends of the distribution. All other continuous variables are winsorized at the 1% level at both ends of the distribution. Funds Director Education hat and Charter is measured at time *t*, all other variables are measured at time *t+1.* Funds Director Education hat is the fitted value of Funds Director Education regressed on Charter when the firm characteristics are used as control variables.
*p<.1. **p<.05. ***p<.01

Table A4

First Stage Regression and Probit Models for Instrument Validity

	Charter		Charter Dummy	
Independent Variable	I	II	III	IV
Funds Director Education	0.046***	0.039***	0.319**	0.309**
	(3.64)	(3.25)	(2.43)	(2.33)
Constant	0.096***	-0.082	0.004	0.378
	(16.04)	(-1.60)	(0.05)	(1.01)
Leverage	-	0.034**	-	0.005
	-	(1.99)	-	(0.10)
Size	-	-0.074**	-	0.085
	-	(-2.15)	-	(0.15)
ROA	-	-0.001	-	-0.077
	-	(-0.13)	-	(-1.03)
Q	-	-0.002	-	-0.073
	-	(-1.16)	-	(-1.57)
5-year Revenue Growth	-	-0.168	-	-0.009
	-	(-1.20)	-	(-0.02)
N	1719	1719	1719	1719
Adj. R2	0.016	0.040	-	-

Note. Detailed variable definitions are provided in Table A2. The t-statistics are in parenthesis. All continuous variables are winsorized at the 1% level at both ends of the distribution. All variables are measured at time *t*. The dependent variable for columns I and II is Charter. The dependent variable for columns III and IV is Charter Dummy which is a dummy variable equal to one if the firm has at least one chartered director and zero otherwise. Funds Director Education is a dummy variable equal to one if the firm explicitly states in their proxy circular that they fund continuing director education and equals zero otherwise. Column I is a panel regression with firm and year fixed effects and standard errors corrected for clustering at the firm-level. Column III is a probit model corrected for firm-level clustering. Column II is the same model as Column I but includes firm characteristics as control variables. Column IV is the same probit model as Column II but with the inclusion of firm characteristics as the control variables. *p<.1. **p<.05. ***p<.01

Table A5

Regression Results Conditioned on Having a Minimum of One Chartered Director

Variable	I	II	III	IV	V	VI
Charter	-0.426***	-0.043	0.008	0.187**	0.013	0.060***
	(-2.66)	(-0.87)	(0.01)	(2.32)	(0.67)	(2.71)
Financial Controls	Yes	Yes	Yes	Yes	Yes	Yes
Governance Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	965	965	965	752	686	748
Adj. R2	0.125	0.094	0.278	0.014	0.123	0.140

Note. Detailed variable definitions are provided in Table A2. The t-statistics are in parenthesis. Stock returns are winsorized at the 5% level at both ends of the distribution. All other continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variable is measured at time *t+1* for models I, II, III and IV. The Panel regression is a firm and year fixed effects panel regression conditioned on having at least one chartered director. The standard errors are corrected for clustering at the firm-level. The dependent variable for models I-VI are Tobin's Q, ROA, Annual Stock Returns, Innovation, Jones Model Discretionary Accruals and the Sized-Jones Model Discretionary Accruals respectively. The financial and governance controls are the same control variables used in (1), (2) and (6).

*p<.1. **p<.05. ***p<.01

Table A6

Critical Mass Regression Results

Variable	I	II	III	IV	V	VI
One Chartered Director	0.029	-0.005	-0.016	-0.048	0.000	0.002
	(0.57)	(-0.57)	(-0.42)	(-1.44)	(0.09)	(0.33)
Two Chartered Directors	-0.051	0.002	-0.050	-0.015	0.004	0.007
	(-0.78)	(0.22)	(-1.24)	(-0.21)	(0.58)	(1.25)
Three Chartered Directors	-0.000	0.005	-0.046	-0.077	0.002	0.018***
	(-0.00)	(0.36)	(-0.91)	(-1.02)	(0.29)	(2.68)
Financial Controls	Yes	Yes	Yes	Yes	Yes	Yes
Governance Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	1719	1719	1702	1341	1172	1275
Adj. R^2	0.098	0.100	0.281	0.019	0.060	0.094

Note. Detailed variable definitions are provided in Table A2. The t-statistics are in parenthesis. Stock returns are winsorized at the 5% level at both ends of the distribution. All other continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time t. The dependent variable is measured at time *t+1* for models I, II, III and IV. The Panel regression is a firm and year fixed effects panel regression with standard errors corrected for clustering at the firm-level. The dependent variable for models I-VI are Tobin's Q, ROA, Annual Stock Returns, Innovation, Jones Model Discretionary Accruals and the Sized-Jones Model Discretionary Accruals respectively. One Chartered Director and Two Chartered Directors are dummy variables equal to 1 if on the board, there is exactly one and two chartered directors, respectively. Three Chartered Directors is a dummy variable equal to one if there are three or more chartered directors on a board. The financial and governance controls are the same control variables used in (1), (2) and (6).

*p<.1. **p<.05. ***p<.01

Table A7

Regression Results with Forced CEO Turnover as a Moderator

Variable	Tobin's Q_{t+1}	ROA	Annual Stock Returns$_{t+1}$
Charter	-0.242	-0.0301	0.025
	(-1.30)	(-0.85)	(-0.11)
Forced CEO Turnover	-0.103	-0.00361	0.180*
	(-1.53)	(-0.15)	(1.96)
Charter * Forced CEO Turnover	0.264	-0.0761	-0.834
	(0.88)	(-0.55)	(-1.63)
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Financial Controls	Yes	Yes	Yes
Governance Controls	Yes	Yes	Yes
N	1716	1716	1699
Adj. R2	0.099	0.101	0.088

Note. Detailed variable definitions are provided in Table A2. The t-statistics are in parenthesis. Stock returns are winsorized at the 5% level at both ends of the distribution. All other continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variables are Tobin's Q, ROA and annual stock returns, respectively and are all measured at time *t+1*. A panel regression with firm and year fixed effects and standard errors corrected for clustering at the firm-level is used. Forced CEO Turnover is a dummy variable equal to one if the CEO was a) fired or forced out of their position b) the CEO is under 60-years old and the news announcement does not mention that the CEO died, left for health reasons or accepted a different position on the board or at a different firm or c) the CEO "retires" but leaves within four months of the announcement (Hazarika et al., 2012, p.47).
*p<.1. **p<.05. ***p<.01

Table A8

Riskiness Regression Results

Variable	Total Risk	Idiosyncratic Risk	Beta
Charter	0.069	-0.015	0.190
	(0.88)	(-0.48)	(0.65)
Financial Literacy	-0.081	-0.039**	0.101
	(-1.40)	(-2.16)	(0.42)
Female Directors	0.255**	0.057	0.413
	(2.17)	(1.17)	(0.94)
Average Board Tenure	-0.008*	-0.001	0.028*
	(-1.96)	(-0.85)	(1.70)
Average Age of the Board	0.002	0.002	-0.019
	(0.32)	(1.06)	(-1.07)
Industry Related Experience	-0.026	0.044	0.237
	(-0.40)	(1.16)	(0.96)
Board Size	-0.006	-0.002	0.008
	(-1.52)	(-0.96)	(0.58)
CEO Dual	-0.029	-0.009	-0.116
	(-0.71)	(-0.78)	(-0.86)
Board Independence	0.101	0.045	0.220
	(0.72)	(0.78)	(0.65)
Leverage	0.012	-0.056**	1.068***
	(0.19)	(-2.17)	(2.66)
Size	-0.027	0.007	-0.105
	(-1.46)	(0.97)	(-0.87)
5-year Revenue Growth	0.003	0.008**	0.080
	(0.63)	(2.43)	(1.01)
Individual Ownership	0.577	0.062	0.734
	(1.64)	(1.50)	(1.04)
Institutional Ownership	0.000	0.024	0.760*
	(0.00)	(1.00)	(1.95)
Insider Shareholdings	0.186	0.031	-1.199**
	(1.25)	(0.77)	(-2.03)
Constant	0.608*	-0.141	1.941
	(1.73)	(-0.95)	(1.39)
N	1312	1216	1312
Adj. R2	0.302	0.040	0.121

Note. Detailed variable definitions are provided in Table A2. The *t*-statistics are in parenthesis. All continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variables are measured at time *t+1*. A panel regression with firm and year fixed effects and standard errors are corrected for clustering at the firm-level. Beta, idiosyncratic risk and total risk is calculated using monthly returns similar to Baulkaran (2014).
*p<.1. **p<.05. ***p<.01

Table A9

Regression Results with Riskiness as a Moderator

Variable	I	II	III	IV	V
Panel A: Riskiness as Beta					
Charter	-0.549**	-0.016	0.002	0.003	0.041
	(-2.11)	(-0.37)	(0.01)	(0.11)	(1.65)
Low Beta	-0.008	0.003	-0.051	0.000	-0.004
	(-0.13)	(0.45)	(-0.83)	(0.03)	(-0.82)
High Beta	-0.140**	0.006	0.051	-0.009	-0.009*
	(-2.27)	(0.54)	(1.04)	(-1.50)	(-1.79)
Charter * Low Beta	0.419*	0.003	0.184	0.009	0.017
	(1.84)	(0.08)	(0.72)	(0.37)	(0.70)
Charter * High Beta	0.463*	-0.040	-0.095	0.019	0.024
	(1.87)	(-0.78)	(-0.30)	(0.98)	(1.20)
Financial Literacy	-0.080	-0.014	0.014	-0.016	-0.027*
	(-0.50)	(-0.40)	(0.07)	(-0.96)	(-1.90)
Female Directors	0.329	0.006	-0.546	0.032	0.011
	(1.41)	(0.16)	(-1.39)	(1.10)	(0.44)
Average Board Tenure	-0.010	-0.002	0.006	-0.002	-0.002**
	(-0.98)	(-0.89)	(0.42)	(-1.50)	(-2.12)
Average Age of the Board	-0.005	0.003	0.008	0.002	0.002
	(-0.51)	(1.38)	(0.68)	(1.55)	(1.63)
Industry Related Experience	0.039	0.006	-0.292	0.005	0.011
	(0.21)	(0.24)	(-1.64)	(0.30)	(0.85)
Board Size	-0.040***	-0.005**	-0.013	-0.001	0.001
	(-3.47)	(-2.20)	(-1.11)	(-0.99)	(0.55)
CEO Dual	-0.055	0.029	-0.057	0.003	0.018
	(-0.79)	(1.34)	(-0.59)	(0.28)	(1.39)
Board Independence	-0.005	-0.006	0.168	-0.016	-0.018
	(-0.02)	(-0.15)	(0.72)	(-0.59)	(-0.75)
Leverage	0.213	-0.021	2.459	0.015	-0.011
	(0.63)	(-0.58)	(1.60)	(0.67)	(-0.49)
Size	-0.194***	-0.033**	-0.328**	0.001	-0.004
	(-2.63)	(-1.97)	(-1.97)	(0.07)	(-0.60)
5-year Revenue Growth	0.014	0.002	-0.028	0.005*	0.009***
	(1.09)	(0.52)	(-0.10)	(1.65)	(4.10)
Individual Ownership	0.132	0.063	-0.490	0.044	0.111
	(0.07)	(0.39)	(-0.84)	(0.52)	(1.32)
Institutional Ownership	0.075	-0.071*	0.709	0.016	-0.005
	(0.34)	(-1.93)	(1.50)	(0.66)	(-0.25)
Insider Shareholdings	-0.301	0.115	-0.477	0.003	0.112
	(-0.33)	(1.02)	(-0.49)	(0.03)	(0.93)
ROA	-	-	-	-0.095**	-0.087***
	-	-	-	(-2.03)	(-2.60)
Q	-	-	-	-0.004	-0.007*
	-	-	-	(-0.77)	(-1.67)
Constant	3.694***	0.238	1.711	-0.022	0.009
	(4.63)	(1.48)	(1.37)	(-0.23)	(0.11)
N	1719	1719	1702	1172	1275
Adj. R2	0.107	0.100	0.085	0.062	0.100
Panel B: Riskiness as Idiosyncratic Risk					
Charter	-0.274	-0.059	0.077	-0.007	0.007
	(-0.94)	(-1.13)	(0.24)	(-0.19)	(0.21)

Variable	I	II	III	IV	V
Low Idiosyncratic Risk	0.072	0.009	-0.087	-0.008	-0.008
	(1.50)	(0.99)	(-1.43)	(-1.13)	(-1.27)
High Idiosyncratic Risk	-0.064	-0.000	0.053	-0.005	-0.009
	(-1.10)	(-0.03)	(1.21)	(-1.06)	(-1.59)
Charter * Low Idiosyncratic Risk	-0.154	0.004	0.003	0.014	0.043*
	(-0.93)	(0.10)	(0.01)	(0.49)	(1.78)
Charter * High Idiosyncratic Risk	0.182	0.032	-0.072	0.024	0.043*
	(0.83)	(0.94)	(-0.30)	(0.93)	(1.70)
Financial Literacy	-0.075	-0.016	0.029	-0.013	-0.025*
	(-0.46)	(-0.47)	(0.16)	(-0.81)	(-1.81)
Female Directors	0.296	0.009	-0.489	0.030	0.006
	(1.24)	(0.21)	(-1.30)	(0.99)	(0.23)
Average Board Tenure	-0.007	-0.002	0.007	-0.001	-0.002*
	(-0.70)	(-1.01)	(0.44)	(-1.08)	(-1.73)
Average Age of the Board	-0.004	0.003	0.007	0.002	0.002*
	(-0.40)	(1.33)	(0.60)	(1.55)	(1.68)
Industry Related Experience	0.054	0.005	-0.301	0.006	0.014
	(0.27)	(0.19)	(-1.65)	(0.35)	(1.04)
Board Size	-0.039***	-0.005**	-0.013	-0.001	0.001
	(-3.34)	(-2.18)	(-1.13)	(-0.86)	(0.55)
CEO Dual	-0.038	0.030	-0.056	0.003	0.018
	(-0.52)	(1.41)	(-0.56)	(0.28)	(1.32)
Board Independence	-0.030	-0.007	0.177	-0.016	-0.019
	(-0.10)	(-0.15)	(0.74)	(-0.59)	(-0.77)
Leverage	0.211	-0.023	2.431	0.013	-0.013
	(0.61)	(-0.63)	(1.61)	(0.61)	(-0.62)
Size	-0.188**	-0.030*	-0.325**	0.001	-0.004
	(-2.57)	(-1.85)	(-2.05)	(0.13)	(-0.52)
5-year Revenue Growth	0.012	0.002	-0.025	0.005	0.009***
	(0.97)	(0.50)	(-0.09)	(1.61)	(4.05)
Individual Ownership	-0.045	0.051	-0.385	0.024	0.100
	(-0.02)	(0.32)	(-0.65)	(0.30)	(1.22)
Institutional Ownership	0.071	-0.071*	0.729	0.018	-0.005
	(0.32)	(-1.95)	(1.52)	(0.73)	(-0.27)
Insider Shareholdings	-0.469	0.111	-0.327	-0.004	0.105
	(-0.51)	(0.99)	(-0.35)	(-0.04)	(0.90)
ROA	-	-	-	-0.097**	-0.088***
	-	-	-	(-2.08)	(-2.69)
Q	-	-	-	-0.003	-0.007
	-	-	-	(-0.65)	(-1.60)
Constant	3.572***	0.229	1.655	-0.029	0.004
	(4.58)	(1.44)	(1.40)	(-0.30)	(0.04)
N	1719	1719	1702	1172	1275
Adj. R2	0.102	0.101	0.086	0.062	0.103
Panel C: Riskiness as Total Risk					
Charter	-0.201	-0.018	-0.022	0.034	0.072***
	(-1.08)	(-0.40)	(-0.10)	(1.40)	(3.30)
Low Total Risk	0.017	-0.008	-0.037	0.002	-0.000
	(0.42)	(-1.07)	(-0.92)	(0.52)	(-0.04)
High Total Risk	0.038	0.005	0.127**	0.004	0.005
	(0.99)	(0.51)	(2.03)	(0.79)	(1.05)
Charter * Low Total Risk	-0.091	-0.015	0.118	-0.034	-0.014
	(-0.50)	(-0.44)	(0.48)	(-1.60)	(-0.66)

Variable	I	II	III	IV	V
Charter * High Total Risk	0.017	-0.030	0.010	-0.016	-0.033*
	(0.11)	(-0.64)	(0.05)	(-0.68)	(-1.65)
Financial Literacy	-0.061	-0.015	0.032	-0.014	-0.025*
	(-0.37)	(-0.45)	(0.17)	(-0.87)	(-1.85)
Female Directors	0.320	0.009	-0.497	0.029	0.008
	(1.34)	(0.22)	(-1.34)	(0.97)	(0.32)
Average Board Tenure	-0.006	-0.002	0.007	-0.002	-0.002*
	(-0.60)	(-0.87)	(0.50)	(-1.22)	(-1.91)
Average Age of the Board	-0.004	0.003	0.010	0.002	0.002
	(-0.34)	(1.37)	(0.79)	(1.52)	(1.63)
Industry Related Experience	0.041	0.003	-0.287	0.005	0.012
	(0.21)	(0.11)	(-1.60)	(0.31)	(0.91)
Board Size	-0.039***	-0.005**	-0.012	-0.001	0.001
	(-3.29)	(-2.16)	(-1.03)	(-0.89)	(0.45)
CEO Dual	-0.041	0.030	-0.059	0.004	0.019
	(-0.58)	(1.41)	(-0.62)	(0.36)	(1.47)
Board Independence	-0.040	-0.011	0.134	-0.018	-0.021
	(-0.14)	(-0.27)	(0.55)	(-0.65)	(-0.86)
Leverage	0.206	-0.025	2.475	0.012	-0.013
	(0.60)	(-0.70)	(1.62)	(0.54)	(-0.63)
Size	-0.190***	-0.031*	-0.330**	0.002	-0.004
	(-2.61)	(-1.92)	(-2.09)	(0.28)	(-0.53)
5-year Revenue Growth	0.015	0.002	-0.026	0.005*	0.009***
	(1.15)	(0.56)	(-0.09)	(1.69)	(4.16)
Individual Ownership	0.034	0.069	-0.405	0.027	0.110
	(0.02)	(0.43)	(-0.70)	(0.33)	(1.33)
Institutional Ownership	0.076	-0.071*	0.708	0.015	-0.007
	(0.34)	(-1.94)	(1.50)	(0.62)	(-0.35)
Insider Shareholdings	-0.373	0.120	-0.465	-0.008	0.105
	(-0.41)	(1.08)	(-0.49)	(-0.08)	(0.89)
ROA	-	-	-	-0.099**	-0.088***
	-	-	-	(-2.10)	(-2.65)
Q	-	-	-	-0.003	-0.006
	-	-	-	(-0.57)	(-1.55)
Constant	3.464***	0.235	1.556	-0.043	-0.002
	(4.37)	(1.48)	(1.36)	(-0.45)	(-0.03)
N	1719	1719	1702	1172	1275
Adj. R2	0.098	0.101	0.087	0.061	0.099

Note. Detailed variable definitions are provided in Table A2. The *t*-statistics are in parenthesis. Stock returns are winsorized at the 5% level at both ends of the distribution. All other continuous variables are winsorized at the 1% level at both ends of the distribution. All independent variables are measured at time *t*. The dependent variables in column I, II and III are Tobin's Q, ROA, annual stock returns all of which are measured at time *t+1*. The dependent variables in column IV and V are Jones Model discretionary accruals and the Sized-Jones Model discretionary accruals measured at time *t*. A panel regression with firm and year fixed effects and standard errors corrected for clustering at the firm-level is used. High and Low Beta, Idiosyncratic Risk and Total Risk are dummy variables equal to one if the beta, idiosyncratic risk and total risk, respectively, is in the top or bottom tercile in the sample. Beta, idiosyncratic risk and total risk is calculated using monthly returns similar to Baulkaran (2014).
*p<.1. **p<.05. ***p<.01