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Active Independent Directors and Earnings Quality

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Abstract

We examine the relationship between active independent directors and earnings quality for U.S. firms. We construct measures that proxy for activeness of independent directors and find that the proportion of active independent directors is under half on average. Our finding shows that earnings quality increases with the percentage of active independent directors on the board. Once the active independent directors are separated out, the other independent directors do not have any effect on earnings quality. This finding supports the hypothesis that the activeness of independent directors is incrementally significant over just the proportion of independent directors for the quality of reported earnings.

Keywords

Active Independent Directors, Earnings Quality, Corporate Governance

1. Introduction

The high-profile failures of corporate governance such as Enron, WorldCom, Tyco and Adelphia, and the resulting loss of investor confidence, have resulted in regulatory and legislative responses such as the Sarbanes Oxley Act of 2002 and an increasing academic interest in the factors that improve corporate governance. The current literature has focused on the role of agency conflicts in corporations (Jensen & Meckling, 1976) with a view that reducing the consequences of such conflicts could improve corporate governance. Research in this area has identified various attributes of the corporate board such as board size, board leadership structure, board independence, and board committees such as the audit committee as factors that improve corporate governance.

Among these board attributes, board independence is recognized as arguably the most important board characteristic. For example, following the Sarbanes Oxley Act (SOX) of 2002, the New York Stock Exchange listing rules require higher than 50% of the boards of listed firms to consist of independent directors[1] where independence is defined based on the affiliations of the director[2].

Academic research finds mixed results on whether the appointment of non-affiliated directors provides positive contributions to the firm (Bhagat & Black, 2002). The effectiveness of director independence is still a debated but unsettled issue among researchers in different fields (i.e. accounting, finance, management, and law). Several studies argue that independence (defined based on affiliation) *per se* is not sufficient to positively impact the outcomes. As early as 1982, Brudney (1982) argues that independent directors might be beholden to the management for their continued appointment and this could compromise their role as monitors of the managers. Bhagat & Black (1999) comment that independent directors "often turn out to be lapdogs rather than watchdogs". They give the examples of independent boards with reputed directors associated with lackluster performance at General Motors under Roger Smith and Robert Stempel and at American Express under James Robinson. Another possibility is that although they are independent and reputed, the independent directors might not actively participate and seek to enforce better governance in the firm by disciplining the managers.

Even though there is some evidence that independent corporate boards improve earnings quality, it does not reconcile with the fact that firms like Enron had directors with very strong reputations and capable of acting independently[3]. More recently, the obvious failure of governance at Theranos Corporation (which included stalwarts such as Henry Kissinger and George Schultz in its board) further confirms that merely having independent directors on the board is not sufficient to improve corporate governance. We argue that the reason that even independent and reputed directors do not improve governance in firms is that they are not actively engaged in the oversight function of the board. The effectiveness of independence in board oversight is predicated on the assumption that independent directors question the management and the CEO intensely in board discussions and constrain the managers from manipulating the reports or making self-serving decisions at the expense of the firm's interests. Therefore, non-affiliated directors who do not actively participate in the board meetings contribute little towards this oversight. We argue that corporate governance improves if and only if the board members are both independent and actively en-

[1]NYSE CG Rules § 303A.01. An exception is made for "controlled" firms.

[2]NYSE CG Rules § 303A.02. Most employment-related or business related affiliations or board interlocks negate the independence of the director.

[3]The Enron board included a former Stanford dean (accounting professor), former CEOs of an insurance company, and an international bank, a hedge fund manager, a prominent Asian financier, and an economist who is the former head of the U.S. government's Commodity Futures Trading Commission (Sonnenfield, 2002).

gaged in their governance duties.

There are several underlying reasons for the passivity of independent directors. First, they mostly depend on the firm itself and its management to get information about the factors considered in making operations, investments, strategy and reporting decisions. Clearly, self-serving managers are not likely to include much information that runs contrary to their own proposals and projects. As a result, the independent directors lack the information needed to confidently confront managers on items of disagreement. Second, many of the independent directors come from the same "old boy" network and lack the willingness to break the established mold. Third, the independent directors can be busy with other activities (academics with their research, senators with their political and administrative work, etc.) or because they sit on too many boards. These "busy" independent directors lack the time and effort needed to acquire enough information to form independent opinions and confront the CEO and other managers on the points of disagreement. The empirical literature has recognized this problem with the "busyness" of directors who sit on too many boards (such as Core et al., 1999; Fich & Shivdasani, 2006) and finds that busy directors do not act independently enough to exercise the watchfulness that is expected of them. Further, some independent directors who are beholden to the CEO lack the incentives to "bite the hand that feeds them". These arguments and evidence from prior studies suggest that while director independence is a plausible condition for effective corporate governance, it is not sufficient to ensure effective fulfillment of directorial duties.

In response to the financial crisis which occurred in 2008 and 2009, there has been a renewed emphasis on the role of the boards in providing effective oversight of risk management activities undertaken by firms. In particular, the U.S. Securities and Exchange Commissions (SEC) recently introduced enhancements in proxy statements disclosures that took effect from 28 February 2010. For example, every U.S. listed firm is required to disclose how the board performs its risk management oversight in its proxy statements and annual reports.

One of the primary outcomes of good corporate governance is good earnings quality that can help investors allocate their capital more efficiently. Several papers show that certain director characteristics, the board composition, and effective board processes improve the oversight by the board and its committees and in turn, improve earnings quality. Recent papers have found evidence that director's reputation (Francis et al., 2008), characteristics of audit committee members (Kusnadi et al., 2016), the presence of political connections (Chaney et al., 2011), and gender diversity (Srinidhi et al., 2011) influence earnings quality for both the U.S. and international firms. A recent paper documents that effective internal control mechanisms and risk management have positive implications on earnings quality for German firms (Brown et al., 2014).

This paper focuses on how independent directors' activism on the board affects earnings quality. We first construct measures of director activism for a

sample of U.S. firms, like those developed by Zajac & Westphal (1996)[4]. The measures of director activism allow us to classify each independent director in each corporate board as either active or passive. Next, we examine the relationship between the proportion of active independent directors on the board and earnings quality for U.S. firms, after controlling for the proportion of other independent directors. We conjecture that earnings quality improves with the proportion of active independent directors to total numbers of directors on the board.

This study contributes to the streams of literature on board governance and earnings quality. Specifically, we highlight on the dimension of independent directors' activism, which is lacking in the existing literature. We provide additional evidence which shows that active independent directors provide beneficial corporate governance effect to the firm in terms of oversight, which leads to a higher quality of reported earnings. The findings also contribute to the established literature on how the effectiveness of corporate governance influences firms' financial reporting incentives (Dechow et al., 1996; Ball et al., 2000; Klein, 2002; Ashbaugh et al., 2006). Based on our findings, we argue that director activism should be regarded as an important factor in the effectiveness of board oversight that investors should consider for assessing the extent to which their interests are safeguarded.

The remainder of the paper is organized as follows. Section 2 reviews the current literature on board governance and earnings quality and develops the main hypothesis on the relationship between active independent directors and earnings quality. This is followed by a detailed description of the sample and the construction of the measures of director activism, accruals quality, and other control variables in Section 3. In Section 4, we present the research design and discuss the main results of the multivariate regression analyses. Section 5 concludes the paper by providing some direction for future studies.

2. Literature Review and Hypothesis Development

2.1. Literature on Board Structure

Since the publication of the influential work on agency costs by Jensen & Meckling (1976), researchers in various disciplines have put forth recommendations on attributes or structures that will facilitate the board of directors in the capacity as a monitoring and disciplinary agent on behalf of the minority shareholders' interests. Some of the established findings include: small board size increases firm value (Yermack, 1996) and the appointment of separate persons rather than the same individual as CEO and Chairman will also be more beneficial to the firm (Tsui et al., 2001).

Meanwhile, board independence is perhaps the most controversial issue that is still debated among scholars. Some studies argue that increasing the represen-

[4]The difference is that Zajac & Westphal (1996) focus on five different measures related to board control, whereas, we focus on measures related to risk-reduction.

tation of independent members on the board of directors can help in restricting managers from engaging in self-serving activities that are detrimental to shareholder values and financial reporting quality (see Byrd & Hickman, 1992; Weisbach, 1998; Beasley, 1996; Klein, 2002; Fich & Shivdasani, 2006). In contrast, some studies fail to establish an association between board independence and increased firm performance (Bhagat & Black, 1999, 2002).

In addition, prior research has shown that the appointment of "busy" independent directors (i.e. those that serve in at least three boards) could be counter-productive to the firm's performance; and these boards are less likely to replace the CEOs when firm performance declines (Fich & Shivdasani, 2006). A related paper by Faleye et al. (2011) also examines the quality of monitoring by independent directors. They find that independent directors who serve on at least two board monitoring committees will be better able to perform their monitoring functions. Moreover, Chiu et al. (2013) find that there exists a "board contagion effect" with respect to earnings management. Specifically, firms are more likely to engage in earnings management activities in the presence of directors who also sit on the boards of other firms that are found to be managing their earnings as well.

2.2. Literature on Earnings Quality

The extant literature has documented extensive evidence of country-level and firm-level characteristics that influence firms' financial reporting incentives. For example, papers by Ball et al. (2000) and Leuz et al. (2003) document that firms in countries with strong legal protection have higher earnings quality than their counterparts in weak legal protection countries.

A widely cited paper by Dechow & Dichev (2002) introduces the use of accrual estimation errors as a proxy for firm-specific earnings quality. Specifically, they regress changes in working capital on current cash flows from operations and the corresponding lagged one year as well as lead one-year values. The higher standard deviation of the residuals from the regression implies lower earnings quality. They further examine the firm-specific determinants of earnings quality and find that shorter operating cycle, lower incidence of loss, and lower standard deviation of sales, cash flows, accruals, and earnings, as well as larger firm size, predict higher earnings quality. In addition, they find that firms with higher earnings quality tend to have higher earnings persistence. Subsequently, McNichols (2002) provides a refinement to Dechow & Dichev (2002)'s model by adding property, plant and equipment, and changes in sales to the regression specification.

Francis et al. (2008) examine the relationship between CEO reputation and earnings quality. They find that media coverage (which implies higher CEO reputation) is inversely related to earnings quality and emphasizes the importance of managerial traits in influencing firms' financial reporting incentives.

Srinidhi et al. (2011) study the relationship between gender diversity and

earnings quality. They find that female representation in the board of directors of U.S. firms has the effect of improving firms' earnings quality (measured by discretionary accruals quality and the propensity of firms to meet or beat earnings benchmark). They attribute this finding to the fact that female directors bring about more effective monitoring of the boards as they provide a different perspective and exhibit greater independent thinking on certain important issues. These findings have important policy implications, especially since there are calls for more female representation in the board of directors to improve board governance and alleviate agency conflicts between top managers and minority shareholders in various countries such as Norway, Sweden, and Spain (see Burke & Vinnicombe, 2008).

2.3. Hypothesis Development

Based on the existing literature as elaborated in the earlier sub-sections, critics have argued that independence is *per se* not sufficient to cause changes. Independent directors who are *passive* or are not sufficiently informed will neither have the confidence nor the will to cause significant changes. Alternatively, independent directors can be busy with other activities or because they sit on too many boards. In fact, the appointment of "busy" independent directors (i.e. those that serve on at least three boards) will be counter-productive to the firm and results in lower firm values as well as accounting performance (Fich & Shivdasani, 2006). Therefore, while director independence is necessary, it is not sufficient for effective fulfillment of directorial oversight and monitoring duties.

A recent paper by Brown et al. (2014) provides evidence from Germany that the enactment of a new ruling on internal control and transparency in 1998 has the effect of improving the quality of earnings. The findings of Brown et al. (2014) suggest that effective risk control has positive implications on earnings quality. If independent directors are performing their duties in terms of providing board oversight with respect to risk management activities undertaken by the firms, earnings quality is likely to improve.

Therefore, we posit that only independent directors who are ***active change agents*** contribute to improvement in earnings quality. This leads to our hypothesis 1 below:

H1. The proportion of active independent directors on the board is ***positively*** associated with earnings quality and is incremental to the proportion of non-active independent directors.

3. Data and Variables

Our sample is derived from all the U.S. listed companies whose complete board and director information (detailed information on the background of the individual director) is available in the GMI Metrics database (previously known as Corporate Library). We identify ***independent*** directors as non-executive directors who do not have any personal or business ties with the company or its

managers.

We construct accruals earnings quality and other control variables (such as firm-level and segment-specific financials, executive compensation, and returns data) for the U.S. firms using data from the Compustat North America, Compustat Segment, Compustat ExecComp, and CRSP databases. To be consistent with prior studies, we require our sample to have non-missing firm-year observations on the measures of director activism as well as firm-level variables. We further filter out financial firms (SIC 6000 to 6999), utility firms (SIC 4400 to 5500) and small firms (book values of total assets of less than US$10 million) that follow sets of financial regulations that are different from those of other firms. All the control variables are winsorized at the 1 and 99 percent levels to alleviate the effects of outliers. Eventually, our final sample consists of 7739 firm-year observations, covering the sample period from 2004 to 2010.

3.1. Measure of Director Activism

We construct proxies for director activism similar to Zajac & Westphal (1996). First, we develop five measures to estimate director activism in reducing a firm's risk. These measures include reductions in the volatilities of quarterly net income, quarterly sales, quarterly operating cash flows, monthly stock returns, and a reduction in abnormal research and development (R & D) expenditures.

Next, for each director i in each board j in the sample in each year t, we create several parallel measures k. Then, the ***change*** in each measure k in year t is defined as the difference in the values calculated from year $t-1$ to year t. We calculate the change in year t, $t-1$, and $t-2$; respectively. An indicator variable for each measure k is defined as 1 if the change in year t, $t-1$, and $t-2$ exhibits ***negative*** change in risk dimension during the focal director's term in the board, or 0 otherwise. These values are then summed up over all the boards in our sample on which the focal director is a member to obtain the director activism index for each measure k in year t. Therefore, the value for each director i will be an integral number that ranges from 0 to the number of boards on which the focal director sits on.

We use each measure k to reflect the director's activism in reducing risk each year. Specifically, for the first three proxies, we calculate the director's activism index as the number of firms on whose boards the director serves that decrease the risk proxies from year $t-2$ to year t. The volatility of each measure in year t is calculated as the standard deviation of the appropriate quarterly number over the fiscal years $t-2$ to t (i.e. 12 quarters). For the last two risk proxies, we calculate the director's activism index as the number of firms on whose boards the director serves that decrease the particular risk proxy in any of the years $(t-2)$ or $(t-1)$ or t. Specifically, the volatility of monthly return in year t is the standard deviation of the 12-month return from January to December. We calculate abnormal R & D using the residual from expected investment using a model that predicts R & D amount as a function of capital expenditure level, firm perfor-

mance and growth opportunities. Since we need to evaluate the activism of directors, and actions and decisions by directors need some time to bear fruit, therefore, we believe that the longer window of three years is better suited for our purpose. We further establish a one-year change model to define director activism and report the regression results as a robustness test.

Next, we create an aggregate index to capture the overall activism of the independent director in all the risk-reducing measures, which is obtained as the first eigenvector in the principal component analysis of all the activism proxies within each dimension.

3.2. Board-Level Measure of Director Activism

After calculating the aggregate activism index for each director, we define the board-level director activism in the following way. We first calculate the mean activism indexes of all the directors in the sample and define a director as an active director if his or her activism index is higher than the mean value. Then, we calculate the proportion of independent directors on the board who are active in risk reduction (***PActiveIndep***). A higher value for *PActiveIndep* implies that the board has more active change-agents (in terms of independent directors) in the risk management dimension. This variable will be used as the main independent variable in the subsequent regression analysis to examine the relationship between director activism and earnings quality.

3.3. Measure of Accruals Quality

In our empirical tests, our primary measure of accruals quality (AQ) is calculated as the absolute value of residuals from the following regression specification; multiplied by −1.

$$\frac{TCA_{i,t}}{AVTA_{i,t}} = a_0 + a_1\left(\frac{1}{AVTA_{i,t}}\right) + a_2\left(\frac{CFO_{i-1,t}}{AVTA_{i,t}}\right) + a_3\left(\frac{CFO_{i,t}}{AVTA_{i,t}}\right) + a_4\left(\frac{CFO_{i,t+1}}{AVTA_i}\right) + a_5\left(\frac{\Delta SALES_{i,t}}{AVTA_{i,t}}\right) + a_6\left(\frac{PPE_{i,t}}{AVTA_{i,t}}\right) + \varepsilon_{i,t} \quad (1)$$

where i and t refer to firm i in year t; TCA is total current accruals, calculated as net income before extraordinary items—operating cash flow from cash flow statement (CFO)—depreciation and amortization expense; $AVTA$ is average total assets between year $t-1$ and year t; PPE is the gross value of property plant and equipment; $\Delta SALES$ is the change in net sales between year $t-1$ to year t. We estimate Equation (1) for each two-digit SIC industry groups with at least 10 firms in each year t. The annual cross-sectional regression estimations of Equation (1) yield the firm and year-specific residuals. Higher values of accruals quality are taken to indicate a higher quality of earnings being reported by the firm.

3.4. Control Variables

In addition, we use the following control variables identified in the literature to

be significant determinants of earnings quality. These include firm size (*Size*, calculated as the natural logarithm of net sales), leverage (*Leverage*, calculated as the ratio of total liabilities to total assets), growth opportunity (*MTB*, calculated as the ratio of market value of equity to book value of equity)[5], performance (*ROA*, calculated as the ratio of net income before extraordinary items to total assets), governance (*Pindep*, calculated as the proportion of independent outside directors representation in the board), and incidents that may trigger earnings management (*Dloss*, *Finance*, and *MA*). Specifically, *Dloss* is an indicator variable that equals 1 if the firm experiences a loss (negative earnings before extraordinary items) in the year, or 0 otherwise. *Finance* is an indicator variable that equals 1 if the firm raises external financing by issuing debt or equity, or 0 otherwise. *MA* is an indicator variable that equals 1 if the firm experience merger or acquisition during the sample period, or 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles.

The definitions of these variables are provided in **Appendix**.

3.5. Descriptive Statistics and Correlation Matrix

Table 1 provides the descriptive statistics of all the main variables in this study. The mean and median values of accrual quality (*AQ*) are −0.03 and −0.02, respectively, with a standard deviation of 0.03. Meanwhile, the mean and median proportion of independent outside directors in the board (*Pindep*) are 0.66 and 0.67, respectively, with a standard deviation of 0.14. These values confirm the prevailing findings in the literature that independent directors constitute about

Table 1. Descriptive statistics. The table reports the descriptive statistics of measures for accruals quality, director activism, and control variables that are used in the regression tests. All the variables are as defined in **Appendix**. The sample consists of 7739 firm-year observations for the sample period from 2004 to 2010.

Variable	N	Mean	Median	Std Dev	10th Percentile	25th Percentile	75th Percentile	90th Percentile
AQ	7739	−0.03	−0.02	0.03	−0.06	−0.03	−0.01	0.00
PActiveIndep	7739	0.49	0.44	0.31	0.11	0.22	0.77	0.92
Size	7739	7.51	7.42	1.51	5.63	6.48	8.52	9.53
Lev	7739	0.51	0.51	0.22	0.22	0.36	0.65	0.77
MTB	7739	2.84	2.17	3.06	0.99	1.46	3.43	5.30
ROA	7739	0.04	0.05	0.10	−0.04	0.02	0.09	0.13
Dloss	7739	0.16	0.00	0.37	0.00	0.00	0.00	1.00
Finance	7739	0.38	0.00	0.49	0.00	0.00	1.00	1.00
MA	7739	0.03	0.00	0.17	0.00	0.00	0.00	0.00
Pindep	7739	0.66	0.67	0.14	0.50	0.57	0.77	0.83

[5]Market value of equity is calculated as stock price at the end of fiscal year multiplied by number of common stocks outstanding.

two-thirds of the board representation for publicly listed firms in the U.S. More relevantly for this study, the mean and median proportion of independent directors who are active in risk-reduction in the board (*PactiveIndep*) are 0.49 and 0.44, respectively, with a standard deviation of 0.31. These figures indicate that almost half of the board members are active change agents. This finding also implies that most of the independent directors are performing their board oversight duty with respect to risk management. The inter-quartile range (the difference between the 75th and 25th percentile) is 55%.

The mean (median) values for firm size (*Size*), leverage (*Leverage*) ratio, market to book (*MTB*) ratio and return on assets (*ROA*) are 7.51 (7.42), 0.51 (0.51), 2.84 (2.17) and 0.04 (0.05), respectively. The standard deviations are 1.51, 0.22, 3.06, and 0.10, respectively. For the indicator variables, about 16% of the firms report a loss (*Dloss*), 38% of the firms refinance through issuing additional stocks and allotment of shares (*Finance*), and another 3% of the firms experience mergers or acquisitions during the sample period (*MA*).

Table 2 presents the Pearson's (lower triangular) and Spearman's (upper triangular) correlations between the main variables of interest. We find that there exists a positive and significant correlation between accruals quality (*AQ*) and the director activism measure (*PActiveIndep*) for both the Pearson' correlations (magnitude of 0.06, statistically significant at the 1 percent level) as well as the Spearman's correlations (magnitude of 0.07, statistically significant at the 1 percent level too). These findings suggest that ignoring other control variables, a firm's earnings quality is positively associated with the strength of the board member's activism in risk-reduction, which provides preliminary evidence in support of Hypothesis 1. Nevertheless, we will conduct multivariate tests in the next section to further validate our conjecture.

Table 2. Pearson and spearman's correlation matrices. The table presents the Pearson (lower triangular) and Spearman's (upper triangular) correlation matrices. All the variables are as defined in **Appendix**. The sample consists of 7739 firm-year observations for the sample period from 2004 to 2010. ***, **, and * denote statistical significance at 1, 5, and 10 percent levels; respectively.

	AQ	*PActiveIndep*	*Size*	*Leverage*	*MB*	*ROA*	*Dloss*	*Finance*	*MA*	*Indep*
AQ		0.06***	0.13***	0.05***	−0.02*	0.02	−0.09***	−0.08***	0.01	0.06***
PActiveIndep	0.07***		0.36***	0.24***	0.04***	−0.01	−0.00	−0.15***	0.02	0.29***
Size	0.16***	0.35***		0.45***	0.09***	0.12***	−0.20***	−0.22***	0.00	0.24***
Leverage	−0.00	0.22***	0.40***		0.01	−0.27***	0.09***	−0.22***	−0.02**	0.20***
MB	−0.03**	0.03***	0.05***	0.05***		0.53***	−0.27***	0.06***	−0.02	0.05***
ROA	0.15***	−0.00	0.19***	−0.20***	0.25***		−0.64***	0.04***	−0.02	0.01
Dloss	−0.14***	0.00	−0.21***	0.11***	−0.14***	−0.70***		0.04***	−0.02*	−0.05***
Finance	−0.07***	−0.15***	−0.22***	−0.22***	0.03**	0.00	0.04***		−0.14***	−0.08***
MA	0.03	0.02	0.00	−0.02**	−0.01	0.01	−0.02*	−0.14***		0.00
Pindep	0.05***	0.27***	0.23***	0.17***	0.02***	0.04***	−0.06***	−0.09***	0.00	

Among the other pair-wise correlations between accruals quality and other control variables that are presented in Table 2, the most notable correlations are with *Size*, *ROA*, and *Dloss* (*Size*, *Dloss*, and *Finance*), with magnitudes of 0.16, 0.15 and −0.14 (0.13, −0.09, and −0.08) for Pearson's (Spearman's) correlations. More importantly for the multivariate regression analysis in the subsequent section, the correlations among the independent variables are not higher than 0.5, suggesting that multicollinearity problem is unlikely to be a serious issue in our multivariate tests in the next section.

4. Research Design and Empirical Analysis

4.1. Research Design

To test H1, we estimate the following regression specification using fixed effects model[6]:

$$\begin{aligned} AQ_{i,t} = {} & b_0 + \beta_1 PActiveIndep_{i,t} + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} + \beta_3 MB_{i,t} \\ & + \beta_4 ROA_{i,t} + \beta_5 Dloss_{i,t} + \beta_6 Finance_{i,t} + \beta_6 MA_{i,t} + \beta_7 PIndep_{i,t} \\ & + IndustryFE_i + YearFE_t + \varepsilon_{i,t} \end{aligned} \quad (2)$$

Our main coefficient of interest is coefficient β_1 and H1 predicts that β_1 should be ***positive***. In other words, a higher representation of active independent directors on the board leads to higher earnings quality.

The rationale to include these control variables and the predictions on how these variables are associated with accruals quality are as follows. Large firms are more visible and it is, therefore, more costly for them to manage earnings (Chiu et al., 2013). As such, we predict that firm size is positively associated with accruals quality (the coefficient on *Size* is positive). The leverage ratio controls for the higher incentive to manage earnings to avoid debt-related constraints imposed on management. Therefore, we conjecture that leverage is negatively associated with accruals quality (the coefficient of *Leverage* is negative).

Accruals quality may also be affected by the firm's growth opportunity (measured by market-to-book ratio) and performance (measured by return on assets). On the one hand, firms with higher growth and better performance may have lower risks and do not need to manipulate their earnings. On the other hand, these firms may be tempted to manage earnings to sustain growth (Chiu et al., 2013) and good performance. Due to these alternative explanations, we do not have apriori expectation on the sign of their effects.

We include three indicator variables: *Dloss*, *Finance*, and *MA* to capture the demand for manipulating earnings associated with negative earnings occurrence, financing activities, and business combinations. We predict that these events are negatively associated with earnings quality (the coefficients on *Dloss*, *Finance*, and *MA* are negative). Finally, we control for the proportion of independent outside directors (*Pindep*) and we predict that it is positively associated

[6]We use the fixed effects model rather than the random effects model as it is more widely used in the regression of determinants of earnings quality.

with earnings quality (the coefficient on *Pindep* is positive). The regression estimation in Equation (2) also includes include industry and year fixed effects to control for potential differences in accrual quality across industries and over years. Test statistics are computed based on robust standard errors corrected for heteroscedasticity and clustered by the firm (Petersen, 2009).

4.2. Empirical Results

We report the results of the multivariate regression analysis in examining the association between accrual quality and board's activism in risk-reduction in Model (1) of **Table 3**. The results reveal that the coefficient of *PActiveIndep* is positive and statistically significant at the 10% level (magnitude = 0.002, *t*-statistics = 1.83). This suggests that firms with a higher representation of directors who are active in risk-reduction, based on the behavior of the boards they sit when they perform their directorship, are associated with a significantly higher quality of the accruals (in terms of smaller residuals from regressions relating current accruals to cash flows). This is consistent with the prediction of H1. The results are not only statistically significant, but they are also economically significant. An increase in *PActiveIndep* by 1 standard deviation will increase accruals quality by 2%[7].

The coefficient of the variable *Pindep* is positive but not significant. This result shows that once the active independent directors are separated out, the proportion of independent directors, by itself, is not significant anymore. We believe that this is an important result in that the benefits of independent directorship are driven entirely by the active independent directors and the other independent directors (who are, by implication, not active) do not contribute to an improvement in accruals quality.

Our results with respect to other control variables are consistent with our expectations and findings in prior studies. We find that accrual quality is higher in larger firms and firms with good financial performance (measured by higher *ROA*). On the other hand, firms with higher leverage, a larger market to book ratio, negative earnings occurrence, and higher demand for financing activities exhibit lower earnings quality. The coefficients on these variables are statistically significant at least at the 10% level. The coefficient of *MA* is not significant.

4.3. Alternative Measure of Accruals Quality

As a robustness test, we also employ an alternative measure of accruals quality. In particular, Francis et al. (2005) separate accruals quality into those driven by economic fundamentals (innate component) versus those driven by management choices (discretionary component). They argue that only the discretionary component can reflect the manipulation intention of the manager and can be influenced by the governance level of the directors of the board. Therefore,

[7]The increase in accruals quality = (0.31 * 0.002)/0.03 = 2.1%.

Table 3. Director activism and earnings quality. The table presents the coefficient estimates of multivariate regression of accruals quality on director activism and other control variables. *AQ* is a measure of accruals quality. *DiscAQ* is an alternative measure of accruals quality. *PActiveIndep* is a measure of director activism based on the past three years of the director's involvement with corporate boards. Coefficient estimates and *t*-statistics are based on robust standard errors clustered by firm. The standard errors are reported in the parentheses. Coefficient estimates and *t*-statistics of the main variables of interest are highlighted in bold. ***, **, and * denote statistical significance at 1, 5, and 10 percent levels; respectively.

Variable	(1) Dependent Variable: *AQ*		(2) Dependent Variable: *DiscAQ*	
	Coefficient estimate	*t*-statistic	Coefficient estimate	*t*-statistic
PActiveIndep	**0.002***	**1.83**	**0.003****	**2.31**
	(0.001)		(0.001)	
Size	0.002***	7.10	−0.001***	−3.37
	(0.000)		(0.000)	
Lev	−0.008***	−2.84	−0.008***	−3.22
	(0.003)		(0.002)	
MB	−0.001***	−2.95	−0.000**	−2.52
	(0.000)		(0.000)	
ROA	0.030***	3.38	0.019***	2.74
	(0.009)		(0.007)	
Dloss	−0.003*	−1.81	0.002	1.01
	(0.002)		(0.002)	
Finance	−0.002***	−2.87	−0.002**	−2.46
	(0.001)		(0.001)	
MA	0.001	0.89	0.001	0.95
	(0.001)		(0.001)	
Pindep	0.003	0.99	0.004	1.57
	(0.003)		(0.003)	
Intercept	−0.046***	−9.33	0.010**	2.19
	(0.005)		(0.005)	
Year fixed effect	Yes		Yes	
Industry fixed effect	Yes		Yes	
N	7739		7371	
Adj. *R*-square	0.066		0.017	

following Francis et al. (2005), we exclude the five innate factors and obtain the discretionary component of the firm's accrual quality. Specifically, we run the following regression specification:

$$ABS(RES)_{i,t} = b_0 + b_1 LNTA_{i,t} + b_2 \sigma(CFO)_{i,t} + b_3 \sigma(SALE)_{i,t} + b_4 OPERCYCLE_{i,t} + b_5 NEGEARN + \mu_{i,t}; \quad (3)$$

where i and t refers to firm i in year t; $ABS(RES)$ is the absolute value of residuals estimated in Equation (1); $LNTA$ is the natural logarithm of total assets; $\sigma(CFO)$ is cash-flow volatility, calculated as the standard deviation of the firm's operating cash flow divided by average total assets[8]; $\sigma(SALE)$ is sales volatility, calculated as the standard deviation of the firm's sales divided average total assets; $OPERCYCLE$ is the natural logarithm of the firm's operating cycle; $NEGEARN$ is the proportion of negative earnings, calculated as the number of years, out of the past 10, where the firm reports negative net income before extraordinary items. The residual from Equation (3) is the estimate of the discretionary component of the firm's accrual quality ($DiscAQ$).

We re-estimate Equation (2) using discretionary accruals quality ($DiscAQ$) as the dependent variable and present the results in Model (2) of Table 3. The coefficient of $PActiveIndep$ is positive and significant (magnitude = 0.003 and t-statistics = 2.31). Therefore, using both measures of accruals quality, our main finding contributes to the existing literature on board governance and earnings quality by showing that that active independent directors' representation in the board is an important determinant of accruals quality. In other words, active independent directors act as positive change agents in the board by providing board oversight role in terms of risk reduction, which help to improve the quality of reported earnings.

4.4. Alternative Measure of Directors' Activism

In the main tests described earlier, we measure activism for each director based on his or her involvement in boards that affected changes over the preceding three years. As a robustness test, we also use a definition of director activism based on whether he or she has been involved in boards that affected changes during the last one year (i.e., a short-term proxy of board activism). Using short-term proxies, we find that the results in both Models (1) and (2) of Table 4 are consistent with the earlier findings in Table 2. In fact, the coefficient of $PActiveIndep$ in Model (1) is statistically significant at 5% level (magnitude = 0.002, t-statistics = 2.11). The magnitude and sign of the other control variables are mostly similar to those found in Table 2. Hence, regardless of whether short-term or long-term proxies are used for the director activism measure, we find that active independent directors are positively associated with earnings quality.

[8]The standard deviation is calculated over the past 5 years (with at least 5 years of non-missing data).

Table 4. Director activism and earnings quality – using an alternative measure of director activism. The table presents the coefficient estimates of multivariate regression of accruals quality on director activism and other control variables. *AQ* is a measure of accruals quality. *DiscAQ* is an alternative measure of accruals quality. *PActiveIndep* is a measure of director activism based on the last one year of director's involvement with corporate boards. Coefficient estimates and *t*-statistics are based on robust standard errors clustered by firm. The standard errors are reported in the parentheses. Coefficient estimates and *t*-statistics of the main variables of interest are highlighted in bold. ***, **, and * denote statistical significance at 1, 5, and 10 percent levels; respectively.

Variable	(1) Dependent Variable: *AQ*		(2) Dependent Variable: *DiscAQ*	
	Coefficient estimate	*t*-statistic	Coefficient estimate	*t*-statistic
PActiveIndep	**0.002****	**2.11**	**0.002*****	**2.79**
	(0.001)		(0.001)	
Size	0.003***	7.37	−0.001***	−3.23
	(0.000)		(0.000)	
Lev	−0.008***	−2.82	−0.008***	−3.21
	(0.003)		(0.002)	
MB	−0.001***	−2.91	−0.000**	−2.47
	(0.000)		(0.000)	
ROA	0.030***	3.32	0.019***	2.67
	(0.009)		(0.007)	
Dloss	−0.003*	−1.87	0.001	0.94
	(0.002)		(0.001)	
Finance	−0.002***	−2.84	−0.002**	−2.52
	(0.001)		(0.001)	
MA	0.001	0.86	0.001	0.96
	(0.001)		(0.001)	
Pindep	0.003	1.18	0.004	1.72
	(0.003)		(0.002)	
Intercept	−0.047***	−9.61	0.009**	2.05
	(0.005)		(0.004)	
Year fixed effect	Yes		Yes	
Industry fixed effect	Yes		Yes	
N	7701		7335	
Adj. *R*-square	0.066		0.017	

5. Conclusion

This paper examines whether board activism influences earnings quality for U.S. firms. Specifically, we first construct measures that capture the degree of activeness of independent directors with regards to risk reduction, similar to those adopted by Zajac & Westphal (1996). The active independent directors account for almost half the number of board members. More importantly, the finding from subsequent regression analysis reveals that there exists a positive association between the percentages of the active independent director on the board with earnings quality. In other words, the earnings quality of a firm improves as more active independent directors are represented on the board. We also find that once active independent directors are separated out the rest of the independent directors do not have a significant positive effect on accruals quality. The implication is that the result found in prior studies—that the proportion of independent directors improves governance and therefore the quality of earnings—is driven entirely by the active independent directors. The non-active independent directors do not seem to contribute significantly to better governance.

Our finding sheds more insight into the role that independent directors play in board governance. In particular, we argue that it is more important for boards to have more active (rather than passive) independent directors' representation because only active independent directors act as positive change agents on the board. Further, financial analysts, regulators, and academics who evaluate corporate governance need to be cognizant of the fact that governance is impacted positively only by active independent directors. In other words, if the company follows the regulations by the letter but not in spirit by engaging independent directors who are not active, the analysts need to be cautious in attributing better governance to the firm.

The results of our paper also suggest that active independent directors provide more effective board oversight role in terms of risk management within the firm than passive independent directors. In turn, more effective board monitoring has positive implication on the quality of reported earnings. This finding can be generalised to studies using international setting as similar measures of director activism can be constructed for firms listed in other countries.

Finally, we believe that our paper provides an important direction for future research, which is to expand on the role of director activism and combining it with gender diversity within the board to examine how active female directors can influence corporate policies, such as accruals earnings management or corporate investment decisions.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix. Variable Definitions

Variables		Definitions
Variables of interest:		
AQ		Accrual quality measure, calculated as the inverse value of the absolute value of residuals from regression specification that relates current accruals to cash flows, augmented with the fundamental variables from the modified Jones model.
PActiveIndep		Director activism measure, calculated as the proportion of independent outside directors who are active in terms of risk-reduction in the board.
Control variables:		
Size		Firm size measure, calculated as the natural logarithm of net sales.
Lev		Leverage measure, calculated as the ratio of total liabilities to total assets.
MTB		Growth opportunity measure, calculated as the ratio of market value of equity to book value of equity.
ROA		Performance measure, calculated as the ratio of net income before extraordinary items to total assets.
Dloss		A dummy variable that equals 1 if the firm experiences loss in the year, or 0 otherwise.
Finance		A dummy variable that equals 1 if the firm raises external financing by issuing debt or equity (i.e. common shares outstanding increases 10% or Long-term debt increases 20% from t to t − 1; firms that conduct merger and acquisition are not included), or 0 otherwise.
MA	=	A dummy variable that equals 1 if the firm experiences a merger or acquisition, or 0 otherwise.
Pindep	=	The proportion of independent outside directors on the board.