5-20-2008

Two Essays on Corporate Governance–Are Local Directors Better Monitors, and Directors Incentives and Earnings Management

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by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctoral of Philosophy
Department of Finance
College of Business
University of South Florida

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Date of Approval:
May 20, 2008

Keywords: Distance, CEO compensation, Insider trading,
Agency problem, Director compensation

Dedication

This is dedicated to my beloved parents, Renyi Wan and Fenge Zhang, my wife, Yingxia, and my children, Richard and Serena, for their everlasting support and love.

Acknowledgments

I want to thank my committee, Dr. Chris Pantzalis, Dr. Delroy Hunter, Dr. Ninon Sutton and Dr. Jianping Qi for their invaluable support and insightful advices during the process. I can not find a right word to express my appreciation to their help. Without my committee, and especially my advisor, Dr. Pantzalis, there will have no dissertation of mine.

I also want to thank Susan Albring, Dong Bai, Alex Butler, Lily Qiu, Lei Wedge, Tina Yang, Ken Weiand for their helpful comments and insightful discussions. I am also grateful to all friends in the finance PhD program at the University of South Florida, for their support and friendship during last five years.

Last, my thanks go to my wife, Yingxia, for what she has done to the family while I am writing the essays for the dissertation and my son, Richard, and my daughter, Serena, whose gentle hearts remind me how joyful and beautiful my life is while I am writing the dissertation. This dissertation is written for them, for their unconditional support and everlasting love.

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ABSTRACT

Previous literature have documented that the independent directors play a crucial goal in corporate governance but the research on the firm value and board independence remains inconclusive. In my dissertation, I examine the impact of independent directors' geographic proximity to corporate headquarters on the effectiveness of corporate boards and the motivations of board directors. Using a large sample of directors trading, I show that independent directors who live close to headquarters ("local director") earn higher abnormal returns on their trades than other directors, and that this advantage is stronger in small firms. Further, I find an inverse relationship between the number of local independent directors on the board and firm value. Companies with fewer local independent directors also have higher ROA ratios, lower abnormal CEO compensations, and higher CEO incentive compensations. Collectively, the findings suggest that local independent directors are more informed but less effective monitors. I also provided evidence that firms with a higher proportion of directors' incentive compensation are more likely to manage earnings. Directors are more likely to exercise options in the year following the firms' earnings management being in the top

tercile of the sample. The results are robust after controlling for self-selection bias. Taken together, the evidence suggests that director incentive pay is more likely to align directors' interest with the CEO's, rather than to induce the directors to act in the best interest of the shareholders.

Essay 1— Are Local Directors Better Monitors

Introduction

Board independence is an important mechanism of corporate governance. Independent directors are elected to oversee the managers and act in the best interests of stockholders. Fama (1980) and Fama and Jensen (1983) focus on the outside directors' role as monitors and emphasize that independent directors have incentives to build their reputation as expert monitors. Since then, a series of corporate scandals have led to changes in laws and regulations that are aimed at enhancing board independence.

According to the National Association of Corporate Directors, in 2005, 83% of boards consisted of a majority of independent directors, up from 54% in 2000. However, in spite of the crucial function of independent directors as monitors, the evidence on the relationship between board independence and firm value remains inconclusive. For example, Aggrawal and Willamson (2006) find that the fraction of independent directors on the board has a positive impact on firm's Q. However, Hermalin and Wissbach (1991) show an insignificant relationship between board independence and firm performance, while Yermack (1996), Klein (1998), and Bhagat and Black (2002) find a negative relationship.

Two possible reasons for the mixed evidence have been suggested in the literature. First, it is unclear what constitutes director independence. The literature defines independent directors by their affiliation. However, Hermalin and Weisbach (1998) and others argue that being unaffiliated does not necessarily mean being independent. Second, while the board's function is to monitor the CEOs, the CEO most always determines the agenda of board meetings and the information given to the board (Jensen (1993)). Consequently he may be

able to keep the board in the dark whenever he wants to make decisions that may harm the shareholders. Adams and Ferreira (2007) also present a model wherein the CEO is less likely to share information with directors when the board is monitoring intensively.

To shed new light on this issue, I examine board effectiveness by considering a new dimension of board independence: proximity of board members to the corporate headquarters, and hence to the CEOs. My primary focus in this paper is on the relationship between geographic proximity of independent directors and board effectiveness. I propose two contending hypotheses to explain this association. The first proposes that board effectiveness rises with the proportion of the board that is made up of local independent directors ("local director"). I call this the efficiency hypothesis. An alternative hypothesis is that local directors, because of their proximity to the firm's CEO and other executives, may be less effective monitors. In other words, more geographically proximate directors may be less objective and hence reduces board effectiveness. I call this the entrenchment hypothesis.

In support of the first hypothesis, many studies have documented that geographic proximity is an important component of monitoring activities. For example, geographic proximity determines the effectiveness of internal control mechanisms within bank holding companies (Berger and DeYoung (2001, 2002)), and the representation of venture capitalists on the boards of U.S. private firms (Lerner (1995)). Physical closeness to the firm further influences activities of equity analyst and auditors. Malloy (2005) shows that equity analysts forecast local stocks more accurately and that their forecast revisions for the local stock have a strong effect on the market, suggesting that local equity analysts have information advantage over distant analysts. Moreover, Malloy (2005) documents that the underwriter affiliated analyst biases are only observed for the distant affiliated analysts. Choi et al. (2007) find that local auditors provide higher quality auditing services while charging lower

auditing fees. Like in the case of external monitors, such as banks, auditors and analysts, the director locality or geographic proximity to the firm is more likely to be associated with an information advantage that could lead to a more effective board. Local directors may, for example observe more firm operations, be aware of more news about the firm in the local media, have first-hand knowledge about the firm from their local sources, or have a better understanding of the local industry conditions.

On the other hand, local directors may be weak monitors. Proximity to the firms is more likely to be associated with more personal ties with the firm managers. This is because both CEO and directors are, for example, likely to serve on other local boards, charitable institutions and to attend the same country clubs. These interactions may lead to the development of social and/or personal bonds between the directors and CEOs and may compromise local directors' objectivity.

Consequently, one can argue that the presence of local independent directors on the board could make the board either more effective or more entrenched. The information advantage, if available, would allow the local independent directors to monitor more effectively, and thus lead to better firm performance. On the other side of the coin, more frequent social interactions with the CEO may impair the independence of local directors. This, in turn, may lead to a misalignment of directors' and shareholders' interest.

It is reasonable for local independent directors to be more concerned about local issues and persons with whom they interact more frequently. Additionally, CEOs are more visible in the local community and, consequently, local independent directors are also more likely to weigh the implications of board decisions on their social standing. Social considerations of local independent directors may lead to a conflict of interests with shareholders. Local independent directors are therefore more likely to place emphasis on

"politeness and candor at the expense of frankness and truth" (Jensen (1993)) in the functions as members of the board. Therefore, the presence of local independent directors could lead to a weaker board and poor firm performance.

Given the two opposite hypothesized relationships between local independent directors and firm performance, there are several natural empirical questions that can be addressed: are local independent directors more informed than other directors? Do firms that have more local independent directors perform better or worse than firms that have more geographically distant independent directors? Does the geographic dispersion of the independent directors affect board decision-making, such as setting up CEO compensation?

In this study, I find addresses of directors for S&P 1500 firms for the years 1996 to 2004 and compute the distance between the home address and corporate headquarters for each director. The director is identified as local if they live within a 50 miles radius from corporate headquarters. First, I use the performance of directors' trades in the stock of the firm on whose board they serve as a proxy of potential information advantage. I collect all the director trades from Thomas Financial Insider Trading Database and compute the return for each director trade by mimicking their positions. Among all trades, I only investigate purchase trades as they are more informative compared with sales trades (Lakonishok and Lee (2001)). By comparing the profits from the trades of local directors and non-local directors, I reveal that the local directors trades overall outperform the non-local directors trades. Specifically, over a one-year horizon, the local independent directors' trades have an average cumulative return of 25.3% versus 21.3% for the non-local directors. After adjusting by the value-weighted market index, the difference between the local directors' trades and

non-local director trades is about 3.8%[1].

I further explore the issue by sorting the trades by firm characteristics. If the local directors have an information advantage over their distant counterparts, it is reasonable to expect that the advantage will be stronger for firms with high levels of information asymmetry. Indeed, I find the difference on the trades by local and non-local independent directors is strongest for the smallest size tercile or the group of firms that have the fewest analysts following. Local directors of firms belonging to the smallest tercile earn a 7.72% higher cumulative market adjusted return over a one-year horizon compared to the non-local counterparts. However the return difference drops to 1.56% in large size tercile and becomes statistically insignificant at the 5% level.

Next, I investigate whether the majority of local independent directors on the board enhance board effectiveness, i.e. leads to better firm performance. The analysis shows an inverse relationship between the proportion of local independent directors and firm value and ROA, respectively. This suggests that the presence of local independent directors has a negative impact on board effectiveness and lends support to the idea that local directors are less effective monitors and more likely to side with the CEOs.

Finally, I investigate whether the proportion of local independent directors affect the pay-performance sensitivity of CEO compensation and the total compensation CEO received. I find that CEOs of firms with 100% non-local independent directors receive a lower total compensation than the median number in industry.

This paper contributes to the literature in at least three research areas: (1) To the best of my knowledge, this is the first paper that links directors' geographic proximity to the firm

[1] It is possible that this reflects only the advantage of being local investors, rather than being more informed local directors with access to the CEOs.

(i.e. the CEOs), and their monitoring role. Previous literature has focused on various board characteristics and firm performance, but has failed to identify director locality as a factor that affects board effectiveness. (2) This study sheds light on the tradeoff between having more geographically proximate and more potentially informed independent directors and having directors that are less informed but more objective due to their distance. Recognizing that even unaffiliated, but geographically proximate, directors may not exercise sufficient independence has important implications for both corporate and the mutual fund boards in light of recent legal proposals that have sought to make boards more independent[2]. The classification of directors as independent based on affiliation alone has been previously criticized. This study provides novel evidence that independent, i.e. local but unaffiliated, directors' behavior is not always in line with the best interest of the shareholders. The evidence suggests that adding geographic proximity to the CEO to the selection criteria for director may improve shareholder values. (3) This study also contributes to the growing literature on the importance of geography on economics by demonstrating that local independent director trades are more profitable than those of their non-local counterparts.

The reminder of the paper is organized as follows. Hypotheses are developed in section I. Section II contains the data selection process and descriptive statistics. Section III provides the results. Section IV presents additional robustness tests and section V concludes.

[2] For example, in 2002 NYSE and NASD have a rule change to require that a majority of a listed firm's board be made up of "independent directors". Detail of this rule can be found at http://www.sec.gov/rules/sro/34-48745.htm.

Geography and Director Independence: Background

Distance and Information

Previous research has documented that geographical proximity is of importance for investors. The literature has shown that local investors earn, on average, higher returns compared to remote investors. For instance, Ivkovic and Weisbenner (2005) examine the returns of a large number of individual investors using data from 1991 to 1996 obtained from a discount broker and find that households exhibit a strong preference for local investments. The average household earns an additional annualized return of 3.2% from its local holdings relative to its non-local holdings, suggesting that local investors can exploit local knowledge. Excess returns to investing locally are even larger, about 6%, among stocks not in the S&P 500 index.

Mutual funds also earn a higher return on holding local stocks than remote stocks. Coval and Moskowitz (2001) separate mutual fund holdings into local and distant stocks. Local stocks that are held by the mutual funds earn a higher return than the local stocks that are not held by mutual funds. Moreover, turnover of the local stocks is less frequent than that of non-local stocks. Local firms held by mutual funds tend to be small and highly leveraged. Coval and Moskwitz (2001) suggest that stocks of firms with these kinds of characteristics are the ones in which local investors have a greater information advantage. Further evidence of the local information advantage comes from equity analyst and investment bank studies. For example, Malloy (2005) finds that local analysts provide more accurate earnings forecast and that their forecast revisions have a greater impact on the market. Butler(2007) shows that local investment banks have better access to "soft" information and have absolute and comparative advantage to place low-rated bonds. By employing a large sample of municipal

bond offerings from 1997 to 2001, he finds that for per credit rating notch of the bond, the increase in all-in cost (yield plus investment banking fee) is approximately 4.4 basis points if the bond is underwritten by local investment banks compared with 18.7 basis points if underwritten by non-local investment banks.

In the same vein, local directors might have their own information advantage over directors who are residing far away from the corporate headquarters. If the local directors possess better information, I could expect that, on average, their trades will yield higher positive abnormal returns than that of their remote counterparts. Furthermore, it would also be reasonable to expect that the local information advantage would decrease with firm transparency. Large firms with greater analysts following and /or firms in the urban area would be less likely to exhibit local information advantages. Based on the above, I propose the following hypothesis on the information advantage associated with local directors.

H1: Local directors have an information advantage over non-local directors and the advantage is stronger in firms with higher information asymmetry.

Distance and Monitoring

Naturally, the next question to ask is how geographic proximity of independent directors may affect firm value. Many other studies have documented other attributes of the board that are related to firm value. For instance, Yermack (1996) finds that the size of the board is negatively related to firm value. Vafeas(1999) finds that board meeting frequency is negatively related to Tobin's Q. Ferris, Jagannathan and Pritchard (2003) find there is a positive link between firm performance and the number of board seats a director holds while Fich and Shivdasani (2006) show that firms with busy boards, i.e. those in with a majority of outside directors holding three or more directorships, are associated with weak corporate

governance, exhibiting lower market-to-book ratios and weaker profitability. Over a wide range of issues, all management has to do to capture the board is to present information in a way that is likely to generate support for its perspectives, or in a selective way, to achieve effective capture of the board. In a model developed by Adams and Ferreira (2007), the CEO is less likely to share information with directors when the board is monitoring intensively. If the managers want to act against the shareholders' interest, they can simply keep the directors in the dark. Geographic proximity enables the local directors to have more information advantage over the remote directors. In this sense, the board could become more effective if the majority of outside directors are local. Therefore, I want to examine the interplay between the effectiveness of the board and local directors.

In contrast, local independent directors are more likely to have greater levels of social interaction with the managers. This friendly interaction makes local directors less likely to challenge managers. Landier, Nair and Wulf (2006) have shown that the proximity to headquarter affects the managerial concerns to their employees at different divisions. By using a firm division level data, they show that divisions that are closer to firm headquarter are less likely to experience layoffs. Thus, under this alternative view, geographic proximity could cause local independent directors to work less effectively in the board.

Based on the above, the second hypothesis is as follows:

H2: Geographic proximity does not affect firm value, other things equal. The firm that has a greater proportion of local independent directors is not systematically different from the firms that have few local independent directors.

Director Locality and CEO Compensation

The board of directors is the primary internal corporate governance mechanism

responsible for setting management compensation and monitoring senior management (Jensen (1993)). It has been considered to play an important role in setting an effective incentive contract structure that alleviates agency problems arising from the separation of ownership and control (Murpey(1999), Cory, Guay and Larker(2001)). If boards with more local independent directors act more effectively because locals are better informed, then companies with such boards will favor lower non-incentive pay (such as cash compensation) and higher pay-performance sensitivity of CEO compensation. However, the opposite effect may hold if the proximity of the directors' residence compromises their objectivity. In that case, the local independent directors may be less likely to challenge the CEO in compensation matter in the board. Therefore, I propose the following hypothesis.

H3: The director geographic proximity does not systematically affect CEO compensation and there is no systematic difference in CEO total compensation and CEO incentive compensation and performance between firms with board dominated by local directors and other things being equal.

Data and Variable Constructions

Sample Selection

The databases used in this study are CRSP, Compustat, IRRC, ExecuComp, I/B/E/S, and Insider Trading. The IRRC database covers board director information for S&P 1500 firms for the period 1996-2004. For each director in the database, I identify her home address from her report on their insider trading to the SEC. For the directors who change their home address at a given year, I pick the address that is closer to the annual board meeting date. The stock return of the firm is retrieved from CRSP database while the accounting information is

from Compustat database.

Variables

Distance is defined as the number of miles from the director's home address to corporate headquarters. I computed it based on the zip codes of these two addresses. I then classify a director as local if the distance between the director's home address and corporate headquarters is within 50 miles and non-local if the distance is greater than 50 miles. To obtain a clearer local variable, I exclude director observations where the distance is between 50 and 100 miles for the tests of directors' trades[3].

I identify around 11,300 distinct zip codes in the data. I obtain the latitude and longitude for each of the zip codes from the U.S. Census Bureau's Gazetteer Place and Zip Code Database. The corresponding company location comes from Compact Disclosure, which contain information about the company headquarters' zip code. Finally, I compute the distances based on the combination of firm headquarters' zip code and directors zip code[4].

Table 1 presents the distributions of directors by distance from their firms' headquarters. For the employee directors, 18,560 out of 22,879 director-year observations are within 50 miles. This is not surprising since most of employee directors are working in the corporate headquarters. For the employee directors, only 3,966 out of 22,879 director-year observations live over 100 miles away, accounting for about 17% of all insider director-year observations. For the independent directors, there are 33,724 out of 68,751 outside director-year observations are within 50 miles radius, accounting for 49% of all observations for independent directors. Over 48% or 32,751 of independent director year observations are

[3] There are 696 buy trade observations from the directors who live between 50 and 100 miles away from headquarters.
[4] A detailed explanation about the method can be found in Ivkovic and Weisbenner (2005).

over 100 miles away from the corporate headquarters. Looking at the geographic distribution by the city or state, there are 3,214 employee directors living in the same city as the headquarters and 18,764 living in the same state. This is compared with 3,908 independent directors who live in the same city and 36,075 who live in the same state as the corporate headquarters.

In this study, my main variable for geographic proximity is the local variable classified by the distance. The drawback of the same-state or same-city variable is that headquarter and director home addresses might be located close to state boundaries or city boundaries leading to incorrect classification of proximity. Since my focus is on the social interaction between independent directors and CEOs, the distance measure would better capture the proximity between the CEO and directors. For example, the independent director who lives in Miami would not necessary have more social interaction with the CEO in Jacksonville than the independent directors living in Savannah, Georgia.

Table 1 Distribution of Director by Distance

Director Type	Distance			SameCity	SameState	Total
	< 50 miles	50-100 miles	> 100 miles			
Employee	18,560	353	3,966	3,214	18,764	22,879
Independent	33,724	2,456	32,571	3,908	36,075	68,751
Gray	9,440	506	6,293	1,439	9,872	16,239

Table 2 presents the descriptive statistics for the major variables. Q is defined as market value of the firm divided by the replacement cost, as in Chung and Pruitt (1994)[5]. It

[5]Alternatively, Q has been proxied by the mmarket-to-book ratio, as the market value of the firm's equity at the end of the year plus the difference between the book value of the firm's assets and the book value of the firm's equity at the end of the year, divided by the book value of the firm's assets at the end of the year. In

is computed as the sum of market value of equity, liquidation value of preferred stock(Compustat item 10), net value of debt, which is short term debt liability (Compustat item 72) net current asset (Compustat item 68), and book value of long term debt (Compustat item 9), and then scaled by book value of total assets. In the sample, firms have a mean Q of 1.43 with a standard deviation of 1.84.

ROA is computed, following Fich and Shivdasani (2006), as operating income before depreciation (Compustat item 13) plus the decrease in receivables (Compustat item 2), the decrease in inventory (Compustat item 3), the increase in current liabilities (Compustat item 72), and the decrease in other current assets (Compustat item 68). I then scared it by the average of beginning- and ending-year book value of total assets (Compustat item 6).

Following Shivdasani and Yermack (1999), I also create a variable for CEO involvement to measure the influence of CEO in the selection of directors. It equals to 1 when the CEO sits on the nominating committee or CEO sits on the board when the firm does not have a nominating committee. It has a mean value of 0.3, indicating that in about 30% of the firm whose director selection procedure is influenced by the CEOs.

I also use urban and rural variables as documented in Loughran and Schultz (2005). A stock is defined as an urban stock if the company headquarters is in one of the ten largest metropolitan areas of the United States according to the 2000 census. These include New York City, Los Angeles, Chicago, Washington-Baltimore, San Francisco, Philadelphia, Boston, Detroit, Dallas, and Houston. A company is defined as rural if its headquarters is 100 miles or more from the center of any of the 49 U.S. metropolitan areas of one million or more people according to the 2000 census. The sample has 40% director-year observations with headquarter in urban areas, 8% in rural area and the remaining 52% in the suburbs.

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the tests, using this metric, not reported for the sake of brevity, yield similar results with the ones reported

I created two variables to identify the independent director's geographic characteristics based on the distance of their residence from firm headquarters: a) an indicator variable for 100% non-local independent directors on the board, and b) the number of local independent directors on the board. In the sample, about 16% of the available firm-year observations have a board with 100% non-local independent directors. The sample firms have an average 2.79 local independent directors with a median 2 local independent directors on the board. Overall, 50% of independent directors on the board are local.

In Panels B and C of Table 2, I also separate the sample firms into groups based on the geographic characteristics: urban and rural, and based on the board locality characterisitics: zero local independent directors' board and all others. As shown in Panel B, urban firms are, on average, larger than rural firms. Urban firms also have more local independent directors on the board. On average, urban firms have 2.9 local independent directors (55% of the total independent directors) compared with 2.2 for the rural firms (39% of the total independent directors).

In Panels B and C of Table 2, I also separate the sample firms into groups based on the geographic characteristics: urban and rural, and based on the board locality characterisitics: zero local independent directors' board and all others. As shown in Panel B, urban firms are, on average, larger than rural firms. Urban firms also have more local independent directors on the board. On average, urban firms have 2.9 local independent directors (55% of the total independent directors) compared with 2.2 for the rural firms (39% of the total independent directors).

When we compare the firms with 100% non-local independent director boards with all other firms, we observe that the former group, on average, consists of small firms in terms

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here.

of assets value. Also, in contrast to firms with local independent directors on the board, those firms are more likely to be headquartered in a rural area, rather than in an urban area. For the firms with zero local independent directors 28% are in urban and 15% are in rural areas, while 42% (7%) of firms with all other types of board structure are in (rural) areas.

Table 2 Descriptive Statistics

Panel A				
Firm characteristics				
	Mean	Median	SD	N
Sales ($ million)	4527	1218	12491	11416
Assets ($ million)	11711	1568	55096	11416
Q	1.43	0.98	1.84	11416
Return on assets	0.13	0.13	0.12	10483
Age	27.55	22	18.73	11416
# of business segments	2.7	2	1.79	10691
Capital expenditure/assets	0.06	0.04	0.06	10569
Governance structure and CEO compensation				
	Mean	Median	SD	N
Board size	8.74	8	2.97	11416
Number of independent directors	6.17	6	2.72	11416
CEO ownership (%)	2.54	0.33	6.22	9978
Director ownership (%)	8.62	1.3	19.51	11416
CEO compensation ($ million)	11.83	6.59	18.67	10439
CEO involvement dummy	0.3	0	0.46	11416
CEO-Chair dummy	0.66	1	0.47	11416
Board and firm geographic characteristics				
	Mean	Median	SD	N
Urban dummy	0.4	0	0.49	11416
Rural dummy	0.08	0	0.27	11416
100% non-local independent director board	0.16	0	0.36	11416
# of local independent directors	2.79	2	2.29	11416
% of independent directors are local	50%	50%	33%	11416

Table 2 Descriptive Statistics (continue)

Panel B										
Firm Characteristics										
	Urban Firms				Rural Firms					
	Mean	Median	SD	N	Mean	Median	SD	N	Difference of Mean	P-value
Sales ($ million)	5416.97	1271.65	15316.8	4570	4771.82	979.69	18568.02	930	645.15	0.26
Assets ($ million)	17993.14	1889.06	76853.02	4570	7234.28	1459.01	15680.82	930	10758.86	0.00
Q	1.55	1	2.37	4570	1.09	0.88	0.9	930	0.46	0.00
Return on assets	0.17	0.16	0.18	4082	0.17	0.16	0.17	828	0	0.25
Age	27.49	21	20.14	4570	28.34	28	16.21	930	-0.85	0.27
# of business segments	2.8	3	1.84	4284	3.2	3	2.04	848	-0.4	0.00
Capital expenditure/assets	0.06	0.04	0.06	4224	0.07	0.05	0.07	849	-0.01	0.00
Governance structure and CEO compensation										
Board size	8.59	8	2.96	4570	8.97	9	2.96	930	-0.38	0.00
Number of independent directors	6	6	2.56	4570	6.35	6	2.71	930	-0.35	0.00
CEO ownership (%)	2.48	0.31	5.79	3919	3.42	0.41	8.34	816	-0.94	0.00
Director ownership (%)	8.56	1.3	18.02	4570	7.62	1.4	14.74	930	0.94	0.13
CEO compensation ($ million)	14824.2	8236.72	21989.99	4159	7290.66	4494.46	8148.3	856	7533.54	0.00
CEO involvement dummy	0.29	0	0.45	4570	0.32	0	0.47	930	-0.03	0.03
CEO-Chair dummy	0.67	1	0.47	4570	0.62	1	0.49	930	0.05	0.00
Board geographic characteristics										
100% non-local independent director board	0.11	0	0.31	4570	0.29	0	0.45	930	-0.18	0.00
# of local independent directors	2.98	3	2.19	4570	2.23	2	2.26	930	0.75	0.00
% of independent directors are local	0.55	0.6	0.32	4570	0.39	0.33	0.36	930	0.16	0.00

Table 2 Descriptive Statistics (continue)

Panel C										
Firm Characteristics										
	Board w/ 100% non-Local Directors				Board w/ Local Directors					
	Mean	Median	SD	N	Mean	Median	SD	N	Difference of mean	P-value
Sales ($ million)	4511.17	1040.21	13896.85	1779	4533.15	1259.6	12223.13	9623	-21.98	0.94
Assets ($ million)	6784.46	1300.03	35458.51	1779	12634.13	1646.31	57995.98	9623	-5849.67	0.00
Q	1.43	1.01	2.28	1779	1.43	0.97	1.75	9623	0	0.93
Return on assets	0.17	0.17	0.18	1707	0.17	0.17	0.17	8666	0	0.23
Age	26.33	19	19.32	1779	27.78	23	18.62	9623	-1.45	0.00
# of business segments	2.67	2	1.82	1757	2.71	3	1.78	8920	-0.04	0.39
Capital expenditure/assets	0.07	0.05	0.07	1742	0.06	0.04	0.06	8814	0.01	0.00
Governance structure and CEO compensation										
Board size	7.89	8	2.79	1779	8.91	9	2.97	9623	-1.02	0.00
Number of independent directors	5.27	5	2.61	1779	6.34	6	2.7	9623	-1.07	0.00
CEO ownership (%)	2.69	0.39	6.46	1491	2.52	0.32	6.18	8473	0.17	0.34
Director ownership (%)	10.52	1.7	23.67	1779	8.28	1.3	18.63	9623	2.24	0.00
CEO compensation ($ million)	10483.37	6258.78	16344.29	1560	12079.53	6670.28	19051.08	8865	-1596.16	0.00
CEO involvement dummy	0.34	0	0.47	1779	0.3	0	0.46	9623	0.04	0.00
CEO-Chair dummy	0.64	1	0.48	1779	0.67	1	0.47	9623	-0.03	0.00
Firm Geographic Characteristics										
Urban dummy	0.28	0	0.45	1779	0.42	0	0.49	9623	-0.14	0.00
Rural dummy	0.15	0	0.36	1779	0.07	0	0.25	9623	0.08	0.00

Empirical Results

Directors Trades Return: Local vs. Non-local

In order to test the information advantage of the local directors versus non-local directors, I collect all insider buys for all independent directors from Insider Trading database[6]. For each director-purchase trade, I mimic it by going long the firm's stock and at same time short the value-weighted CRSP market index. I compute cumulative market adjusted returns and buy and hold market adjust return for each trade. The cumulative market adjusted return for the horizon H is computed as the sum of difference of daily stock return and daily value-weighted market index return.

$$CAR_{iH} = \sum_{t=1}^{H} R_{it} - \sum_{t=1}^{H} R_{Index,H}$$

The buy and hold market adjusted return (BHAR) for the horizon H is the sum of compounded daily stock return minus the compounded daily value weighted CRSP market index return.

$$BHAR_{iH} = (1+R_{i1}) \times (1+R_{i2}) \cdot \cdot (1+R_{iH}) - (1+R_{Index1}) \times (1+R_{Index2}) \cdot \cdot (1+R_{IndexH})$$

Each director-purchase trade is then classified into local or non-local trades based on the geographic location of the directors. Table 3 presents the directors trades cumulative return and BHR return before and after adjusted by the value weighted CRSP index for periods from 3 months up to 2 years.

As shown in the Table 3, the cumulative return for the local independent directors' purchase trades ranges between 0.085 for a three months period to 0.44 for two years, compared with 0.078 to 0.375 for non-local independent directors trades. The difference between their trades stands 0.008 to 0.065, which are statically significant at the 5% level.

After adjusting by the CRSP value-weighted market return, the difference of the trades' profit are similar to those of cumulative returns and are still significant, in both economic and statistic levels.

Panel C and D show the buy and hold return for the director trades. For all periods from 3 months to 2 years, the return for local independent director purchase trades are higher than non-local director trades. The differences between these two are still statistically significant.

Table 3 Trading Performance of Directors: Local vs. Non-local

	Panel A: Cumulative return			
	3 months	6 months	1 year	2 years
Local independent	0.085	0.140	0.253	0.440
Non-local independent	0.078	0.110	0.213	0.375
Difference(Local-Non-local)	0.008	0.030	0.040	0.065
P-values	(0.038)	(0.000)	(0.000)	(0.000)
	Panel B: Market adjusted cumulative return			
Local independent	0.053	0.080	0.142	0.268
Non-local independent	0.045	0.053	0.104	0.193
Difference(Local-Non-local)	0.007	0.027	0.038	0.074
P-values	(0.038)	(0.000)	(0.000)	(0.000)
	Panel C: Buy and hold return			
Local independent	0.082	0.137	0.302	0.495
Non-local independent	0.072	0.104	0.209	0.400
Difference(Local-Non-local)	0.009	0.034	0.092	0.095
P-values	(0.026)	(0.000)	(0.000)	(0.000)
	Panel D: Market adjusted buy and hold return			
Local independent	0.049	0.078	0.188	0.305
Non-local independent	0.041	0.048	0.097	0.198
Difference(Local-Non-local)	0.009	0.030	0.091	0.107
P-values	(0.026)	(0.000)	(0.000)	(0.000)

In Table 4, I sort the firms in the sample into the size terciles and report CARs and BHARs by size terciles. Malloy (2005) shows that the local information advantage is stronger in small and highly levered firms. If local directors, as other monitors, also have an

information advantage, the advantage would be stronger when the firm has less external information which the non-local directors could use. On the other hand, the local information advantage can be diminished if the firms are larger or more transparent. To account for this, each firm is assigned into small, middle and top size tercile based on the market value at the end of previous calendar year.

As shown in the Table 4, the difference between the returns for local directors' trades and non-local director trades appears to be strongest in the small tercile and gradually declines for the medium and large size terciles. For example, the difference for the 6 month period is 4.3% between the local director trades and non-local director trades in small size tercile, while for the top size tercile, the difference is only 1.99%. Moreover, it becomes insignificant for the 1 year and 2 year horizon for the firms in top size tercile. This result indicates in small firms local directors have a clearer information advantage while for the large firms; the local information advantage becomes weaker as the large firms have more external information availability. This finding could be driven by the fact that analysts are more likely to follow the large firms, large firms have greater media coverage and more voluntary disclosures. This is consistent with Malloy (2005)'s finding.

Table 4 Trading Performance of Directors by Distance

and Firm's Information Characteristics

	Market-Adjusted Return by Size Tercile						
	Small Size Tercile						
	Cumulative Return				Buy and Hold Return		
	6 month	1 year	2 years		6 month	1 year	2 years
Local Independent	16.65%	28.57%	49.07%		18.21%	41.64%	68.61%
Non-local independent	12.35%	20.85%	30.30%		13.11%	22.14%	40.96%
Difference(Local-Non-local)	4.30%	7.72%	18.77%		5.10%	19.50%	27.65%
P-values	(0.00)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)

Table 4 Trading Performance of Directors by Distance

and Firm's Information Characteristics (continue)

	Middle Size Tercile						
Local Independent	6.02%	11.63%	23.99%		5.42%	14.76%	21.92%
Non-local independent	4.02%	8.71%	20.29%		2.97%	7.44%	17.35%
Difference(Local-Non-local)	2.00%	2.92%	3.70%		2.45%	7.32%	4.57%
P-values	(0.02)	(0.03)	(0.04)		(0.01)	(0.00)	(0.08)
	Top Size Tercile						
Local Independent	3.25%	5.74%	12.48%		2.18%	5.19%	9.71%
Non-local independent	1.26%	4.18%	10.68%		0.22%	2.36%	6.50%
Difference(Local-Non-local)	1.99%	1.56%	1.80%		1.96%	2.83%	3.21%
P-values	(0.00)	(0.10)	(0.15)		(0.00)	(0.01)	(0.05)

Multivariate Regression Tests: Director Locality and Trades Return

Though the univariate tests show that there is a significant difference between local versus non-local director trades, these tests do not control for other effects that could explain the trading differences between local and non-local directors. Table 5 presents the multivariate regression tests for the following models:

$$BHAR_{iH} = Localdummy_{i,j,t} + DirectorHolding_{i,j,t} + \varepsilon$$
$$BHAR_{iH} = Localdummy_{i,j,t} + DirectorHolding_{i,j,t} + Size_{i,t} + BM_{i,t} + \varepsilon$$
$$BHAR_{iH} = Localdummy_{i,j,t} + DirectorHolding_{i,j,t} + Size_{i,t} + BM_{i,t} + PoorGovernance_{i,t} + \varepsilon$$

where $DirectorHolding_{i,j,t}$ is the percentage of the shares held by each director j in firm i at time t . $Localdummy_{i,j,t}$ equals to 1 if director j's home address is within 50 miles from firm i's corporate headquarters or 0 otherwise. *Size* is the market value of the firm at the end of the previous calendar year; book to market is defined as the book value at fiscal year scaled by the market value of the firm; *PoorGovernance* is equal to 1 if the G-index is greater than 10 and 0 otherwise. As shown in Table V, the dependent variables are the compounding abnormal market return at the different horizons. The independent variables

are local director indicator (0,1) and director holding. The local director indicator, which is the variable of main concern, is statistically significant at the 1% level or better for the six months- and one year horizons. The result indicates that on average the local director trades yield 0.01 or 1% more than non-local director trades for the three months- and the difference goes up to 0.03 for the six months horizon.

In the second model, I include size and book-to-market as additional controls in the main regressions. Size and book-to-market have been documented as main explanatory variables for cross-sectional returns. Adding these two variables does not alter the effect of the local director indicator. The coefficients for the local director indicators remain pretty stable in all three regressions in the second model. Size has a negative coefficient, indicating that director trades have a lower return when the size goes up.

In the third model, I control for the quality of the firm's governance by adding a poor governance dummy. The evidence shows that if firms have poor governance (i.e., a G-Index of 10 or more), their directors' trades yield a higher return. Directors earn 2.6% higher return on their trades over a one year horizon if the firm has poor governance. This evidence implies that in poor governance firms, insiders are more likely to enjoy an informational advantage.

The results in Table 3 to 5 show that the local directors' trades yield a higher abnormal return than those of the non-local directors. However, this evidence cannot answer the question of where this return difference comes from and how other governance mechanisms, such as analysts, board meetings and board memberships, could alleviate this advantage. In Table 6, I add the following variables to the model: number of analysts following the stock at the quarter when the trade made; audit committee member dummy; less than 75% board meeting dummy, which equals to one if the director attends over 75% of

the board meetings; interaction terms with the local director variables.

If board attendance or audit committee membership is substitute channels for accessing firm's information, then they could also explain the performance of director trades. As shown in all regressions, the significance of local director trades is not affected after adding these two controls: an indicator of board attendance which equals to 1 if the director attends less than 75% board meetings and a dummy for audit committee membership, and it is still significant statistically at 0.000 level.

Board attendance has a negative coefficient, implying that attending less board meeting would reduce the trade profit. Audit membership also has a positive coefficient but insignificant for the horizons over six months and one year, indicating being a member of the audit committee will result in more profitable trades.

The inclusion of interaction terms serves the purpose of disentangling the effects of the "informative monitor" and "social ally" roles the local directors may play on the board. Conditional on analyst following or size, the marginal effect of the local indicator variable would be smaller if local directors play an "informative monitor" role.

However, conditional on the poor governance, I would expect the marginal effect of the local director indicator would be greater if local directors assume the role of the CEO's "social ally". Note that, as shown in Table 5, if the firm has poor governance, both local and distant directors would expect to have earn higher returns on their trades, consistent with the notion that they both enjoy some information advantage.

As shown in Table 6, the coefficients for the interaction terms between the local director indicator and analyst following and poor governance respectively, are significant and negative when performance is measured over a one year horizon.

Table 5 Independent directors' trades return: local vs. non-local

	Buy and Hold Market Adjusted Return								
	3-month	6-month	1-year	3-month	6-month	1-year	3-month	6-month	1-year
Local director indicator (0,1)	0.011	0.033	0.103	0.011	0.034	0.103	0.011	0.034	0.103
	(0.013)**	(0.000)***	(0.000)***	(0.012)**	(0.000)***	(0.000)***	(0.011)**	(0.000)***	(0.000)***
Director holding	-0.001	-0.000	0.001	-0.001	-0.000	0.002	-0.001	0.000	0.002
	(0.301)	(0.721)	(0.571)	(0.447)	(0.999)	(0.308)	(0.519)	(0.959)	(0.270)
Size				-0.000	-0.001	-0.001	-0.000	-0.001	-0.001
				(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Book to market				0.024	0.046	0.094	0.025	0.047	0.096
				(0.003)***	(0.005)***	(0.011)**	(0.003)***	(0.005)***	(0.011)**
Poor governance(G-index>10)							0.018	0.013	0.026
							(0.000)***	(0.073)*	(0.089)*
Constant	-0.013	0.016	-0.078	-0.026	-0.010	-0.128	-0.030	-0.013	-0.135
	(0.293)	(0.388)	(0.004)***	(0.050)*	(0.652)	(0.000)***	(0.023)**	(0.549)	(0.000)***
Observations	16038	16038	16038	16038	16038	16038	16038	16038	16038
Adjusted R-squared	0.03	0.04	0.03	0.04	0.05	0.03	0.04	0.05	0.03

This suggests that the informational advantage of the local directors over the distant directors decreases as analyst following increases. This is consistent with the notion that the local directors' information advantage weakens in the more transparent firms. The coefficient of the interaction term between local director indicator and audit committee membership indicator is positive, indicating that local directors enjoy and even greater information advantage if they are also sitting on the audit committee.

The negative coefficient of the interaction term between local director indicator and poor governance implies that the local directors' information advantage relative to distant directors becomes smaller when governance is poor.

Table 6 Independent directors' trades return: local versus non-local after controlling for asymmetry information

	Buy and Hold Market Adjusted Return		
	3-month	6-month	1-year
Local director	0.004	0.061	0.137
	(0.700)	(0.000)***	(0.000)***
Size	-0.000	-0.000	-0.001
	(0.003)***	(0.110)	(0.000)***
Book to market	0.034	0.062	0.130
	(0.000)***	(0.000)***	(0.001)***
Director holding	-0.004	-0.004	-0.002
	(0.000)***	(0.034)**	(0.468)
Number of analysts	-0.001	-0.002	-0.001
	(0.038)**	(0.003)***	(0.487)
Less than 75% attendance indicator (0,1)	-0.004	-0.033	-0.038
	(0.771)	(0.111)	(0.306)
Committee membership - audit	-0.008	0.011	0.005
	(0.269)	(0.303)	(0.771)
Poor governance(G-Index >10)	0.026	0.061	0.086
	(0.001)***	(0.000)***	(0.000)***
Local X Size	0.000	-0.000	0.000
	(0.035)**	(0.884)	(0.669)
Local X Analysts	-0.000	-0.000	-0.006
	(0.595)	(0.861)	(0.013)**
Local X Audit Membership	0.014	0.010	0.116
	(0.174)	(0.522)	(0.000)***
Local X Poor governance	-0.004	-0.073	-0.083
	(0.675)	(0.000)***	(0.008)***
Constant	-0.024	-0.021	-0.184
	(0.100)*	(0.371)	(0.000)***
Observations	13542	13542	13542
Adjusted R-squared	0.04	0.05	0.04

Firm Value and Director Locality

Previous research has documented that firm value is related to the board

characteristics. An effective board would likely enhance the firm value. For example, Yermack (1996) finds a negative link between board size and firm value, Fich and Shivdasani (2006) shows that busy boards have a negative impact on firm's Q. Vafeas (1999) presents evidence that board meetings become more frequent after bad firm performance. However, how the distribution of director affects board effectiveness and hence the firm value is not yet resolved. In the previous section, I have shown that local independent directors seem to have more information on their firms, as evidenced by their more informative trades. According to our efficiency hypothesis, more local independent directors sitting on the board would benefit the firm by increasing efficiency and, hence, improve the Q as the local directors are more informed and thus better monitors. On the other hand, the likelihood of social interaction between board independent directors and corporate executives increases with geographic proximity and, thus, creates a weaker board when the board is dominated by the local directors.

To address this issue, I collect data from 1996 to 2004 from IRRC and find the distance information for each director in the board. The number of firms per year with non-missing distance information ranges about 800 to 1100 firms per year. The dependent variable Q is defined following Chung and Pruitt (1994). The main explanatory variable is director locality. I create two different director locality variables. The first one is the number of local independent directors on the board, and the second one is the zero local independent directors' indicator, which takes the value of 1 if there is none of the independent directors who are local, and 0 otherwise. To control the board characteristics, I include several main variables previously used in the literature. The independent variables include the log form of board size (Yermack(1996)), stock ownership of CEOs, directors' ownership(Morck,

Shleifer and Vishny(1988)), busy board dummy, which is equal to 1 if the firm has at least 1 busy director(Fich and Shivdasai(2006)), log form of number of board meetings (Vafeas(1999), firm age, number of different business segments(Lang and Stultz(1994)), growth opportunity as proxied by capital expenditure (Smith and Watts(1992)), firm leverage and size proxied by the log form of sales.

Table 7 shows the result for the fixed-effect panel regressions. The year dummies are also included but not reported. In the first column of Table 7, the locality variable is the number of local independent directors. The coefficient for the number of local independent directors is negative and significant. This shows that for each additional local independent director on the board, the Q on average decreases by 0.045.

The board size has a negative and slightly significant coefficient in the first regression. This is consistent with Yermack (1996) and indicates a large board would be less effective and thus decrease the firms' value. CEO ownership and director ownership both have a positive impact on Q but only CEO ownership has a statically significant effect. This result is consistent with the notion that ownership helps align the interests of the CEO and stockholders. Busy board has a negative coefficient, in support of the view that the directors who are busy would exert less effort. Consistent with Vafeas(1999), the number of board meetings is associated with lower Qs, possibly because firms tend to increase the frequency of board meetings after they have experienced poor performance.

In the second column, I create a strong local board dummy to explore the effect of non-local independent directors on the board. The base group is that the firm with at least one local independent directors. As shown in the table 7, the zero local independent director dummy has a significant positive impact on the firm value. Compared with base group, on

average, the Q is 0.317 higher for the firm with zero local independent directors or 100% non-local independent directors. Given that the standard deviation of Q is 1.84, it indicates that firm with no local directors on the board would have about a 17% higher Q than other firms.

The results do not support the notion that the presence of local independent directors helps improve board effectiveness, i.e. increase the firm value. Instead the finding in Table 7 implies that firm value decreases with the presence of more local independent directors on the board.

Q mostly reflects the firm's market value or the value of growth opportunities. In the next section, I discuss how accounting performance measures are affected by the board locality.

Table 7 Fixed effect regression of Q on director locality characteristics

	Q	
# of local independent directors	-0.045	
	(0.011)**	
Zero local independent directors indicator (0,1)		0.317
		(0.000)***
Log(board size)	-0.206	-0.246
	(0.080)*	(0.031)**
CEO ownership	0.021	0.020
	(0.000)***	(0.000)***
Director ownership	0.002	0.002
	(0.258)	(0.229)
Busy directors on the board indicator (0,1)	-0.030	-0.034
	(0.476)	(0.429)
Log(number of board meetings)	-0.158	-0.161
	(0.011)**	(0.010)***
Age	0.001	0.002
	(0.946)	(0.891)
Number of different business segments	-0.012	-0.013
	(0.454)	(0.430)
Capital expenditure	2.982	2.962
	(0.000)***	(0.000)***

Table 7 Fixed effect regression of Q on director locality characteristics (continue)

Leverage	-1.474	-1.482
	(0.000)***	(0.000)***
Log(sales)	-0.221	-0.229
	(0.000)***	(0.000)***
Constant	4.115	4.065
	(0.000)***	(0.000)***
Observations	8972	8972
R-squared	0.03	0.03

The corporate governance literature has documented extensively that firm performance and board composition are endogenous. It is possible, in the context of this study, that firms with weak governance choose a board that is tilted toward greater local director representation, which in turn leads to poor performance. To address this issue, we conduct a two stage instrumental variables (IV) test to for the endogenous nature of the relationship between performance and board geographic structure.

In the first stage of the regression, we use the number of local independent directors or the zero local independent directors' dummy as the dependent variables. The independent variables are: a CEO involvement dummy, which is takes the value of one if the CEO is sitting in the nomination committee or if the CEO is chair when the company does not have a nomination committee, and the value of zero otherwise; an urban dummy, which takes the value of one if the headquarters of the firm are located if the firm's headquarter is located in one of the ten largest metropolitan areas of the United States according to the 2000 census; the interaction term between the CEO involvement dummy and the urban dummy; the interaction term between the CEO involvement dummy and the natural logarithm of the number of independent directors; and, the interaction term between the urban dummy and the

natural logarithm of the number of independent directors. The remaining independent variables are all control variables used to predict firm value. As shown in the table 8, the interaction term between CEO involvement dummy and the natural logarithm of the number of independent directors has a coefficient of 0.118, indicating that conditioning on the number of independent directors, the board will have on average 0.118 more local directors when the CEO is involved in the nomination. In addition, when the firm is located in an urban area, the firm has 1.47 more local directors on the board. The same result is obtained when the dependent variable used is the zero local independent directors dummy: conditioning on the number of independent directors, firms when the CEO is involved in the nomination and firm headquarted in the urban area, are less likely to have a board with zero local independent board.

Our second stage regression uses the control variables used in our previous tests of firm value together with the predicted board locality variable from the first stage. The results we obtain remain qualitatively similar to the ones obtained from the OLS regressions. As shown in Table 8, the firm value exhibit a negative association with the boards dominated by local directors. An additional local independent director would reduce Tobin's Q by 0.5. Compared with a zero local independent director board, the other boards lead to 4.5 lower in terms of Q.

Table 8 Two Stage IV regression of Q on director locality characteristics

	Q			
	First Stage	Second Stage	First Stage	Second Stage
# of local independent directors		-0.583		
		(0.000)***		
Zero local independent directors indicator (0,1)				4.878
				(0.000)***

Table 8 Two Stage IV regression of Q on director locality characteristics

(continue)

log(board size)	1.553	0.747	-0.108	0.318
	(0.000)	(0.000)***	(0.000)	(0.046)**
CEO ownership	0.005	0.020	0.000	0.016
	(0.201)	(0.001)***	(0.915)	(0.019)**
Director Ownership	-0.005	-0.001	0.000	-0.000
	(0.000)	(0.491)	(0.424)	(0.983)
Whether the firm has any busy directors	-0.036	0.033	0.001	-0.005
	(0.253)	(0.465)	(0.911)	(0.924)
Log(Number of board meetings)	-0.031	-0.153	0.014	-0.202
	(0.431)	(0.020)**	(0.131)	(0.007)***
Firm Age	-0.026	-0.015	0.000	-0.000
	(0.025)	(0.404)	(0.998)	(0.986)
Number of different business segments that a firm has	0.010	0.031	-0.004	0.030
	(0.387)	(0.083)*	(0.142)	(0.139)
Capital Expenditure Adj	0.160	1.940	0.126	1.419
	(0.638)	(0.001)***	(0.102)	(0.031)**
Book Leverage	-0.113	-1.567	0.034	-1.713
	(0.381)	(0.000)***	(0.253)	(0.000)***
Log(sales)	-0.127	-0.094	0.032	-0.191
	(0.001)	(0.107)	(0.000)	(0.003)***
CEO involved in nomination indicator (0,1)	-0.237		0.096	
	(0.014)		(0.000)	
Urban dummy	-2.313		0.141	
	(0.000)		(0.295)	
CEO involvement X Urban	0.021		0.007	
	(0.682)		(0.521)	
Log(# of independent directors) X CEO involvement	0.118		-0.065	
	(0.019)		(0.000)	
Log(# of independent directors) X Urban	1.478		-0.083	
	(0.000)		(0.000)	
Constant		3.051		2.068
		(0.000)***		(0.013)**
Observations		8972		8972
R-squared				
Number of spc permanent number		1804		1804

Directors Locality and ROA

Table 9 presents multivariate regressions of ROA on director locality. The dependent

variable, ROA, is created following Fich and Shivdasani (2006) as previously described.[7] The other independent variables are those included in the Q regressions. As shown in Table VIII, the results of the ROA regressions are consistent with those of the Q regressions. Local director presence has a negative impact on the ROA. The coefficient of the number of local independent director variable is -0.004, indicating that for an additional local director in the board, the firm ROA decreases by 0.004. The impact of locality becomes stronger when I compare the board with 100% no local directors and those with at least 1 local director in the board, the difference is 0.029. It implies that the board with no local directors on the board has a 0.029 higher ROA than other firms. Considering that the standard deviation of ROA is about 0.12, the firm with zero local independent directors has a about 0.23 standard deviation higher ROA than other counterparts.

Table 9 Fixed effect regression of ROA on director locality characteristics

	Return on Assets	
# of local independent directors	-0.004	
	(0.025)**	
Zero local independent directors indicator (0,1)		0.029
		(0.000)***
Log(board size)	-0.020	-0.024
	(0.075)*	(0.034)**
CEO ownership	0.003	0.003
	(0.000)***	(0.000)***
Director ownership	-0.000	-0.000
	(0.409)	(0.437)
Busy directors on the board indicator (0,1)	-0.017	-0.017
	(0.000)***	(0.000)***
Log(number of board meetings)	-0.017	-0.017
	(0.005)***	(0.005)***
Age	-0.001	-0.001
	(0.471)	(0.509)

[7] For the sake of brevity, we also have two different definitions of ROA. But the results are basically same. So we omitted it to report in the tables.

Table 9 Fixed effect regression of ROA on director locality characteristics (continue)

Number of different business segments	-0.013	-0.013
	(0.000)***	(0.000)***
Capital expenditure	0.509	0.507
	(0.000)***	(0.000)***
Leverage	-0.121	-0.121
	(0.000)***	(0.000)***
Log(sales)	0.069	0.068
	(0.000)***	(0.000)***
Constant	-0.167	-0.171
	(0.009)***	(0.007)***
Observations	8740	8740
R-squared	0.06	0.06

Following the IV technique in the previous section, we ran the same test tor the ROA regression, the result remains also qualitatively similar to the fixed effect regression. On average, a local independent director is associated with a reduction in ROA by 0.07, while a zero local independent board would cause a 0.7 increase in ROA.

Table 10 Two Stage IV regression of ROA on director locality characteristics

	ROA			
	First Stage	Second Stage	First Stage	Second Stage
# of local independent directors		-0.078		
		(0.000)***		
Zero local independent directors indicator (0,1)				0.702
				(0.000)***
log(board size)	1.543	0.109	-0.108	0.060
	(0.000)	(0.000)***	(0.000)	(0.001)***
CEO ownership	0.005	0.003	0.000	0.002
	(0.143)	(0.000)***	(0.834)	(0.004)***
Director Ownership	-0.005	-0.001	0.000	-0.000
	(0.000)	(0.002)***	(0.310)	(0.047)**
Whether the firm has any busy directors	-0.038	-0.008	0.002	-0.014
	(0.229)	(0.094)*	(0.743)	(0.016)**
Log(Number of board meetings)	-0.029	-0.016	0.010	-0.021
	(0.463)	(0.018)**	(0.264)	(0.016)**

Table 10 Two Stage IV regression of ROA on director locality characteristics (continue)

Firm Age	-0.026	-0.003	0.000	-0.001
	(0.026)	(0.066)*	(0.996)	(0.533)
Number of different bus segments that a firm has	0.008	-0.007	-0.004	-0.007
	(0.491)	(0.000)***	(0.092)	(0.004)***
Capital Expenditure Adj	0.149	0.351	0.156	0.255
	(0.677)	(0.000)***	(0.054)	(0.001)***
Book Leverage	-0.115	-0.133	0.024	-0.148
	(0.379)	(0.000)***	(0.417)	(0.000)***
Lsales	-0.126	0.086	0.032	0.072
	(0.001)	(0.000)***	(0.000)	(0.000)***
CEO involved in nomination indicator (0,1)	-0.219		0.102	
	(0.025)		(0.000)	
Urban dummy	-2.308		0.128	
	(0.000)		(0.344)	
CEO involvement X Urban	0.023		0.006	
	(0.657)		(0.624)	
Log(# of independent directors) X CEO involvement	0.107		-0.068	
	(0.036)		(0.000)	
Log(# of independent directors) X Urban	1.474		-0.077	
	(0.000)		(0.000)	
Constant		-0.312		-0.461
		(0.000)***		(0.000)***
Observations		8740		8740
R-squared				
Number of spc permanent number		1759		1759

Director Locality and CEO Compensation

The previous sections have shown that the presence of local independent directors is negatively related to firm performance. This evidence lends support to the entrenchment hypothesis that more social interaction between local independent directors and firm CEO leads to a weaker board. To further explore this question, I am testing another crucial function the directors play on the board: setting up the CEO compensation. If local directors behave in accordance with the entrenchment hypothesis, the presence of local directors would more likely result in higher CEO compensation and more importantly a weaker link

between CEO compensation and firm performance. Agency theory advocates that strong CEO incentive pay is more likely to reduce agency costs. Jensen and Murphy (1990) and Yermack (1996) show that strong boards are associated with higher CEO incentive pay. Westphal and Zajac(1995) illustrate that the powerful CEO seeks to recruit new directors with similar demographic characteristics and, therefore, those directors are more friendly to the CEOs when setting up the compensation.

In Table 11, I assess the relationship between abnormal CEO compensation and local directors. The abnormal CEO compensation is defined as the difference between current total CEO compensation, sum of salary and bonus, and the median industry CEO total compensation. The industry is classified by the first two digits of the firm's SIC code. As control variables, I include size (log of sales), CEO-Chairman dummy, profitability (industry adjusted ROA), and growth opportunities (depreciation over sales).

$$CEOCompensation_{it} = Local_{it} + Log(sales)_{it} + CEOChairdummy_{it} + ROA_{it} + Depreciation_{it} + \varepsilon_{it}$$

Table 11 has two columns, each corresponding to a different director locality variable. As shown in the first column in Table 11, the number of local independent director has a significant coefficient of 0.024, implying that for an additional local directors sitting on the board, the abnormal CEO compensation increases by 0.024 million dollars. In the second column, the coefficient for the zero local director dummy has an opposite sign and with a coefficient of -0.04, implying 100% non-local directors would compensate CEO less than the median CEO receives in the same industry. Overall, the result shows that local director presence would increase the CEO total compensation.

Table 11 Regressing CEO total compensation on director locality characteristics

	Industry-adjusted CEO compensation	
# of local independent directors	0.024	
	(0.014)**	
Zero local independent directors indicator (0,1)		-0.040
		(0.411)
Log(sales)	0.429	0.440
	(0.000)***	(0.000)***
Depreciation/Sales	0.067	0.068
	(0.022)**	(0.021)**
Chair-CEO indicator(0,1)	0.091	0.091
	(0.001)***	(0.001)***
Return on assets	1.079	1.052
	(0.000)***	(0.000)***
Constant	-3.023	-3.025
	(0.000)***	(0.000)***
Observations	9917	9917
Adjusted R-squared	0.28	0.28

In addition, the board of directors not only set up the level of CEO compensation, but more importantly, they also set up the link between CEO compensation and firm performance. Previous research has documented that the link is stronger when firms have more effective boards (for instance, Yermack(1997)). In Table 12, I create the CEO incentive variable in the spirit of Core and Guay (1999), measured by the dollar change in the value of stock and option CEO holds from a one percentage change of firm's stock price. Following Bergstresser and Philippon (2006), I create the CEO incentive ratio as follows:

$$Onepct_{it} = 0.01 \times Price_{it} \times (Shares_{it} + Options_{it})$$

$$CEOIncentive_{it} = Onepct_{it} / (Onepct_{it} + Salary_{it} + Bonus_{it})$$

Where shares is the number of shares the CEO holds, options is the sum of the stock options the CEO granted, number of unexercised options and number of exercisable options. Each regression includes the same control variables as in Table X, with the addition of the log of board size. I then regress the CEO incentive pay on the director locality variables and

the other controls. According to agency theory, an effective board acting in the best interest of stockholders would create a strong link between CEO compensation and firm performance. As shown in the column and second column, the director locality variable has a negative sign, which implies that adding the local directors on the board would weaken the link between CEO incentive pay and firm performance. For example, for additional local directors on the board, the CEO incentive pay decreases by 0.003. The second column further shows that those firms with no local directors have an increased CEO incentive pay, with a positive coefficient of 0.037 which is significant at the 5 percent level.

In conclusion, Tables 11 and Table 12 indicate that firms with more local directors on their boards are more likely to pay their CEOs higher levels of total compensation, thus providing a weaker link between CEO pay and firm performance. Overall, these findings are consistent with the entrenchment hypothesis. The potential social interactions between local directors and CEOs make local directors less likely to play the role of watchdog on the board. They are more likely to return favors back to CEOs by helping them to set up higher compensation and weaken the link between incentive pay and performance.

Table 12 Regressing CEO incentives on directors' characteristics

	CEO Incentive	
# of Local Independent Directors	-0.003	
	(0.001)**	
Zero local independent directors indicator (0,1)		0.037
		(0.00)*
Log(sales)	0.057	0.058
	(0.000)***	(0.000)***
Depreciation/Sales	0.002	0.003
	(0.453)	(0.400)
Chair-CEO indicator(0,1)	0.038	0.037
	(0.000)***	(0.000)***

Table 12 Regressing CEO incentives on directors' characteristics (continue)

Return on assets	0.056	0.049
	(0.005)***	(0.014)**
Log(number of board meetings)	-0.079	-0.079
	(0.000)***	(0.000)***
Log(board size)	-0.109	-0.11
	(0.000)***	(0.000)***
Constant	0.282	0.265
	(0.000)***	(0.000)***
Observations	9933	9933
Adjusted R-Square	0.29	0.29

Robustness Tests

In this study, I investigate the effect of proximate directors on board effectiveness. I rely on the measure of distance between the home address and corporate headquarters to determine whether the directors are local or distant. I decide the directors are local when they are live within a 50 miles radius from the headquarters. This measure is reasonable given that the actual travel time could be with in 1 hours drive. However, for the robustness check, I excluded the observations for the directors who are living between 50 and 100 miles as their information role can be ambivalent. The results, of the trades' return test do not change. Additionally, I also repeated the tests using a different measure, "*SameState*", instead of the local director indicator. The *SameState* variable takes the value of one if the directors live in the same state as the corporate headquarter. Using *SameState* rather than distance measure, yields qualitatively similar results. This can be partly attributed to the fact that most directors in the same state as the headquarters are more likely to be classified as local as well in the sample. These results are not reported here for the sake of brevity.

In addition to using a variety of local director measures, I have also used an

alternative measure for Q. Q is a proxy of firm value widely used in the literature. Besides the Chung and Pruitt (1994) version of Q, I also used the market-to-book measure, defined as sum of market value of equity, book value of assets, minus common equity and then divided by the book value of assets. Tests based on market-to-book yield qualitatively similar results with the ones reported in the paper.

Conclusion

While many studies have examined geographic characteristics in the context of monitoring commercial banks, venture capitalists and security analysts, to our knowledge, this is the first study to investigate the role of geographic characteristics in the context of board effectiveness.

I extend the literature of geographic proximity and information advantage by examining the difference in performance between trades of local independent directors and distant directors. The empirical tests' results support the notion that the local advantage previously recorded in the context of analysts, mutual fund investors, and individual investors also appears to exist in the context of the board of directors. On average, local director trades significantly outperform those by distant directors. Moreover, the local directors' advantage becomes stronger in smaller firms and firms followed by fewer analysts.

I further analyze the effect of director locality on board effectiveness. The efficiency hypothesis predicts that the presence of local directors would enhance board effectiveness and hence improve the firm's Q and ROA. On the other hand, the entrenchment hypothesis posits that more social interaction between local directors and CEO would make local

directors weak monitors. Thus, more local directors would weaken the board and lower Q and ROA. The presence of local directors significantly reduces both Q and ROA. Our empirical tests support the notion that the local directors play a weak role on the board.

Finally, I test how directors' locality affects the CEO compensation level and incentive pay. Agency theory suggests that higher incentive pay would help align the interest of CEO and stockholders. An effective board would be associated with a strong link between CEO pay and their performance, i.e., a higher proportion of incentive pay. The results show when there are more local directors on the board, firms are inclined to pay a higher level of compensation and lower proportion of incentive pay.

Overall, my results show strong relations between director locality and firm performance and CEO compensation, suggesting that director geographic characteristics play an important role in the effectiveness of corporate boards. These findings are of special interest to both law makers as well as researchers by highlighting the effect of the geographic characteristics of corporate boards on board effectiveness and firm performance.

Essay 2 — Director Incentives and Earnings Management

Introduction

A well-functioning corporate board is generally considered an important disciplinary mechanism that monitors managers and helps align the scope of their decision making with the interests of stockholders. Therefore, monitoring by the board of directors has an important effect on the economic performance of organizations (Jensen (1989)). However, how to motivate board directors to monitor instead of forming alliances with the managers has been the subject of ongoing debate. Previous research has focused on the importance of directors' reputation concerns[8]. In this study, my primary focus is on directors' incentive compensation. According to Compustat ExecuComp Database, there were 274 firms that paid directors with stock options in 1992, while the figure climbs to 1,214 in 2002 but then drops again to 1,055 in 2004. During the same period, about 660 firms never paid directors with stock options and another 102 firms stopped awarding stock options to their directors. These changes in director compensation structure pose an interesting empirical question. Does the incentive pay matter in terms of motivating directors to monitor managers? If yes, how do changes in the form of compensation affect directors' behavior? Earlier research on the impact of equity-based incentive compensation, such as stocks and stock option, on managerial behavior remains inconclusive. Jensen and Meckling(1976) suggested that firms suffering from the agency problem resulting from the separation of management and control can use incentive compensation to help align the interests of the CEO and stockholders.

Several subsequent empirical studies have provided support for this notion. For example, Morck, Shelifer and Vishny (1988), and McConnell and Servaes (1990) find a positive relation between Tobin's Q and inside director shareholdings. Warfield et al. (1995) show a negative link between managerial stockholdings and the absolute value of abnormal accruals. They interpret their results as being consistent with managerial shareholdings acting as a disciplinary mechanism. However, incentive compensation may also induce executives to become short-term oriented, causing more severe agency problems. For example, Burns and Kedia (2006) find that the firms are more likely to misreport accounting information if the sensitivity between CEO's compensation and stock prices is high. Bergstresser and Philippon (2006) show that when the CEO's incentive pay ranks near the top decile, the CEO is likely to sell more shares and exercise more stock options in the current year. In the same vein, Aboody and Kasznik (2000) and Yermack (1997) show that CEOs manage investors' earnings expectations downward prior to scheduled stock option awards in order to increase the future value of their awards. Taken together, the empirical evidence suggests that if the CEO manages earnings to increase his overall compensation, then there will be a positive relation between CEO incentive and earnings management.

While a large body of research on executive equity incentives exists, there is less research on the effect of the form of compensation on directors' behavior. Unlike CEO's, the directors' compensation contract that govern their continued participation in board activities are relatively less important than their other sources of income. In addition, directors' investment portfolios are more diversified than that of CEOs since director compensation is rarely the only source of income. Nevertheless, directors' compensation is sizeable (Yermack(2004)), especially for directors that sit on multiple corporate boards (Fich and

[8] For example, Fama(1980), Fama and Jensen (1983), Ofek and Yermack(2000).

Shivdasani (2006) and Ferris and Jagannathan et al. (2003)). This suggests that as is the case with managers, the director's compensation structure might also provide a mechanism that fosters an alignment of interests with shareholders.

In this study I empirically address how elements of director compensation structure affect directors' monitoring behavior. Specifically, I test whether directors' incentive pay affects the level of firms' earning management. If incentive pay induces directors to act as monitors, then earnings management is likely to be negatively related to the directors' incentive pay. This study is in the strand of research of Fich and Shivdasani(2005) and Byard and Li(2005). Fich and Shivdasani(2005) show that firms that offer stock options to their directors' exhibit higher market to book ratios. Moreover, outside directors' appointments produce near zero abnormal returns for firms with option plans but significantly negative abnormal returns for firms without them. Fich and Shivdasani (2005) indicate that stock-option plans help to align the interests of outside directors and shareholders. However, Byard and Li(2005) argue that when stock options are used as a common component of the compensation to the CEOs and directors, they can compromise directors' independence and ability to monitor CEO's option timing opportunities. Consequently, one can argue that awarding stock options to directors may reduce their incentives to monitor and therefore allow CEOs to manipulate earnings.

Prior studies have found that board characteristics are associated with the level of firms' earnings management. For example, Klein (2002), among others, shows a negative relation between the independence of the auditing committee of the board and abnormal accruals. However, her study does not account for the potential conflict arising from stock option grants to board directors and how it affects the relationship between directors'

compensation and earnings management.

In this paper, I empirically investigate whether directors' incentive pay affects the firm's earnings management using a sample of S&P 500, S&P middle cap 400 and S&P small cap 600 firms. Following previous researchers (i.e. Jones (1991), Teoh, Welch and Wong (1998)), I estimate the abnormal discretionary accruals from a group of cross sectional regressions estimated by year and industry. I find that earnings management is more severe among firms paying their directors with a higher proportion of stock options. This result still holds when I control for firm fixed effects. I further examine how board characteristics and CEO incentives pay jointly determine earnings management. Conditioning on director incentives the firm paid, I show earnings management is significantly larger for firms with high level of CEO incentive pay than for firms with low CEO incentive pay, but only when directors' incentive compensation is high as well.

In the tests, I also control for self-selection bias. Specifically, it is possible that firms that have never paid stock options to their directors during the entire sample period could also be more likely to have a specific governance mechanism in place that would affect the level of firm's earnings management. After controlling for self selection bias, I find firms that awarded their board with stock options engage in more severe earnings management than those that never paid their directors with stock options. Moreover, after controlling for bias, the degree of earnings management is still positively related to the proportion of incentive pay the directors received.

These results suggest that the interests of directors who receive higher levels of incentive pay tend be closely aligned with those of the CEO rather than the shareholders. I also examine directors' option sales for the years following severe earnings management.

The findings show large and significant options sales by directors following the years when the firm's earnings management is in the top tercile of the sample firms. This is additional evidence in line with the notion that directors may join the CEO in an effort to manipulate the earnings so that they could maximize their benefit from exercising their options for the purpose of profiting or diversification.

This paper sheds new light on the relationship between director incentive compensation and earnings management. Specifically the results show a positive relationship between director incentive pay and earnings management, suggesting that incentive pay may compromise the board's independence. Second, it provides an interpretation for the recent years' phenomenon wherein firms decide to pay less incentive pay to the board of directors.9

The paper proceeds as follows. Section 1 presents related literature and hypotheses. Section 2 describes data and presents descriptive statistics. Section 3 discusses the results. Section 4 presents robustness tests and Section 5 concludes.

Literature Review

Earnings Management

Healey and Wahlen (1999) define earnings management as a process where "managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers." Many researchers have shown evidence that earnings management is used to make firm's financial statement look more optimistic. For example, Teoh, Welch and Wong (1989) show that firms are more likely to increase accruals before they go public or

issue seasoned equity offerings.

It is argued that the management's use of earnings management has both costs and benefits. Benefits include potential improvements in managements' credible communication of private information to external stockholders (Healey and Wahlen (1999)). A similar statement was also appeared in the financial press, "the CEOs know that investors hate surprises, so they try to keep net income trending up a nice straight slop…" (Fortune 1989, 196). Goel and Thakor (2003) propose that uninformed liquidity investors are more likely to hold stocks with less volatile earnings as the informed investors make profits from their inside information when the earnings are more volatile. In this context, smoothing earnings by borrowing earnings from the next year when current earnings are actually low, or lending earnings when the previous year earnings are exceptionally high may provide a manipulative way to convince investors to hold on to the stock. This practice could also be beneficial to the firm because it reduces the variance of the firms' observed earnings and thus reduces the cost of borrowing (Trueman and Titman (1999)). However, this argument relies on unrealistic economic and behavior assumptions. Watts (1982) argues that the investors are sophisticated enough to be able to undo such manipulations. Thus, the usefulness of CEOs' manipulation of earnings for the sake of reducing earnings variance is suspect.

Recent empirical research has also highlighted the costs of earnings management. Beneish and Vargus (2002) find that abnormally high accruals are associated with increases in insider sales of shares but after the "event period", stock returns tend to be poor. Recent work focusing on how CEO compensation is related to earnings management shows that CEOs are more likely to use earnings management to inflate stocks prices and thus affect their own wealth. For example, Cheng and Warfield (2005) and Bergstresser and Philippon

[9] See Wall Street Journal Feb 24, 2003. pg. R.4 for a special report on Corporate Governance

(2006) provide evidence that the use of discretionary accruals to manipulate reported earnings is more pronounced among firms where the CEO's potential total compensation is more closely tied to the value of the stock and option holdings. Francis, Nanda and Olsson (2007) use discretional accruals as a proxy for earnings quality and show that higher abnormal discretional accruals are positively related to the firm's cost of capital, and that cost of capital has no effect on the voluntary disclosure in the presence of earnings management measures. Their evidence further shows that higher accruals are more likely to be associated with insider sales of shares or options.

Director Incentives

Previous research documented that career and reputation concerns are constitute an important disciplinary mechanism that induces directors to act in the best interest of the shareholders. For example, Fama and Jensen (1983) posit that labor market pressure and concerns for reputation will lead directors to fulfill their duty. Consistent with this argument, a handful of studies show that vigilant directors that establish reputations as good monitors are expected to be rewarded with additional board seats in the labor market, while lax monitors are expected to be penalized with a reduction in board seats. For example, outside directors hold fewer board seats after serving in dividend-reducing firms (Kaplan and Reishus (1990), in companies that experience financial distress (Gilson (1990)), and in firms that perform poorly (Yermack(2004)). In contrast, CEOs from firms that have performed well receive outside directorships after retirement (Brickley, Coles, and Linck (1999)).

Using a sample of 111 public firms that either filed for bankruptcy or privately restructured their debt between 1979 and 1985, Gilson (1990) finds that, on average, only

46% of incumbent directors remained on the board at the end of bankruptcy or debt restructuring period. Directors who resign hold significantly fewer seats on other boards following their departure.

Harford (2003) reports that all directors, and outside directors in particular, are unlikely to be retained following a completed takeover offer. All target directors hold fewer directorships in the future than a control group, suggesting that the target board seat is difficult to replace. If we view takeover as a disciplinary action, his findings support the notion that ineffective directors are rewarded with fewer directorship. However, this also implies that the incumbent directors including outside directors have an incentive to resist a takeover offer in order to keep their hard-to-replace director seats.

Yermack (2004) finds a positive relation between the company's performance in the previous two years and the net acquisition of new board seats by outside directors over the four years after their appointments. Additionally, if a shorter time period is used, such relation disappears, suggesting that the market for directors takes time to assess and assimilate the monitoring ability of newly appointed directors.

Another strand of research posits that director compensation is an important tool for motivating directors. The typical compensation contract of a director who typically works an average of 150 hours a year and sometimes sits on multiple boards include an annual retainer, board meeting fees, and restricted stock and option awards. The rationale behind the recent trend of including stock award as part of director pay resembles the one for granting stock options to a CEO: giving an ownership stake to the agent helps align his/her interests with those of the owners. There is some evidence that directors who own more equity are better monitors. Perry (1999) finds that when directors of independent boards receive

incentive compensation, the likelihood of CEO turnover following poor performance increases. He also shows that the likelihood of a firm adopting a stock-based incentive plan for directors is positively related to the fraction of independent directors on the board.

In spite of the benefits of improved monitoring, director incentive compensation could be a double edge sword, especially in light of the recent dramatic increase of the director incentive compensations. The existing research shows that stock based compensation can cause managers to manipulate information in order to increase their compensation by transferring wealth from the stockholders to the managers. Byard and Li (2005) show that when directors receive a lower portion of compensation from stock options, the CEOs are less likely to set up the option grant date before (after) the good news (bad news) and vise versa.. Incentive pay leads to directors' interest being more closely tied to the interests of the executives and reduces their incentives to monitor.

Data and Variables

Sample description

The primary sample is retrieved from IRRC. The sample period is from 1996 to 2004. The information reported in the IRRC is then combined with data in Compustat and Compustat ExecuComp. I exclude all financial firms with SIC 6000-6999 and require that firms granted directors stock options in at least one year during the entire sample period. The resulting final sample contains 6837 firm-year observations.

Measures of director incentive

The director incentive measure is defined as the proportion of incentive pay over the director's total compensation during the given year. IRRC reports the directors committee membership, director classification, shares owned, pension and annual compensation. Directors receive compensation in the form of cash, stock and options. Since most company disclosures for directors' equity pay are less detailed when compared with those for executives, the basic terms of these awards such as the date, the stock price when awarded, vesting, or restrictions on sale are often unavailable for directors. I therefore follow Yermack (2006) and make a range of assumptions for valuing equity compensation and its incentive features. I assume all stock options are awarded at-the-money with 10 year lives. I first value options using the Black–Scholes method. Volatility and dividend yields for each firm-year are obtained for the vast majority of observations from the ExecuComp database. Then I compute total compensation by summing up the option value, annual retainer, board meeting fee and value of restricted stock. The director incentive variable is finally obtained by dividing the option value from the total compensation of the director.

Measures of earnings management

I use data from firms' reported income statements to compute accrual measures. My method closely follows that of Dechow et al. (1995), which estimates discretionary accruals from regressions of total accruals on changes in sales and on property, plant, and equipment (PPE) within industries.

I obtained accounting information from the Compustat Annual Industrial, Research and Full Coverage files. All firm-year observations should satisfy the following criteria: (1) domestic firms; (2) firms with non missing values for sales, total assets, net

income before extraordinary items, and cash from operations; (4) non-financial firms. Ultimately, I am able to estimate discretionary accruals for 57,903 firm-year observations over the period from 1996 and 2004.

To determine discretionary accruals, I first run the following cross-sectional OLS regression for each combination of calendar year and two-digit SIC code with a minimum of 8 observations to estimate coefficients b0, b1, and b2.

$$\frac{TAC_{jt}}{TA_{j,t-1}} = b_0\left(\frac{1}{TA_{j,t-1}}\right) + b_1\left(\frac{\Delta SALES_{jt}}{TA_{j,t-1}}\right) + b_2\left(\frac{PPE_{jt}}{TA_{j,t-1}}\right) + \varepsilon_{jt}$$

where j indexes firms, t indexes time, Total accruals(TAC) equals Net Income (Compustat item #172) minus Cash Flow from Operations (#308). ΔSales is the changes in sales revenues (#12), *PPE* is gross property, plant, and equipment (#7). All variables used here are scaled by total assets(TA) at the beginning of the period (#6) to reduce heteroskedasiticity. I estimate the earning using cross-sectional models. I then use the estimated coefficients to calculate nondiscretionary accruals (NDTAC) as follows:

$$NDTAC_{it} = \hat{b}_0\left(\frac{1}{TA_{i,t-1}}\right) + \hat{b}_1\left(\frac{\Delta SALES_{it} - \Delta AR_{it}}{TA_{i,t-1}}\right) + \hat{b}_2\left(\frac{PPE_{it}}{TA_{i,t-1}}\right)$$

where, AR is the dollar value of Accounting Receivable (#2)

Thus, I can derive discretionary accruals (DTAC) as:

$$DTAC_{it} = \left(\frac{TAC_{it}}{TA_{i,t-1}}\right) - NDTAC_{it}$$

Since earnings manipulation involves both positive and negative discretional accruals, I use the absolute value of discretional accruals to measure the level of earnings management of the firm. To reduce possible problems from outliers, I also winsorize the absolute

discretional accrual variable at the 1% level. [10] As all the variables are scaled by total assets at the beginning of the period, the magnitude of a firm's discretionary accruals is indicated as a percentage of the firm's assets.

Measures of option sale

I also collect the data on board directors' option sales from Thomas Financial Insider Trading database. I gather option sales by directors in each calendar year and scaled it by the firm's shares of outstanding.

Other control variables

Other control variables I retrieve to explain the firm's earnings management behavior are profitability, size, market to book, financial leverage, institutional ownership and current growth.

Profitability is proxied by ROA, which is obtained as the net income scaled by the total assets at the beginning of fiscal year. Firms that are more profitable have less incentive to adjust the earnings upward to cover a financial problem and thus suggest a negative relationship between ROA and abnormal accruals.

Large firms are followed by more external capital markets and receive more analyst coverage while small firms are less like to receive scrutiny about their accounting statement. This indicates a negative relationship between earnings management and size (Dechow et al.(1995)).

Institutional investors serve as the external monitors. The firms with large institutional ownership would be less likely to hide their earnings with abnormal accruals

[10] The results are consistent even when we do not winsorize the accrual measures.

(Chung et al. (2002)). Similar to institutional investors, the control of the book leverage, proxied by the total long term debt over the total assets, implies a negative relationship as firms will receive closer scrutiny from lenders when the debt level is high. But on the other hand, firms will have more incentive to adjust earnings because they do not want to lead to a debt-covenant violation when the performance is poor and thus miss earnings target set by the lenders (DeFond and Park (1997)).

Previous studies also argue that earnings management is an interaction between the current stockholders and future stockholders (Bolton, Scheinkman, and Xiong (2005)). Although its effect on the earnings management is not clear, I control it with the current asset growth, which is defined as change of total assets scaled by the total assets at the beginning of fiscal year

Firms with higher growth rate are more likely to overinvest in current assets in anticipation of future growth of sales. This practice leads to a positive relationship between earnings management and growth rate. The growth rate is proixed by the market to book ratio.

Descriptive statistics

Table 13 provides descriptive statistics for the director compensation, director incentive and earnings management measures. Panel A presents details of the director compensation variable. Across 6,839 firm-year observations, the mean annual retainer is $22,260, with a standard deviation of $14,700. The Annual meeting fee, the product of number of board meetings and meeting fee, has a mean value of $7,740 with a standard deviation of $7,380. On average, restricted stock, while reflects the value of the restricted

stock newly issued when the board meeting holds, is $2,840 per year. The option awards accounts for the largest part of the director compensation. Based on the Black-Scholes formula, the option value stands at $103,160 for an average director in the sample. The variation of the option pay is substantial, as indicated by a standard deviation of $262,180.

To further assess how the average level of director incentive and earnings management varies over time and with one another, I also provide their mean values for each year from 1996 to 2004 in Panel B and C, respectively. As shown in Panel B, the option portion of the payment in director compensation climbs each year from 1996 until it peaked in 2002 and then started to decline.

Panel C shows the yearly distribution of the mean absolute discretionary accrual. In 2000 and 2004, the evidence indicates a severe earnings management problem on average with absolute discretional accruals of 0.21 and 0.28 respectively. However, the median shows a more consistent pattern of earnings management over time, thus suggesting that the mean values could be reflective of extreme outliers.

Table 13 Descriptive statistics of earnings management

and incentive measure by years

Panel A: Board director Compensation (in $ thousand)				
	Sample size	Mean	Median	Standard deviation
Annual Retainer	6837	22.26	20	14.7
Annual Meeting Fee	6837	7.74	7	7.38
Restricted Stock	5605	2.84	0	8.45
Option	6694	103.16	41.08	262.18

Table 13 Descriptive statistics of earnings management

and incentive measure by years(continue)

Panel B: Director Incentive				
1996	544	0.39	0.37	0.33
1997	670	0.47	0.52	0.33
1998	694	0.49	0.55	0.33
1999	700	0.51	0.57	0.32
2000	756	0.53	0.58	0.34
2001	806	0.56	0.62	0.33
2002	865	0.59	0.67	0.31
2003	862	0.55	0.61	0.3
2004	797	0.53	0.61	0.33
Total	6694	0.52	0.58	0.33
Panel C: Absolute Discretional Accrual				
1996	544	0.06	0.04	0.06
1997	677	0.07	0.04	0.09
1998	730	0.07	0.04	0.10
1999	729	0.09	0.04	0.17
2000	785	0.20	0.05	0.38
2001	848	0.08	0.05	0.12
2002	865	0.08	0.04	0.12
2003	862	0.08	0.04	0.26
2004	797	0.23	0.04	0.59
Total	6837	0.11	0.04	0.28

Table 14 provides summary statistics on main variables and a first look at whether measures of director incentive and earnings management are correlated. Averaging across all firm-year observations, the mean (median) absolute discretionary accrual is 0.12 (.04) and the sample standard deviation is 0.39. The mean (median) director incentive is 52% (58%) of the director's total compensation, with a standard deviation of 0.33. The correlation between director incentive and absolute discretionary accruals is 0.08, significantly at the 1% level, which suggests that a higher portion of incentive pay in the director compensation is related with a more severe earnings management problem. The absolute discretionary accruals are

also negatively correlated with ROA, which indicates that profitable firms have less severe earnings manipulation problems. The director incentive measure is negatively correlated with the book to market ratio.

Table 14 Summary statistics and correlations of earnings management and incentive measures

Panel A				
	Sample size	Mean	Median	Standard deviation
Absolute discretionary accrual	6837	0.12	0.04	0.39
Director incentive	6694	0.52	0.58	0.33
ROA	6836	0.03	0.05	0.18
Book to market	6830	0.53	0.43	0.52
Total asset(in million dollars)	6837	4690.38	1149.74	15747.08
Asset growth	6836	0.14	0.07	0.38
Institutional ownership	6837	0.62	0.63	0.17

Panel B						
	Correlation(p-value)					
	Director incentive	ROA	Book to market	Total asset	Asset growth	Institutional ownership
Absolute discretionary accrual	0.08	-0.18	-0.02	-0.02	0.08	0.01
	(0.00)	(0.00)	(0.11)	(0.12)	(0.00)	(0.55)
Director incentive	1.00	-0.02	-0.16	-0.12	0.10	0.17
		(0.14)	(0.00)	(0.00)	(0.00)	(0.00)
ROA		1.00	0.09	0.09	0.14	0.12
			(0.00)	(0.00)	(0.00)	(0.00)
Book to market			1.00	-0.04	-0.13	-0.09
				(0.00)	(0.00)	(0.00)
Total asset(in million dollars)				1.00	0.06	0.08
					(0.00)	(0.00)
Asset growth					1.00	0.09
						(0.00)
Institutional ownership						1.00

Empirical Results

Univariate Analysis

In Table 15, I test for differences in earnings management across groups of firms formed after sorting on different variables of interest. More specifically, I sort by director incentives, ROA, market to book ratio, log(market value), institutional ownership, and book leverage, and test for differences of mean values of earnings management across the highest tercile and lowest tercile groups. For example, after sorting firms in the top and bottom tercile of director incentive, the mean earnings management is shown separately for the sub-samples of high-director incentive firms and low-director incentive firms.

Table 15 Univariate analysis

	Director incentive	ROA	Market to book	Log(market value)	Asset growth	Institutional ownership	Book leverage
High Group	0.144	0.107	0.139	0.111	0.121	0.102	0.098
Low Group	0.083	0.133	0.079	0.121	0.117	0.125	0.135
Difference	0.061	-0.026	0.060	-0.009	0.005	-0.024	-0.037
P-value	(0.000)	(0.000)	(0.000)	(0.289)	(0.558)	(0.000)	(0.000)

Not surprisingly, firms with high market to book ratio have significantly higher earnings management than firms with low market to book ratio (0.139 versus 0.079). This difference is also statistically significant (p-value=0.000). Earnings management is also larger for high director incentive than for low director incentive stocks, and the difference is also statistically significant at 1% level. This finding provides preliminary evidence that stock option pay for directors may provide encouragement, or at least tolerance, for earnings management. Earnings management is much higher for low than for high institutional ownership firms (0.125 versus 0.102), consistent with the view that institutional investors act as external monitors, thereby reducing earnings management. Overall, the evidence from table 3 is consistent with that of the correlation evidence found in Table 2. However, this univariate analysis is still not sufficient enough to draw definitive conclusions as it does not control for many other variables simultaneously. Thus, the next section proceeds with a series of multivariate tests to further examine the relationship between directive incentive pay and earnings management.

Regressing earnings management on director incentives

Table 16 provides multivariate regression analysis of the effect of director option compensation on earnings management. I control for ROA market-to-book, size (log of market value), asset growth, institutional ownership, book leverage, year dummies (not reported), and Fama-French 48 industry dummies (not reported). The White's (1980) method is used to control for heteroskedasticity, and all p-values are reported with robust standard errors. The regression is clustered at the individual firm level to reduce the serial correlation across each firm over different years.

The first column contains the OLS regression and the second column the fixed effects

regression results. The findings are consistent with the univariate evidence in Tables 2 and 3. Specifically, the coefficient for director incentive is 0.023, and statistically significant with a p-value of 0.017. This result shows that when director incentives increase by 1, earnings management will increase by 0.023. Or put another way, if the percentage of option compensation to total compensation increases from 50% to 80%, which is about 1 standard deviation change of director incentive, the earnings management will increase by 0.69%. Given that the absolute discretionary accrual is scaled by total assets at the beginning of each year, 0.69% represents a $3.236 million increase in discretionary accruals on average. In line with the univariate analysis, ROA, institutional ownership and leverage have significant negative effects on the firm's earnings management, while market to book and asset growth have a positive impact on earnings management. Overall, the result suggests that the firms are more likely to manipulate their earnings when the directors are paid with higher incentive compensation.

Table 16 Director incentives and earnings management

	Dependent variable: absolute discretionary accrual	
	OLS	Fixed Effect
Director incentive	0.023	0.080
	(0.017)**	(0.000)***
ROA	-0.216	-0.283
	(0.000)***	(0.000)***
Market to book	0.005	0.006
	(0.035)**	(0.006)***
Log(market value)	-0.001	-0.014
	(0.715)	(0.091)*
Asset growth	0.070	0.096
	(0.000)***	(0.000)***
Institutional ownership	-0.043	0.014
	(0.043)**	(0.775)
Book leverage	-0.034	-0.066
	(0.066)*	(0.020)**
Observations	6665	6665
Adjusted R-squared	0.22	0.08
Number of standard and poor's identifier		1281

Board characteristics and earnings management

Klein (2005) and Xie et al. (2003) show that a more independent board may lead to lower earnings management and that an independent auditing committee may also reduce earnings manipulations. Cornett, Marcus and Tehranian (2008) further show that an effective governance structure, such as more independent board, will decrease the earnings management. Thus, the analysis in Table 17 controls for different board characteristics. In particular, the following variables are added: a board independence indicator that is equal to 1 if over 51% of board members are independent; the percent of independent directors on the auditing committee; an auditing committee independence indicator variable; and an indicator variable equal to 1 if the auditing committee is 100% independent. In all four regressions shown in Table 5, director incentive pay shows a significant positive relationship with earnings management. The coefficients for director incentives range from 0.023 to 0.027 and are statistically significant at the 5% level. The board characteristics variables are not statistically significant. Thus, these findings provide further evidence that stock option pay for directors is associated with higher earnings management, even after controlling for other important board characteristics.

Table 17 Director incentives and earnings management: controlling for board characteristics

	Dependent variables: Absolute discretional accrual			
Director incentive	0.023	0.027	0.028	0.027
	(0.017)**	(0.019)**	(0.017)**	(0.020)**
ROA	-0.216	-0.203	-0.204	-0.203
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Market to book	0.005	0.004	0.004	0.004
	(0.035)**	(0.053)*	(0.054)*	(0.053)*
Log(market value)	-0.001	-0.002	-0.002	-0.002
	(0.732)	(0.429)	(0.433)	(0.444)
Asset growth	0.070	0.074	0.074	0.074
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Institutional ownership	-0.042	-0.050	-0.048	-0.050
	(0.046)**	(0.038)**	(0.044)**	(0.036)**
Book leverage	-0.034	-0.032	-0.032	-0.032
	(0.067)*	(0.127)	(0.133)	(0.128)
Independent board (0,1) indicator	-0.002			
	(0.715)			
% independent directors on the audit committee		0.016		
		(0.309)		
Independent auditing committee (0,1) indicator			-0.001	
			(0.919)	
100% independent directors on the auditing committee (0,1) indicator				0.008
				(0.269)
Observations	6665	5454	5456	5456
Adjusted R-squared	0.22	0.24	0.24	0.24

CEO incentive and earnings management

Previous studies, such as Peasnell et al. (2005), have documented that board directors help constrain earnings management, while Bergstresser and Philippon (2006) show that firms with high CEO incentive pay are likely to be involved in high levels of earnings management. Table 18 presents univariate analysis of CEO incentives on earnings management conditioning on the director incentive. I assign firm into three terciles after sorting on director incentive. Within each director incentive tercile, I further segmented the data into three sub-terciles after sorting on the CEO incentive pay, which is measured as the proportion of CEO option compensation over the CEO total compensation. The result shows that when director incentive pay is in the low or median tercile, there is no significant difference in earnings management between the high CEO tercile and the low CEO tercile subgroups. However, when the director incentive is in the high tercile, the differences in the earnings management between the high CEO incentive tercile and low CEO incentive tercile subgroups is about 0.053, which is statistically significant with a p-value of 0.000. This evidence that CEO incentive pay has an impact on earnings management only when director incentive is high, lends support to the notion that the directors are more likely to form an alliance with CEO in manipulating earnings.

Table 18 Univariate test: directors' incentives and earnings management:

Controlling for CEO incentives

	Absolute Discretional Accruals	
	Low Director Incentive	
	(1)	(2)
Low Tercile CEO Incentive	0.089	0.078
High Tercile CEO Incentive	0.081	0.084
Difference	0.008	-0.006
P-Value	(0.778)	(0.280)

Table 18 Univariate test: directors' incentives and earnings management: Controlling for CEO incentives (continue)

	Median Director Incentive	
Low Tercile CEO Incentive	0.104	0.077
High Tercile CEO Incentive	0.094	0.084
Difference	0.010	-0.007
P-Value	(0.755)	(0.202)
	High Director Incentive	
Low Tercile CEO Incentive	0.115	0.091
High Tercile CEO Incentive	0.168	0.149
Difference	-0.053	-0.058
P-Value	(0.001)***	(0.000)***

To further address the concern on the effect of director incentive on constraining CEO's earnings manipulation. I sort the sample into three terciles by the CEO incentive and then run the main regressions discussed in Section 3.2. The result is not reported for the sake of brevity, the coefficients of director incentives are only statistically significant for the subsample where CEO incentive is at the top terciles. When CEO incentives are at lower or middle tercile, director incentives are not significant. This confirms that the director incentive affects earnings management only when CEO incentive and director incentive are high.

Further, I add two control variables: high director incentive high CEO incentive dummy and low director incentive high CEO incentive dummy. As shown in table 18, the result indicates that although the director incentive is still significantly positive, but the group of the company year having high directors incentive and high CEO incentives have significantly larger absolute abnormal discretional accruals while the group with high CEO incentive low director incentive are significantly indifferent from the other groups with low CEO incentives in terms of earnings management. This result suggests is consistent with our universal test. The CEO incentive does affect the firm's abnormal discretional accruals when

coupled with high directors' incentives award to the board directors.

Table 19 Directors incentives and earnings management:

Controlling for CEO incentives

	Dependent variables: Absolute discretional accrual
Director incentive	0.036
	(0.007)***
Low Director Incentive X High CEO Incentive	0.002
	(0.748)
High Director Incentive X High CEO Incentive	0.019
	(0.064)*
ROA	-0.273
	(0.000)***
Market to book	0.007
	(0.016)**
Log(sales)	-0.001
	(0.839)
Asset growth	0.085
	(0.000)***
Institutional ownership	-0.046
	(0.083)*
Book leverage	-0.07
	(0.000)***
Constant	0.243
	(0.000)***
Observations	6670
Adjusted R-squared	0.19

Controlling for self selection bias

The tests thus far show that director incentive pay has a positive, significant relationship with the degree of earnings management. However, the sample only includes those firms that pay stock options to their directors and, thus, excludes firms that do not pay their directors any stock options. Therefore, the previous findings could be attributed to the lack of control for selection bias, which may exist, because the decision to pay the directors stock options is not random. For instance, a firm that is involved in high earnings

management would be likely to pay its directors stock options and therefore, based on the sample criteria, it would be included in the sample. The director incentive effect on earnings management could be distorted without controlling for self-selection biases. To address this issue, I first conduct a univariate test by comparing earning management across the subsample of firms that pay their directors with stock options and firms that do not award any options at all.

Table 20 Earnings management for incentive vs. no incentive paid companies

	Absolute discretional accrual		
	N	Mean	Median
Incentive paid companies	6837	0.109	0.042
Non-incentive paid companies	1894	0.084	0.034
Difference		0.026	0.008
		(0.000)***	(0.000)***

As shown in Table 20, there are 1894 firm-year observations with no incentive pay to directors. When I compare the average earnings management between these two groups, I see that non-incentive paying companies have mean absolute discretional accruals of 0.088 in contrast to 0.119 for the incentive paying companies. The difference of the mean absolute discretional accruals is statistically significant as supported by a t-statistic of 3.144. Looking at the median value of the absolute discretional accrual also leads to the same conclusion. The median absolute discretional accrual is 0.042 for incentive paying firms and the median absolute discretional accrual for non incentive paying companies is 0.034.

To address the self-selection bias issue, we use a two-stage Heckman selection model that controls for the probability of a firm paying directors incentive compensation. The first stage is a probit regression to estimate the probability of the firm awarding the directors with

a stock option plan. The predicted probability of paying incentive options obtained from the first stage regression will be added as a control variable in the second stage regression.

In the first stage probit regression, the dependent variable is an incentive paid dummy that is equal to one if the firm pays directors incentive pay, or zero otherwise. Following Fich and Shivdasani (2005), I include the following control variables that could help explain the firm's decision to award directors with stock options: board independence dummy, the natural logarithm of one plus the annual retainer, new CEO dummy, CEO of retirement age dummy, an indicator of whether the directors receive a pension plan, percentage of directors who are CEOs in other firms, CEO-chairman dummy, dividend yield, market adjusted stock return for the last 12 months and the natural logarithm of sales. The results, shown in Table 21, indicate that , the firm is more likely to pay directors with stock options when it has a more independent board, the director annual retainer is high, and the CEO is new and at retirement age. This result is consistent with the findings of Fich and Shivdasani (2005). Directors are reluctant to adopt stock option plan in their compensation package as the stock option will make their portfolio less diversified and thus more risky. When the cash-based annual retainer is high, the board is more likely to adopt the stock option plan. The more independent the board, implying less insider ownership, the more likely it is to adopt the stock option plan. But when the CEO also chairs the board, the board is less likely to adopt the stock option plan. This result is not in conflict with the relationship between board effectiveness and earnings management. It shows that more independent boards are more likely to adopt the stock option plan, but we fail to conclude that independent boards lead to severe earnings management. Thus, our study is not inconsistent with some other studies have shown that independent boards can help reduce earnings management (for example, see Cornett, Marcus and Tehranian (2008)).

The second stage regression test includes previously employed control variables and the predicted probability to pay directors incentive compensation from the first stage regression as a new control variable. The coefficient of the fitted value of director incentive is still strongly significant. Moreover, compared to our previous results, the coefficient has increased from 0.023 to 0.043, which is about 100% larger in magnitude. The predicted probability of incentive pay is significant but with a positive sign, which is consistent with the univariate analysis findings. The results show that firms without incentive pay, on average, have lower earnings management than those firms which paid directors with incentive compensation. In addition, the lambda statistics from the selection model has a negative coefficient of -0.095 and significant at 0.000 level, which indicates that selection biases exists and the result has a downward biases without controlling the firm's probability to pay directors incentive compensation. This self-selection test supports our result that the earnings management is more severe when the directors receive incentive compensation even after we control the factors that affect the firm's decision to provide incentive compensation, the coefficient of director incentive compensation variable moves up from 0.02 to 0.043.

Table 21 Earnings management for incentive vs. no incentive paid companies: self selection analysis

	Dependent variable: Absolute discretional accrual	
	First stage (Incentive paid dummy)	Second stage
Director incentives		0.043
		(0.000)***
ROA		-0.266
		(0.000)***

Table 21 Earnings management for incentive vs. no incentive paid companies: self selection analysis (continue)

Market to book		0.007
		(0.000)***
Log(market value)		0.001
		(0.685)
Asset growth		0.073
		(0.000)***
Institutional ownership		-0.032
		(0.066)*
Book leverage		-0.053
		(0.000)***
Predicted incentive paid (0,1) indicator		0.143
		(0.000)***
Independent board (0,1)indicator	0.247	
	(0.000)***	
Log(1+annual retainer)	0.124	
	(0.000)***	
New CEO	0.147	
	(0.017)**	
CEO of retirement age	0.185	
	(0.000)***	
Pension plan to director	-0.063	
	(0.279)	
Percentage of directors who are CEOs of other firm	0.280	
	(0.052)*	
CEO chairs the board	-0.111	
	(0.002)***	
Dividend yield	-0.133	
	(0.615)	
Market adjust 12-month stock return	0.023	
	(0.337)	
Log(sales)	-0.067	
	(0.000)***	
Lambda statistics	-0.095	
	(0.000)***	
Observations	8533	8533

Earnings management and directors option sale

The evidence thus far is consistent with the notion that director incentive pay inhibits the director's monitoring effectiveness and thus leads to higher level of earnings management. Next, I investigate whether directors understand and take advantage of the high

earnings management activity of the firm. I collect information on directors' options sale for the year t+1 for all sample firms. The dependent variable is total director options realized in year t+1. The control variables are a high-earnings management dummy that takes the value of 1 if the firm's earnings management is in the top tercile in year t, change of cash flow (#308), market return and log(sales). In the first column of Table 10, the coefficient for the high-earnings management dummy is 0.067, significant at the 5% level. When all other control variables are included, the coefficient is 0.059, significant at the 10% level. This finding indicates that for firms with earnings management level in the top tercile in the previous year, the current year directors' options realization increases by approximately 0.06 to 0.07.

Table 22 Earnings management and insider sell

	Directors Option Sell	Directors Option Sell
Absolute discretional accruals (Top Tercile)	0.059	0.067
	(0.060)*	(0.049)**
Stock market return	-0.008	
	(0.701)	
Change of cash flow	0.288	
	(0.095)*	
Log(sales)	-0.127	
	(0.000)***	
Observations	2194	2196
Adjusted R-squared	0.11	0.05

Additional robustness tests

Given the small time variation of the director incentive, it is reasonable to assume that firms are less likely to change the structure of the board compensation. I therefore employ in my analysis the cumulative change of director incentives over a three year period from year t-3 to year t. As shown in Table 23, the dependent variable is the change of earnings management from year t-3 to year t, and all independent variables are also

measured as changes over the same period. As in Table 4, I use year and industry dummies to control for time and industry effects, but their coefficients are not reported for the sake of brevity. The number of observations drops to 3195 and the overall R-square drops to 17% from 22% in Table 4. The coefficient of director incentives is 0.07, which is about 3.5 times of the corresponding coefficient in Table 4 and strongly significant at the 1% level. The significance for the other variables is retained except for the coefficient of the change in institutional ownership, which becomes insignificant.

Table 23 Cumulative change of director incentives and earnings management

	Dependent variable: change of absolute discretional accrual
Change of director incentive	0.072
	(0.002)***
Change of ROA	-0.172
	(0.211)
Change of market to book	0.008
	(0.079)*
Change of log(market value)	-0.032
	(0.005)***
Change of asset growth	0.156
	(0.000)***
Change of institutional ownership	-0.026
	(0.645)
Change of book leverage	-0.103
	(0.011)**
Observations	3195
Adjusted R-squared	0.17

The results are robust to other sample and model specifications. For example, Table 24 focuses on a subsample of firms with independent boards, i.e., firms for which 51% or more of the board directors are independent. The regression result, presented in column 1 in Table 11 shows that director incentive pay affects earnings management even when the

majority of the board are independent directors. This relationship is significant at the 1% level. Second, I include in the sample only firms with an independent auditing committee, i.e., firms for which 51% or more of the auditing committee members are independent directors. The purpose of excluding all firms without an independent auditing committee is to re-test the relationship for a subset of firms which potentially have a less severe earnings management problem. Again, the director incentive variable is positive and significant at the 1% level. Thus, these results indicate that whether a board is independent or not does not materially change the relationship between director incentive pay and earnings management.

Table 24 Director incentives and earnings management: sub-samples

	Dependent variables: Absolute discretional accrual	
	(1)	(2)
Director incentive	0.043	0.029
	(0.000)***	(0.003)***
ROA	-0.213	-0.210
	(0.000)***	(0.000)***
Market to book	0.005	0.005
	(0.036)**	(0.036)**
Log(market value)	-0.000	-0.001
	(0.874)	(0.572)
Asset growth	0.049	0.063
	(0.008)***	(0.000)***
Institutional ownership	-0.046	-0.048
	(0.064)*	(0.020)**
Book leverage	-0.022	-0.035
	(0.316)	(0.066)*
Observations	5026	6262
Adjusted R-squared	0.22	0.21

I consider alternative measures of earnings management and directors incentive pay. In the Table 25, column 1, I use the absolute discretional accrue estimated as Jone's model. In column 2 and 3, I used a standardized director incentive measure instead of measuring director incentive in percentage terms. For the sake of brevity, I do not report the coefficients

for other control variables. Table 12 shows that the result remains robust. For one standard deviation change of director incentive, the absolute discretional accrual would change by 0.8%. Economically, this number is not small given that the average total asset is about 4,690 million dollars in the sample. A 0.8% percentage change means that 37.52 million dollars change of absolute discretional accruals.

Table 25 Directors incentives and earnings management: alternative measures

	Dependent variables: Absolute discretional accrual		
	(1)	(2)	(3)
Director incentive	0.024		
	(0.017)**		
Director incentive (standardized)		0.008	0.008
		(0.017)**	(0.017)**
Observations	6665	6665	6665
Adjusted R-squared	0.22	0.22	0.22

Conclusion

This paper finds that director incentive compensation has a positive and significant relationship with the level of the firms' earnings management. To identify the effect of the director incentive on firm's earnings management, I employ a series of tests that control for self selection and provide robust evidence using alternative earnings management and directors compensation measures. This paper contributes to two strands of research. First, while some policymakers and researchers believe that incentive compensation for directors may lead to an alignment of their interest with that of the stockholders, this paper shows that high incentive pay may lead to a higher degree of earnings management. Second, previous studies show that high CEO incentive pay would lead to high earning management, but they

fail to control for director incentives. I find that after controlling for director incentives, it becomes apparent that CEO incentives lead to higher earning manipulation levels only if directors' incentive pay is high as well.

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