THREE ESSAYS IN EMPIRICAL CORPORATE FINANCE

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By

ABDUL-RAHMAN KHOKHAR
B.Sc., M.B.A.

A Thesis

Submitted to the School of Graduate Studies

In Partial Fulfillment of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

McMaster University

DOCTOR OF PHILOSOPHY
(Business Administration – Finance)

McMaster University
Hamilton, Ontario

Title: Three Essays in Empirical Corporate Finance

Author: Abdul-Rahman Khokhar
M.B.A. (McGill University)

Supervisors: Professor Sudipto Sarkar
Professor Trevor Chamberlain
Professor Jiaping Qiu

Number of Pages: xi, 198

Abstract

This thesis explores the following three important issues in the field of corporate finance: window dressing in corporate cash holdings, market effects of SEC regulation of short-term borrowing disclosure and market response to dividend change announcements by unregulated versus regulated firms.

First, I find strong evidence of upward window dressing in cash holdings by U.S. industrial firms during the fourth fiscal quarter. This behavior is robust to several controls and a December year-end dummy. Further cross-sectional analysis reveals that the window dressing is sensitive to firm size and level of information asymmetry. I also find that firms manipulate discretionary accruals to dress up fourth quarter cash, perhaps to gain favourable credit terms on issuing short-term debt.

Second, I use portfolios of financial and non-financial SEC registrants to examine the market reaction to proposed SEC short-term borrowing disclosure regulation. Using event study methodology, I find that the market reaction is positive and significant at the announcement date and negative and significant at the voting date. Overall, I observe a positive market reaction, indicating the usefulness of the disclosure from the vantage point of users. The results for various subsets confirm the expectations and suggest that a "one-size-fits-all" approach to regulation is undesirable.

Finally, I use large samples of dividend increase and decrease announcements for the period 1960 to 2010 in order to compare stock price reactions of unregulated and regulated firms. I observe a stronger market reaction to the dividend increase announcements of unregulated firms compared to those of regulated firms after controlling for firm characteristics, market factors and contemporaneous earnings announcements, a result consistent with the dividend signaling hypothesis and uniqueness argument for regulated firms. However, I find that the market reaction to dividend decrease announcements is similar for unregulated and regulated firms. The cross-sectional analysis further confirms that the stronger stock price reaction to dividend increase announcements of unregulated firms is associated with the level of information asymmetry.

Acknowledgements

First and foremost, I would like to acknowledge my thesis supervisor, Dr. Sudipto Sarkar, for his continued guidance and support since 2008. It has been a great joy and pleasure to work under his supervision. Secondly, I owe a great deal of patronage to Dr. Trevor Chamberlain, whose guidance and mentorship helped me not only to make progress in my doctoral studies at McMaster and complete the thesis but also to prepare for my academic career. I am highly indebted to his support throughout the last five years during my course work, thesis writing, and especially my career search. I would also like to pay my respect to Dr. Jiaping Qiu, whose guidance was instrumental in my initial training as a researcher in the field of corporate finance. In fact, it was his professional, often challenging, approach that enabled me to develop my first independent research idea. In addition to my supervisory committee members, I am also highly grateful to Dr. Lonnie Magee (Department of Economics - McMaster University) for his generous support in shaping my econometrics knowledge and developing a proficiency with STATA software.

I owe a special thank you to my fellow student, Hesam Shahriari, for his immense contribution throughout my tenure as a doctoral student. My countless discussions with him on my research projects not only provided me clarity of thoughts, but also enhanced my motivation level.

Lastly, I would like to pay tribute to my family for their continued support and encouragement throughout the last five years, as without the support from

Fouzia, Falah and Moosa, I would not be able to successfully survive the demanding tenure as a PhD student. I am especially thankful to Fouzia for her encouragement to start the doctoral studies and her continued support towards completing the program. Finally, I would like to dedicate this thesis to my mother, Aziza Rasool, whom I lost during the second year of my doctoral studies. I am sure that if she were alive she would have been the happiest person in the world to learn about the completion of my studies.

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1. Chapter One

Thesis Introduction

The thesis investigates three important issues related to the broad field of corporate finance. The first two essays are related to the topic of corporate governance. Chapter 2 explores managers' tendency to manipulate disclosure of financial information to inflate the reported liquidity at the fiscal year-end in order to gain better terms on issuing short-term debt. Chapter 3 investigates the cost-benefit tradeoff of an SEC (Securities and Exchange Commission) regulation proposed to curb downward window-dressing of short-term debt with the purpose of hiding real credit risk. Finally, Chapter 4 compares empirically the market reactions to the announcement of dividend changes by regulated versus unregulated firms.

The first essay provides evidence for upward window dressing of cash holdings among U.S. industrial firms. Window dressing is regarded as a dangerous activity as a cumulative process (Johnson, 1969) and could lead to severe consequences. One example is Lehman's failure in 2008, which triggered one of the worst crises in the history of financial markets. Theory provides several motivations for window dressing the information presented in financial disclosures. Managers may periodically manipulate reported information in order to hide operational risks from external stakeholders or to overstate asset size in order to increase their size-related perquisites.

The extant literature on periodic window dressing is limited and focused on financial institutions, such as portfolio window dressing by managers of money, pension and mutual funds prior to annual performance disclosure. To the best of my knowledge, no study has researched periodic balance-sheet window dressing by industrial firms, especially of a liquid asset such as cash holdings. The theory predicts several incentives for window dressing liquid assets such as, a desire to "look good" by reporting higher than actual cash holdings towards the fiscal year-end (Ryan, 2010), appear more liquid (Johnson, 1969; Yang and Shaffer, 2010), appear larger to gain size-related benefits (Allen and Saunders, 1992; Johnson; Yang and Shaffer) and reduce the market's assessment of risk (Allen and Saunders), as the market may interpret the manipulated statements as positive information. Furthermore, a firm has the following three incentives to manipulate cash holdings during the fourth fiscal quarter: 1) externally audited fourth quarter reports are more reliable for external stakeholders; 2) lending institutions such as banks may depend more on externally audited annual reports than internally audited or externally reviewed quarterly reports to assess a borrower's liquidity and credit risk; and 3) external rating agencies normally assess a firm's annual performance using new financial reports (Crouhy et al, 2001). Consequently, I investigate whether industrial firms hold higher than normal cash holdings at the end of the fourth quarter and whether the fiscal year-end higher cash holdings, if any, reflect systematic window dressing behaviour.

Both the univariate and multivariate analyses confirm strong evidence of upward window dressing in cash holdings by U.S. industrial firms during the fourth fiscal quarter. The results are robust to several controls such as cash holdings determinants, firm characteristics, and a December year-end dummy. I also find that window dressing in corporate cash holdings is associated with firm size and, to some extent, the level of information asymmetry. Next, it is important to explore the channels used by corporate managers to dress up the fourth quarter cash holdings. In this respect, analyses show that firms manipulate discretionary accruals to dress up the fourth quarter cash holdings. Finally, it is important to investigate possible consequences of such window dressing for the firms and their managers. Theory predicts that such window dressing may help reduce perceived liquidity and credit risk through improved financial ratios. Consistent with this conjecture, I find that the fourth quarter window dressing in cash holdings provides favourable credit terms for issuing short-term debt.

The first essay contributes to the corporate finance literature in two major ways. First, the study reveals industrial firms' tendency to manipulate their most liquid assets periodically in order to look good towards the end of the year. As an implication of this result, I argue that the users of financial reports need to be wary of reported fourth quarter cash holdings. Second, the results complement the SEC's recent concern about firms' tendency to mask liquidity and credit risks through window-dressing of short-term borrowing by revealing an additional channel used by corporate managers to mask liquidity risk.

The second essay studies the market effects of SEC regulation of short-term borrowing disclosure. The 2008 financial crisis, triggered, in part, by excessive bank borrowing, led to the failure of a number of major financial institutions, including U.S. investment bank, Lehman Brothers. Investigating the reasons for Lehman's failure, the bankruptcy examiner determined that the bank had improperly moved $50 billion off its balance sheet by misclassifying short-term trades as sales, whereas, in fact, they were a form of borrowing. This, and similar "window-dressing" at other major banks, precipitated an SEC inquiry. In April 2010, the SEC informed Congress that it was considering new rules to discourage financial firms from reducing borrowing in anticipation of their quarter-end reports.

Subsequently, in September 2010, the SEC unanimously voted for a proposal requiring increased disclosure about short-term borrowing. The rules would apply to all SEC registrants, with most disclosure required of financial firms and a broad definition of what constituted a financial firm. The proposed regulation was posted for public comments, with a specific request for comments on the benefits to investors and costs to registrants.

The comments received were, with one exception, from SEC registrants or their representatives. Moreover, the response was mixed, with some comments favouring enhanced disclosure and others expressing concern about the resulting cost. Only one comment was received from an investor, the importance of that constituency notwithstanding.

Here I attempt to obtain a broad assessment of investor opinion by investigating the market reaction to the SEC's announcement of its intention to consider stricter disclosure (the "announcement date": April 21, 2010) and the reaction to the SEC's unanimous vote in favour of enhanced disclosure (the "voting date": September 17, 2010). I interpret a positive market reaction to either event as indicating that the benefits of the proposed rule exceed the costs.

Portfolios of 2,450 financial and 3,970 non-financial SEC registrants were used to compute the mean cumulative abnormal returns for periods prior to, around, and after each of the announcement and voting dates. Results for various subsets, including commercial banks and savings institutions, bank holding companies, size quartiles, and exchange-listed and OTC registrants were also examined and compared. In general, they confirm expectations. Thus, for example, for the entire financial registrant portfolio, I find that the market reaction is positive and significant at the announcement date and negative and significant at the voting date. Moreover, the results generally are robust to alternate specifications using value-weighted portfolios.

This study appears to be the first to examine market reaction to proposed, as opposed to enforced, SEC regulation. It also provides an indication of the usefulness of the disclosure from the vantage point of users, including evidence that a "one-size-fits-all approach" to regulation is undesirable. The results also quantify the impact of the proposed rule on stockholders, and indicate that they

are economically significant. Finally, on the question of short-term borrowing disclosure, the study complements the survey information gathered by the SEC.

The third essay is the first study, to the best of my knowledge, to compare the stock price reaction to dividend change announcements by unregulated and regulated firms. Despite an extensive research on the wealth effects of dividend change announcements, the extant literature lacks the direct empirical comparison of stock price reaction by unregulated and regulated firms to dividend change announcements. Typically, regulated firms are excluded based on the uniqueness assumption leaving two unanswered questions in the dividend literature. First, whether the reaction by investors in regulated firms is different than that for unregulated firms to the announcement of dividend changes. Second, what factors explain the difference, if any, in the reaction for the two types of firms. This essay attempts to bridge these gaps in the existing literature.

The information content hypothesis implies that asymmetric information between managers and investors affects the magnitude of stock price reaction to dividend change announcements (Bhattacharya, 1979; Miller and Rock, 1982; Amihud and Li, 2006) and predicts that dividend changes by firms with higher levels of information asymmetry would result in a relatively stronger stock price reaction. The literature also suggests that unregulated firms have higher levels of information asymmetry compared to regulated firms since utilities and financial firms are subject to additional disclosure requirements by the SEC (SEC Industry Guides), added monitoring (Saxena, 1999) and product, geographic and price

restrictions by regulators. Overall, I argue that the higher level of asymmetric information for unregulated firms should lead to a stronger stock price reaction to dividend changes by unregulated firms than regulated firms.

Using an event study methodology on large samples of unregulated and two types of regulated (utilities and financial) firms over the period 1960 to 2010, I find that the stock price reaction, though in the same direction, is significantly stronger for unregulated firms compared to both types of regulated firms for both dividend increase and decrease announcements. However, in cross-sectional regressions, only the difference in stock price reaction to dividend increases is robust to variations in firm-specific (size, dividend yield, profitability, firm age, market-to-book ratio, leverage, earnings volatility, and contemporaneous earnings announcements) and market-wide (net taxes and business cycle) factors. For the dividend decrease sample, the difference in stock price reaction observed in the univariate analysis disappears in the cross-section analysis after including control variables. As a whole, it seems that the regulatory environment only plays a role in moderating investors' reaction to dividend increase events, whereas, a dividend decrease announcement is a surprise for investors in all types of firms.

Next, I explore the question of whether a stronger positive stock price reaction by investors in unregulated firms for dividend increase announcements is a result of a higher level of information asymmetry. Both the univariate and multivariate analyses suggest that the higher stock price reaction to dividend

increase announcements by unregulated firms is driven by the level of information asymmetry between managers and stockholders.

The third essay contributes to the dividend literature by addressing the question of whether the wealth effects of dividend changes differ for regulated and unregulated firms. In addition, given the evidence of a differential investor reaction to dividend increases for regulated firms, the findings of this study have implications for short-term investors and provide evidence on the question of the uniqueness of regulated firms compared to unregulated firms with respect to the wealth effects of dividend policy changes.

The rest of the thesis is organized as follows. Chapter 2 examines the role of window dressing in corporate cash holdings, Chapter 3 discusses the market effects of SEC regulation of short-term borrowing disclosures and Chapter 4 presents the results of the study of the stock price reaction to dividend change announcements by unregulated and regulated firms. Finally, Chapter 5 concludes the thesis.

References

Allen, L. ,and Saunders, A.,1992, Bank window dressing: Theory and evidence, *Journal of Banking and Finance* 16, 585-623.

Amihud, Y., and Li, K., 2006, The declining information content of dividend announcements and the effects of institutional holdings, *Journal of Financial and Quantitative Analysis* 41(3), 637-660.

Bhattacharya, S., 1979, Imperfect information, dividend policy, and "the bird in the hand" fallacy, *Bell Journal of Economics* 259-270.

Crouhy, Michel, Dan Galai, and Robert Mark, 2001, Prototype risk rating system, *Journal of Banking and Finance* 25, 47-95.

Johnson, Walter L., 1969, The theory and practice of window dressing by commercial banks, *Mississippi Valley Journal of Business and Economics* 4, 43-49.

Miller, M. H., and Rock, K., 1985, Dividend policy under asymmetric information, *Journal of Finance*, 40(4), 1031-1051.

Ryan, V., 2010, *A license to hold excess cash*. CFO.Com (February 17, 2010). Retrieved from http://www3.cfo.com/article.cfm/14476574.

Saxena, A. K., 1999, Determinants of dividend payout policy: Regulated versus unregulated firms. *Journal of Applied Topics in Business and Economics*, Retrieved from *http://www.westga.edu/~bquest/1999/payout.html*.

Yang, Shanshan, and Sherrill Shaffer, 2010, Bank Window Dressing: A Re-Assessment and a Puzzle, *Unpublished Working Paper*, SSRN eLibrary.

2. Chapter Two

Window Dressing in Corporate Cash Holdings: Evidence from Quarterly Financial Statements

2.1. Introduction

Johnson (1969) argued that window dressing, being a continuous and possibly addictive activity, is dangerous as a cumulative process. Consistent with this argument, the severe consequences of window dressing are illustrated by Lehman's failure in 2008, which triggered one of the worst crises in the history of financial markets. Recently, investigating the reasons for Lehman's failure, bankruptcy examiners stated that "Lehman improperly moved $50 billion off its balance sheet", a practice labeled as balance sheet "window dressing", with the objective of masking true credit and liquidity risk from investors (Ryan, 2010). Apart from the threat of economic crisis, there are several reasons that underscore the importance of an in-depth understanding of corporate window dressing behaviour. Foremost among these is the firm's ability and willingness to manipulate its financial results in order to mask operational risks from external stakeholders (Johnson, 1969). Additionally, possible conflict of interest among firms, stockholders, and regulators (Yang and Shaffer, 2010) provides incentives for window dressing financial reports. Similarly, managers may engage in window dressing behaviour by overstating asset size in order to increase their consumption of size-related perquisites (Allen and Saunders, 1992). Finally, evidence of window dressing has important implications for financial statement reporting and regulatory policy (Allen and Saunders).

Extant literature investigates two distinct window dressing behaviours. One strand of literature explores "occasional" window dressing of earnings around important corporate events such as initial and seasoned security offerings. For instance, the literature confirms window dressing of earnings and/or performance around initial public offerings and seasoned equity offerings (Teoh et al, 1998a and 1998b), initial bond offerings (Demirtas et al, 2006), seasoned bond offerings (Caton et al, 2011), and prior to stock-for-stock mergers (Erickson and Wang, 1999). Another strand of literature investigates the "periodic" manipulation of balance sheet accounts prior to issuance of interim and annual financial reports. However, the research on periodic window dressing behaviour is limited and focused on financial institutions. For instance, several authors (Haugen and Lakonishok, 1988; Musto, 1997; Lakonishok et al, 1991; Musto, 1999; Meier and Schaumburg, 2004; Ortiz et al, 2010) offer evidence of portfolio window dressing by managers of money, pension and mutual funds prior to annual performance disclosure. Similarly, a few studies (Allen and Saunders; Yang and Shaffer) provide evidence of periodic balance sheet window dressing by banks prior to issuance of the fiscal quarter reports. Thus far, no published study has explored directly "periodic" balance sheet window dressing by industrial firms. This study addresses this question by investigating window dressing behaviour in cash holdings among industrial firms.

The theory predicts several incentives for window dressing liquid assets such as cash holdings. First, the Duke University/CFO Business Outlook survey

for the fourth quarter of 2009 reported a "need to show investors and banks a healthy balance sheet" as the second most important motivation for holding large amounts of cash (Ryan, 2010). The motive to "look good" was a close second to the well supported precautionary motive of cash holdings. This desire to look good creates a strong incentive for the periodic window dressing of cash holdings, particularly towards the fiscal year-end. Second, a firm may engage in window dressing of cash holdings to appear more liquid (Johnson, 1969; Yang and Shaffer, 2010). Third, window dressing of cash holdings can help an institution appear larger and thus provide several size-related benefits by enhancing employment opportunities, bonuses and non-pecuniary reputational benefits, reducing career risks, attracting business growth, helping the firm's expansion, increasing the prestige of the firm, its managers and its owners, indicating efficient operations and managing competition (Allen and Saunders, 1992; Johnson; Yang and Shaffer). Finally, temporary window dressing of liquid assets, through an improvement in financial ratios, may help to reduce the market's assessment of risk (Allen and Saunders) as the market may interpret manipulated statements as positive information, thereby lowering the cost of debt and equity in an inefficient capital market.

Furthermore, a firm has a greater incentive to manipulate cash holdings during the fourth fiscal quarter for three reasons. An unbiased and independent opinion by an external auditor mandated by the Security Exchange Commission (SEC) at fiscal year-end makes the fourth quarter reports unequivocally more

important for external stakeholders such as shareholders, lending institutions and regulators. The interim quarterly reports, on the other hand, require only a review by the external auditors. Secondly, for similar reasons, lending institutions such as banks may depend more on externally audited annual reports than internally audited or externally reviewed quarterly reports to assess a borrower's liquidity and credit risk. Finally, since external rating agencies normally assess a firm's business and financial risk once a year based on new financial reports (Crouhy et al, 2001), firms have a greater incentive to look good towards the fiscal-year end.

Given the theoretical predictions and managers' desire to look good through higher cash holdings, it is important to investigate periodic window dressing behaviour (referred to as the "window dressing hypotheses") in cash holdings during the fourth fiscal quarter. This study examines whether industrial firms hold higher than normal cash holdings at the end of the fourth quarter and whether higher fiscal year-end cash holdings reflect systematic window dressing behaviour.

Figures 2.1 and 2.2 plot quarterly mean and median cash to total asset ratios for U.S. industrial firms yearly and for pooled ten-year periods for the years 1999 to 2008.

<Insert Figure 2.1 and 2.2 Here>

Interestingly, during a typical year both mean and median cash to asset ratios decline significantly in the first quarter, remain more or less the same for the next

two quarters and finally increase in the fourth quarter. This study argues that the trends in Figures 2.1 and 2.2 may reflect systematic fourth quarter window dressing of cash holdings by industrial firms.

The mean comparison test confirms that the fourth quarter mean cash holdings (at 20.6%) are higher than, at the one percent significance level, those of the other three quarters (at 19.7%, 19.6%, and 19.7%, respectively). A similar analysis shows that fourth quarter mean values of several other variables are statistically different from those of the first three quarters. For example, inventories, receivables and payables are lower in the fourth quarter compared to those of the other quarters. On the other hand, accrued and other liabilities, total assets, capital expenditures, the market-to-book ratio, and sales are higher in the fourth quarter. The quarterly differences in other variables weaken the window dressing argument for the fourth quarter cash holdings. Accordingly, this study uses multiple empirical specifications to validate the window dressing hypotheses.

Initially, a univariate methodology similar to Allen and Saunders (1992) is used to compute the annual percentage degree of window dressing and reversibility in cash holdings in order to test whether the fiscal year-end increase in cash holdings reflects periodic window dressing behaviour. A positive (negative) and significant average value of percentage window dressing (reversibility) across all or most sample years would provide support for the window dressing hypotheses. On average, a significant degree of window dressing (35.47%) and corresponding reversibility (-24.33%) is observed during

the entire sample period. The analysis indicates that, on average, the fourth quarter cash holdings are 35% higher than the average cash holdings of the first three quarters and more than two-thirds of this fourth quarter increase in cash holdings reverses in the following quarter.

Changes in variables such as net working capital and sales can affect the cash holdings in the fourth quarter and, hence, weaken the argument confirmed in the univariate analysis. For example, higher than usual cash flow, leverage, sales and sales growth may increase cash holdings during the fourth quarter. In addition, prior literature provides evidence of the effect of various firm characteristics on cash holdings. It is, therefore, important to control for such factors to verify whether the increase in the fourth quarter cash holdings indeed reflects window dressing. Consequently, the multivariate analysis controls for net working capital, capital expenditures, leverage, market-to-book ratio, size, sales, sales growth, dividends per share, cash flow, cash flow volatility, governance, competition and several alternate proxies for information asymmetry. The higher cash holdings during the fourth quarter could result from abnormal business activity towards the calendar year-end rather than window dressing of cash holdings. To mitigate this concern, a December year-end dummy is included. Then, following a methodology similar to Shin and Kim (2002), and using only the first three fiscal quarter dummies, ordinary least squares (OLS) regressions with robust standard errors are estimated to determine if firms' fourth quarter cash holdings are significantly higher than those of the other three quarters. Regardless

of the choice of information asymmetry proxy and inclusion of the governance measure, all three quarter dummies are negative and statistically significant at the one percent significance level, providing strong support for the window dressing hypotheses. Likewise, the main result in this paper is robust to several alternate specifications, such as controlling for firm level fixed effects, restricting the sample depending on whether or not the fiscal year-end falls in December, and estimating quintile regressions using the median sample values rather than means. Taken as a whole, this paper shows that managers of industrial firms manipulate financial information systematically to report higher than actual cash holdings during the fourth quarter.

Given the predicted cash holdings' relationship with size (Johnson, 1969; Allen and Saunders, 1992; Yang and Shaffer, 2010), competition (Johnson; Yang and Shaffer), risk (Allen and Saunders), governance (Duchin, 2010), and level of information asymmetry (Chung et al, 2011), it may be argued that the fourth quarter window dressing of cash holdings could be related to such firm characteristics. As a result, cross sectional analysis of window dressing in cash holdings is conducted by creating quartiles based on various firm characteristics. The univariate analysis confirms the cross sectional differences in magnitude of the fourth quarter window dressing in cash holdings based on most firm characteristics. However, the multivariate specification, using interaction terms between fourth quarter dummies and each of the firm's characteristics and including several control variables, shows cross-sectional differences based on

only two characteristics: size and information asymmetry. Specifically, I find that firms with a higher level of information asymmetry and of larger size tend to engage in more window dressing of cash holdings during the fourth quarter.

The robust evidence indicating fourth quarter window dressing in cash holdings by industrial firms poses two further questions. First, it is important to explore the channels used by corporate managers to dress up the fourth quarter cash holdings. Consequently, I use the Allen and Saunders methodology to identify the possible channels of window dressing of fourth quarter cash holdings. Extant literature predicts the liquidity of the instrument, the transaction cost associated with manipulation, firms' disclosure requirements and managers' discretionary flexibility as the likely factors that drive the choice of instruments as a window dressing tool. Accordingly, quarterly variations in several balance sheet accounts, including short-term assets and liabilities, long-term debt, property, plant and equipment, and discretionary accruals are analyzed as possible sources of higher cash holdings in the fourth quarter. The first step identifies accruals and other current liabilities, short-term debt, long-term debt, and discretionary accruals as the instruments with the highest magnitude of window dressing (at 87.50%, 76.51%, 22.46% and 17.54% respectively) and reversal (at -54.52%, -51.28%, -22.35% and -0.52% respectively). All the window dressing and the first three reversal estimates are statistically significant at less than one percent. The second-step shows that the Pearson and Spearman correlation coefficients for accruals and other current liabilities (at 0.0167 and 0.0318 respectively) and

discretionary accruals (at 0.0137 and 0.0374 respectively) are positive and significant at five percent level, providing evidence that firms manipulate accruals to dress-up the cash holdings in the fourth quarter. An alternate, but simple, multivariate specification regresses window dressing measures of cash holdings on window dressing measures for nine suspected instruments while controlling for firm size. The regression results are consistent with the findings of the univariate analysis as only coefficients for two accrual measures are positive and significant at the ten and five percent level, respectively.

Second, it is necessary to investigate possible consequences of such window dressing for the firms and their managers. One of the predicted consequences is that window dressing may help reduce perceived liquidity and credit risk through improved financial ratios. This argument suggests that window dressing of cash holdings could result in either more favourable terms and/or a lower cost for any debt issued after the release of the fourth quarter financial results. However, such window dressing may affect the terms and/or cost of short-term debt for two reasons. First, window dressing, being an annual phenomenon, only provides a short-run advantage inasmuch as its results will be received in subsequent year. Second, assuming that investors, analysts, banks and rating agencies conduct an in-depth analysis prior to the issuance of debt, any window dressing in cash holdings may, in fact, be observed and priced. Consequently, it is appropriate to investigate the impact of window dressing in cash holdings on short-term debt issuance. The scarcity of public information on the cost of short-

term private debt, however, creates a challenge to test this hypothesis. As a result, following a methodology used by Teoh et al (1998a) the study uses an alternative approach to indirectly test this hypothesis. This approach divides the sample into quartiles based on the percentage degree of window dressing in cash holdings, and then compares short-term debt issuance behaviour across the two extreme quartiles, identified as the "conservative" (firms with the lowest magnitude window of dressing in cash holdings) and the "aggressive" (firms with the highest magnitude of window dressing in cash holdings) quartiles. In this design, evidence of higher than usual short-term debt issuance during the first quarter, in particular, by the aggressive quartile, will support the hypothesis. The findings strongly support this argument, as the first quarter net short-term debt issue is 99.37% and 164.43% higher than that of the fourth quarter for the pooled sample and aggressive window dressing subsample, respectively, and both differences are statistically significant at one percent. On the other hand, the amount of short-term debt issue in the first quarter is 11.83% lower than that of the fourth quarter for the conservative window dressing subsample and the difference is statistically insignificant. The evidence that firms that are aggressive in window dressing their fourth quarter cash holdings then issue more short-term debt in the subsequent quarter suggests that more favourable credit terms are available to such firms.

This paper contributes to the corporate finance literature in two major ways. First, providing original evidence on fourth fiscal quarter window dressing of cash holdings, this study reveals industrial firms' tendency to manipulate their

most liquid assets periodically in order to look good towards the end of the year. This suggests that the users of financial reports need to be wary of reported fourth quarter cash holdings. Second, this paper complements the SEC's recent concern about firms' tendency to mask liquidity and credit risks through window-dressing of short-term borrowing. The SEC, arguing that liquidity and leverage are significant tools available to investors to assess a firm's future performance and probability of survival, recently proposed an enhanced Management Discussion and Analysis (MD&A) disclosure rule to curb window dressing, especially by large banks. The evidence of fourth fiscal quarter window dressing in cash holdings by managers of industrial firms reveals an additional channel used by corporate managers to mask liquidity risk.

The rest of the paper is organized as follows. Section 2.2 initially reviews the window dressing theory and empirical evidence and then briefly summarizes the literature on motives and implications of corporate cash holdings with the objective of identifying control variables for multivariate analysis. This section also develops the testable empirical hypotheses. Section 2.3 describes the data and variables; Section 2.4 explores the evidence of window dressing in fourth quarter corporate cash holdings; Section 2.5 probes cross sectional differences in window dressing behaviour among various types of firms, to understand the reasons for window dressing behaviour; Section 2.6 examines the possible vehicles of dressing up the cash holdings; and Section 2.7 investigates a consequence of window dressing in cash holdings. Finally, Section 2.8 concludes the study.

2.2. Theory and empirical hypotheses

2.2.1. Window Dressing

The finance literature provides evidence of window dressing by corporate firms, commercial banks and money management intermediaries such as mutual and pension funds. However, research on the commercial banking sector makes a more formal attempt to define the concept of window dressing. Johnson (1969) provides a definition of window dressing, applicable to all firms, as: "the practice of certain companies of temporarily arranging their affairs in order to make a more favourable impression on a specified date than actual conditions warrant". The temporary and/or short term nature of window dressing requires that any manipulated transaction quickly revert to the normal trend level, typically in the following reporting period.

2.2.1.1. Targets of window dressing

Window dressing behaviour is not likely aimed at regulators because regulators may be able to use window dressing as a signal of potential financial distress and because it is easy for regulators to detect window dressing behaviour (Allen and Saunders, 1992). Given the vigilant role of regulators, window dressing is most probably aimed at the general public (Yang and Shaffer, 2010), who may find it costly to collect and analyze the data to detect window dressing. Furthermore, the earnings management literature provides evidence of window dressing aimed at investors and rating agencies. Teoh et al (1998a and 1998b) find

that firms window dress reported earnings prior to both initial public offerings and seasoned equity offerings. Similarly, Erickson and Wang (1999) provide evidence of manipulation in reported earnings prior to stock-to-stock merger bids in order to inflate stock prices and thereby reduce the cost of transactions. Demirtas et al (2006) report evidence of earnings manipulation surrounding an initial bond offering through aggressive manipulation of current accruals, and argue that such manipulation improves ratings by two notches, on average. Recently, Caton et al (2011) argued that window dressing performance or earning management prior to a seasoned bond offering may be aimed at misleading the rating agencies and thereby the market. They conclude, however, that rating agencies see through such efforts and may penalize the firms involved.

2.2.1.2. Incentives for window dressing

Thus far, no prior study has directly explored the motives for window dressing cash holdings. Nevertheless, the existing window dressing and earning management literature provides a number of incentives for window dressing liquid assets such as cash holdings. First, a firm may engage in window dressing to appear more liquid (Johnson, 1969; Yang and Shaffer). In the same way, for a firm with high information asymmetry, window dressing cash holdings (the most liquid asset) could help reduce asymmetric information. Second, window dressing can help an institution appear larger (Yang and Shaffer), thus facilitating size related benefits such as attracting business growth, helping the firm's expansion, increasing the prestige of the firm, its managers and its owners, indicating

efficient operations (Johnson), enhancing employment opportunities, compensation, non-pecuniary reputational benefits, and reducing career risks (Allen and Saunders). Third, the incentive to window dress increases with competition (Johnson; Allen and Saunders) because a large growing firm can attract new customers, especially considering transaction and opportunity costs associated with assessing and interpreting information at the customer level (Yang and Shaffer, 2010). Fourth, temporary window dressing, through an improvement in financial ratios, may help to reduce the market's assessment of risk (Allen and Saunders, 1992), as the market may interpret manipulated statements as "positive" information, thereby lowering the return on debt and equity in an inefficient capital market. Finally, investigating psychological and behavioural reasons, DeGeorge et al (1999) argue that earnings management (window dressing) could be triggered to realize three earnings thresholds: 1) to report positive earnings, 2) to sustain recent performance, and 3) to meet analyst expectations, rather than as a motivation to manipulate for other reasons. A similar argument is valid for liquid assets where firms may window dress cash holdings to achieve similar thresholds, especially to sustain recent cash holdings levels and meet expectations from external parties. For example, banks may have a debt covenant requiring a firm to maintain a certain level of liquid assets or a rating agency may use past year's cash holdings as a benchmark to assess financial risk to award an initial rating or to assign an "outlook" to an existing rating.

2.2.1.3. Costs of window dressing

The costs of window dressing for a firm arise from two sources (Allen and Saunders, 1992), and are sometimes assumed to be negligible. First, window dressing could result in direct transaction costs associated with the manipulation of accounts followed by the reversal of positions. The transaction cost would seem to be marginal, keeping in view the temporary nature of the manipulation. Secondly, if detected, window dressing could result in penalties, extended audits, and reputational costs.

2.2.1.4. Implications of window dressing

The possible conflict of interest among bank managers, stockholders and regulators regarding window dressing underscores the need to understand window dressing behaviour, and its degree and direction (Yang and Shaffer, 2010). Any evidence of window dressing has important implications for financial statement reporting and regulatory policy (Allen and Saunders). Bank managers may engage in window dressing by overstating asset size in order to increase their consumption of size-related perquisites (Allen and Saunders). In addition, being a continuous and possibly addictive activity, window dressing is dangerous as a cumulative process and could go on and on until it essentially becomes a matter of survival (Johnson, 1969). The severity of window dressing implications is obvious from the financial crisis triggered by the bankruptcy of Lehman Brothers. A bankruptcy examiner report (McGinty et al, 2010) found that "Lehman

Brothers, through transactions the firm dubbed ‘Repo 105s’, had hidden its true debt levels before its collapse by treating certain loans as sales, thus reducing its end-of-quarter debt levels”.

2.2.1.5. Mechanisms of window dressing

Johnson argues that a bank could simultaneously increase (upward window dressing) or decrease (downward window dressing) assets and liabilities to look larger or smaller than they actually are. Alternatively, a bank could appear more liquid than it actually is by trading one asset or liability for another. Depending on the nature of its business and the objective of window dressing, a firm would choose items on either or both sides of the balance sheet as suitable candidates for manipulation. In addition, the disclosure requirements (how easy it is to hide the manipulation) and discretionary flexibility (how easy it is to control the manipulation) could also play a role in the choice of balance sheet items for window dressing. Evidence from the banking sector shows that short term money market instruments such as foreign deposits, cash items and amounts due to banks, certified and officers’ cheques, demand deposits, repurchase agreements, marketable securities and domestic loans (Allen and Saunders, 1992; Johnson, 1969) are examples of balance sheet accounts used for window dressing purposes. All these instruments are highly liquid and not only offer low transaction costs but also are under the direct control of managers. In the nonfinancial sector, the earnings management literature (Teoh et al, 1998a and 1998b; Demirtas et al,

2006; Caton et al, 2011; Erickson and Wang, 1999) focuses mainly on the use of discretionary accruals as a key tool for manipulating earnings.

2.2.2. Cash Holdings

The primary purpose of the paper is to look for evidence of upward window dressing in cash holdings rather than exploring its motives. Nonetheless, in order to identify and control for the key determinants of cash holdings in regressions testing for window dressing, it is important to review briefly the motives for cash holdings and the reasons for their increase. Bates et al (2009) provide a comprehensive review of determinants and factors contributing to the recent increase in corporate cash holdings.

One stream of literature concentrates on establishing the determinants of corporate cash holdings and provides empirical support for cash holdings theories based on precautionary (Opler et al, 1999; Bates et al, 2009; Duchin, 2010), agency (Jensen 1986; Faulkender and Wang, 2006), transaction costs (Mulligan, 1997), corporate governance (Duchin, 2010), ownership structure (Ozkan and Ozkan, 2004), tax (Faulkender and Wang, 2006), and, more recently, strategic (Fresard, 2010) motives. The evidence suggests that cash holdings are negatively associated with firm size (Ferreira and Vilela, 2004; McVanel and Perevalov, 2008; Bates et al), inventories, cash flow risk, capital expenditures (Bates et al), leverage (Ferreira and Vilela), availability of cash substitutes and liquid assets (McVanel and Perevalov), and access to capital markets and credit ratings (Opler

et al, 1999). Likewise, using several alternative measures, Drobetz et al (2010) and Chung et al (2011) report a negative relationship between level of information asymmetry and cash holdings. On the other hand, the level of cash holdings has a positive relationship with cash flow volatility and risk (Han and Qiu, 2007; McVanel and Perevalov; Bates et al, 2009), financial distress (McVanel and Perevalov; Duchin), research and development expenses (McVanel and Perevalov; Bates et al), investment and growth opportunities (Ferreira and Vilela, 2004; Opler et al), riskier activities (Opler et al) and product market outcomes (Fresard, 2010). Finally, a non-monotonic relationship is observed between cash holdings and managerial ownership (Ozkan and Ozkan, 2004). In their study, cash holdings fall as managerial ownership increases up to 24%, possibly suggesting that the alignment effects of managerial ownership dominate the entrenchment effects. The levels of cash rise as managerial ownership increases to 64%, and then fall at higher levels of managerial ownership.

Consistent with its purpose, this study focuses mainly on firm characteristics that explain the recent increase in cash holdings. More specifically, the empirical analysis controls for firm size, net working capital, capital expenditures, leverage, market-to-book ratio, sales, sales growth, cash flow, cash flow volatility, competition and governance.

2.2.3. Empirical Hypotheses

The theory does not suggest that the periodic window dressing phenomenon is restricted to banks and other financial intermediaries. The managers in the industrial sector have multiple incentives to engage in window dressing behaviour to signal good financial health. Given the managerial desire to "show investors and banks a healthy balance sheet" (Ryan, 2010), it is logical to suspect that firms may engage in window dressing of cash holdings on a regular basis. Moreover, such behaviour may be more pronounced toward the fiscal year-end for several reasons. The SEC requires all US publically traded companies to have a qualified audit committee, which is responsible for, among other things, appointing external auditors to review the firm's financial statements quarterly and to issue an opinion on the accuracy of the firm's annual financial statements. For this reason, an unbiased and independent opinion on the annual statements by an external auditor at fiscal year-end makes the fourth quarter reports unequivocally more important for external stakeholders such as shareholders, lending institutions and, possibly, regulators. Similarly, external rating agencies, such as S&P and Moody's, typically assess a firm's rating once a year based on new financial reports, new business information and review meetings with management (Crouhy et al, 2001). For similar reasons, lending institutions depend more on externally audited annual reports than internally audited or externally reviewed quarterly reports for the purpose of borrower risk assessment. Under

these circumstances, in order to look good, a firm has more incentive to manipulate liquid assets during the fourth quarter.

Next, assuming that the notion of window dressing liquid assets during the fourth quarter is correct, for a number of reasons a firm has a strong incentive to choose cash holdings, as an instrument to signal a healthy and strong balance sheet. For example, consistent with the precautionary motive of cash holdings as well as the relationship between liquidity and cash holdings, a firm would like to dress up the most liquid instrument on the balance sheet. Likewise, recent evidence that a large cash reserve leads to future market share gains at the expense of competitors (Fresard, 2010) supports the choice of cash holdings as instruments for window dressing. Additionally, the fact that rating agencies (Standard and Poor's, 2010) not only use firm specific liquidity as one of five factors to assess financial risk, but also consider relative liquidity in comparison to a firm's peers to assess business risk for an initial issuer and/or to issue a credit rating, as well as for subsequent periodic (annual or biennial) reviews, provides a strong incentive to window dress year-end cash holdings. Finally, in the presence of principal-agent conflicts, cash could be a useful instrument for upward window dressing. Firms could window dress cash holdings to reduce asymmetric information.

Taken as a whole, it is important to explore the scale and direction of window dressing in cash holdings by industrial firms, as such activity should be of considerable interest to investors and policy makers. Thus, the previous

discussion leads to the following two hypotheses, jointly referred as the window dressing hypotheses.

H1: *Firms tend to hold more cash at the end of the fourth fiscal quarter.*

H2: *Higher cash in the fourth fiscal quarter reflects upward window dressing behaviour to report systematically higher cash holdings at fiscal year-end. Consistent with the temporary nature of window dressing, average cash holdings will decrease in the following quarter; that is, the first fiscal quarter of the following year.*

2.3. Data

Consistent with the purpose of this study and the short term nature of window dressing, it is important to use quarterly rather than yearly data. In addition, use of quarterly data provides more observations in a short sample period (Han and Qiu, 2007). The only other study that uses quarterly data is Shin and Kim (2002), which looks at quarterly statements of U.S. corporate firms to report higher capital expenditure in the fourth quarter, and links this phenomenon to agency theory, suggesting the inefficient allocation of capital expenditures.

The quarterly financial statement data are gathered from the Standard & Poor's (S&P) Compustat fundamental quarterly files for the fiscal quarters between 1999Q1 and 2008Q4. Several information asymmetry measures are created using the daily stock trading data from the Center for Research in Security Prices (bid-ask spread and share turnover), the S&P Constituents' data (S&P

500), the S&P Issuer Credit Rating data (No Debt Rating), and the Fundamental Quarterly data (Discretionary Accruals) from the S&P's Compustat, following methodologies explained in Appendix 2.A. In addition, the Governance Index data are sourced from A. Metrick's website for the period 1999 to 2006. Even though recent quarterly data for 2009 and 2010 were available, the number of observations was small compared to 2008 and before, and they are therefore not included. The focus in the literature is on unregulated firms, hence, financial firms and utilities (SIC Code 6000 to 6999 and 4900 to 4999) are excluded. Non-U.S. firms are also excluded. The observations with missing data for cash and stock price are deleted, as are the observations with zero or negative total assets, current assets, current liabilities, receivables and sales. All variables including information asymmetry proxies are quarterly and winsorized at 1% to avoid outliers. This approach yields a panel of 191,481 quarterly observations for 8,796 firms.

A review of the literature provides several alternative definitions for the dependent variable, "cash ratio", which may be calculated as: 1) cash to total assets; 2) cash to net assets, i.e., total book assets minus cash and marketable securities; 3) cash to sales; or 4) log of cash to net sales. Cash to total book asset is the measure most often used. In addition, Bates et al (2009) argue that cash to net assets generates extreme outliers. The cash-to-sales ratio in the data results in extreme outliers affecting the mean quarterly ratio. One possible solution to the problem of outliers in calculating cash-to-sales ratio is to trim the data for

observations with sales less than a certain benchmark; however, this would result in a loss of observations. As a result, I follow convention and use cash to total assets as the dependent variable.

Several firm characteristics and control variables are used, and are defined in Appendix 2.A. Summary statistics for each variable for each fiscal quarter are shown in Tables 2.1.A and 2.1.B.

<Insert Table 2.1.A and Table 2.1.B Here>

The overall mean cash holdings during the period 1999 to 2008 is 19.88% of total assets, the largest account under current assets, with two notable trends. First, there has been an overall increase in mean cash holdings since 1999 as the mean cash holdings increased from 16.31% in 1999Q1 to 19.71% in 2007Q4, an observation consistent with Bates et al and other prior literature. There is a slight drop in cash holdings in 2008, possibly on account of the financial crisis, though it is still higher than 1999Q1. Second, there is a consistent trend of an increase in fourth quarter cash holdings, even during the financial crisis in 2008, despite a decrease in the overall average cash holdings compared to 2007. Among other assets, receivables on average are 16.43% of total assets and inventories are 12.45% of total assets. Both receivables and inventory show a decline in the fourth quarter.

As for the liabilities, the largest contribution to current liabilities comes from accruals and other liabilities at 14.52%, distantly followed by payables at

11.34% and short-term debt at 8.68% (not shown) of total assets. Compared to the first three quarters, payables and short-term debt shows a decline, whereas accruals and other liabilities show a sizable increase in the fourth quarter, a finding consistent with Teoh et al (1998a). Similar to the findings of Shin and Kim (2002), capital expenditures are higher in the fourth quarter. In addition, fourth quarter depreciation and total assets are higher.

2.4. Window dressing in cash holdings

Since the previous section showed that mean cash holdings are consistently higher in the fourth quarter, it is reasonable to consider whether the average fourth quarter cash holdings are significantly higher than those of the other three quarters. Applying the mean difference approach, I test whether mean cash holdings in the fourth quarter are significantly higher from those of the other three quarters. A similar approach is used to compare the fourth quarter mean for firm characteristics and control variables with those of the other three quarters. The results are shown in Tables 2.2.A and 2.2.B.

<Insert Table 2.2.A and Table 2.2.B Here>

The summary statistics including mean, median, the 25^{th} percentile, the 75^{th} percentile and the number of observations for each of the four quarters, and combined for all quarters, are shown along with the statistically significant differences, if any. On average, firms' quarterly cash holdings are 19.90% of the book value of total assets. Exploring cash holdings in each quarter, it is observed

that the mean and median cash holdings in the first quarter are 19.70% and 9.40%, respectively, while those in the fourth quarter are 20.60% and 12.00%, respectively. The mean difference approach using the student t-test shows that fourth quarter cash holdings are significantly higher than those of the other three quarters at the one percent significance level.

The fourth quarter capital expenditures are significantly larger than those of each of the first three quarters, a result consistent with Shin and Kim, as are size and accrued and other liabilities. Share turnover is also higher, albeit marginally, in the fourth quarter, and the difference is not always statistically significant. Growth opportunities are lower in the fourth quarter. Leverage, sales growth, risk, the governance index, and competition are statistically similar in each of the four quarters.

Another possible explanation for the increase in fourth quarter cash holdings is increased fourth quarter sales and/or cash flows. On average, sales in the fourth quarter are higher than those of the other three quarters, while cash flows in the fourth quarter are significantly less than those of the other three quarters, suggesting higher sales - in particular, cash sales - may contribute to higher cash holdings, whereas lower cash flows may offset an increase in fourth quarter cash holdings. In addition, firms reduce inventory and receivables and both of these strategies can help increase cash. At the same time, there is a decrease in payables and short-term debt, which may reduce cash holdings. Likewise, if fewer firms in the sample paid dividends or reduced dividends per

share in the fourth quarter, this could increase cash holdings. However, there is no significant drop in dividends per share or dividend payout across fiscal quarters.

The most interesting result is observed in "accrued and other liabilities", which shows the largest increase, statistically significant at less than one percent. This may be the major tool used to manipulate higher cash holdings, a conjecture consistent with the evidence provided by the earnings management literature (Teoh et al, 1998a and 1998b; Demirtas et al, 2006; Caton et al, 2011; Erickson and Wang, 1999), which identifies the use of "discretionary accruals" as a key tool for manipulating earnings.

To test whether the increase in cash holdings towards the fiscal year end reflects window dressing behaviour, I first use a univariate methodology similar to Allen and Saunders (1992). Using quarterly cash holdings data for the period 1999 to 2008, I calculate the percentage degree of window dressing in each year using the following formula:

$$WD_{4,it} = \left[\left(CH_{4,it} - CH_{avg\ 1-3,it}\right)/CH_{avg\ 1-3,it}\right] x\ 100, \qquad (2.1)$$

where $WD_{4,it}$: percentage window dressing in the fourth fiscal quarter for firm i in year t, $CH_{avg\ 1-3,it}$: average cash holdings of the first three fiscal quarters for firm i in year t, and $CH_{4,it}$: fourth quarter cash holdings for firm i in year t. In this model, a positive average value of $WD_{4,it}$ across all or most sample years that is significantly different from zero would provide evidence of upward window dressing.

In order to verify the temporary nature of window dressing, it is important that this upward trend in cash holdings during the fourth quarter be reversed in the subsequent quarter; that is, the first quarter of the following year. Once again, following Allen and Saunders, the degree of "reversibility" can be measured by the extent to which the following measure is negative across each sample year:

$$Rev_{it+1} = \left[\left(CH_{avg\ 1-3,it+1} - CH_{4,it}\right)/CH_{avg\ 1-3,it+1}\right] x\ 100, \quad (2.2)$$

A negative and significant value for Rev_{it+1} for all or most years will confirm that reversibility has taken place. Following Allen and Saunders, I use cash and marketable securities to calculate $WD_{4,it}$ and Rev_{it+1}, and, to avoid outliers, both variables are winsorized at one percent[1]. Columns 2 and 3 of Table 2.3 show yearly percentage values for the degree of window dressing and reversal, respectively. Statistical significance is measured using t-tests for each yearly value for $WD_{4,it}$ and Rev_{it+1}.

<Insert Table 2.3 Here>

On average, a significant degree of upward window dressing (35.47%) is observed during the sample period; that is, on average, the fourth quarter cash ratio is 35% higher than the average cash holdings of the first three quarters. The upward window dressing is consistent across years and is significantly greater than zero at less than one percent. Likewise, I observe a statistically significant (at

[1] Using the cash to assets ratio to calculate $WD_{4,it}$ and Rev_{it+1} provides similar results (not reported here).

one percent) reversal of cash holdings across every year with an average annual reversal of -24.33% over the sample period.

Finally, the increase in cash holdings in the fourth quarter may be associated with other factors. An unusual change in such accounts can affect the cash holdings in the fourth quarter and weaken the argument confirmed by the univariate analysis. For example, higher than usual cash flow, leverage, sales and sales growth could, in fact, increase cash holdings in the fourth quarter. On the other hand, lower than usual capital expenditures and dividends could inflate the cash holdings during the fourth quarter. In addition, prior research, as discussed in Section 2.1, provides evidence for the effect of various firm characteristics, such as net working capital, growth opportunities (proxied by market-to-book ratio), firm-specific risk, governance, competition, and information asymmetry, on cash holdings. It is, therefore, important to control for such factors to verify that the increase in the fourth quarter cash holdings does, in fact, reflect window dressing.

Consequently, in the multivariate analysis I control for firm characteristic variables, including net working capital, capital expenditures, leverage, market-to-book ratio, size, sales, sales growth, dividends per share, cash flow, cash flow volatility (a proxy for risk), G-Index (measure of governance), Herfindahl Index (a proxy for competition), and several proxies for information asymmetry (bid-ask spread, share turnover, discretionary accruals, exclusion from S&P500, and whether or not the firm has rated debt). High bid-ask spreads and discretionary

accruals, low share turnover, not being in the S&P 500 and no debt rating signify a higher level of information asymmetry (Bharath et al, 2011 and Mohd, 2005).

It may be argued that the higher cash holdings during the fourth quarter are the result of abnormal business activity towards the calendar year-end; for example, increased sales and cash flow during the year-end holiday season, rather than window dressing of cash holdings, and that the effects are not completely captured through the use of control variables. To control for such effects, a December year-end dummy is included, which equals 1 if a firm's fiscal year-end falls in December and 0 otherwise.

I use a methodology similar to Shin and Kim (2002) to determine if firms' fourth quarter cash holdings are significantly higher from those of the other three quarters after controlling for known determinants of cash holdings. Two regression models are used. An ordinary least squares regression model with robust standard errors is estimated for each measure of information asymmetry using the fiscal quarter dummies, excluding the fourth quarter dummy. In this design, negative and significant coefficients on the first three quarters' dummies will provide evidence that the fourth quarter cash holdings are significantly higher than those of the other three quarters, even after controlling for firm specific determinants of cash holdings. The G-Index is available only for a small subset of firms in the Compustat sample, and including a governance measure in the regression analysis reduces the sample size to half. Accordingly, two models are estimated, with and without the G-Index, to ensure the robustness of the results.

Tables 2.4.A and 2.4.B summarize the regression results with and without the G-Index, respectively.

<Insert Table 2.4.A and 2.4.B Here>

These tables report coefficients and standard errors for each variable, including the quarter dummies for various measures of information asymmetry. Regardless of the choice of information asymmetry proxy and the inclusion of the governance measure, all three quarter dummies are negative and significant at one percent, providing strong support for the joint window dressing hypotheses (H1 and H2). Interestingly, the December year-end dummy is significant in all regressions, indicating that calendar year-end abnormal business activities do appear to affect the fourth quarter cash holdings.

Like Opler et al (1999), I find a negative and significant relationship between cash holdings and size, a positive and a significant relationship between cash holdings and both the market-to-book ratio and the cash flow volatility (risk). I also observe that cash holdings are negatively related to competition. Similarly, like Chung et al (2011), most measures of information asymmetry (bid-ask spread, share turnover, discretionary accruals and inclusion in the S&P 500 Index) are negatively related to cash holdings.

Bates et al (2009) attribute increases in cash holdings mostly to changes in firm characteristics. Therefore, to control for firm level effects, a fixed effects regression (FE) is estimated separately for each proxy of information asymmetry,

and with and without the governance measure. This model omits the competition variable to avoid multicollinearity among independent variables. Tables 2.4.C and 2.4.D report coefficients and standard errors for each variable including the fiscal quarter dummies. Again, all three fiscal quarter dummies are negative and significant at one percent, despite varying information asymmetry measures and whether or not the governance measure is included, thus supporting the joint window dressing hypotheses (H1 and H2).

<Insert Table 2.4.C and 2.4.D Here>

It is also observed that the mean cash ratio is much higher than the median cash ratio, indicating a skewed distribution. As a robustness check, a quintile regression model is estimated using the median sample values rather than the mean. The results, though not reported here, are similar to those obtained using the ordinary least square model. In an alternate specification to control for the December fiscal year-end effect, two sub-samples were created depending on whether or not the firm's fiscal year end falls in December (two thirds of the firms in the sample have fiscal year-ends in December). The regression results for each sub-sample (not reported here) are similar to those of the pooled sample.

2.5. Why firms engage in window dressing behaviour

This section explores what motivates firms to engage in the upward window dressing of cash holdings. Prior research associates the amount of cash holdings and the recent increase in cash holdings to firm-specific characteristics.

Large firms may have a greater incentive and ability than smaller firms to window dress cash holdings for three reasons: 1) it is easier to manipulate cash for large firms (Johnson, 1969); 2) enhanced career opportunities and perquisites are apparently available to managers of large institutions (Allen and Saunders, 1992); and 3) agency problems are more likely for large firms with diffused ownership structures (Yang and Shaffer, 2010). Additionally, it has been suggested that there is a negative relationship between the demand for cash holdings and information asymmetry (Drobetz et al, 2010; Chung et al, 2011). Given this evidence, it is likely that higher (apparent) cash holdings could be used as an instrument to reduce asymmetric information. As a result, firms with higher levels of information asymmetry could engage in higher fourth quarter window dressing in cash holdings. Moreover, increasing competition provides more incentive to window dress cash holdings because a large growing firm gains attention as being progressive (Johnson, 1969) and attracts new customers (Yang and Shaffer, 2010). Apple's Steve Jobs' comment (Madway and Oreskovic, 2010) that "his company has to think big and its $40 billion cash hoard offers flexibility" suggests the importance of competition. This suggests that firms facing higher competition are more likely to window dress fourth quarter cash holdings. Besides, evidence from research on commercial banks suggests that higher (apparent) capital ratios on a reporting date using temporary window dressing could result in a favourable view by the market and lower the required return on debt and equity, assuming market inefficiency (Allen and Saunders, 1992). In

other words, reducing firm specific risk could provide another incentive to window dress (upward) cash holdings during the fourth quarter, resulting in more window dressing of cash holdings by riskier firms. Finally, a positive relationship between poorly governed firms and cash holdings (Duchin, 2010) suggests that firms with poor governance structures may have more incentive and ability to window dress year-end cash holdings in order to look good.

Consequently, this paper investigates the relationship between the fourth quarter window dressing in cash holdings and firm size, the level of information asymmetry, competition, firm specific risk, and governance structure. First, in a univariate specification, the sample is divided into quartiles based on firm characteristics such as size, competition, risk, governance, and five alternate measures of information asymmetry including bid-ask spread, share turnover, discretionary accruals, whether or not a firm is included in the S&P 500 Index and whether or not a firm has rated debt. I then use the analysis described in Section 2.4 to calculate yearly percentage window dressing $WD_{4,it}$ and percentage reversal Rev_{it+1} for each of these subsamples. These results are summarized in Table 2.5.

<Insert Table 2.5 Here>

The percentage window dressing across the sample period 1999 to 2008 is lower for larger firms (31.18%) than smaller firms (44.83%). Low competition firms exhibit much higher levels of window dressing (41.96%) than high

competition firms (29.05%). Firms in subsamples based on risk exhibit similar levels of window dressing, ranging from 30.16% to 36.45%. Firms with a higher G-Index (poor governance structure) tend to window dress more (44.94%) compared to those with a lower G-Index (29.49%). The window dressing trend for sub-samples based on information asymmetry shows that firms with lower levels of information asymmetry tend to window dress more. Overall, the univariate analysis indicates that substantial and statistically significant upward window dressing of the fourth quarter cash holdings is pervasive across various subsamples.

However, firm characteristics may have an impact on the firms' tendency to window dress cash holdings. Consequently, I use interaction terms in an OLS regression model with robust standard errors, a methodology similar to that of Shin and Kim (2002). In these regressions, I add a fourth fiscal quarter dummy and the following interactive terms: 1) information asymmetry times the fourth quarter dummy; 2) size times the fourth quarter dummy; 3) risk times the fourth quarter dummy; 4) the governance index times the fourth quarter dummy; and 5) competition times the fourth quarter dummy. Since I use multiple proxies for information asymmetry, I estimate separate OLS regression models, one for each of these proxies. In addition, for reasons noted in Section 2.4, two models are estimated, with and without the G-Index. In this design, significant coefficients on the interaction terms would indicate that higher fourth quarter cash holdings or

upward window dressing is driven by the interaction variables. The results of these regressions are shown in Table 2.6.A and 2.6.B.

<Insert Table 2.6.A and 2.6.B Here>

The coefficients of the interaction term of size and the fourth fiscal quarter dummy are positive and significant at one percent in both models with and without the governance index, suggesting that the fourth quarter increase in cash holdings is sensitive to firm size. This result supports the hypothesis that larger firms, on average, tend to engage in more window dressing of cash holdings in the fourth quarter.

The coefficient of the interaction term between various proxies for information asymmetry and the fourth quarter dummy provides support, though weakly, for the argument that firms with a high level of information asymmetry tend to engage in more window dressing of cash holdings in the fourth quarter. In the first model, which includes the governance measure, the fourth quarter interaction term is only significant with the S&P 500 Index dummy (at 5%) and with the No Debt Rating dummy (at 10%). Likewise, in the second model, which excludes the governance measure, the interaction terms with Bid-Ask Spread (at 1%) and No Debt Rating (at 1%) are statistically significant.

The coefficients of the interaction terms between other firm characteristics (competition, risk, and governance) and the fourth quarter dummy are insignificant in all regressions, regardless of the choice of information

asymmetry proxy, suggesting that the fourth quarter increase in cash holdings is not sensitive to firm specific risk, competition, or governance.

2.6. Channels of window dressing of cash holdings

The theory and empirical evidence about mechanisms of window dressing discussed in Section 2.1.6 predicts that a firm is likely to choose accounts on either or both sides of the balance sheet as suitable candidates for manipulation depending on 1) liquidity of the instruments, 2) the transaction cost associated with manipulation and reversal of the position, 3) the disclosure requirements and 4) the discretionary flexibility available to managers. This suggests that to offset the window dressing in cash holdings, firms will resort to matching window dressing in other balance sheet account(s). In order to identify channels of higher cash holdings during the fourth quarter, several balance sheet accounts, primarily short-term assets and liabilities, are analyzed as a possible source of higher cash in the fourth quarter. However; non-current balance sheet accounts may also act as sources of cash. For example, firms may increase the available cash by systematically scheduling sales of surplus fixed assets during the fourth quarter. Similarly, additional cash may be generated by issuing more long-term debt during the fourth quarter. Therefore, property, plant and equipment (a fixed asset) and long-term debt (a non-current liability) are also included in the analysis. Finally, given the evidence from the earnings management literature (Teoh et al, 1998a and 1998b; Erikson and Wang, 1999; Demirtas et al, 2006) on the reliance on discretionary accruals as a vehicle for window dressing, I include this measure

in the analysis as well. Taken as a whole, window dressing behaviour is investigated for the following nine instruments: 1) inventory, 2) receivables, 3) other current assets, 4) payables, 5) short-term debt, 6) accruals and other current liabilities, 7) property, plant and equipment, 8) long-term debt, and 9) discretionary accruals.

Similar to Allen and Saunders (1992), a two-step methodology is used to identify the channels of window dressing cash holdings. The first step computes magnitude of window dressing and the reversal measure for each of the nine instruments. The second step uses a univariate analysis to correlate the window dressing measures for each instrument with that of the cash holdings. In this design, instrument(s) with economically and statistically significant magnitudes of window dressing, as well as positive and significant correlations with window dressing measures of cash holdings, are likely sources of higher reported cash in the fourth quarter. The annual window dressing measure for individual instruments is computed using the following formula:

$$WD_{4,it}^{A} = \left[\left(A_{4,it} - A_{avg\ 1-3,it}\right)/A_{avg\ 1-3,it}\right] x\ 100, \qquad (2.3)$$

where A represents one of the nine accounts mentioned earlier, $WD_{4,it}^{A}$ is percentage window dressing in account A in the fourth quarter for firm i in year t, $A_{avg\ 1-3,it}$ is the average balance for account A during the first three quarters for firm i in year t, and $A_{4,it}$ denotes the fourth quarter balance for account A for firm i in year t. A positive and significant mean value of $WD_{4,it}^{A}$ across the entire

sample period would provide evidence of upward window dressing for instrument A. Similar methodology is then used to compute the degree of reversibility in each of the selected instruments to ascertain the temporal nature of window dressing. The formula used for the reversibility measure is:

$$Rev_{4,it}^{A} = \left[\left(A_{avg\ 1-3,it+1} - A_{4,it}\right)/A_{avg\ 1-3,it+1}\right] x\ 100, \quad (2.4)$$

An overall negative and significant mean value for $Rev_{4,it}^{A}$ will confirm that reversibility has taken place. All window dressing and reversibility measures are winsorized at one percent to exclude outliers. The results are summarized in Panel A of Table 2.7.A.

<Insert Table 2.7.A Here>

From the first step of the analysis, the three balance sheet instruments with the largest magnitude of window dressing and reversal are accruals and other current liabilities (87.50% and -54.52%, respectively), short-term debt (76.51% and -51.28%, respectively), and long-term debt (22.46% and -22.35% respectively). All the window dressing and reversal estimates are statistically significant at one percent. The measure for discretionary accruals shows the fourth highest magnitude of window dressing (17.54%) at one percent significance. The reversal for discretionary accruals measure is economically small (-0.52%) and statistically insignificant. The remaining balance sheet instruments show a window dressing or reversal of less than 10%, with the exception of other current assets, whose window dressing magnitude at 13.25%,

but with a negligible reversal of 0.80%. The first step results indicate that accruals and other current liabilities, short-term debt, and, to some extent, long-term debt are the most likely channels of window dressing in cash holdings.

In the second-step, Pearson and Spearman correlation coefficients are estimated for window dressing measures for cash holdings and for each of the selected instruments. The results are shown in Panel B of Table 2.7.A. Both the Pearson and Spearman correlation coefficients for accruals and other current liabilities (0.0167 and 0.0318 respectively) and discretionary accruals (0.0137 and 0.0374 respectively) are positive and significant at five percent. The correlation between window dressing of long-term debt and cash holdings is either insignificant or negatively significant. The relationship between window dressing measures of the remaining instruments, including short-term debt and cash holdings, is negative and significant. The univariate results provide evidence that firms manipulate accruals to dress up cash holdings in the fourth quarter.

Finally, a simple multivariate specification is estimated to supplement the two-step methodology and confirm the robustness of the findings. An OLS regression model with robust standard errors is estimated with a window dressing measure of cash holdings as the dependent variable and window dressing measures for nine instruments as independent variables. Given the evidence, discussed in Section 2.5, for a significant positive relationship between firms size and window dressing in cash holdings, the multivariate model controls for size. In this specification, a positive and significant coefficient on window dressing

measures of accruals will support the findings from the univariate analysis. The regression results are reported in Table 2.7.B below.

<Insert Table 2.7.B Here>

The results are consistent with the findings of the univariate analysis as only coefficients for two accrual measures are positive and significant. The coefficients for accruals and other current liabilities and discretionary accruals are significant at ten and five percent level, respectively. The coefficients for short-term debt are negative and insignificant regardless of the choice of accrual measure, whereas the coefficients for long-term debt are inconsistent depending on the choice accrual measure, but insignificant.

Generally, consistent with the theory on window dressing and empirical evidence from the earning management literature, the results in this section suggest that managers manipulate highly liquid balance sheet accounts. In particular, they manipulate those that are not only under their direct control but also can be manipulated with low transaction costs.

2.7. Benefits of window dressing of cash holdings

Section 2.2 highlights several incentives and implications of balance sheet window dressing. For instance, managers may manipulate accounts in order to reduce perceived credit risk through dressing up financial ratios, gaining size-related compensation benefits and appearing more competitive. Such conjectures suggest a follow-up question; that is, what would be the benefit(s) of dressing up

fourth quarter cash holdings. To investigate this question, I argue that firms may report inflated cash holdings to reduce perceived liquidity and credit risk through improved financial ratios, and, hence, lower their cost of debt. However, the positive consequences of window dressing are limited for the following reasons. First, window dressing only provides a short-run advantage inasmuch as its effects will be offset in subsequent periods. Second, if investors, analysts, bank lenders or rating agencies conduct an in-depth analysis of financial reports prior to the issue of debt, any window dressing of cash holdings may be observed and priced. Given the limited available public information, it is difficult to identify precisely the quarterly cost of short-term private debt. As a result, this study uses an indirect approach to test the hypothesis. It argues that evidence of higher than usual short-term debt issuance during the first quarter provides indirect support for the hypothesis. In other words, abnormal short-term debt issuance during the first quarter suggests that it is easier and/or less costly to issue short-term debt right after the announcement of fourth quarter financial results that dress up the firm's liquidity position.

Following an empirical methodology similar to Teoh et al (1998a), the sample is first divided into quartiles based on the percentage degree of window dressing in cash holdings, $WD_{4,it}$. Then the quarterly net amount of short-term debt issued scaled by total assets is compared across two extreme quartiles - that is, the "conservative" quartile, which includes firms with the lowest values of $WD_{4,it}$ and the "aggressive" quartile, which includes firms with the largest values

of $WD_{4,it}$. In this design significantly higher mean values of short-term debt issuance during the first quarter compared to that of the fourth quarter will support my hypothesis. In addition, it is hypothesized that firms in the aggressive window dressing quartile may issue comparatively more short-term debt during the first quarter than those in the conservative quartile. The findings, reported in Table 2.8, support both hypotheses.

<Insert Table 2.8 Here>

Higher net debt issues are observed during the first quarter (0.515% of total assets) compared to the fourth quarter (0.003% of total assets). Further, the difference in net debt issues is more pronounced for the aggressive window dressing quartile. In the aggressive quartile, the first quarter increase in short-term debt is 0.63% of total assets compared to a decrease of 0.41% in short-term debt during the fourth quarter. In the conservative quartile, in contrast, the increase is short-term debt in the first quarter (at 0.59% of total assets) is less than that of the fourth quarter (at 0.66%), though the difference is statistically insignificant. It seems that firms in the aggressive quartile enjoy more favourable credit terms for short-term private debt than those in the conservative quartile.

2.8. Conclusion

This study finds that firms have higher cash holdings in the fourth quarter. The increase in the fourth quarter cash holdings is robust even after controlling for cash holdings determinants and a December fiscal year-end dummy. In

addition, inasmuch as cash holdings revert to a normal quarterly level in the subsequent quarter, the "window dressing hypotheses" appear to explain this phenomenon. The study also finds that the increase in fourth quarter cash holdings is sensitive to firm size, a finding consistent with the incentive and ability to window dress of large firms. In addition, upward window dressing in fourth quarter cash holdings is sensitive, though weakly, to some measures of information asymmetry: bid-ask spread, inclusion in the S&P 500 Index, and no debt rating. This suggests that firms with a high level of information asymmetry tend to window dress cash holdings more aggressively, possibly in an attempt to reduce asymmetric information. Moreover, consistent with the evidence on the manipulation of accruals for the purpose of earnings management this study shows that industrial firms manipulate accruals to dress up the fourth quarter cash holdings. Finally, the paper provides preliminary evidence that the window dressing of the fourth quarter cash holdings provides benefits to industrial firms in achieving more favourable credit terms for short-term private debt. However, more research is warranted to further investigate the consequences of such window dressing by industrial firms.

The findings of this paper have corporate policy implications. First, external stakeholders such as shareholders, banks, rating agencies, and regulators need to be wary of reported fourth quarter cash holdings. An in-depth review of cash holdings across all quarters may be required to obtain a better understanding of trends in permanent cash holdings. This is especially true for rating agencies,

which use firm-specific liquidity not only as a measure of financial risk but also as a measure of business risk. Second, there are implications for financial disclosure inasmuch as opaque balance sheet accounts such as “accruals and other liabilities” provide an opportunity for managers to engage in discretionary window dressing.

References

Allen, Linda, and Anthony Saunders, 1992, Bank window dressing: Theory and evidence, *Journal of Banking and Finance* 16, 585-623.

Bates, T. W., K. M. Kahle, and R. M. Stulz, 2009, Why do US firms hold so much more cash than they used to? *Journal of Finance* 64, 1985-2021.

Bharath, S. T., S. Dahiya, A. Saunders, and A. Srinivasan, 2011, Lending relationships and loan contract terms, *Review of Financial Studies* 24, 1141-1203.

Black, T., and W. Daley, 2010, *Jobless suffer as corporate cash hits $ 1.18 trillion.*, Bloomberg (11 February 2010) Retrieved. May 5, 2010 http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a6kXsL1Q5FYc.

Boone, J., J. C. Van Ours, and H. Van Der Wiel, 2007, How (not) to measure competition. Unpublished working paper – SSRN eLibrary.

Caton, G. L., C. N. Chiraphol, C. Chua, and J. Goh, 2011, Earnings Management Surrounding Seasoned Bond Offerings: Do Managers Mislead Ratings Agencies and the Bond Market? *Journal of Financial and Quantitative Analysis* 46(03), 687-708.

Chung, Kee H., Jang Chul Kim, Young S. Kim, and Hao Zhang, 2011, Information Asymmetry and Corporate Cash Holdings, Unpublished working paper, SSRN eLibrary .

Cremers, KJ, and V. B. Nair, 2005, Governance mechanisms and equity prices, *Journal of Finance* 60, 2859-2894.

Crouhy, Michel, Dan Galai, and Robert Mark, 2001, Prototype risk rating system, *Journal of Banking and Finance* 25, 47-95.

Davies, P. J., and A. Sakoui, 2009, Liquidity key as cash hoarding bugs takes hold. *Financial Times* (19 March 2009, p.21, London Ed1).

Dechow, P. M., and I. D. Dichev, 2002, The quality of accruals and earnings: The role of accrual estimation errors, *Accounting Review* 77, 35-59.

DeGeorge, F., J. Patel, and R. Zeckhauser, 1999, Earnings management to exceed thresholds, *Journal of Business* 72(1),1-33.

Demirtas, K. O., A. Ghosh, K. J. Rodgers, and J. Sokobin, 2006, Initial credit ratings and earnings management, Working Paper .

Drobetz, W., M. C. Grüninger, and S. Hirschvogl, 2010, Information asymmetry and the value of cash, *Journal of Banking and Finance* 34, 2168-2184.

Duchin, Ran, 2010, Cash Holdings and Corporate Diversification, *Journal of Finance* 65, 955-992.

Erickson, Merle, and Shiing-wu Wang, 1999, Earnings management by acquiring firms in stock for stock mergers, *Journal of Accounting and Economics* 27, 149-176.

Faulkender, M., and R. Wang, 2006, Corporate financial policy and the value of cash, *Journal of Finance* 61, 1957-1990.

Ferreira, Miguel A., and Antonio S. Vilela, 2004, Why Do Firms Hold Cash? Evidence from EMU Countries, *European Financial Management* 10, 295-319.

Fresard, Laurent, 2010, Financial Strength and Product Market Behavior: The Real Effects of Corporate Cash Holdings, *Journal of Finance* 65, 1097-1122.

Gompers, P., J. Ishii, and A. Metrick, 2003, Corporate governance and equity prices, *Quarterly Journal of Economics* 118, 107-155.

Graham, John R., 2000, How Big Are the Tax Benefits of Debt? *Journal of Finance* 55, 1901-1941.

Han, S., and J. Qiu, 2007, Corporate precautionary cash holdings, *Journal of Corporate Finance* 13, 43-57.

Haugen, R. A., and J. Lakonishok, 1988, The Incredible January Effect: The Stock Market's Unsolved Mystery (Dow Jones-Irwin, Homewood, IL) .

Jensen, M., 1986, Agency cost of free cash flow, corporate finance, and takeovers, *American Economic Review* 76(2), 322 - 329.

Johnson, Walter L., 1969, The theory and practice of window dressing by commercial banks, *Mississippi Valley Journal of Business and Economics* 4, 43-49.

Lakonishok, J., A. Shleifer, R. H. Thaler, and R. W. Vishny, 1991, Window dressing by pension fund managers, National Bureau of Economic Research.

Madway, G., and A. Oreskovic, 2010, Apple's Jobs says must think "big" on cash hoard. *Reuters* (25 February 2010) http://www.reuters.com/assets/print?aid=USTRE61N4EH20100225 .

McGinty, Tom, Kate Kelly, and Kara Scannel, 2010, Debt 'Masking' Under Fire -- SEC Considers New Rules to Deter Banks From Dressing Up Books; Ghost of Lehman, *Wall Street Journal* (21 April 2010, p.A1).

McVanel, D., and N. Perevalov, 2008, Financial Constraints and the Cash-Holdings Behaviour of Canadian Firms, Bank of Canada.

Meier, I., and E. Schaumburg, 2004, Do funds window dress? Evidence for US domestic equity mutual funds, Unpublished working paper, HEC Montreal.

Metrick, A.: "Governance Index Data by Firm, 1990-2006 http://faculty.som.yale.edu/andrewmetrick/data.html, (Accessed: 28 March 2011).

Mohd, Emad, 2005, Accounting for Software Development Costs and Information Asymmetry, *Accounting Review* 80, 1211-1231.

Mulligan, C. B., 1997, Scale economies, the value of time, and the demand for money: Longitudinal evidence from firms, *Journal of Political Economy* 105, 1061-1079

Musto, D. K., 1999, Investment decisions depend on portfolio disclosures, *Journal of Finance* 54, 935-952.

Musto, D. K., 1997, Portfolio disclosures and year-end price shifts, *Journal of Finance* 52, 1563-1588.

Opler, T., L. Pinkowitz, R. M. Stulz, and R. Williamson, 1999, The determinants and implications of corporate cash holdings, *Journal of Financial Economics* 52(1), 3-46.

Ortiz, C., J. L. Sarto, and L. Vicente, 2011, Portfolios in disguise? Window dressing in bond fund holdings, *Journal of Banking and Finance,* 36(2), 418-427.

Ozkan, A., and N. Ozkan, 2004, Corporate cash holdings: An empirical investigation of UK companies, *Journal of Banking and Finance* 28, 2103-2134.

Rangan, S., 1998, Earnings management and the performance of seasoned equity offerings, *Journal of Financial Economics* 50, 101-122.

Ryan, V., 2010, *A license to hold excess cash*. CFO.Com (February 17, 2010). Retrieved from http://www3.cfo.com/article.cfm/14476574.

SEC Industry Guides, Available at http://www.sec.gov/about/forms/industryguides.pdf, (Assessed: 12 June 2013).

Shin, H. H., and Y. H. Kim, 2002, Agency costs and efficiency of business capital investment: evidence from quarterly capital expenditures, *Journal of Corporate Finance* 8, 139-158.

Standard and Poor's, 2010, Guide to Credit Rating Criteria, Version 1.

Teoh, S. H., I. Welch, and T. J. Wong, 1998a, Earnings Management and the Long-Run Market Performance of Initial Public Offerings, *Journal of Finance* 53, 1935-1974.

Teoh, Siew H., Ivo Welch, and T. J. Wong, 1998b, Earnings management and the underperformance of seasoned equity offerings, *Journal of Financial Economics* 50, 63-99.

Yang, Shanshan, and Sherrill Shaffer, 2010, Bank Window Dressing: A Re-Assessment and a Puzzle, Unpublished working paper, SSRN eLibrary.

Figure 2.1:

Quarterly Cash to Total Assets Ratio.

This figure plots quarterly mean and median cash to total asset ratio for U.S. industrial firms for fiscal years 1999 to 2008.

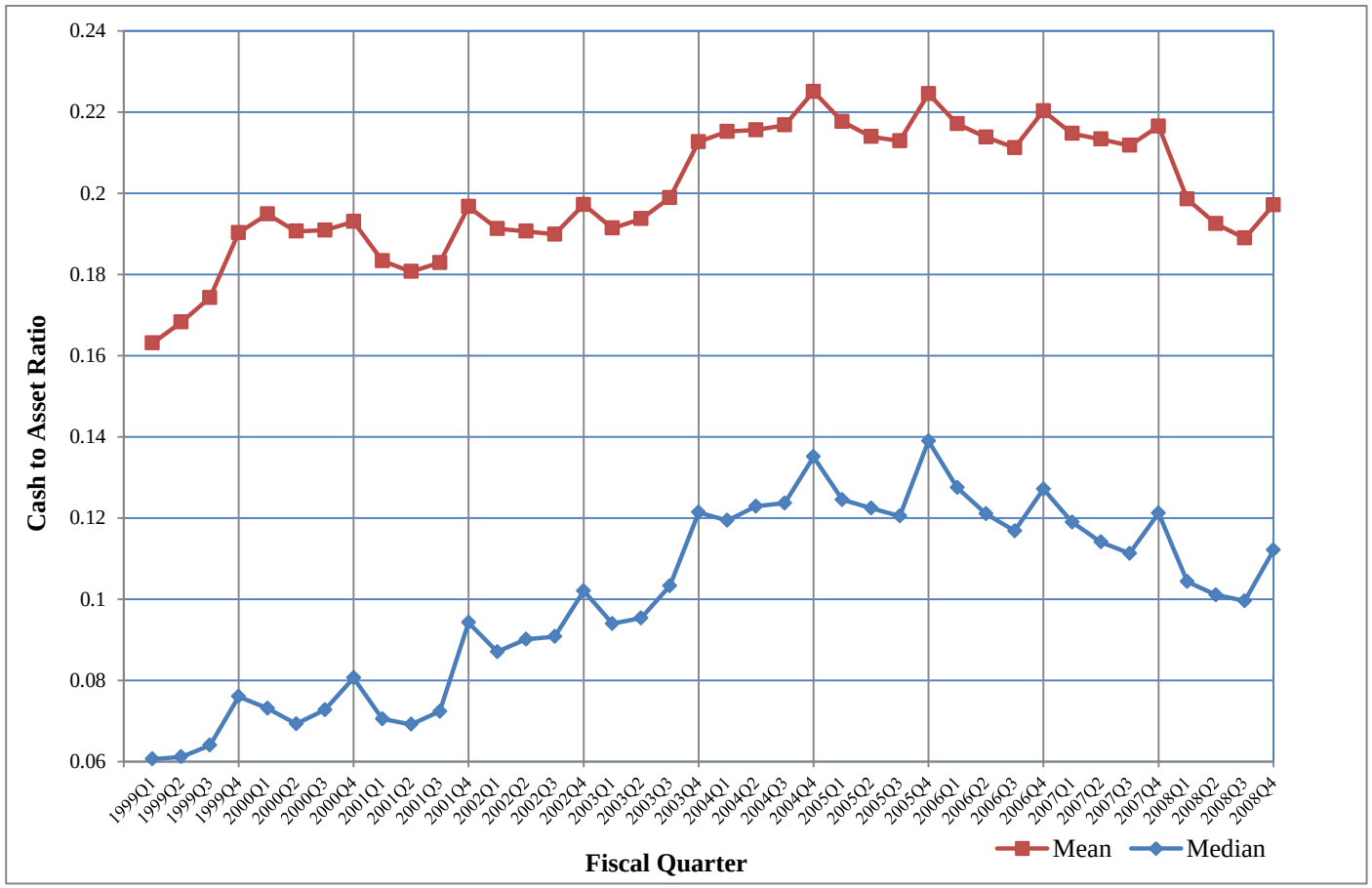
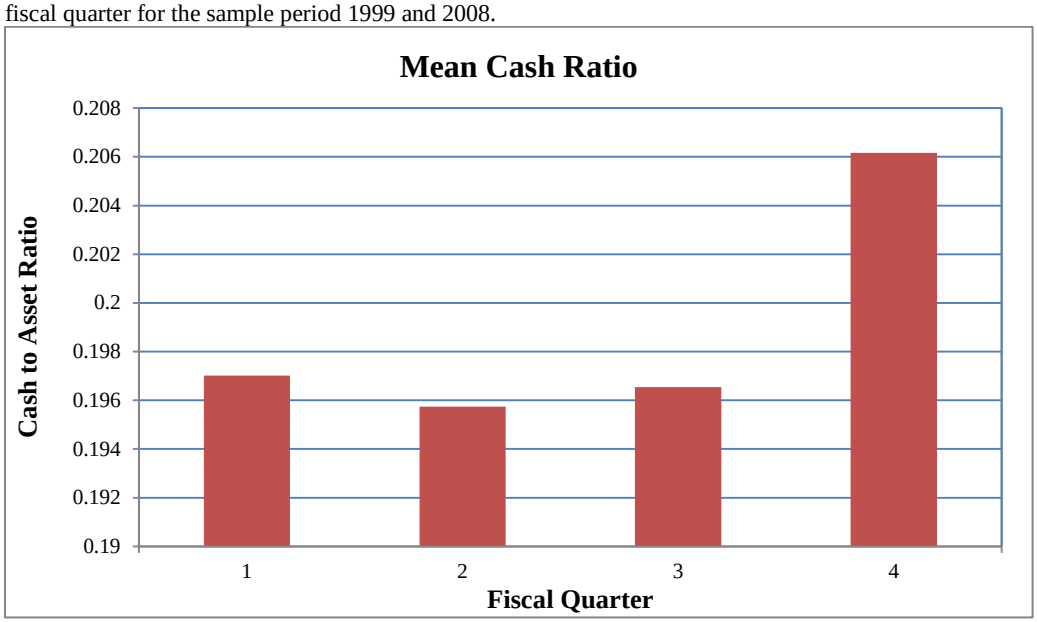


Figure 2.2:

Pooled Quarterly Cash to Asset Ratio.

This figure plots the mean and median pooled quarterly cash to total asset ratio for U.S. industrial firms by fiscal quarter for the sample period 1999 and 2008.



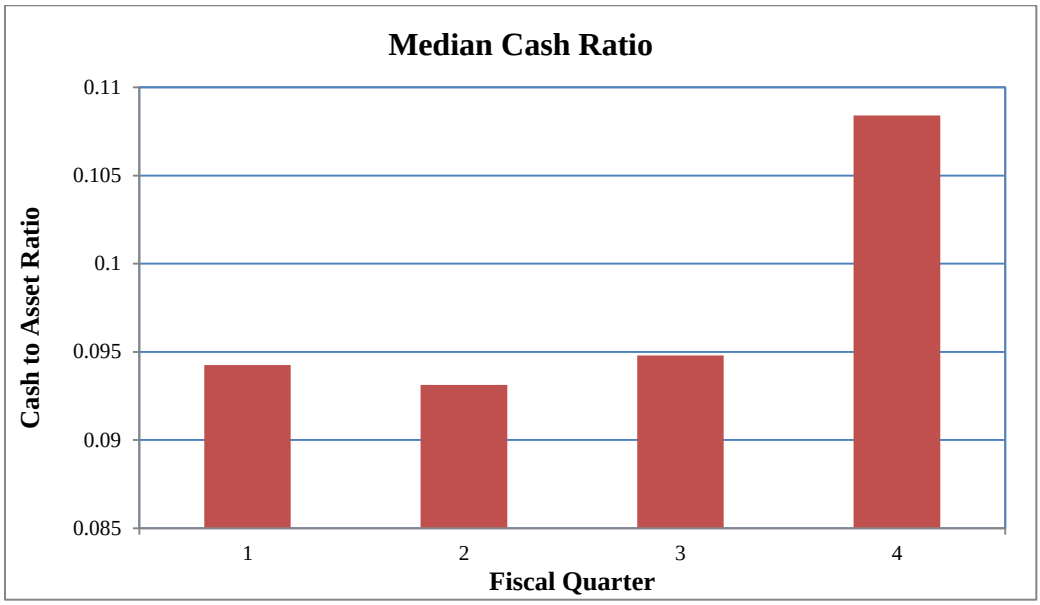


Table 2.1.A:

Average Quarterly Ratios from 1999 to 2008

The sample is obtained from the Quarterly Compustat file for the period 1999Q1 to 2008Q4. Financial firms and Utilities (SIC Code 6000 to 6999 and 4900 to 4999) are excluded. Likewise, non-US firms are excluded. The observations with missing data for Cash and Stock Price are deleted, as are the observations with zero or negative total assets, current assets, current liabilities, receivables, and negative sales. All variables are quarterly and are calculated as follows: Cash: cash and marketable securities scaled by total assets, Inventory: total inventory scaled by total assets, Trade Receivables: total receivables scaled by total assets, Payables: total account payables scaled by total assets, Accrued and Other Liabilities: total current liabilities minus accounts payable minus debt in current liabilities scaled by total assets, Size: log of total assets at the beginning of quarter in 2008 dollars, Leverage: debt in current liabilities plus long term debt divided by total assets, Sales Growth: The quarterly change in sales compared to same period of previous year, and Capital Expenditures: capital expenditures divided by total assets.

Fiscal Quarter	Cash	Inventory	Trade Receivables	Payables	Accrued and Other Liabilities	Size	Leverage	Sales Growth	Capital Expenditure
1999Q1	0.1631	0.1458	0.1855	0.1117	0.1230	4.9287	0.2723	0.2457	0.0151
1999Q2	0.1682	0.1419	0.1853	0.1124	0.1203	4.8373	0.2802	0.2383	0.0159
1999Q3	0.1743	0.1382	0.1849	0.1125	0.1220	4.8495	0.2769	0.2534	0.0159
1999Q4	0.1903	0.1301	0.1759	0.1103	0.1337	4.8463	0.2774	0.2974	0.0179
2000Q1	0.1949	0.1318	0.1722	0.1103	0.1180	4.8501	0.2729	0.3125	0.0151
2000Q2	0.1907	0.1306	0.1721	0.1103	0.1179	4.8766	0.2676	0.3275	0.0165
2000Q3	0.1909	0.1292	0.1719	0.1114	0.1202	4.9035	0.2655	0.3371	0.0161
2000Q4	0.1930	0.1259	0.1682	0.1131	0.1372	4.9170	0.2590	0.3484	0.0179
2001Q1	0.1834	0.1306	0.1654	0.1183	0.1287	4.9088	0.2653	0.2802	0.0141
2001Q2	0.1807	0.1292	0.1648	0.1207	0.1328	4.8645	0.2700	0.2039	0.0139
2001Q3	0.1829	0.1292	0.1643	0.1223	0.1395	4.8547	0.2735	0.1431	0.0127
2001Q4	0.1967	0.1215	0.1588	0.1169	0.1575	4.8540	0.2729	0.1232	0.0130
2002Q1	0.1913	0.1255	0.1595	0.1215	0.1477	4.8304	0.2817	0.0805	0.0103
2002Q2	0.1907	0.1249	0.1622	0.1244	0.1523	4.8060	0.2778	0.1241	0.0111
2002Q3	0.1899	0.1251	0.1640	0.1246	0.1557	4.8229	0.2763	0.1565	0.0107
2002Q4	0.1972	0.1210	0.1624	0.1154	0.1685	4.8670	0.2654	0.1889	0.0118
2003Q1	0.1914	0.1253	0.1636	0.1206	0.1578	4.8644	0.2749	0.1730	0.0098
2003Q2	0.1937	0.1246	0.1641	0.1201	0.1576	4.8476	0.2776	0.1838	0.0105
2003Q3	0.1989	0.1233	0.1642	0.1179	0.1567	4.8804	0.2739	0.1800	0.0106
2003Q4	0.2127	0.1176	0.1611	0.1136	0.1655	4.9035	0.2696	0.2244	0.0122
2004Q1	0.2152	0.1204	0.1606	0.1160	0.1516	4.9409	0.2673	0.2472	0.0104
2004Q2	0.2156	0.1214	0.1619	0.1151	0.1468	4.9681	0.2613	0.2805	0.0116
2004Q3	0.2168	0.1223	0.1634	0.1137	0.1497	4.9974	0.2565	0.3055	0.0119
2004Q4	0.2251	0.1162	0.1592	0.1092	0.1609	5.0451	0.2503	0.3087	0.0137
2005Q1	0.2177	0.1208	0.1586	0.1104	0.1488	5.0896	0.2470	0.2806	0.0116
2005Q2	0.2139	0.1216	0.1607	0.1121	0.1481	5.0818	0.2488	0.2962	0.0128
2005Q3	0.2129	0.1211	0.1611	0.1123	0.1491	5.0868	0.2477	0.2794	0.0128
2005Q4	0.2245	0.1148	0.1600	0.1077	0.1651	5.1176	0.2438	0.2915	0.0143
2006Q1	0.2171	0.1191	0.1580	0.1116	0.1528	5.1716	0.2440	0.2926	0.0126
2006Q2	0.2138	0.1198	0.1603	0.1131	0.1546	5.1591	0.2492	0.2700	0.0137
2006Q3	0.2112	0.1206	0.1615	0.1123	0.1546	5.1993	0.2507	0.2821	0.0136
2006Q4	0.2203	0.1140	0.1587	0.1061	0.1619	5.2344	0.2524	0.2638	0.0145
2007Q1	0.2147	0.1180	0.1565	0.1094	0.1494	5.2622	0.2531	0.2376	0.0128
2007Q2	0.2133	0.1184	0.1568	0.1081	0.1478	5.2416	0.2618	0.2482	0.0137
2007Q3	0.2118	0.1177	0.1578	0.1081	0.1499	5.2651	0.2614	0.2626	0.0139
2007Q4	0.2165	0.1136	0.1525	0.1028	0.1563	5.3125	0.2570	0.2931	0.0147
2008Q1	0.1986	0.1182	0.1527	0.1082	0.1460	5.3462	0.2592	0.2639	0.0130
2008Q2	0.1925	0.1196	0.1556	0.1100	0.1486	5.3855	0.2718	0.2800	0.0135
2008Q3	0.1889	0.1207	0.1561	0.1091	0.1493	5.5940	0.2697	0.2231	0.0135
2008Q4	0.1971	0.1169	0.1529	0.1011	0.1571	7.5748	0.2644	0.1202	0.0139
Total	0.1988	0.1245	0.1643	0.1134	0.1452	5.0527	0.2650	0.2429	0.0134

Table 2.1.B:

Average Quarterly Ratios from 1999 to 2008

Quarterly financial statement data are gathered from Standard & Poor's (S&P) Compustat Fundamental Quarterly files for the quarters between 1999Q1 and 2008Q4. Information asymmetry measures are created using daily stock trading data from the Center for Research in Security Prices (CRSP), S&P Constituents' data, and S&P Issuer Credit Rating data. Governance Index data are sourced from author's (Metrick, A) personal website for the period 1999 to 2006. Financial firms and Utilities (SIC Code 6000 to 6999 and 4900 to 4999) are excluded. Likewise, non-US firms are excluded. The observations with missing data for Cash and Stock Price are deleted, as are the observations with zero or negative total assets, current assets, current liabilities, receivables, and negative sales. All variables are quarterly and are calculated as follows: Risk - Cash Flow Volatility: Coefficient of variation in quarterly cash flow over the past four years, Growth or Market to Book Ratio: (common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter)/total assets at the beginning of quarter, Competition: Sales-Herfindahl Index based on two-digit SIC code, Governance Index: GIM-Index following Gompers, Ishii, and Metrick (2003), Bid-Ask Spread: Quarterly average of log (daily relative bid-ask spread), Share Turnover: Quarterly average of log (daily trading volume in shares divided by shares outstanding), Discretionary Accruals: Income before extraordinary items minus cash flow from operations, S&P 500: Equals 1 if firm is in S&P 500 Index and 0 otherwise, No Debt Rating: Equals 1 if firm does not have S&P Debt Rating and 0 otherwise.

Fiscal Quarter	Risk - CF Volatility	Growth	Competition	GIM Index	Bid-Ask Spread	Share Turnover	Discretionary Accruals	S&P 500	No Debt Rating
1999Q1	2.6081	2.2691	24.6885	8.6133	-3.8043	0.9085	-0.0112	0.0618	0.8234
1999Q2	2.5831	2.3841	24.5012	8.6286	-3.8907	0.9417	-0.0180	0.0614	0.8229
1999Q3	2.6525	2.5494	24.5175	8.6132	-3.9955	0.9475	-0.0225	0.0611	0.8240
1999Q4	2.4369	2.7553	24.2862	8.6690	-4.0294	1.1252	-0.0529	0.0590	0.8255
2000Q1	2.5027	3.3370	23.9982	8.8079	-4.1245	1.3016	-0.0105	0.0629	0.8252
2000Q2	2.6122	3.6010	24.0099	8.8335	-4.0991	1.1314	-0.0234	0.0616	0.8254
2000Q3	2.6230	3.2809	23.8236	8.8645	-4.1964	1.0661	-0.0308	0.0623	0.8258
2000Q4	2.9521	3.1038	23.7429	8.8586	-3.9713	1.0491	-0.0771	0.0630	0.8239
2001Q1	2.9900	2.4622	23.5440	8.8877	-4.0286	0.9320	-0.0285	0.0633	0.8226
2001Q2	2.6296	2.3291	23.5387	8.9163	-4.4983	0.9086	-0.0464	0.0645	0.8195
2001Q3	2.9520	2.3954	23.5567	8.9533	-4.5170	0.8049	-0.0525	0.0663	0.8152
2001Q4	2.9366	2.1902	23.5326	8.9635	-4.5332	0.8717	-0.0912	0.0678	0.8136
2002Q1	2.8616	2.4706	23.2431	8.9069	-4.6048	0.8975	-0.0287	0.0690	0.8123
2002Q2	2.9642	2.4114	23.3145	8.9632	-4.7867	0.9320	-0.0423	0.0690	0.8109
2002Q3	3.0650	2.2405	23.2940	8.9399	-4.6997	0.8045	-0.0439	0.0697	0.8087
2002Q4	2.7328	2.0168	23.5468	8.9360	-4.7709	0.8352	-0.0747	0.0717	0.8047
2003Q1	2.9896	2.0934	23.1885	8.9882	-4.9054	0.8012	-0.0254	0.0728	0.8044
2003Q2	2.9952	2.1272	23.2322	8.9937	-5.1570	1.0679	-0.0346	0.0738	0.8032
2003Q3	3.3303	2.4042	23.0796	9.0082	-5.4454	1.1367	-0.0366	0.0752	0.7987
2003Q4	3.2060	2.6273	23.1453	9.0155	-5.6510	1.2319	-0.0587	0.0767	0.7957
2004Q1	3.0271	2.8665	22.7553	9.0290	-5.8002	1.3619	-0.0235	0.0790	0.7931
2004Q2	3.0304	2.9696	22.7712	9.0205	-5.8413	1.3429	-0.0269	0.0791	0.7914
2004Q3	3.1805	2.8473	22.7383	9.0303	-5.8218	1.2276	-0.0270	0.0795	0.7897
2004Q4	3.3441	2.7120	22.8394	9.0373	-5.8962	1.3353	-0.0533	0.0799	0.7896
2005Q1	3.1801	2.8673	22.5774	9.1034	-5.9663	1.3873	-0.0191	0.0806	0.7858
2005Q2	3.1695	2.7985	22.6398	9.1154	-5.9579	1.3947	-0.0265	0.0815	0.7878
2005Q3	3.3161	2.8168	22.6466	9.1163	-6.0461	1.3846	-0.0279	0.0811	0.7896
2005Q4	3.1412	2.8408	22.6100	9.1126	-6.0998	1.4121	-0.0533	0.0809	0.7878
2006Q1	3.0664	2.7891	22.2298	9.0383	-6.1925	1.4845	-0.0244	0.0840	0.7879
2006Q2	3.1663	2.9978	22.2887	9.0424	-6.2324	1.5520	-0.0267	0.0839	0.7868
2006Q3	2.8792	2.8274	22.1562	9.0263	-6.2112	1.4287	-0.0319	0.0847	0.7839
2006Q4	2.7660	2.7458	22.2221	9.0207	-6.2676	1.4968	-0.0508	0.0847	0.7850
2007Q1	2.7276	2.7842	22.0095	9.0263	-6.3011	1.5537	-0.0236	0.0864	0.7834
2007Q2	2.8730	2.8521	22.0415	9.0188	-6.2563	1.6355	-0.0278	0.0857	0.7833
2007Q3	2.7496	2.8461	22.0285	9.0237	-6.0471	1.6038	-0.0339	0.0864	0.7855
2007Q4	2.6971	2.7755	22.0562	9.0326	-5.9751	1.5834	-0.0539	0.0863	0.7884
2008Q1	2.9630	2.6269	21.8905	9.0327	-5.8501	1.5988	-0.0231	0.0910	0.7846
2008Q2	3.0283	2.4611	21.9425	9.0349	-5.8481	1.5396	-0.0350	0.0916	0.7840
2008Q3	3.1125	2.3944	22.0819	9.0382	-5.7297	1.5414	-0.0384	0.0918	0.7810
2008Q4	3.5294	2.1304	22.0424	9.0442	-5.2901	1.5590	-0.0865	0.0947	0.7761
Total	2.9578	2.6528	23.1119	8.9684	-5.2300	1.2292	-0.0377	0.0743	0.8029

Table 2.2.A:

Variable Comparisons – The 4th Quarter versus the Other Three Quarters

The sample is obtained from the Quarterly Compustat file for the period 1999Q1 to 2008Q4. Financial firms and Utilities (SIC Code 6000 to 6999 and 4900 to 4999) are excluded. Likewise, non-US firms are excluded. The observations with missing data for Cash and Stock Price are deleted, as are the observations with zero or negative total assets, current assets, current liabilities, receivables, and negative sales. All variables are quarterly and are calculated as follows: Cash: cash and marketable securities scaled by total assets, Inventory: total inventory scaled by total assets, Trade Receivables: total receivables scaled by total assets, Payables: total account payables scaled by total assets, Accrued and Other Liabilities: total current liabilities minus accounts payable minus debt in current liabilities scaled by total assets, Size: log of total assets at the beginning of quarter in 2008 dollars, Leverage: debt in current liabilities plus long term debt divided by total assets, Sales Growth: The change in sales from the same quarter of previous year, and Capital Expenditure: capital expenditures divided by total assets. N represents the number of observation. T-tests are used to check if the 4th quarter value is statistically different from each of other three quarters. Note: *, ** indicate that the respective quarter mean is significantly lower than that of the 4th quarter at the 1% and 5% levels respectively and a and b show that the quarterly mean is significantly higher than that of the 4th quarter at the 1% and 5% levels, respectively.

Quarter		Cash	Inventory	Trade Receivables	Payables	Accrued and Other Liabilities	Size	Leverage	Sales Growth	Capital Expenditure
1	Mean	0.197*	0.127[a]	0.164[a]	0.114[a]	0.141*	5.002*	0.265	0.240	0.0123*
	Median	0.094	0.076	0.137	0.071	0.092	5.026	0.182	0.077	0.007
	1st Quartile	0.023	0.002	0.063	0.036	0.050	3.419	0.016	-0.070	0.003
	3rd Quartile	0.303	0.198	0.228	0.134	0.161	6.601	0.378	0.262	0.014
	N	48414	47565	47808	48276	46622	46519	46610	44383	47821
2	Mean	0.196*	0.126[a]	0.165[a]	0.141[a]	0.141*	4.986*	0.267	0.243	0.013*
	Median	0.093	0.074	0.138	0.071	0.092	5.007	0.185	0.076	0.007
	1st Quartile	0.023	0.002	0.064	0.035	0.050	3.392	0.017	-0.069	0.003
	3rd Quartile	0.299	0.198	0.229	0.136	0.161	6.598	0.381	0.262	0.016
	N	48214	47370	47618	48079	46429	47109	45613	44383	46481
3	Mean	0.197*	0.125[a]	0.166[a]	0.143[a]	0.143*	5.021*	0.266	0.241	0.013*
	Median	0.095	0.073	0.138	0.071	0.094	5.035	0.183	0.077	0.007
	1st Quartile	0.024	0.002	0.063	0.035	0.052	3.417	0.016	-0.068	0.003
	3rd Quartile	0.301	0.197	0.229	0.136	0.164	6.643	0.377	0.261	0.015
	N	47692	46859	47108	47559	45945	46573	45069	43855	45924
4	Mean	0.206	0.120	0.162	0.110	0.155	5.206	0.262	0.247	0.015
	Median	0.108	0.067	0.134	0.066	0.102	5.181	0.179	0.072	0.008
	1st Quartile	0.028	0.002	0.062	0.034	0.059	3.505	0.015	-0.081	0.003
	3rd Quartile	0.317	0.186	0.223	0.125	0.176	6.863	0.373	0.262	0.017
	N	47161	46793	46918	47121	45959	45565	44096	43580	44822
All	Mean	0.199	0.124	0.164	0.113	0.145	5.053	0.265	0.243	0.013
	Median	0.098	0.072	0.137	0.070	0.095	5.058	0.182	0.076	0.007
	1st Quartile	0.024	0.002	0.063	0.035	0.053	3.433	0.016	-0.072	0.003
	3rd Quartile	0.305	0.195	0.227	0.133	0.166	6.677	0.377	0.262	0.016
	N	191481	188587	189452	191035	184955	185766	181388	176201	185048

Table 2.2.B:

Variable Comparisons – The 4th Quarter versus the Other Three Quarters

Quarterly financial statement data are gathered from Standard & Poor's (S&P) Compustat Fundamental Quarterly files for the quarters between 1999Q1 and 2008Q4. Information asymmetry measures are created using daily stock trading data from the Center for Research in Security Prices (CRSP), S&P Constituents' data, and S&P Issuer Credit Rating data. Governance Index data are sourced from A. Metrick's website for the period 1999 to 2006. Financial firms and Utilities (SIC Code 6000 to 6999 and 4900 to 4999) are excluded. Likewise, non-US firms are excluded. The observations with missing data for Cash and Stock Price are deleted, as are the observations with zero or negative total assets, current assets, current liabilities, receivables, and negative sales. All variables are quarterly and are calculated as follows: Risk - Cash Flow Volatility: Coefficient of variation in quarterly cash flow over the past four years, Growth or Market to Book Ratio: (common shares outstanding time stock price plus total assets net of common equity at the beginning of quarter) divided by total assets at the beginning of quarter, Competition: Sales-Herfindahl Index based on two-digit SIC code, Governance Index: GIM-Index following Gompers, Ishii, and Metrick (2003), Bid-Ask Spread: Quarterly average of log (daily relative bid-ask spread), Share Turnover: Quarterly average of log (daily trading volume in shares divided by shares outstanding), Discretionary Accruals: Income before extraordinary items minus cash flow from operations, S&P 500: Equals 1 if firm is in S&P 500 Index and 0 otherwise, No Debt Rating: Equals 1 if firm does not have S&P Debt Rating and 0 otherwise. N represents number of observation for respective quarter. A t-test is used to determine if the 4th quarter value is statistically different from that of each of the other three quarters. Note: *, ** indicate that the respective quarter mean is significantly lower than that of the 4th quarter at the 1% and 5% levels respectively and a and b show that the quarterly mean is significantly higher than that of the 4th quarter at the 1% and 5% levels, respectively.

Quarter		Risk - CF Volatility	Growth	Competition	GIM Index	Bid-Ask Spread	Share Turnover	Discretionary Accruals	S&P 500	No Debt Rating
1	Mean	2.906	2.653[a]	23.120	8.956	-5.158[a]	1.224*	-0.021[a]	0.074	0.804
	Median	0.714	1.586	14.235	9.000	-5.111	1.386	-0.008	0.000	1.000
	1st Quartile	0.335	1.122	12.417	7.000	-6.395	0.398	-0.032	0.000	1.000
	3rd Quartile	1.933	2.676	22.797	11.000	-4.008	2.120	0.015	0.000	1.000
	N	13332	47136	48414	10555	28537	28672	48240	48414	48414
2	Mean	2.928	2.695[a]	23.132	8.968	-5.252	1.245	-0.031[a]	0.074	0.804
	Median	0.708	1.593	14.235	9.000	-5.261	1.401	-0.013	0.000	1.000
	1st Quartile	0.337	1.120	12.417	7.000	-6.466	0.429	-0.038	0.000	1.000
	3rd Quartile	1.931	2.682	22.797	11.000	-4.123	2.121	0.007	0.000	1.000
	N	13536	47074	48214	10554	28776	28813	46761	48214	48214
3	Mean	2.998	2.663[a]	23.095	8.972	-5.267	1.196*	-0.035[a]	0.074	0.802
	Median	0.722	1.607	14.235	9.000	-5.286	1.359	-0.016	0.000	1.000
	1st Quartile	0.338	1.128	12.417	7.000	-6.472	0.341	-0.041	0.000	1.000
	3rd Quartile	1.982	2.678	22.797	11.000	-4.153	2.110	0.004	0.000	1.000
	N	14078	46495	47692	10510	28780	28823	46358	47692	47692
4	Mean	2.995	2.598	23.100	8.978	-5.243	1.251	-0.066	0.075	0.801
	Median	0.727	1.552	14.235	9.000	-5.290	1.420	-0.028	0.000	1.000
	1st Quartile	0.339	1.098	12.417	7.000	-6.458	0.445	-0.067	0.000	1.000
	3rd Quartile	2.036	2.591	22.797	11.000	-4.111	2.144	-0.004	0.000	1.000
	N	14213	45487	47161	10463	28722	28744	45100	47161	47161
All	Mean	2.958	2.653	23.112	8.968	-5.230	1.229	-0.038	0.074	0.803
	Median	0.718	1.584	14.235	9.000	-5.238	1.392	-0.016	0.000	1.000
	1st Quartile	0.337	1.118	12.417	7.000	-6.450	0.402	-0.044	0.000	1.000
	3rd Quartile	1.973	2.657	22.797	11.000	-4.095	2.124	0.006	0.000	1.000
	N	55159	186192	191481	42082	114815	115052	186459	191481	191481

Table 2.3:

Percentage Window Dressing and Reversal - 1999 to 2008

Window Dressing (WD) and Reversal (REV) values are first calculated for each firm year using formulas provided in Section 2.4. The mean values across each year are computed and shown below. T-tests are conducted to confirm whether yearly WD and REV percentages are significantly higher or lower than zero respectively. P-values are reported in parentheses.

t	WD_t	REV_t
1999	47.66	-27.90
	(0.000)	(0.000)
2000	29.55	-35.70
	(0.000)	(0.000)
2001	41.50	-24.60
	(0.000)	(0.000)
2002	29.10	-18.14
	(0.000)	(0.000)
2003	49.85	-13.63
	(0.000)	(0.000)
2004	37.88	-22.82
	(0.000)	(0.000)
2005	36.28	-25.43
	(0.000)	(0.000)
2006	31.12	-20.14
	(0.000)	(0.000)
2007	30.61	-28.18
	(0.000)	(0.000)
2008	15.20	N/A
	(0.000)	
Overall	35.47	-24.33

Table 2.4.A:

Quarterly Cash Holdings Regressions with Governance Index - OLS Model

The dependent variable in each regression model is the Cash-to-Asset Ratio. All variables are quarterly and are calculated as follows: December Year-End Dummy: Equals 1 if a firm's fiscal year-end falls in December and 0 otherwise, Share Turnover: quarterly average of log (daily trading volume in shares divided by shares outstanding), Bid-Ask Spread: quarterly average of log (daily relative bid-ask spread), Discretionary Accruals: Income before extraordinary items minus cash flow from operations, S&P 500: equals 1 if firm is in S&P 500 Index and 0 otherwise, No Debt Rating: equals 1 if firm does not have a S&P Debt Rating and 0 otherwise, Size: log of total assets normalized to 2008 dollars at the beginning of quarter, Cash Flow Volatility: coefficient of variation in quarterly cash flow over the past four years, Competition: Sales-Herfindahl Index based on two-digit SIC code, Governance Index: G-Index following Gompers, Ishii, and Metrick (2003), Net Working Capital: current assets minus current liabilities minus cash and marketable securities scaled by total assets, Capital Expenditure: capital expenditures divided by total assets, Leverage: debt in current liabilities plus long term debt divided by total assets, Market to Book Ratio: common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter divided by total assets at the beginning of quarter, Sales: sales revenue (net) scaled by total assets, Sales Growth: the percentage change in sales from the same quarter of the previous year, Dividends Per Share: dividends per share scaled by the closing stock price, and Cash Flow: net income plus depreciation divided by total assets at the beginning of quarter. All models estimate ordinary least squares with Robust option and R^2 is adjusted. Standard errors are reported in parentheses. Note: * means p<0.10, ** means p<0.05 and *** means p<0.01.

Variables	OLS 1	OLS 2	OLS 3	OLS 4	OLS 5
Constant	0.467***	0.467***	0.493***	0.520***	0.434***
	(0.0087)	(0.0083)	(0.0084)	(0.0094)	(0.0098)
1st Quarter Dummy	-0.0313***	-0.0292***	-0.0323***	-0.0325***	-0.0315***
	(0.0036)	(0.0036)	(0.0038)	(0.0036)	(0.0036)
2nd Quarter Dummy	-0.0279***	-0.0254***	-0.0280***	-0.0282***	-0.0272***
	(0.0036)	(0.0035)	(0.0037)	(0.0036)	(0.0036)
3rd Quarter Dummy	-0.0275***	-0.0248***	-0.0273***	-0.0273***	-0.0267***
	(0.0036)	(0.0035)	(0.0036)	(0.0036)	(0.0036)
December Year-End Dummy	-0.0180***	-0.0141***	-0.0185***	-0.0172***	-0.0188***
	(0.0038)	(0.0037)	(0.0038)	(0.0038)	(0.0038)
Information Asymmetry - Bid-Ask Spread	-0.00606***				
	(0.0007)				
Information Asymmetry - Share Turnover		0.0320***			
		(0.0012)			
Information Asymmetry - Discretionary Accruals			-0.0116		
			(0.0293)		
Information Asymmetry - S&P 500				0.0185***	
				(0.0026)	
Information Asymmetry - No Debt Rating					0.0272***
					(0.0026)
Net Working Capital	-0.270***	-0.265***	-0.272***	-0.269***	-0.270***
	(0.0073)	(0.0072)	(0.0073)	(0.0072)	(0.0072)
Capital Expenditure	-2.243***	-2.419***	-2.264***	-2.231***	-2.249***
	(0.0576)	(0.0585)	(0.0591)	(0.0570)	(0.0571)
Leverage	-0.291***	-0.290***	-0.297***	-0.292***	-0.275***
	(0.0072)	(0.0069)	(0.0070)	(0.0070)	(0.0075)
Market-to-Book Ratio	0.0316***	0.0303***	0.0322***	0.0312***	0.0317***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Size	-0.0245***	-0.0271***	-0.0231***	-0.0269***	-0.0180***
	(0.0008)	(0.0007)	(0.0007)	(0.0009)	(0.0008)
Sales	-0.133***	-0.135***	-0.134***	-0.132***	-0.134***
	(0.0044)	(0.0043)	(0.0044)	(0.0044)	(0.0044)
Sales Growth	0.00841*	0.00369	0.00987**	0.0104**	0.00980**
	(0.0046)	(0.0046)	(0.0046)	(0.0046)	(0.0045)
Dividend per Share	-3.418***	-1.888***	-3.666***	-3.866***	-3.750***
	(0.2650)	(0.2641)	(0.2610)	(0.2641)	(0.2599)
Cash Flow	-0.300***	-0.257***	-0.263***	-0.283***	-0.262***
	(0.0350)	(0.0337)	(0.0410)	(0.0345)	(0.0340)
Risk - Cash Flow Volatility	0.00166***	0.00129***	0.00157***	0.00159***	0.00160***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Competition - Herfindahl Index	-0.000217***	-0.000201***	-0.000222***	-0.000221***	-0.000226***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Governance Index	-0.00519***	-0.00538***	-0.00510***	-0.00534***	-0.00478***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
N	19314	19387	19493	19493	19493
Adjusted R^2	0.4496	0.4712	0.4480	0.4494	0.4515

Table 2.4.B:

Quarterly Cash Holding Regressions without Governance Index - OLS Model

The dependent variable in each regression model is the Cash-to-Asset Ratio. All variables are quarterly and are calculated as follows: December Year-End Dummy: equals 1 if a firm's fiscal year-end falls in December and 0 otherwise, Share Turnover: quarterly average of log (daily trading volume in shares divided by shares outstanding), Bid-Ask Spread: quarterly average of log (daily relative bid-ask spread), Discretionary Accruals: Income before extraordinary items minus cash flow from operations, S&P 500: equals 1 if firm is in S&P 500 Index and 0 otherwise, No Debt Rating: equals 1 if firm does not have a S&P Debt Rating and 0 otherwise, Size: log of total assets normalized to 2008 dollars at the beginning of quarter, Cash Flow Volatility: coefficient of variation in quarterly cash flow over the past four years, Competition: Sales-Herfindahl Index based on two-digit SIC code, Net Working Capital: current assets minus current liabilities minus cash and marketable securities scaled by total assets, Capital Expenditure: capital expenditures divided by total assets, Leverage: debt in current liabilities plus long term debt divided by total assets, Market to Book Ratio: common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter divided by total assets at the beginning of quarter, Sales: sales revenue (net) scaled by total assets, Sales Growth: the percentage change in sales from the same quarter of the previous year, Dividends Per Share: dividends per share scaled by the closing stock price, and Cash Flow: net income plus depreciation divided by total assets at the beginning of quarter. All models estimate ordinary least squares with Robust option and R2 is adjusted. Standard errors are reported in parentheses. Note: * means p<0.10, ** means p<0.05 and *** means p<0.01.

Variables	OLS 1	OLS 2	OLS 3	OLS 4	OLS 5
Constant	0.373***	0.422***	0.367***	0.361***	0.333***
	(0.0048)	(0.0048)	(0.0040)	(0.0041)	(0.0051)
1st Quarter Dummy	-0.0231***	-0.0227***	-0.0240***	-0.0240***	-0.0234***
	(0.0027)	(0.0027)	(0.0025)	(0.0024)	(0.0024)
2nd Quarter Dummy	-0.0198***	-0.0189***	-0.0202***	-0.0202***	-0.0196***
	(0.0027)	(0.0027)	(0.0024)	(0.0024)	(0.0024)
3rd Quarter Dummy	-0.0192***	-0.0175***	-0.0195***	-0.0197***	-0.0191***
	(0.0027)	(0.0027)	(0.0024)	(0.0024)	(0.0024)
December Year-End Dummy	-0.00584**	-0.00385	-0.00740***	-0.00820***	-0.00780***
	(0.0029)	(0.0029)	(0.0026)	(0.0026)	(0.0026)
Information Asymmetry - Bid-Ask Spread	-0.0115***				
	(0.0006)				
Information Asymmetry - Share Turnover		0.0320***			
		(0.0012)			
Information Asymmetry - Discretionary Accruals			-0.0116		
			(0.0293)		
Information Asymmetry - S&P 500				0.0185***	
				(0.0026)	
Information Asymmetry - No Debt Rating					0.0272***
					(0.0026)
Net Working Capital	-0.251***	-0.253***	-0.150***	-0.151***	-0.149***
	(0.0068)	(0.0068)	(0.0040)	(0.0040)	(0.0040)
Capital Expenditure	-2.069***	-2.147***	-1.705***	-1.722***	-1.712***
	(0.0400)	(0.0402)	(0.0350)	(0.0342)	(0.0341)
Leverage	-0.318***	-0.319***	-0.294***	-0.296***	-0.285***
	(0.0055)	(0.0054)	(0.0041)	(0.0041)	(0.0042)
Market-to-Book Ratio	0.0294***	0.0277***	0.0270***	0.0275***	0.0269***
	(0.0009)	(0.0008)	(0.0007)	(0.0007)	(0.0007)
Size	-0.0219***	-0.0240***	-0.0132***	-0.0118***	-0.0103***
	(0.0005)	(0.0005)	(0.0003)	(0.0004)	(0.0004)
Sales	-0.168***	-0.166***	-0.182***	-0.182***	-0.183***
	(0.0040)	(0.0040)	(0.0033)	(0.0033)	(0.0034)
Sales Growth	0.00901***	0.00709**	0.00720***	0.00690***	0.00699***
	(0.0028)	(0.0028)	(0.0023)	(0.0023)	(0.0023)
Dividend per Share	-2.481***	-1.582***	-2.800***	-2.682***	-2.733***
	(0.1861)	(0.1856)	(0.1724)	(0.1727)	(0.1724)
Cash Flow	-0.157***	-0.125***	0.0521***	0.0574***	0.0541***
	(0.0262)	(0.0256)	(0.0183)	(0.0139)	(0.0138)
Risk - Cash Flow Volatility	0.000814***	0.000611***	0.000715***	0.000705***	0.000721***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Competition - Herfindahl Index	-0.000310***	-0.000261***	-0.000408***	-0.000407***	-0.000408***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
N	38857	38944	52503	52543	52543
Adjusted R^2	0.0087	0.0083	0.0084	0.0094	0.0098

Table 2.4.C:

Quarterly Cash Holding Regressions with Governance Index - Fixed Effects Model

The dependent variable in each regression model is the Cash-to-Asset Ratio. All variables are quarterly and are calculated as follows: December Year-End Dummy: equals 1 if a firm's fiscal year-end falls in December and 0 otherwise, Share Turnover: quarterly average of log (daily trading volume in shares divided by shares outstanding), Bid-Ask Spread: quarterly average of log (Daily Relative Bid-Ask Spread), Discretionary Accruals: income before extraordinary items minus cash flow from operations, S&P 500: equals 1 if firm is in S&P 500 Index and 0 otherwise, No Debt Rating: equals 1 if firm does not have S&P Debt Rating and 0 otherwise, Size: log of total assets normalized to 2008 dollars at the beginning of quarter, Cash Flow Volatility: coefficient of variation in quarterly cash flow over the past four years, Competition: Sales Herfindahl Index based on two-digit SIC code, Governance Index: G-Index following Gompers, Ishii, and Metrick (2003), Net Working Capital: current assets minus current liabilities minus cash and marketable securities scaled by total assets, Capital Expenditure: capital expenditures divided by total assets, Leverage: debt in current liabilities plus long term debt divided by total assets, Market to Book Ratio: common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter divided by total assets at the beginning of quarter, Sales: sales revenue (net) scaled by total assets, Sales Growth: the percentage change in sales from the same quarter of the previous year, Dividends Per Share: dividends per share scaled by the closing stock price, and Cash Flow: net income plus depreciation divided by total assets at the beginning of quarter. All regressions estimate firm level fixed effects model and R^2 is overall. Standard errors are reported in parentheses. Note: * means p<0.10, ** means p<0.05 and *** means p<0.01.

Variables	FE 1	FE 2	FE 3	FE 4	FE 5
Constant	0.231***	0.254***	0.242***	0.242***	0.243***
	(0.0097)	(0.0098)	(0.0096)	(0.0097)	(0.0099)
1st Quarter Dummy	-0.00819***	-0.00893***	-0.00192	-0.00900***	-0.00899***
	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0018)
2nd Quarter Dummy	-0.00877***	-0.00853***	-0.00343*	-0.00858***	-0.00858***
	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0018)
3rd Quarter Dummy	-0.00872***	-0.00838***	-0.00418**	-0.00850***	-0.00849***
	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0018)
December Year-End Dummy	0.00165	0.00132	0.00339*	0.000865	0.000886
	(0.0020)	(0.0020)	(0.0020)	(0.0020)	(0.0020)
Information Asymmetry - Bid-Ask Spread	-0.00739***				
	(0.0005)				
Information Asymmetry - Share Turnover		0.00573***			
		(0.0010)			
Information Asymmetry - Discretionary Accruals			-0.252***		
			(0.0135)		
Information Asymmetry - S&P 500				-0.000830	
				(0.0033)	
Information Asymmetry - No Debt Rating					-0.000985
					(0.0028)
Net Working Capital	-0.224***	-0.234***	-0.212***	-0.230***	-0.230***
	(0.0076)	(0.0076)	(0.0075)	(0.0075)	(0.0075)
Capital Expenditure	-0.653***	-0.699***	-0.729***	-0.696***	-0.697***
	(0.0465)	(0.0466)	(0.0460)	(0.0464)	(0.0464)
Leverage	-0.120***	-0.137***	-0.137***	-0.133***	-0.133***
	(0.0056)	(0.0055)	(0.0053)	(0.0054)	(0.0055)
Market-to-Book Ratio	0.0118***	0.0116***	0.0118***	0.0122***	0.0122***
	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Size	-0.00720***	-0.00635***	-0.00525***	-0.00493***	-0.00499***
	(0.0009)	(0.0009)	(0.0009)	(0.0009)	(0.0009)
Sales	-0.0856***	-0.0887***	-0.123***	-0.0840***	-0.0838***
	(0.0084)	(0.0084)	(0.0086)	(0.0084)	(0.0084)
Sales Growth	-0.00486***	-0.00351**	-0.00256	-0.00329*	-0.00327*
	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)
Dividend per Share	-0.173	-0.418**	-0.458**	-0.357*	-0.356*
	(0.2087)	(0.2091)	(0.2068)	(0.2089)	(0.2089)
Cash Flow	0.0658***	0.0837***	0.309***	0.0853***	0.0851***
	(0.0139)	(0.0139)	(0.0181)	(0.0137)	(0.0137)
Risk - Cash Flow Volatility	0.000384***	0.000381***	0.000403***	0.000388***	0.000387***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Governance Index	-0.00309***	-0.00162**	-0.000726	-0.000805	-0.000816
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
N	19314	19387	19493	19493	19493
Adjusted R^2	0.0738	0.0643	0.0785	0.0610	0.0610

Table 2.4.D:

Quarterly Cash Holding regressions without Governance Index - Fixed Effects Model

The dependent variable in each regression model is the Cash-to-Asset Ratio. All variables are quarterly and are calculated as follows: December Year-End Dummy: equals 1 if a firm's fiscal year-end falls in December and 0 otherwise, Share Turnover: quarterly average of log (daily trading volume in shares divided by shares outstanding), Bid-Ask Spread: quarterly average of log (Daily Relative Bid-Ask Spread), Discretionary Accruals: income before extraordinary items minus cash flow from operations, S&P 500: equals 1 if firm is in S&P 500 Index and 0 otherwise, No Debt Rating: equals 1 if firm does not have S&P Debt Rating and 0 otherwise, Size: log of total assets normalized to 2008 dollars at the beginning of quarter, Cash Flow Volatility: coefficient of variation in quarterly cash flow over the past four years, Competition: Sales Herfindahl Index based on two-digit SIC code, Net Working Capital: current assets minus current liabilities minus cash and marketable securities scaled by total assets, Capital Expenditure: capital expenditures divided by total assets, Leverage: debt in current liabilities plus long term debt divided by total assets, Market to Book Ratio: common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter divided by total assets at the beginning of quarter, Sales: sales revenue (net) scaled by total assets, Sales Growth: the percentage change in sales from the same quarter of the previous year, Dividends Per Share: dividends per share scaled by the closing stock price, and Cash Flow: net income plus depreciation divided by total assets at the beginning of quarter. All regressions estimate firm level fixed effects model and R2 is overall. Standard errors are reported in parentheses. Note: * means p<0.10, ** means p<0.05 and *** means p<0.01.

Variables	FE 1	FE 2	FE 3	FE 4	FE 5
Constant	0.218***	0.258***	0.242***	0.239***	0.234***
	(0.0052)	(0.0049)	(0.0042)	(0.0043)	(0.0047)
1st Quarter Dummy	-0.0108***	-0.0114***	-0.00632***	-0.0120***	-0.0121***
	(0.0014)	(0.0014)	(0.0013)	(0.0013)	(0.0013)
2nd Quarter Dummy	-0.0102***	-0.0103***	-0.00703***	-0.0111***	-0.0111***
	(0.0014)	(0.0014)	(0.0013)	(0.0013)	(0.0013)
3rd Quarter Dummy	-0.0102***	-0.0101***	-0.00767***	-0.0111***	-0.0111***
	(0.0014)	(0.0014)	(0.0013)	(0.0013)	(0.0013)
December Year-End Dummy	0.000129	-0.000541	0.000797	-0.00100	-0.00100
	(0.0016)	(0.0016)	(0.0015)	(0.0015)	(0.0015)
Information Asymmetry - Bid-Ask Spread	-0.00788***				
	(0.0004)				
Information Asymmetry - Share Turnover		0.00719***			
		(0.0006)			
Information Asymmetry - Discretionary Accruals			-0.193***		
			(0.0065)		
Information Asymmetry - S&P 500				-0.00695*	
				(0.0036)	
Information Asymmetry - No Debt Rating					0.00473**
					(0.0024)
Net Working Capital	-0.160***	-0.166***	-0.0677***	-0.0709***	-0.0707***
	(0.0048)	(0.0048)	(0.0027)	(0.0027)	(0.0027)
Capital Expenditure	-0.568***	-0.591***	-0.480***	-0.448***	-0.448***
	(0.0303)	(0.0304)	(0.0265)	(0.0267)	(0.0267)
Leverage	-0.158***	-0.172***	-0.138***	-0.136***	-0.136***
	(0.0043)	(0.0042)	(0.0029)	(0.0030)	(0.0030)
Market-to-Book Ratio	0.0120***	0.0118***	0.0115***	0.0113***	0.0113***
	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0003)
Size	-0.00300***	-0.00293***	-0.00404***	-0.00292***	-0.00290***
	(0.0006)	(0.0007)	(0.0006)	(0.0006)	(0.0006)
Sales	-0.156***	-0.162***	-0.150***	-0.131***	-0.131***
	(0.0056)	(0.0056)	(0.0043)	(0.0043)	(0.0043)
Sales Growth	-0.00378***	-0.00318***	-0.00184**	-0.00213***	-0.00209***
	(0.0010)	(0.0010)	(0.0008)	(0.0008)	(0.0008)
Dividend per Share	0.205	0.0573	0.118	0.167	0.148
	(0.1587)	(0.1587)	(0.1458)	(0.1472)	(0.1471)
Cash Flow	0.124***	0.134***	0.276***	0.116***	0.116***
	(0.0087)	(0.0087)	(0.0080)	(0.0060)	(0.0060)
Risk - Cash Flow Volatility	0.000250***	0.000237***	0.000133***	0.000134***	0.000135***
	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0000)
N	38857	38944	52503	52543	52543
Adjusted R^2	0.0722	0.0675	0.0466	0.0297	0.0297

Table 2.5:

Summary of Percentage Window Dressing and Reversal - 1999 to 2008

Size is measured as log of total assets normalized to 2008 dollars at the beginning of quarter. Competition is Sales Herfindhal Index based on two-digit SIC code. Risk is measured as Cash Flow Volatility, that is, coefficient of variation in quarterly cash flow over past four years. Governance is measured as G-Index following Gompers, Ishii, and Metricks (2003). Share turnover is measured as quarterly average of log (daily trading volume in shares divided by shares outstanding). Bid-Ask Spread is quarterly average of log (Daily Relative Bid-Ask Spread). Discretionary accruals are measured as income before extraordinary items minus cash flow from operations. S&P 500 Dummy equals 1 if firm is in S&P 500 Index and 0 otherwise. No Debt Rating Dummy equals 1 if firm does not have S&P Debt Rating and 0 otherwise. Window Dressing and Reversal values are first calculated for each firm year using formula provided in Section 2.4. The mean values across each year are computed and t-tests are conducted to confirm if yearly WD and REV percentages are significantly higher or lower than zero respectively. This table, however, reports the summary of WD and REV across overall sample.

Panel A

	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Characteristics	WD_t	REV_t	WD_t	REV_t	WD_t	REV_t	WD_t	REV_t
Size	44.83	-34.67	33.03	-24.42	32.39	-21.12	31.18	-16.90
Competition	29.05	-18.31	32.54	-26.32	39.31	-25.38	41.96	-28.96
Risk	30.16	-15.29	36.45	-21.13	36.23	-24.18	33.96	-25.48
Governance	29.49	-15.15	25.51	-12.39	33.48	-15.96	44.94	-19.94
Share Turnover	30.77	-24.66	27.52	-19.24	32.59	-16.97	34.57	-14.07
Bid-Ask Spread	30.44	-15.85	31.75	-14.35	34.17	-16.20	29.25	-29.21
Discretionary Accruals	49.02	-39.54	31.06	-18.23	23.57	-12.96	25.09	-15.34

Panel B

	Yes		No	
Characteristics	WD_t	REV_t	WD_t	REV_t
S&P 500	35.84	-25.30	31.10	-13.26
No Debt Rating	38.03	-20.71	34.82	-25.28

Table 2.6.A:

Quarterly Cash Holdings Regressions including Interaction Terms with G-Index

The dependent variable in each regression model is the Cash-to-Asset Ratio. All variables are quarterly and are calculated as follows: Share Turnover: quarterly average of log (daily trading volume in shares divided by shares outstanding), Bid-Ask Spread: quarterly average of log (Daily Relative Bid-Ask Spread), Discretionary Accruals: income before extraordinary items minus cash flow from operations, S&P 500: equals 1 if firm is in S&P 500 Index and 0 otherwise, No Debt Rating: equals 1 if firm does not have S&P Debt Rating and 0 otherwise, Size: log of total assets normalized to 2008 dollars at the beginning of quarter, Risk - Cash Flow Volatility: coefficient of variation in quarterly cash flow over the past four years, Competition: Sales Herfindahl Index based on two-digit SIC code, Governance Index: G-Index following Gompers, Ishii, and Metrick (2003), 4th Quarter Dummy: equals 1 for 4th fiscal quarter and 0 otherwise, December Year-End Dummy: equals 1 equals 1 if a firm's fiscal year-end falls in December and 0 otherwise, Net Working Capital: current assets minus current liabilities minus cash and marketable securities scaled by total assets, Capital Expenditure: capital expenditures divided by total assets, Leverage: debt in current liabilities plus long term debt divided by total assets, Market to Book Ratio: common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter divided by total assets at the beginning of quarter, Sales: sales revenue (net) scaled by total assets, Sales Growth: the percentage change in sales from the same quarter of the previous year, Dividends Per Share: dividends per share scaled by the closing stock price, and Cash Flow: net income plus depreciation divided by total assets at the beginning of quarter. All models estimate ordinary least squares with Robust option and R^2 is adjusted. Standard errors are reported in parentheses. Note: * means p<0.10, ** means p<0.05 and *** means p<0.01.

Variables	OLS 1	OLS 2	OLS 3	OLS 4	OLS 5
Constant	0.449***	0.448***	0.475***	0.511***	0.422***
	(0.0086)	(0.0091)	(0.0085)	(0.0101)	(0.0106)
Share Turnover	0.0311***				
	(0.0014)				
Share Turnover x 4th Quarter	0.00282				
	(0.0026)				
Bid - Ask Spread		-0.00642***			
		(0.0008)			
Bid - Ask Spread x 4th Quarter		0.000859			
		(0.0015)			
Discretionary Accruals			-0.0600*		
			(0.0360)		
Discretionary Accruals x 4th Quarter			0.0848		
			(0.0518)		
S&P 500				0.0238***	
				(0.0030)	
S&P 500 x 4th Quarter				-0.0134**	
				(0.0054)	
No Debt Rating					0.0241***
					(0.0029)
No Debt Rating x 4th Quarter					0.00870*
					(0.0050)
Size	-0.0282***	-0.0265***	-0.0248***	-0.0301***	-0.0201***
	(0.0008)	(0.0009)	(0.0008)	(0.0011)	(0.0010)
Size x 4th Quarter	0.00367***	0.00646***	0.00604***	0.00935***	0.00650***
	(0.0014)	(0.0014)	(0.0014)	(0.0018)	(0.0017)
Risk - Cash Flow Volatility	0.00138***	0.00176***	0.00162***	0.00168***	0.00168***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Risk x 4th Quarter	-0.000371	-0.000412	-0.000265	-0.000364	-0.000355
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Competition - Herfindahl Index	-0.000200***	-0.000215***	-0.000221***	-0.000218***	-0.000229***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Competition x 4th Quarter	0.00000196	0.00000693	0.0000103	0.00000293	0.0000235
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Governance Index	-0.00520***	-0.00493***	-0.00483***	-0.00512***	-0.00461***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Governance x 4th Quarter	-0.000576	-0.000874	-0.000873	-0.000755	-0.000560
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
4th Quarter Dummy	-0.000208	-0.00540	-0.00584	-0.0290*	-0.0195
	(0.0132)	(0.0148)	(0.0131)	(0.0155)	(0.0162)
December Year-End Dummy	-0.0155***	-0.0210***	-0.0214***	-0.0209***	-0.0207***
	(0.0038)	(0.0039)	(0.0039)	(0.0038)	(0.0039)
Net Working Capital	-0.265***	-0.271***	-0.271***	-0.270***	-0.271***
	(0.0072)	(0.0073)	(0.0073)	(0.0072)	(0.0072)
Capital Expenditure	-2.419***	-2.247***	-2.270***	-2.233***	-2.251***
	(0.0585)	(0.0576)	(0.0593)	(0.0570)	(0.0572)
Leverage	-0.289***	-0.290***	-0.297***	-0.291***	-0.275***
	(0.0069)	(0.0071)	(0.0070)	(0.0070)	(0.0075)
Market-to-Book Ratio	0.0303***	0.0315***	0.0323***	0.0310***	0.0317***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Sales	-0.135***	-0.134***	-0.134***	-0.133***	-0.134***
	(0.0043)	(0.0044)	(0.0043)	(0.0044)	(0.0044)
Sales Growth	0.00400	0.00878*	0.0104**	0.0108**	0.0101**
	(0.0046)	(0.0046)	(0.0046)	(0.0046)	(0.0045)
Dividend per Share	-1.911***	-3.432***	-3.677***	-3.898***	-3.755***
	(0.2629)	(0.2636)	(0.2598)	(0.2625)	(0.2588)
Cash Flow	-0.255***	-0.297***	-0.272***	-0.275***	-0.259***
	(0.0339)	(0.0352)	(0.0432)	(0.0348)	(0.0342)
N	19387	19314	19493	19493	19493
Adjusted R^2	0.4714	0.4502	0.4485	0.4501	0.4518

Table 2.6.B

Quarterly Cash Holdings Regressions including Interaction Terms without G-Index

The dependent variable in each regression model is the Cash-to-Asset Ratio. All variables are quarterly and are calculated as follows: Share Turnover: quarterly average of log (daily trading volume in shares divided by shares outstanding), Bid-Ask Spread: quarterly average of log (Daily Relative Bid-Ask Spread), Discretionary Accruals: income before extraordinary items minus cash flow from operations, S&P 500: equals 1 if firm is in S&P 500 Index and 0 otherwise, No Debt Rating: equals 1 if firm does not have S&P Debt Rating and 0 otherwise, Size: log of total assets normalized to 2008 dollars at the beginning of quarter, Risk - Cash Flow Volatility: coefficient of variation in quarterly cash flow over the past four years, Competition: Sales Herfindahl Index based on two-digit SIC code, 4th Quarter Dummy: equals 1 for 4th fiscal quarter and 0 otherwise, December Year-End Dummy: equals 1 equals 1 if a firm's fiscal year-end falls in December and 0 otherwise, Net Working Capital: current assets minus current liabilities minus cash and marketable securities scaled by total assets, Capital Expenditure: capital expenditures divided by total assets, Leverage: debt in current liabilities plus long term debt divided by total assets, Market to Book Ratio: common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter divided by total assets at the beginning of quarter, Sales: sales revenue (net) scaled by total assets, Sales Growth: the percentage change in sales from the same quarter of the previous year, Dividends Per Share: dividends per share scaled by the closing stock price, and Cash Flow: net income plus depreciation divided by total assets at the beginning of quarter. All models estimate ordinary least squares with Robust option and R2 is adjusted. Standard errors are reported in parentheses. Note: * means p<0.10, ** means p<0.05 and *** means p<0.01.

Variables	OLS 1	OLS 2	OLS 3	OLS 4	OLS 5
Constant	0.356***	0.409***	0.350***	0.343***	0.320***
	(0.0046)	(0.0046)	(0.0038)	(0.0040)	(0.0053)
Share Turnover	0.0233***				
	(0.0009)				
Share Turnover x 4th Quarter	-0.00148				
	(0.0016)				
Bid - Ask Spread		-0.0132***			
		(0.0007)			
Bid - Ask Spread x 4th Quarter		0.00506***			
		(0.0013)			
Discretionary Accruals			0.00961		
			(0.0197)		
Discretionary Accruals x 4th Quarter			-0.0158		
			(0.0250)		
S&P 500				-0.0154***	
				(0.0022)	
S&P 500 x 4th Quarter				-0.00478	
				(0.0043)	
No Debt Rating					0.0190***
					(0.0021)
No Debt Rating x 4th Quarter					0.00985***
					(0.0038)
Size	-0.0239***	-0.0253***	-0.0139***	-0.0125***	-0.0113***
	(0.0006)	(0.0005)	(0.0004)	(0.0005)	(0.0005)
Size x 4th Quarter	0.00663***	0.00441***	0.00239***	0.00254***	0.00322***
	(0.0009)	(0.0009)	(0.0007)	(0.0008)	(0.0009)
Risk - Cash Flow Volatility	0.000809***	0.000592***	0.000692***	0.000686***	0.000701***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Risk x 4th Quarter	-0.0000118	0.0000536	0.0000729	0.0000637	0.0000631
	(0.0003)	(0.0003)	(0.0002)	(0.0002)	(0.0002)
Competition - Herfindahl Index	-0.000304***	-0.000260***	-0.000407***	-0.000406***	-0.000409***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Competition x 4th Quarter	-0.00000403	0.00000510	0.000000338	0.00000126	0.00000943
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
4th Quarter Dummy	0.00867	-0.00523	0.00718	0.00746	-0.00516
	(0.0068)	(0.0060)	(0.0051)	(0.0055)	(0.0082)
December Year-End Dummy	-0.00930***	-0.00651**	-0.00903***	-0.00979***	-0.00901***
	(0.0030)	(0.0030)	(0.0027)	(0.0027)	(0.0027)
Net Working Capital	-0.252***	-0.253***	-0.150***	-0.151***	-0.149***
	(0.0068)	(0.0068)	(0.0040)	(0.0040)	(0.0040)
Capital Expenditure	-2.073***	-2.149***	-1.706***	-1.720***	-1.710***
	(0.0401)	(0.0403)	(0.0350)	(0.0342)	(0.0341)
Leverage	-0.317***	-0.318***	-0.294***	-0.296***	-0.285***
	(0.0055)	(0.0054)	(0.0041)	(0.0041)	(0.0043)
Market-to-Book Ratio	0.0294***	0.0278***	0.0270***	0.0275***	0.0269***
	(0.0009)	(0.0009)	(0.0007)	(0.0007)	(0.0007)
Sales	-0.168***	-0.166***	-0.182***	-0.182***	-0.183***
	(0.0040)	(0.0040)	(0.0033)	(0.0033)	(0.0034)
Sales Growth	0.00909***	0.00714***	0.00726***	0.00696***	0.00706***
	(0.0028)	(0.0028)	(0.0023)	(0.0023)	(0.0023)
Dividend per Share	-2.493***	-1.601***	-2.809***	-2.691***	-2.738***
	(0.1855)	(0.1853)	(0.1721)	(0.1725)	(0.1722)
Cash Flow	-0.150***	-0.121***	0.0556***	0.0580***	0.0549***
	(0.0263)	(0.0258)	(0.0186)	(0.0139)	(0.0138)
N	38857	38944	52503	52543	52543
Adjusted R^2	0.4407	0.4510	0.3693	0.3698	0.3707

Table 2.7.A:

Panel A:

Sources of Window Dressing in Cash Holdings - Percentage Window Dressing and Reversal

Window Dressing (WD) and Reversal (REV) values are first calculated for each firm year using formulas provided in Section 2.7. The mean values across the entire sample period between 1999 and 2008 are reported below. T-tests are conducted to confirm whether average WD and REV percentages are significantly higher or lower than zero respectively. P-Values are reported in parentheses. The variables are defined as follows: Inventory: total inventory scaled by the total assets, Receivables: total receivables divided by total assets, Other Current Assets: current assets minus cash holdings, inventory and receivables scaled by the total assets, Property, Plant and Equipment: property, plant and equipment normalized by total assets, Payables: total account payables scaled by total assets, Short-Term Debt: debt in current liabilities divided by total assets, Accruals and Other Liabilities: total current liabilities minus accounts payable minus debt in current liabilities scaled by total assets, Long-Term Debt: long term debt divided by total assets, Discretionary Accruals: Income before extraordinary items minus cash flow from operations scaled by total assets.

Variable	WD	REV
Inventory	-0.51	1.11
	(0.9944)	(1.0000)
Receivables	6.80	-4.75
	(0.0000)	(0.0000)
Other Current Assets	13.25	-0.80
	(0.0000)	(0.0028)
Property, Plant and Equipment	5.89	-0.97
	(0.0000)	(0.0000)
Payables	5.40	-2.84
	(0.0000)	(0.0000)
Short-Term Debt	76.51	-51.28
	(0.0000)	(0.0000)
Accruals & Other Current Liabilities	87.50	-54.52
	(0.0000)	(0.0000)
Long-term Debt	22.46	-22.35
	(0.0000)	(0.0000)
Discretionary Accruals	17.54	-0.51
	(0.0051)	(0.4696)

Panel B:

Sources of Window Dressings in Cash Holdings - Correlation Analysis

Window Dressing (WD) values for balance sheet accounts are first calculated for each firm year using formulas provided in Section 2.4 and 2.7. The Pair-wise and Spearman correlation coefficients are reported along with statistical significance. Note that * shows coefficient significance at 5% level. The variables are defined as follows: Cash Holdings: cash and marketable securities scaled by the total assets, Inventory: total inventory scaled by total assets, Receivables: total receivables divided by total assets, Other Current Assets: current assets minus cash holdings, inventory and receivables scaled by total assets, Property, Plant and Equipment: property, plant and equipment normalized by total assets, Payables: total account payables scaled by total assets, Short-Term Debt: debt in current liabilities divided by total assets, Accruals and Other Liabilities: total current liabilities minus accounts payable minus debt in current liabilities scaled by total assets, Long-Term Debt: long term debt divided by total assets, Discretionary Accruals: Income before extraordinary items minus cash flow from operations scaled by total assets.

Variable	WD - Cash Holdings	
	Pearson	Spearman
WD - Inventory	-0.0977*	-0.1913*
WD - Receivables	-0.0530*	-0.1511*
WD - Other Current Assets	-0.0148*	-0.0666*
WD - Payables	-0.0487*	-0.1103*
WD - Short-Term Debt	-0.0107*	-0.1044*
WD - Accruals & Other Current Liabilities	0.0167*	0.0318*
WD - Discretionary Accruals	0.0137*	0.0374*
WD - Long-Term Debt	0.001	-0.0649*
WD - Property, Plant & Equipment	-0.0474*	-0.1471*

Table 2.7.B

Sources of Window Dressing in Cash Holdings - Regression Analysis

The dependent variable in each regression model is window dressing in cash holdings. Window Dressing (WD) values for balance sheet accounts are first calculated for each firm year using formulas provided in Section 2.4 and 2.7. The variables are defined as follows: Cash Holdings: cash and marketable securities scaled by total assets, Inventory: total inventory scaled by total assets, Receivables: total receivables divided by total assets, Other Current Assets: current assets minus cash holdings, inventory and receivables scaled by total assets, Property, Plant and Equipment: property, plant and equipment normalized by total assets, Payables: total account payables scaled by total assets, Short-Term Debt: debt in current liabilities divided by total assets, Accruals and Other Liabilities: total current liabilities minus accounts payable minus debt in current liabilities scaled by total assets, Long-Term Debt: long term debt divided by total assets, Discretionary Accruals: Income before extraordinary items minus cash flow from operations scaled by total assets, and Size: log of total assets normalized to 2008 dollars at the beginning of quarter. All models estimate ordinary least squares with Robust option and R^2 is adjusted. Standard errors are reported in parentheses. Note: * means p<0.10, ** means p<0.05 and *** means p<0.01.

Variables	OLS 1	OLS 2
WD-Inventory	-0.379***	-0.367***
	(0.0341)	(0.0332)
WD-Receivables	-0.159***	-0.165***
	(0.0306)	(0.0305)
WD-Other Current Assets	-0.0356***	-0.0447***
	(0.0136)	(0.0130)
WD-Payables	-0.0914***	-0.0988***
	(0.0273)	(0.0265)
WD-Short-term Debt	-0.000991	-0.00146
	(0.0023)	(0.0023)
WD-Accruals and Other Current Liabilities	0.00325*	
	(0.0020)	
WD-Discretionary Accruals		0.00169**
		(0.0007)
WD-Long-term Debt	-0.000100	0.000243
	(0.0061)	(0.0060)
WD-Property, Plant and Equipment	-3.081***	-2.976***
	(0.3948)	(0.3899)
Size	-3.081***	-2.976***
	(0.3948)	(0.3899)
Constant	53.67***	53.17***
	(2.6750)	(2.6413)
Adjusted R^2	0.0168	0.0168
N	23969	23548

Table 2.8

Consequences of Window Dressing – Short-Term Debt Issue

First and fourth fiscal quarters average change-in-current-debt is compared for pooled sample, conservative and aggressive window dressing quartiles using t-test with unequal variances. The variable Change in Current Debt represents the net change in short-term borrowings and/or current maturities of long-term debt scaled by total assets. A positive value of change in current debt indicates a net short-term debt issue. The table reports mean values for each variable, difference in means and t-statistics. Note *** show that difference in means is statistically significant at the one percent level.

Variable	Fiscal Qtr	Obs	Mean	Difference	T-Stat
Change in Current Debt - Pooled Sample	1	25,682	0.00515	0.00511***	10.840
	4	19,793	0.00003		
Change in Current Debt - Conservative Quartile	1	5,331	0.0059	-0.00070	-0.553
	4	4,533	0.0066		
Change in Current Debt - Aggressive Quartile	1	5,610	0.0063	0.01042***	9.691
	4	4,731	-0.0041		

Appendix 2.A

Variable Definitions

Dependent Variable:

- Cash holdings: The ratio of quarterly cash and marketable securities to the value of the total assets.

Firm Characteristics:

- Cash flow volatility or risk: The coefficient of variation in quarterly cash flow over the past 16 quarters. Following Han and Qiu (2007), the coefficient of variation is calculated as the standard deviation of operating cash flows (net income plus depreciation) over the past 16 quarters divided by the absolute mean of cash flow over the past 16 quarters.
- Herfindahl Index: (Proxy for industry competition) Following Graham (2000) and Boone et al (2007), the Sales-Herfindahl Index is calculated as the sum of squared market share, where market share is firm sales divided by the total sales in the industry using the two-digit SIC code. A higher value for the Sales-Herfindahl Index indicates that the firm faces lower competition in its industry.
- Governance: This study uses the G-Index compiled by Gompers, Ishi, and Metrick (2003) from the Investor Responsibilities Research Center (IRRC) publications as a measure for corporate governance. A higher G-Index value (G≥14) signifies a poor/dictatorship governance structure whereas a lower G-Index value indicates strong/democratic governance structure. G-Index data for the years 1998 to 2006 are downloaded from Metrick's website (http://faculty.som.yale.edu/andrewmetrick/data.html). The G-Index data are available only for the years 1998, 2000, 2002, 2004, and 2006. Following the argument of Cremers and Nair (2005), for intervening years and after 2006 the prior year's data are used in this study. For the same reason, the G-Index is assumed to be the same during all four quarters in a given calendar year.

- Information Asymmetry Measures:
    - Bid-ask spread: Following Mohd (2005), the quarterly relative bid-ask spread is calculated as the quarterly average of log (daily absolute spread divided by the average of bid-ask spread). A higher bid-ask spread corresponds to higher asymmetric information.
    - Share turnover: Again, following Mohd, quarterly share turnover is calculated as the quarterly average of log (daily trading volume in shares divided by shares outstanding). Higher share turnover indicates lower asymmetric information.
    - Discretionary Accruals: Following Dechow and Dichev (2002), discretionary accruals are calculated as earnings before extraordinary items minus cash flow from operations. Higher levels of discretionary accruals correspond to greater asymmetric information.
    - S&P 500: Following Bharath et al (2011), inclusion of a firm in the S&P 500 is used as a measure of information asymmetry. This dummy variable equals 1 if the firm is in the S&P 500 Index in a given fiscal quarter and 0 otherwise. A firm in the S&P 500 Index means that the firm has lower asymmetric information.
    - No Debt Rating: Following Bharath et al (2011), this measure depends on whether or not a firm has an S&P Debt Rating. A dummy variable equal to 1 is used if the firm does not have a S&P Senior Secured Debt rating in a given fiscal quarter and 0 otherwise. A firm with no debt rating would indicate higher asymmetric information.
- Size: The natural log of book value of quarterly total assets normalized to 2008 dollars at the beginning of the quarter.

Control Variables:

- Capital expenditure: The ratio of quarterly "capital expenditures" to the book value of total assets.
- Cash Flow: The sum of quarterly income before extraordinary items plus depreciation divided by the book value of total assets.

- December Fiscal Year-End Dummy: This is used to control for a seasonal effect (Christmas/holiday shopping), generating higher than normal cash flows during the month of December. This dummy equals 1 if the fiscal year end falls in the month of December.
- Dividends Per Share: The quarterly dividends per share scaled by the closing stock price for the same quarter.
- Inventory: The quarterly inventory divided by the book value of quarterly total assets.
- Leverage: The sum of quarterly total long term debt plus quarterly debt in current liabilities scaled by the book value of the total assets at the beginning of the quarter.
- Market to Book: (Proxy for growth opportunities) The common shares outstanding times quarterly closing stock price plus quarterly total assets minus quarterly common and ordinary equity at the beginning of the quarter, divided by the book value of the total assets at the beginning of the quarter.
- Net working capital: The ratio of quarterly total current assets minus total current liabilities minus cash and marketable securities to the book value of total assets.
- Sales Growth: The change in sales from the same quarter of the previous fiscal year.
- Sales: The quarterly net sales/revenue scaled by the book value of the total assets. Note: To avoid outliers, observations with sales to asset ratios exceeding 100% are removed.

Other Variables

- Accruals and other current liabilities: The quarterly total current liabilities minus quarterly accounts payable minus quarterly debt in current liabilities, scaled by the book value of quarterly total assets. This measure mainly reflects the quarterly "accrued liabilities".
- Long-term debt: The quarterly total long term debt divided by the book value of total assets.
- Net short-term debt issue: The quarterly net short-term debt changes scaled by the book value of total assets.

- Payables: The ratio of quarterly accounts payables to the book value of total assets.
- Property, plant and equipment: Quarterly property, plant and equipment scaled by the book value of total assets.
- Receivables: The quarterly total receivables scaled by the book value of total assets.
- Short-term debt: Quarterly debt in current liabilities divided by the book value of total assets.

3. Chapter Three

Market Effects of SEC Regulation of Short-term Borrowing Disclosure

3.1. Introduction

Excessive bank borrowing was one of the key triggers of the 2008 financial crisis that led to the failure of banks such as Lehman Brothers. In March 2010, Lehman's bankruptcy examiner confirmed that window-dressing had been used to move improperly $50 billion off the firm's balance sheet by misclassifying short-term trades as sales. In April 2010, the *Wall Street Journal* reported similar window-dressing by eighteen major banks, to mask their risk levels. Then, on April 21, 2010, the Securities and Exchange Commission (SEC) announced that the agency was considering a new rule to deter window-dressing of short-term debt and might impose new rules on all registrants. Later, on September 17, 2010, the SEC unanimously voted for a proposed "Short-Term Borrowing Disclosure Rule", which would require additional quantitative and qualitative disclosure about short-term borrowing. The SEC intended to make the rule applicable to all registrants, though enhanced disclosure would be required of financial firms. Further, the proposed rule would change the definition of financial firms to include many non-banking financial institutions. The proposal was posted for public comment for a period of sixty days and, as of June, 2013, has not been yet implemented.

The value of the proposed rule depends on the tradeoff between the costs to registrants and benefits to investors, and the challenge for the SEC is to determine the overall impact of the rule before it is implemented. The SEC intended to use public comment as a tool for this purpose. However, I argue that this mechanism is extremely limited in properly identifying the cost-benefit tradeoff for two reasons. First, comments, predominantly posted by SEC registrants or their service providers, may not represent the view of investors. Only one out of the thirty-six comments posted is from an investor. Second, the comments were mixed and did not indicate clear support for the proposed rule.

To address these limitations, this study offers an alternative approach to measuring the cost-benefit tradeoff, by analyzing stockholders' reactions to the announcement and vote on the proposed rule. More specifically, I use event study methodology to investigate the stock price reaction on two key dates; that is, the announcement date (April 21, 2010) and the voting date (September 17, 2010), and argue that positive abnormal stock returns indicate that the expected benefits of the regulation outweigh the compliance costs. A negative reaction would indicate that, in the eyes of investors, the costs of compliance exceed the expected benefits.

I apply the market model to equal-weighted portfolios of 2,450 financial and 3,985 non-financial U.S. firms to calculate mean cumulative abnormal stock returns (MCARs, hereafter) on the announcement and voting dates. The results for financial and non-financial firms differ, as do the results for the announcement

and voting dates. Specifically, I observe a positive (negative) reaction on the announcement (voting) date for financial firms and a negative (positive) reaction on the announcement (voting) date for non-financial firms. Mean difference tests on firm-level MCARs across three event windows, that is, (-30,-1), (0,+1) and (+2,+30), confirm that the MCARs of financial firms are different from those of non-financial firms at the one percent level on both the announcement and the voting dates. On the announcement date, consistent with the public interest theory of market regulation, the results suggests that stockholders believe that the benefits from additional disclosure by financial (non-financial) firms exceed (fall short of) the additional costs. However, on the voting date, when the details about the amount and structure of the disclosure became public, the stockholders in both groups of firms react negatively. The results are robust to alternate specifications inasmuch as value-weighted portfolios produce similar results.

The proposed rule would impose minimal costs on bank holding companies (BHCs), which are currently required to make similar disclosures under the "Statistical Disclosure by Bank Holding Companies" (Guide 3, hereafter) of the Securities Act Industries Guides[2]. Consequently, assuming similar benefits of disclosure by BHCs and financial firms generally, I argue that the benefits of the proposed disclosure would outweigh the potential costs for BHCs. Consistent with this argument, I find a more significant and statistically different reaction by investors in BHC's than other financial firms to both the

[2] Securities Act Industry Guides, available at http://www.sec.gov/about/forms/industryguides.pdf

announcement of, and vote on, the proposed rule. Similarly, assuming that the proposed disclosure rule may have a different effect on OTC versus exchange traded financial firms, and on commercial banks versus saving institutions, I analyze these subsamples. For exchange-traded firms, I find that stockholders expect a net benefit. However, the stockholders reaction does not indicate any difference in the tradeoff for commercial banks versus saving institutions. Finally, given empirical evidence indicating a disproportionate effect of SEC regulations on smaller firms (Chow, 1983; Ahmed and Schneible, 2007; Leuz and Wysocki, 2008; and Ahmed et al, 2010), I test for variations in stockholder reaction among size-based quartiles. The results confirm the disproportionate effect on smaller firms, with higher expected net benefits for stockholders of large financial firms, including BHCs and non-financial firms. These findings are consistent with prior theoretical and empirical evidence that a one-size-fits-all approach to regulation may not be optimal.

This study contributes to the finance literature in several ways. First, this is the first empirical study, to the best of my knowledge, to explore stockholder reaction to a proposed, rather than an enforced, SEC regulation. Second, by providing an unbiased view regarding the value of the proposed disclosure from the vantage point of investors, the findings of the study contribute to the SEC's final decision on the rule. Third, given a dissimilar reaction from investors of different firms, depending on the nature and size of their businesses, the results suggest that the SEC needs to reconsider its one-size-fit-all approach for the

proposed rule. Fourth, because the proposed disclosure would affect all SEC registrants, the economic implications of my findings are important not only for stockholders, but also for regulators, as they attempt to manage systematic risk and optimize the level of market intervention. Finally, the findings of this paper complement the comments posted by various stakeholders in the SEC review process.

The rest of the paper is organized as follows. Section 3.2 reviews the background of the proposed short-term borrowing disclosure rule. Section 3.3 presents the theory and empirical evidence related to SEC disclosure regulations and develops the empirical predictions. Section 3.4 describes the sample selection and empirical methodology, Section 3.5 reports the main results and Section 3.6 reports empirical results for restricted samples based on firm characteristics. Finally, Section 3.7 concludes the study.

3.2. Background of the Proposed Short-term Borrowing Disclosure Rule

The 2008 financial crisis, one of the worst in the history of financial markets, was triggered, at least in part, by excessive bank borrowing that led to the failures of investment banks Lehman Brothers and Bear Stearns (Kelly et al, 2010). Investigating the reasons for Lehman's failure, its bankruptcy examiner stated in March 2010 that "Lehman improperly moved $50 billion off its balance sheet by misclassifying short-term trades as "sales", when they should have been classified as borrowings" (Rapoport, 2010), a practice labeled as balance sheet

window dressing[3]. In early April 2010, the Wall Street Journal reported that eighteen major banks, including Goldman Sachs, Morgan Stanley, J.P. Morgan Chase, Bank of America and Citigroup, had disguised their risk levels in the previous five quarters by temporarily reducing the debt just before issuing reports to the public. The average amount of debt outstanding was 42% below its peak at the quarter end and then jumped back up in the subsequent quarter (Kelly et al, 2010). Such reports of balance sheet window dressing by large banks led to a SEC inquiry. In April 2010, at a hearing of the House Committee on Financial Services, the SEC chairwoman disclosed that the agency is "considering new rules that would prevent financial firms from masking the risks they take by temporarily lowering their debt levels before quarterly reports to the public are due" (McGinty et al, 2010). The current disclosure rules only mandate bank holding companies to disclose the average debt balance in their annual reports. Quoting an unnamed SEC official, it was reported that the agency is "considering extending this disclosure requirement to all companies" and "mulling whether those figures should be made public to the shareholders every quarter rather than just once a year" (McGinty et al). Later, on September 17, 2010, the SEC unanimously voted for a proposed "Short-Term Borrowing Disclosure Rule"[4] requiring additional quantitative and qualitative disclosure about short-term

[3] Window dressing is defined as "the use of short term financial transactions to manipulate accounting values around the quarter-end dates" (Allen and Saunders, 1992) or "the practice of certain companies of temporarily arranging their affairs in order to make a more favorable impression on a specific date than actual conditions warrant" (Johnson, 1969).

[4] Short-term Borrowing Disclosure Rule (17 CFR Parts 229 and 249, SEC Release Nos. 33-9143; 34-62932).

borrowing in the Management Discussion and Analysis (MD&A) section of a firm's interim and annual reports to shareholders, with the primary objective of improving investors' understanding of whether the short-term borrowing disclosed at the end of the quarter was consistent with the amounts outstanding throughout the quarter. The proposed rule would build on the disclosure required under Guide 3, but with significantly more detailed intra-period information regarding firms' financing activities. The SEC further announced that the proposed rule would be applicable to all SEC registrants including non-financial firms. However, financial firms would have to provide significantly more information than non-financial firms. In addition, the proposed rule changed the definition of a financial firm to include many non-banking financial institutions[5]. The proposal was opened to public comment for a period of 60 days ending November 29, 2010, with the agency specifically requesting forty comments on several components of the proposed regulation.

Consistent with its objective to improve disclosure about funding and liquidity risk, a review of the requested comments reveals that the SEC solicited comments primarily on two issues: First, whether or not the enhanced disclosure of short-term borrowing is useful to investors. For example, the first request for comment in Section II of the discussion of proposed amendments (Comment # 1;

[5] Companies engaged to a significant extent in the business of lending, deposit taking, insurance underwriting, providing investment advice, and as a broker or dealer, as defined in Section 3.3 of the Exchange Act. In addition, financial companies would include an entity that is, or is the holding company of, a bank, savings association, insurance company, broker, dealer, business development company, investment advisor, commodity trading advisor, commodity pool operator, or mortgage real estate investment trust (SEC, 2010).

SEC, 2010) states: “Is information about short-term borrowings and intra-period variations in the level of short-term borrowings useful to investors?” Likewise, another request was concerned with whether requiring non-banking firms to provide the largest daily amount of short-term borrowings would be useful to investors, especially when non-banks may not currently track such information on a daily basis. Second, despite arguing that the benefits of the proposed disclosure of short-term borrowing outweighed the associated costs, the SEC still seemed concerned about an undue burden and cost of the amended disclosure, particularly for non-banking companies, foreign private issuers, and smaller reporting firms. For instance, with regard to reporting the largest daily amount of short-term borrowing, the agency asked (Comment # 6; SEC, 2010): “What are the burdens and costs of requiring registrants that meet the definition of “financial company” but are not banks to meet that requirement”. Similarly, Comment # 8 (SEC, 2010) states: “Do registrants that are not financial companies have systems to track and calculate this information on a daily basis? What are the burdens and costs of requiring companies engaged in non-financial businesses to meet the requirement?”

Taken as a whole, I argue that the success of the proposed rule depends on whether or not the enhanced disclosure is useful to investors in helping them better understand a firm’s ongoing liquidity and credit risks and whether the expected and/or perceived benefits outweigh the additional costs of the enhanced disclosure. In other words, the effectiveness of the proposed regulation depends

on the tradeoff between disclosure benefits and costs, and it is, therefore, important to identify the net tradeoff.

The SEC apparently intended to use the posted comments to determine the net tradeoff of the proposed rule. Consequently, I review the comments[6] provided by various stakeholders. Based on this review, I believe that the posted comments do not provide an objective cost-benefit analysis for several reasons. First, there is only one comment, out of thirty-six, from a stockholder (institutional investor), whereas, more than two thirds of the posted comments are either from affected firms or representatives, such as bankers' associations, accounting and auditing firms, and corporate lawyers. This suggests that the comments may not represent the views of investors. Second, the posted comments indicate a mixed reaction in terms of the tradeoff between the costs and benefits of the proposed regulation. The proponents (mainly politicians) argue that the proposed rule would deter balance sheet window-dressing through short-term borrowing, and help investors, regulators, policy makers and analysts gain a better understanding of a company's ongoing liquidity, leverage position and funding risk. Further, they argue, disclosure would impose market discipline and give regulators a better picture of systematic risk problems without any undue burden on companies to identify and report such information[7]. Critics of the proposed rule, mainly affected firms and their representatives, argue that the expected costs and efforts to comply may be

[6] Available at http://www.sec.gov/comments/s7-22-10/s72210.shtml on the SEC's website.
[7] See comment (No. s72210-35) by U.S. Senators at http://www.sec.gov/comments/s7-22-10/s72210-35.pdf

higher than the expected benefits, particularly for smaller firms, foreign private issuers, and non-banking financial institutions such as investment advisors, real estate investment trusts and non-financial (industrial) firms.

The posted comments thus focus on the costs of the proposed rule rather than its benefits. Moreover, comments suggesting burdensome and unnecessary costs may represent a biased view, reflecting not only a concern about the direct costs, but also indirect costs, such as the release of proprietary information to competitors (Leuz and Wysocki, 2008). Therefore, evaluating the effectiveness of the proposed rule by considering only the comments may be insufficient. I argue that the best measure of the usefulness of the proposed rule could come from the recipients and users of the disclosed information, that is, investors. On the other hand, the suppliers of information, that is, the affected firms, can best identify the real additional costs of compliance. In fact, I argue that the SEC needs an alternate approach to probe objectively investor opinion about the true costs and benefits of the proposed rule, which is the goal of the present study.

3.3. Theory and Empirical Predictions

3.3.1. Theory of Regulation

This section briefly discusses economic models and the framing of disclosure regulations, historical evidence on the cost-benefit tradeoff of disclosure requirements in the U.S., and the cross-sectional differences in their effects.

3.3.1.1. Economic models and framing of disclosure regulation

The extant literature provides several economic motivations for a disclosure regulation, ranging from the public interest to the special interest model. Given its fundamental role of ensuring that public companies disclose material information to investors, the SEC's regulations are best viewed as based on the "public interest model", which argues that "regulations respond to market failure as an attempt to improve social welfare" (Mulherin, 2007). For instance, it is argued that without the SEC, there would be a suboptimal amount of information provided to investors (Coffee, 1984). Similarly, there is evidence that the private provision of information is fraught with the risk of market failure (Stiglitz, 2002) because lack of full disclosure undermines investor confidence (Dillon, 2001).

In contrast, few critics question whether the mandate of the SEC protects investors better than alternatives, such as rules adopted by stock exchanges and reputational forces in the marketplace. Thus, some researchers frame SEC regulations as an example of the special interest model, which predicts that "regulation responds to various political groups such as regulations aimed at benefiting producers rather than consumer groups" (Mulherin). For example, Mahoney (2001) argued that imposing rules on how and when information is disclosed subtly creates entry barriers that benefit the special interests of incumbent investment banks. Similarly, Stigler (1964) suggested that information

costs money, and no society is rich enough to acquire all of the available information.

The resolution of whether or not a particular SEC regulation is best framed in terms of the public interest model is ultimately an empirical question (Mulherin, 2007). Hence, investor reaction to the announcement and voting of the proposed rule on short-term borrowing disclosure will determine whether or not it is consistent with the public interest.

3.3.1.2. Evidence on the cost-benefit tradeoff of disclosure regulations

Prior evidence on the net benefits of SEC regulations is mixed. One stream of literature reports a variety of costs related to SEC regulations. For instance, there is evidence that the creation of the SEC has reduced market liquidity (Dolley, 1938), failed to provide savings to issuers of new issues (Stigler, 1964), increased variance of post-issue performance (Simon, 1989), and failed to reduce information asymmetry (Mahoney and Mei, 2006). Similarly, Chow (1983) argues that the introduction of the 1933 Securities Act has had negative wealth consequences for shareholders of regulated firms as opposed to OTC traded firms. In a recent paper, Farvaque et al (2009) argue that disclosing information involves both direct (communication and audit) and indirect (proprietary information leakage to competitors, increased managerial suboptimal behavior by hiding their activities in order to protect the private gains and to

reduce external monitoring) costs. These costs foster increased informational asymmetry between managers and investors, because the former manipulate information and the latter are discouraged from seeking more information. Moreover, according to Farvaque et al, the arguments for social benefits from increased disclosure are less convincing than those for private advantages inasmuch as it is not certain that disclosure leads to stability in financial markets. Similarly, Leuz and Wysocki (2008) doubt the success of unilateral disclosure rule changes. They argue that the global diversity in institutional and economic factors provides support and alternative resources for firm avoidance strategies and impairs the effectiveness of regulation. Their study provides evidence of substantial firm-specific, as well as market-wide, costs associated with SEC regulation.

On the other hand, several studies provide evidence indicating benefits from SEC regulation. Greenstone et al (2006) report that extension of SEC disclosure to the OTC market resulted in positive returns, while Ferrell (2003) finds that regulation reduced the volatility of returns for OTC firms relative to exchange listed companies. Likewise, Farvaque et al (2009) argue that corporate disclosure is desirable as it reduces the cost of capital and creates value. In addition, Leuz and Wysocki (2008) provide evidence for firm-specific as well as market-wide benefits of disclosure. The firm-specific benefits include the mitigation of adverse selection problems, increased market liquidity, reduced uncertainty about firm value, improved managerial decisions and reduced

amounts appropriated by managers for themselves, as a result of greater transparency and better corporate governance. In terms of market-wide benefits, corporate disclosure reduces agency problems in other firms through information transfer and governance spillover effects.

The empirical evidence on the effects of recent SEC regulations is, once again, mixed. For instance, for the Sarbanes-Oxley Act of 2002 (SOX)[8], some studies document an overall positive effect on the U.S. stock market (Chhaochharia and Grinstein, 2007; Jain and Rezaee, 2006; Li et al, 2008) or positive governance effects such as increases in the size, independence and meeting frequency of corporate boards (Linck et al, 2009). Others report negative effects on the U.S. stock market, generally (Zhang, 2007; Litvak, 2007), depending on firm size (Wintoki, 2007), and in terms of higher governance costs (Linck et al). Recently, Ahmed et al (2010) reported that, despite its intention to improve the accuracy and reliability of disclosure, SOX led to increased costs in the form of lower operating cash flows and operating profitability for up to four years after it was introduced.

Taken as a whole, the literature fails to provide a clear indication of the net benefits or costs of SEC regulation and suggests using other approaches for investigating the impact on investors of the introduction of a new rule.

[8] This act requires that corporations have independent audit committees, prohibits corporate loans to officers, and requires executive certification of financial statements (Karmel, 2005)

3.3.1.3. Cross-sectional differences in the effects of SEC regulation

Despite the inconclusive evidence on the benefits of SEC regulation overall, the literature seems to agree that there are differential effects of new SEC rules on various cross-sections of registrants, depending on firm characteristics such as size, age, nature of business and operations, and growth opportunities. For instance, regulations appear to have different effects on small versus large firms (Chow, 1983; Ahmed and Schneible, 2007; Leuz and Wysocki, 2008; and Ahmed et al, 2010). Fixed disclosure costs lead to economies of scale and can make certain disclosures burdensome for small firms. Similarly, there is evidence of disproportionately larger effects of SEC regulations on firms in the high technology sector (Ahmed and Schneible, 2007), with complex operations (Ahmed et al), that are young (Wintoki, 2007) and with low growth potential (Ahmed et al, Wintoki). Overall, it is argued that the "one-size-fit-all" approach is not appropriate for disclosure regulations (Mulherin, 2007; Leuz and Wysocki). Consequently, I undertake an analysis of investor reaction to the proposed SEC regulation across various sub-samples of firms in order to assess properly the effectiveness of the one-size-fits-all approach.

3.3.2. Empirical Predictions

Given the limitations of posted comments as a means of identifying the net cost-benefit tradeoff of the proposed rule, I argue that investor response is the best indicator. As a result, this paper analyzes stockholders reaction to the proposed

rule. Specifically, I hypothesize that a positive abnormal stock return around the event date(s) would indicate that the expected benefits of the regulation outweigh the compliance costs. Alternatively, a negative abnormal stock return around the event date(s) would indicate that in the eyes of the stockholders, the incremental costs of compliance exceed the expected benefits.

In addition, the literature suggests two major challenges to analyzing the costs and benefits of a SEC regulation. First, the predicted or intended effects depend on the underlying economic model (Mulherin, 2007). For example, a regulation that imposes entry barriers could be framed as serving the public interest or special interests. The public interest view may consider it as a measure to discourage fraudulent firms, while others may see it as inhibiting competition. Second, a proper framing of the underlying model is important to identify any unintended consequences of regulation. For instance, Peltzman (1973) argues that seat belt laws, though reducing driver deaths (intended consequence), may result in faster driving and thus more pedestrian deaths (unintended consequence). Consequently, considering the information content released on each event date and type of firm (that is, financial versus non-financial), I develop multiple predictions of how shareholders will react.

First, on both announcement and voting dates, I expect a different reaction depending on whether or not stockholders frame the proposed rule consistent with the public interest theory of regulation. On one hand, assuming that the proposed rule as a response to a financial crisis is consistent with the public interest theory

of market regulation, I would expect a positive stock price reaction, suggesting that investors expect additional disclosure benefits to exceed the additional costs. In contrast, if the proposed regulation is perceived as a manifestation of the reaction of the special interest model, I would anticipate a negative stock reaction, indicating that the costs of additional disclosure exceed the expected benefits.

Second, on both event dates, I anticipate different and possibly opposite reactions from the stockholders of financial and non-financial firms for several reasons. Since the proposed rule is in response to a market failure, the public interest theory of market regulation predicts a positive reaction - in particular, from investors in financial firms - suggesting they believe that the benefit from the additional disclosure exceeds the additional costs. There are two possible reasons for this: First, since almost all the evidence of balance-sheet window dressing using short-term debt comes from financial firms – in particular, eighteen large U.S. banks – shareholders of such firms may desire additional disclosure. Similarly, financial firms likely have better access to short-term liquid instruments – such as repurchase agreements – used for window-dressing purposes.

Finally, since the two event dates are nearly five months apart, and provide significantly different information, I expect a different stockholders reaction for each event. The first event is the SEC's announcement of its intention to consider stricter disclosure (the "announcement date"; April 21, 2010) and the second is when the SEC unanimously voted in favor of the enhanced disclosure

and released the details (the "voting date"; September 17, 2010). The structure and amount of prescribed disclosure proposed on the voting date went beyond what was proposed in the SEC's initial announcement in April 2010. For example, it was initially suggested that the SEC might extend the existing rules applicable to bank holding companies (as per Guide 3) to all financial firms or to all SEC registrants, and, also increase the frequency of the disclosure from annual to quarterly reports. However, the SEC voted to require not only quarterly disclosure of short-term borrowing activities, but also disclosure of maximum, minimum and average amounts for various short-term borrowing accounts on a daily and, possibly, intraday basis. Furthermore, the definition of financial firms was amended to include all banks or their holding companies, rather than just large banks, as well as several other non-banking financial institutions. This also went beyond the recommendation by Lehman's bankruptcy examiner that he would like to "see 'hard and fast' regulatory requirements for liquidity levels and risk limits for the most important financial firms" (Phillips, 2010). Finally, the rules approved by the SEC in September would be applicable to foreign private issuers who were exempt from Guide 3 disclosure previously.

Overall, my empirical predictions are consistent with the argument by Mulherin (2007) that the question of whether a SEC regulation is consistent with the public interest model is best resolved through empirical research.

3.4. Sample Selection and Empirical Methodology

3.4.1. Data and Sample Construction

This study uses Eventus software from Cowan Research, L.C., available through Wharton Research Database Services (WRDS), to conduct the event study analysis. Eventus, using company identifiers such as "PERMNO" or "CUSIP" and event dates, performs the analysis with stock price data from the Centre for Research in Security Prices (CRSP) dataset. Consistent with the SEC's intention to apply the new rule to all registrants, the study uses the sample of all publically traded firms available in the CRSP database daily stock header file.

I then create portfolios of financial and non-financial firms, bank holding companies, OTC versus exchange traded firms, and commercial banks versus savings institutions using SIC and stock exchanges codes. Similarly, to create size quartiles based on market value of the equity, the stock price and shares outstanding data are sourced from the CRSP Monthly Stock file.

Next, the amended definition of a financial company in the proposed rule is used to create two portfolios of "financial" and "non-financial" firms. Specifically, consistent with the proposed definition of a financial company, the firms in 2-digit SIC codes 60 to 65 and 67 constitute a portfolio of financial firms resulting in an initial sample of 7,111 firms. This portfolio includes firms labeled as depository and non-depository credit institutions, security and commodity brokers, dealers, exchanges and services, insurance carriers, insurance agents,

brokers and services, real estate firms and holding and other investment offices. The portfolio of non-financial firms is created by including all firms that do not belong to the financial firm portfolio, resulting in an initial sample of 21,712 firms.

In order to investigate the cross-sectional differences in the effects of the proposed regulation, event study analysis is conducted on several sub-samples. First, I create a separate portfolio of bank holding companies by downloading the updated list of such firms from the Bank Regulatory Database available at WRDS, yielding a sample of 290 companies. Second, consistent with theoretical predictions about the disproportionate effect of SEC regulations, I create sub-samples of OTC versus exchange traded firms. The firms traded on one of the three major stock exchanges, namely, AMEX, NYSE, and NASDAQ, are included in the exchange traded firms sub-sample, while the remaining firms are included in the OTC traded firms sub-sample. The initial sub-samples contain 6,072 exchange traded and 1,039 OTC traded firms. In addition, using 3-digit SIC codes, I create two sub-samples of commercial banks (SIC code 602) and savings institutions (SIC code 603) with 344 and 206 firms, respectively. Finally, since the prior studies have found differential effects of SEC regulations on small versus large firms, I create size quartiles of financial, non-financial and bank holding firms portfolios based on the market value of equity.

3.4.2. Event Date(s) Selection

Given the nature of the regulatory process, which extends over a long period of time, from the initial proposal in a congressional committee to actual passage and implementation, it is difficult to identify precisely the date when the market responds to a new regulation. In fact, the regulatory process may involve multiple event dates when new material information is announced. Consequently, to increase the statistical reliability of the results, the literature suggests several measures. First, it is important to specify carefully key dates throughout the regulatory process before choosing the final event date(s) (Binder, 1985). Second, it is customary to include in the event window the event day plus/minus a number of days or weeks (Campbell et al, 1997; Henderson, 1990). The multiple-day event window helps to capture abnormal stock returns in the event of leakage of information before the formal announcement as well as accommodate the case when the event announcement occurred after the stock market close. Third, Brown and Warner (1985) recommend consulting the Wall Street Journal (WSJ, hereafter) to determine more accurately the event date(s).

I, therefore, document ten dates related to the proposed rule that appeared in the WSJ during a seven month period and create an event chart as shown in Figure 3.1.

<Insert Figure 3.1 here>

This analysis highlights two dates of particular interest. The first is April 21, 2010, when it became public that the SEC's chairwoman disclosed at a hearing of the House Committee on Financial Services that the agency was considering new disclosure rules to curb bank window dressing. This I refer to as the announcement date. It could be argued that declaration of the SEC intention to consider new disclosure rules to control bank window dressing with short-term debt may suffice as the sole event date as most of the stock price reaction would be observed around this date. However, given the nature of the regulatory process, I suggest that there is a second important date, September 17, 2010, when the SEC unanimously voted in favor of the proposed regulation and released its details. This event, called the voting date, presents a significant surprise to the market and reveals new material information about the proposed regulation in the market and possibly precipitates further investor reaction.

3.4.3. Event Study Methodology

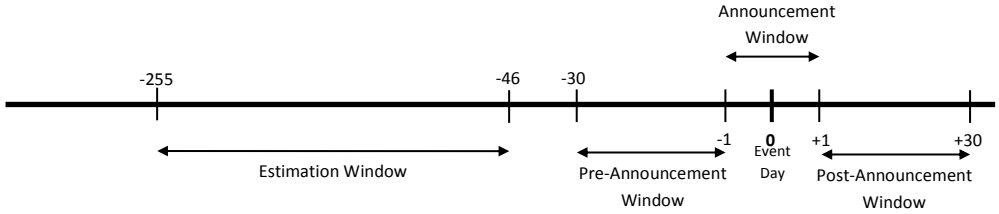
This sub-section focuses on the two important steps related to event study methodology, namely, the estimation of abnormal stock returns (ARs, hereafter) and the cross-sectional aggregation of ARs across time and firms. A single factor market model is used to estimate the ARs. This model predicts that in the absence of an event, the security or portfolio earns a return equal to the return on the market portfolio (Henderson, 1990). Campbell, Lo and MacKinlay (CLM, hereafter, 1997) argue that the market model is preferred to other models of measuring normal performance such as the constant-mean-return model or a

multifactor economic model for two reasons. First, it has greater capacity for detecting event effects, especially compared to the constant-mean-return model, inasmuch as it reduces the variance of abnormal returns by removing the portion of return related to variations in market factors. Second, gains from applying multifactor economic models, such as CAPM or APT, are limited because of the marginal increase in explanatory power of additional factors beyond the market factor. Specifically, the following model is used to estimate the ARs.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it} \,, \tag{3.1}$$

where R_{it} is the period t return on security i, R_{mt} is the period t return on the market portfolio and α_i, β_i and ϵ_{it} are model parameters. The further specification of the model and its assumption are discussed in CLM (1997).

Next, I choose an event study time line, as shown below. I use a period between -46 and -255 to estimate the market model parameters with daily data over approximately the number of trading days in a calendar year.



The use of daily data with irregular returns could potentially lead to a nonsynchronous trading problem (Henderson, 1990). To reduce such bias, the analysis uses a minimum of 30 days of return data for estimation of the market model parameters. This condition substantially reduces the size of various

portfolios. For instance, the number of firms in financial and non-financial portfolios drops from 7,111 and 21,715 to 2,450 and 3,985, respectively. The estimation of the market model requires the return on a market portfolio, and the literature, in general, suggests using either the CRSP equal-weighted or value-weighted index (CLM, 1997). However, Corrado and Troung (2008) argue that tests based on the CRSP equal-weighted index provide improved test specification over tests based on the CRSP value-weighted index for U.S. stocks. Therefore, this study reports results using the CRSP equal-weighted index to estimate the parameters of the market model. However, as a robustness check, I also use the CRSP value-weighted index for estimation of the model parameters and obtain qualitatively similar results (not reported).

Next, the study aggregates the ARs across time and firms to calculate the MCARs. The ARs are aggregated across time using the following three event windows: 1) the pre-announcement window (-30, -1), representing a 30-day period from thirty days prior to the event to one day before the event; 2) the announcement window (0, +1), representing a 2-day period between the event date and the day after; and 3) the post-announcement window (+2, +30), representing a 29-day period from two days after the event to thirty days after the event. Inasmuch as the nature of regulatory change is such that it affects firms simultaneously and violates the key assumption of independence of asset returns, this clustering of event dates could compromise the statistical power of the event study analysis. One of the prescribed solutions to deal with the clustering effect is

to conduct the analysis at the portfolio level (Mulherin, 2007). Consequently, I aggregate the ARs based on several portfolios such as financial and non-financial firms and bank holding companies.

In addition, as suggested by Boehmer et al (1991), this study chooses a combination of parametric and non-parametric test statistics to confirm the statistical significance of the MCARs. Thus, I use traditional Patell's Standardized Residual method as a parametric test statistic and the Generalized Sign Test as a non-parametric test statistic. This combination of tests is helpful to identify if the results are driven by few firms. The statistical assumptions and properties of these test statistics are available in Boehmer et al (1991) and CLM (1997).

Finally, to verify the statistical difference between the MCARs across three event windows (pre-announcement, announcement and post-announcement) for various portfolios, such as financial versus non-financial, I conduct mean difference tests with unequal variance using firm-level MCARs.

3.5. Stockholders Reaction to the Proposed Rule

3.5.1. The Announcement Date

The market model is applied to equal-weighted portfolios of 2,450 financial and 3,985 non-financial U.S. firms to calculate MCARs on the 'announcement' date (April 21, 2010). The financial firms' portfolio earns a positive and statistically significant MCAR of 3.04% across the 61-day event

window. The mean abnormal returns (MARs, hereafter) and MCARs for the financial portfolio are tabulated in Table 3.1 – Panel A and plotted in Figure 3.2.

<Insert Table 3.1 and Figure 3.2 here>

The MCAR for the financial firms is 1.05% during the pre-announcement window, 0.30% during the announcement window and 2.06% during the post-announcement window. Using the parametric Patell's test, the MCARs are statistically significant at one percent for the pre-announcement window and less than one percent for the announcement and post-announcement windows. On the other hand, when the non-parametric Generalized Sign Test is used, the MCARs are still statistically significant at less than the one percent level during the announcement and post-announcement windows, but insignificant for the pre-announcement window, suggesting that the MCAR for the pre-announcement window may be driven by a few firms. Overall, the reaction of investors in financial firms is consistent with the public interest theory of market regulation, the objectives of the proposed rule, and the arguments of the proponents of corporate disclosure. The positive reaction suggests that stockholders believe that the benefits of additional disclosure by financial firms exceed the additional costs.

Analyzing the pooled sample of 3,985 non-financial U.S. firms, I find that the stock price reaction is different. The non-financial firm portfolio earns negative and statistically significant MCARs during the pre-announcement, announcement and post-announcement windows. The MCARs during the three

event windows are all statistically significant at one percent regardless of whether parametric or non-parametric test statistics are used. The MARs and MCARs for the non-financial portfolio are tabulated in Table 1 – Panel A and plotted in Figure 2. The negative MCAR for the entire 61-day period is -0.96% compared to 3.41% for the financial firms. This result is inconsistent with the objectives of the proposed rule and suggests that stockholders are less likely to benefit from additional short-term borrowing disclosure by non-financial firms. One explanation of the negative reaction could be that stockholders did not expect window dressing of short-term debt by non-financial firms inasmuch as there had not been any media reports suggesting that non-financial firms had disguised their risk levels by manipulating short-term borrowing. In addition, non-financial firms likely have limited access to tools such as repurchase agreements to window dress short-term debt.

The comparison of MCARs using the mean difference test, explained earlier in Section 4.3, confirms that the MCARs of financial firms are statistically different from those of non-financial firms at the one percent significance level across all three event windows. The t-statistics for the mean difference analysis are also reported in Figure 2.

The different reaction on the announcement date for the two portfolios suggests that in the eyes of the stockholders the overall benefits (costs) of the proposed regulation exceed its overall costs (benefits) for financial (non-financial) firms.

3.5.2. The Voting Date

On the voting date, the equal-weighted portfolio of financial firms has negative and significant (at less than one percent for both test statistics) MCARs of -0.17% and -1.31% during the announcement and post-announcement windows, respectively. However, the MCAR is positive (0.43%) and significant at less than one percent during the pre-announcement window. The MARs and MCARs are reported in Table 3.1 – Panel B and graphed in Figure 3.2.

The MCAR for the entire 61-day window is -1.05%, suggesting that the expected approval of the rule prior to the event date is consistent with investors' belief that the rule will be approved and yield positive benefits. However, as the details of the proposed rule became public and investors realized that the costs of the proposed regulation would outweigh the expected benefits, they reacted negatively and share prices fell.

Next, looking at the non-financial portfolio, I observe a MCAR of 1.08% across the 61-day event window. Specifically, on the voting date, the equal-weighted MCAR for the portfolio of non-financial firms is positive and statistically significant at 0.21%, 0.03%, and 0.84% for the pre-announcement, announcement, and post-announcement windows, respectively. The MARs and MCARs are presented in Table 3.1 – Panel B and plotted in Figure 3.2. These results suggest that on the voting date investors in non-financial firms believed that the proposed disclosure was beneficial. One explanation for the positive

reaction may reside in the details of the proposed rule. The initial announcement in April indicated that the SEC was considering a similar disclosure requirement for all registrants rather than only financial firms. However, the proposed rule imposed more lenient disclosure terms on non-financial firms. For example, non-financial companies were only required to disclose the month-end amount outstanding for prescribed categories of short-term borrowing during each reporting period, as opposed to the maximum daily amount required of financial firms. Similarly, in their quarterly reports, non-financial firms would be allowed to calculate the average amount of short-term borrowing using monthly frequencies rather than the daily frequencies required of financial firms. Consequently, the proposed rule would be less costly for non-financial firms.

Again, the mean difference test using the firm-level MACRs generally substantiates the statistical difference between the MCARs of financial and non-financial portfolios. Specifically, the difference in MCARs is significant at the five and one percent levels during the announcement and post-announcement event windows, respectively.

3.6. Cross-Sectional Analysis of Stockholders' Reaction

Inasmuch as the literature indicates disproportionate effects of regulation on various cross-sections of firms (Chow, 1983; Ferrell, 2003; Greenstone et al, 2006; Ahmed and Schneible, 2007; Leuz and Wysocki, 2008; and Ahmed et al, 2010), I empirically test for such evidence in relation to short-term borrowing

disclosure. More specifically, I investigate whether or not investor reaction is different on the announcement and voting dates for several sub-samples, including bank holding companies, OTC versus exchange traded firms, commercial banks versus savings institutions and small versus large firms. The analysis assumes that a positive (negative) investor reaction to the announcement of, or voting on, the proposed regulation indicates that users of the disclosure believe that its expected benefits (costs) exceed the expected costs (benefits).

3.6.1. Reaction for Bank Holding Companies (BHCs)

Currently, U.S. BHCs provide similar, but less exhaustive, disclosure of short-term borrowing under Guide 3 than would be required under the new rule. This suggests that they may already have the systems, processes and expertise needed to comply with the proposed disclosure, and, thus, be able to do so at little additional cost. On the other hand, most of the reported window dressing with short term debt is associated with BHCs, suggesting that the additional disclosure would provide greater benefits for investors in this group relative to financial firms in general. Taken together, the arguments suggest a large net benefit to the shareholders of BHCs, which should be reflected in the stock price reaction. As a result, I predict that the benefits of the proposed disclosure should clearly outweigh the potential costs for BHCs, resulting in a more significant reaction by investors compared to that for the pooled sample of financial firms. Consistent with my prediction, I observe a significant reaction by the investors in bank holding companies, as presented in Figure 3.3.

<Insert Figure 3.3 here>

Like the results for the entire sample of financial firms, the MCAR is positive and significant on the announcement date, and negative and significant on the voting date. However, the magnitudes of the MCARs are much larger and generally statistically different from those of the entire sample of financial firms. For example, the MCAR for the announcement window is 4.23%, compared with 0.30% for the entire sample of financial firms. Similarly, the aggregate MCAR across the aggregated 61-day window is 17.91%, compared with 3.41%. On the voting date the overall reaction during the 61-day window is -5.70% for the BHC sample, compared to -1.05% for the pooled sample of financial firms. Interestingly, the magnitude of the stockholders' positive reaction on the announcement date is much larger than their negative reaction on the voting date, reflecting perhaps a smaller incremental effect of the rule on BHCs.

3.6.2. Reaction for OTC versus Exchange Traded Firms

Chow (1983) argues that because of increased out-of-pocket costs, the 1933 Securities Act had negative wealth effects on shareholders of newly regulated New York Stock Exchange firms, but no effect on unregulated OTC firms. This evidence suggests that the proposed regulation may impose a lower additional cost of compliance on exchange traded financial firms than on OTC traded financial firms. Unregulated financial firms would likely lack the necessary systems and processes to track the desired disclosure information under the

proposed rule and hence incur a higher initial investment to ensure compliance. As a result, I anticipate a different and, perhaps, less significant reaction from the stockholders of the OTC traded firms on both the announcement and voting dates. Thus, I test an alternate specification by sorting financial firms into sub-samples of OTC and exchange traded firms.

I find that on the announcement date the overall MCAR for the exchange traded firms is positive and significant except during the announcement window, when it is positive but insignificant, as shown in Figure 3.4.

<Insert Figure 3.4 here>

On the other hand, the MCAR for OTC traded firms is positive overall, though it is negative and significant during the pre-announcement and announcement windows. The overall positive MCAR for the OTC traded firms over the 61-day window is much less (at 0.15%) than that of exchange traded firms (at 4.94%), and a comparison of firm-level MCARs finds that the difference in MCARS is significant across the three event windows at the one percent level. This may be because OTC traded firms are more likely to lack the available systems for dealing with new disclosure requirements.

On the voting date, I observe an overall negative and significant MCAR for exchange traded portfolio of 2.32% during the 61-day window, as shown in Figure 4. The pre-announcement, announcement, and post-announcement windows' MCAR for exchange traded firms are -0.28%, -0.07%, and -1.97%,

respectively. This negative reaction is particularly strong during the 29-day post-announcement. For OTC traded firms, in contrast, I observe an overall positive and significant MCAR of 1.58% during the 61-day window. The positive reaction occurs mainly in the pre-announcement window, at 1.86%, whereas the 31-day combined announcement and post-announcement window has an MCAR of -0.28%.

On both the announcement and voting dates, the mean difference test clearly shows that MCARs for the exchange traded firms are statistically different from those of OTC traded firms at the one percent level across all three event windows. On the whole, these findings are consistent with the prediction that the proposed rule is likely to impose higher net compliance costs on OTC traded firms.

3.6.3. Reaction for Commercial Banks versus Savings Institutions

The argument made for the OTC versus exchange traded subsamples also suggests that the reaction of investors in commercial banks versus savings institutions is likely to be different. Inasmuch as commercial banks are more likely to be associated with BHCs, they might already provide a similar disclosure under the mandate of Guide 3. Therefore, they may have the systems in place to comply with the proposed disclosure and, as a result, incur lower costs compared to saving institutions. Accordingly, I examine the MCARs for the two subsamples based on three-digit SIC code (602 for commercial banks and 603 for savings

institutions). However, I find the results to be qualitatively similar, as the differences in firm-level MCARs across the three event windows are statistically insignificant on the announcement as well as the voting date, for the two sub-samples and consistent with the pooled sample of financial firm. The results are shown in Figures 3.5.

<Insert Figure 3.5 here>

3.6.4. Reaction for Small versus Large Firms

Inasmuch as market disclosure has been found to have a disproportionate effect on smaller firms, I argue that shareholder reaction to the proposed regulation would be different for small versus large firms. For example, corporate disclosure is costly (Leuz and Wysocki, 2008; Stigler, 1964) and fixed disclosure costs related to developing systems and procedures for compliance may provide economies of scale for large financial firms not available to smaller firms (Leuz and Wysocki). To examine the possibility of a differential size effect, I create sub-samples for three portfolios (financial firms, bank holding companies and non-financial firms) by sorting the sample into quartiles based on the market value of equity. Quartile 1 is classified as small firms and quartile 4 as large firms.

First, I find that the stockholders' reaction is different for small versus large financial firms, as shown in Figure 3.6.A.

<Insert Figure 3.6.A here>

On the announcement date, the MCAR for the pre-announcement window is positive, though not always significant for equal-weighted portfolios of both large and small financial firms. Similarly, examining the 31-day aggregated MCAR for the announcement and post-announcement windows; I find that it is positive for all size quartiles, with two interesting observations. First, the MCAR for small firms is small (0.42% for quartile 1) and not significant, whereas the MCAR for large firms is large (5.42% for quartile 4) and significant. Second, the magnitude of the MCAR over the 61-day window for the largest size quartile (6.23%) is almost twice that of all financial firms (3.41%). These results suggest that the benefits of the proposed regulation are much greater for large firms, perhaps explained by their ability to gain size-related benefits from balance sheet window dressing (Allen and Saunders, 1991).

On the other hand, on the voting date all size quartiles of financial firms earn a positive and significant return during the pre-announcement window. The aggregated MCAR over the 31-day window for the announcement and post-announcement window is marginally negative and weakly significant for small firms (-0.30% for size quartile 1) and substantially negative and significant for large firms (-3.77% for size quartile 4), yet, again, suggesting a disproportionate effect on small versus large financial firms. Similar to the results on the announcement date, I observe that the MCAR over the 61-day window for the largest size quartile (at -2.79%) is more than twice than that for the entire sample

of financial firms (at -1.06%), suggesting that investors in larger firms are relatively more concerned about the effect of the proposed rule.

Comparing the firm-level MCARs for large versus small financial firms confirms some significant differences. On the announcement date, the difference is significant at the one percent level during the announcement and post-announcement event windows, whereas, on the voting date, the difference is only significant at one percent for the post announcement window. One reason for the weak difference between the MCARs of large versus small financial firms may be the small sample size. Alternatively, it may suggest that stockholders' disclosure expectations are indeed similar regardless of the size of financial firms.

The analysis of the size-related portfolios of non-financial firms on the announcement date also confirms the disparity in stockholders reaction between small and large firms.

<Insert Figure 3.6.B here>

As indicated in Figure 3.6.B, the MCAR for portfolios of small non-financial firms is negative and weakly significant during the combined 31-day announcement and post-announcement window (-8.10% for quartile 1). However, the MCAR for large nonfinancial firms during the aggregated 31-day announcement and post-announcement window (2.10% for quartiles 4) is positive and significant. This suggests that despite an overall negative reaction from investors of non-financial firms, the additional disclosure by large non-financial

firms is desired. A similar analysis of size-based portfolios on the voting date shows that during the combined 31-day announcement and post-announcement window, the MCAR is positive for small non-financial firms (3.03% for quartile 1), but negative for large non-financial firms (-0.93% for quartile 4). This finding also suggests a disproportionate effect on smaller non-financial firms, once again suggesting that investors in larger firms are more skeptical of the reported levels of short-term borrowing and, hence, react more significantly.

The analysis of the difference between firm-level MCARs of small and large non-financial firms confirms the difference in reactions, especially on the voting date, when the differences are significant at the one percent level across all three event windows. On the announcement date, the difference in MCARs is only significant during the post-announcement event window, when the two sub-groups also experience the largest difference in MCARs.

Finally, inasmuch as the balance sheet window dressing of short term debt reported in the media is mainly associated with large bank holding companies (BHCs), investors would expect more disclosure and greater transparency from them. Consequently, the MCARs for large BHCs are likely to be different from those of small BHCs. Consistent with this argument, I find that investors in large BHCs do, indeed, react differently to the proposed rule disclosure than do investors in small BHCs, as shown in Figure 3.6.C.

<Insert Figure 3.6.C here>

For example, I observe a positive and significant MCAR on the announcement date across all size quartiles. However, the positive MCAR is higher for the large BHCs during the combined 31-day announcement and post-announcement window (12.48% and 9.26% for quartiles 3 and 4 versus 9.56% and 7.01% for quartile 1 and 2, respectively)[9]. On the other hand, on the voting date I observe negative and significant MCARs for all windows for large firms, whereas the MCARs for small BHCs are neither negative nor statistically insignificant.

The comparison of firm-level MCARs for small versus large BHCs clearly identifies the difference in magnitude, though the difference is not consistently significant across all three event windows. One reason for this result may be the small number of firms in the size-based portfolios of BHCs. On the announcement date, the MCARs are statistically different at the one and five percent levels during the announcement and post-announcement event windows. On the other hand, on the voting date the MCARs are different only during the post announcement window. There are two possible explanations for a weak significance in the MCAR difference. The insignificant mean difference could be due to a smaller sample size. Alternatively, inasmuch as the media evidence for balance-sheet window dressing is mostly associated with BHCs, stockholders may expect similar disclosure from BHCs regardless of their size.

[9] Note: Given a limited sample of BHCs, quartile 1 and 2 are classified as small firms and quartile 3 and 4 as large firms. The MCARs for quartiles 2 and 3 are not shown in Figure 3.6.C.

3.7. Conclusion

This paper investigates the impact on share prices of the announcement of the SEC's intention to introduce, and subsequent vote on, a short-term borrowing disclosure rule. I argue that the market reaction to the announcement of and vote on the proposed rule provides an objective tool for assessing its expected benefits and costs.

The results on the announcement date suggest that the benefits of the proposed rule exceed the costs for financial firms, whereas for non-financial firms, the costs of the proposed rule outweigh the benefits. A stronger positive share price reaction for the subsample of bank holding companies suggests that the market expects a higher net benefit from the proposed rule for this subgroup of financial firms. On the other hand, on the voting date, when the SEC released details about the structure and scope of the proposed rule, the market reaction is reversed for both financial and non-financial firms. This result is interesting as it suggests that the market, though in favor of additional disclosure, is wary of its scope and structure.

In addition, I find evidence of cross-sectional differences in stockholder reaction depending on firm size, listing and type of business. These result support existing evidence indicating disproportionate effects of SEC regulation depending on firm characteristics. In particular, they suggest that investors expect the proposed rule to impose higher costs on small firms and OTC traded registrants.

Overall, the results raise important issues concerning the implementation of the proposed short-term borrowing disclosure rule and suggest that before finalizing its implementation, the SEC needs to consider carefully the extent and scope of the additional disclosure as well as its one-size-fits-all approach to regulation. Indeed, this would apply to all regulatory proposals.

Finally, despite indicating a net benefit to the rule announcement and vote, the study has two limitations. One, it is unable to provide precise estimates of the net costs or benefits of the proposed rule inasmuch as information about the SEC's plans flowed into the market over a period of time and it is not possible to identify precisely the beginning and ending dates for the event-related windows. Second, inasmuch as the rule is not yet implemented, the study does not assess the effect of the new regulation on firm performance. Once the proposed rule is enforced, additional research will be necessary to evaluate this effect.

References

Ahmed, A. S., M. L. McAnally, S. Rasmussen, and C. D. Weaver, 2010, How costly is the Sarbanes Oxley Act? Evidence on the effects of the Act on corporate profitability, *Journal of Corporate Finance* 16, 352-369.

Ahmed, A. S., and R. A. Schneible Jr, 2007, The impact of regulation Fair Disclosure on investors' prior information quality-Evidence from an analysis of changes in trading volume and stock price reactions to earnings announcements, *Journal of Corporate Finance* 13, 282-299.

Allen, L. and A. Saunders, 1992, Bank window dressing: Theory and evidence, *Journal of Banking and Finance* 16, 585-623.

Binder, J. J., 1985, On the use of the multivariate regression model in event studies, *Journal of Accounting Research* 23, 370-383.

Boehmer, E., J. Masumeci, and A. B. Poulsen, 1991, Event-study methodology under conditions of event-induced variance, *Journal of Financial Economics* 30, 253-272.

Brown, S. J., and J. B. Warner, 1980, Measuring security price performance, *Journal of Financial Economics* 8, 205-258.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay, 1997, *The Econometrics of Financial Markets* (Princeton, NJ: Princeton University Press).

Chhaochharia, V., and Y. Grinstein, 2007, Corporate governance and firm value: The impact of the 2002 governance rules, *Journal of Finance* 62, 1789-1825.

Chow, C. W., 1983, The impacts of accounting regulation on bondholder and shareholder wealth: The case of the securities acts, *Accounting Review* 58, 485-520.

Coffee Jr, J. C., 1984, Market failure and the economic case for a mandatory disclosure system, *Virginia Law Review* 70, 717-753.

Corrado, C. J., 2011, Event studies: a methodology review, *Accounting and Finance* 51, 207-234.

Corrado, C. J., and C. Truong, 2008, Conducting event studies with Asia-Pacific security market data, *Pacific-Basin Finance Journal* 16, 493-521.

Dillon, N., 2001, Columbia Prof Nobel Winner Shares Econ Prize with 2 Others. *Daily News*, October 11, 2001.

Dolley, J. C., 1938, The effect of government regulation on the stock-trading volume of the New York Stock Exchange, *American Economic Review* 28, 8-26.

Farvaque, E., C. Gainet, D. Saidane, and C. Refait-Alexandre, 2009, Is corporate disclosure necessarily desirable? A survey, Unpublished working paper, SSRN.

Ferrell, A., 2003, Mandated disclosure and stock returns: Evidence from the Over-the-Counter market, Working paper, Harvard Law School, Harvard University.

Greenstone, M., P. Oyer, and A. Vissing-Jorgensen, 2006, Mandated Disclosure, Stock Returns, and the 1964 Securities Acts Amendments, *Quarterly Journal of Economics* 121, 399-460.

Henderson Jr, G. V., 1990, Problems and solutions in conducting event studies, *Journal of Risk and Insurance*, 57(2), 282-306.

Jain, P. K., and Z. Rezaee, 2006, The Sarbanes-Oxley Act of 2002 and Capital-Market Behavior: Early Evidence, *Contemporary Accounting Research* 23, 629-654.

Johnson, Walter L., 1969, The theory and practice of window dressing by commercial banks, *Mississippi Valley Journal of Business and Economics* 4(2), 43-49.

Karmel, R. S., 2005, Realizing the Dream of William O. Douglas-The Securities and Exchange Commission Takes Charge of Corporate Governance, *Delaware Journal of Corporate Law* 30, 79-144.

Kelly, K., T. McGinty, and D. Fitzpatrick, 2010, Big Banks Move to Mask Risk Levels - Quarter-End Loan Figures Sit 42% Below Peak, Then Rise as New Period Progresses; SEC Review, *Wall Street Journal*, April 9, 2010.

Leuz, C., and P. Wysocki, 2008, Economic consequences of financial reporting and disclosure regulation: A review and suggestions for future research, Unpublished working paper, SSRN.

Li, H., M. Pincus, and S. O. Rego, 2008, Market Reaction to Events Surrounding the Sarbanes-Oxley Act of 2002 and Earnings Management, *Journal of Law and Economics* 51, 111-134.

Linck, J. S., J. M. Netter, and T. Yang, 2009, The effects and unintended consequences of the Sarbanes-Oxley Act on the supply and demand for directors, *Review of Financial Studies* 22, 3287-3328.

Litvak, K., 2007, The effect of the Sarbanes-Oxley Act on non-US companies cross-listed in the US, *Journal of Corporate Finance* 13, 195-228.

MacKinlay, A. C., 1997, Event studies in economics and finance, *Journal of Economic Literature* 35, 13-39.

Mahoney, P. G., 2001, The political economy of the Securities Act of 1933, *Journal of Legal Studies* 30, 1-31.

Mahoney, P. G., and Mei, J., 2006, Mandatory vs. contractual disclosure in securities markets: Evidence from the 1930s, Working paper. University of Virginia Law School.

McGinty, T., K. Kelly, and K. Scannel, 2010, Debt 'Masking' Under Fire - SEC Considers New Rules to Deter Banks From Dressing Up Books; Ghost of Lehman, *Wall Street Journal,* April 21, 2010, A1.

Mulherin, J. Harold, 2007, Measuring the costs and benefits of regulation: Conceptual issues in securities markets, *Journal of Corporate Finance* 13, 421-437.

Peltzman, S., 1973, An evaluation of consumer protection legislation: the 1962 drug amendments, *Journal of Political Economy*, 81, 1049-1091.

Phillips, Matt, 2010, Wall Street's 'Window Dressing': Lehman's Accidental Historian, *The Wall Street Journal,* September 18, 2010, B1.

Rapoport, Michael, 2010, SEC Had 'Window Dressing' on Radar for Years - Since 2004, Agency Has Questioned 102 Companies; Booking Trades as Sales Instead of Borrowings, *The Wall Street Journal,* July 21, 2010, C1.

SEC, 2010, Short Term Borrowings Disclosure, Proposed Rule, *Federal Register*, 17 CFR Part 229 and 249.

Simon, C. J., 1989, The effect of the 1933 Securities Act on investor information and the performance of new issues, *American Economic Review* 79, 295-318.

Stigler, G. J., 1964, Public regulation of the securities markets, *Journal of Business*, 37, 117-142.

Stiglitz, J. E., 2002, Information and the change in the paradigm in economics, *American Economic Review* 92, 460-501.

Wintoki, M. B., 2007, Corporate boards and regulation: The effect of the Sarbanes-Oxley Act and the exchange listing requirements on firm value, *Journal of Corporate Finance* 13, 229-250.

Zhang, I. X., 2007, Economic consequences of the Sarbanes-Oxley Act of 2002, *Journal of Accounting and Economics* 44, 74-115.

Figure 3.1:
SEC Proposed Short-term Borrowing Disclosure Rule – Major News/Events

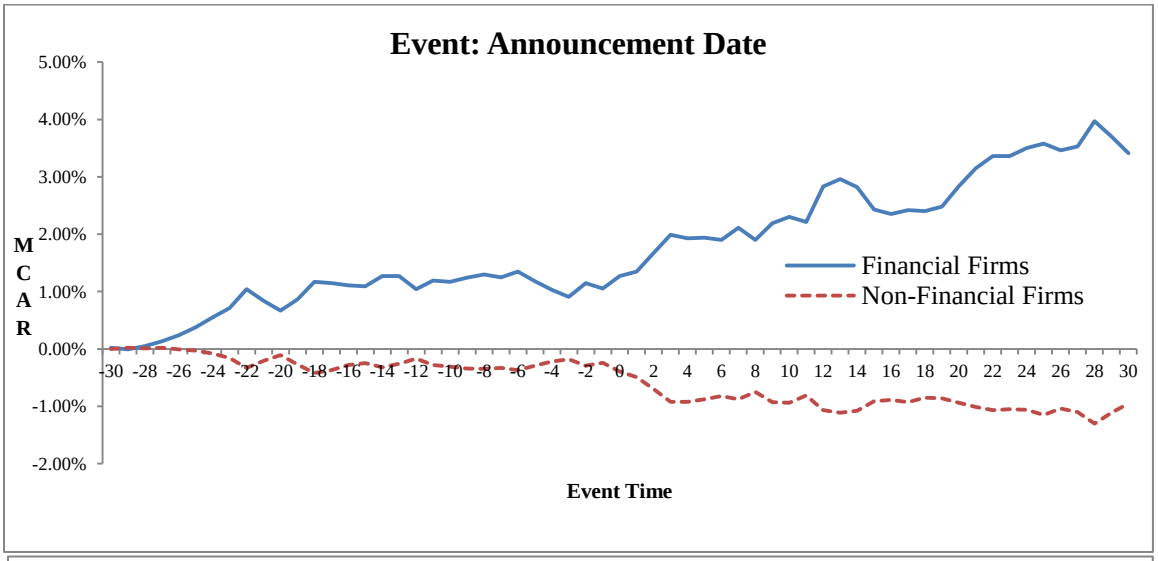
Event	1	2	3	4	5	6	7	8	9	10
Publication Date	9th April 2010	**21st April 2010**	26th May 2010	27th May 2010	10th July 2010	16th July 2010	16th September 2010	**17th September 2010**	**17th September 2010**	18th September 2010
Publication Source	The Wall Street Journal	The Wall Street Journal	The Wall Street Journal	The Wall Street Journal	The Wall Street Journal	The Wall Street Journal	The Wall Street Journal	Dow Jones Business News - The Wall Street Journal - Time: 10.39 a.m.	Dow Jones Newswire - Time: 3.00 p.m.	The Wall Street Journal
Key Information Content	Big banks mask risk levels	SEC considers new rules to deter window dressing up books by banks and may extend the new rule to all companies.	SEC considers stricter disclosure of quarter-end borrowings.	BofA, Citi 'repo' hid debt - disclosure cites accidental misclassifications.	BofA admits hiding debt. Details come as the SEC is set to unveil review of Wall Street window dressing.	Citi miscues helps mask debt risk.	Regulators to target window dressing. The SEC is expected to propose rule requiring greater disclosure by banks and other companies about their short-term borrowings.	The SEC meets to consider rules on bank window dressing. Under the proposed rule all companies will require disclosure about short-term borrowing. Financial institutions would face a higher level of disclosure.	Top economic story of the day. SEC to propose rules on bank window dressing. SEC votes 5-0 in favor of proposing rule.	Wall Street's window dressing: United SEC votes to propose pulling back drapes on debt.

Figure 3.2:

Plot of Cumulative Mean Abnormal Return - Event Study Analysis of the SEC Short-term Borrowing Disclosure Rule Proposal - Financial and Non-financial Portfolios

The MCARs are plotted on the announcement and voting dates. The MCARs for the pre-announcement (-30, -1), announcement (0,+1) and post-announcement (+2,+30) periods are reported with both parametric (Patell) and non-parametric (Generalized Sign Test) test statistics. A mean difference test is conducted using firm-level MCARs across the three event windows to verify that the mean MCAR of financial firms is not equal to that of non-financial firms and T-Stat (MCAR Difference) reports the t-statistic. Note: The symbols *,**, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Announcement Date							Voting Date						
	Financial			Non-Financial			T-Stat (MCAR	Financial			Non-Financial			T-Stat (MCAR
Event Window	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)
(-30,-1)	1.05%	2.898***	1.048	-0.25%	2.499***	2.758***	3.358***	0.43%	9.282***	10.414***	0.21%	5.286***	7.281***	0.704
(0,+1)	0.30%	-5.315***	-7.964***	-0.25%	-2.613***	-7.761***	4.305***	-0.17%	-4.308***	-6.811***	0.03%	1.795**	-0.113	-2.040**
(+2,+30)	2.06%	10.391***	12.565***	-0.46%	4.576***	7.095***	6.480***	-1.31%	-7.280***	-9.266***	0.84%	4.142***	4.217***	-6.624***



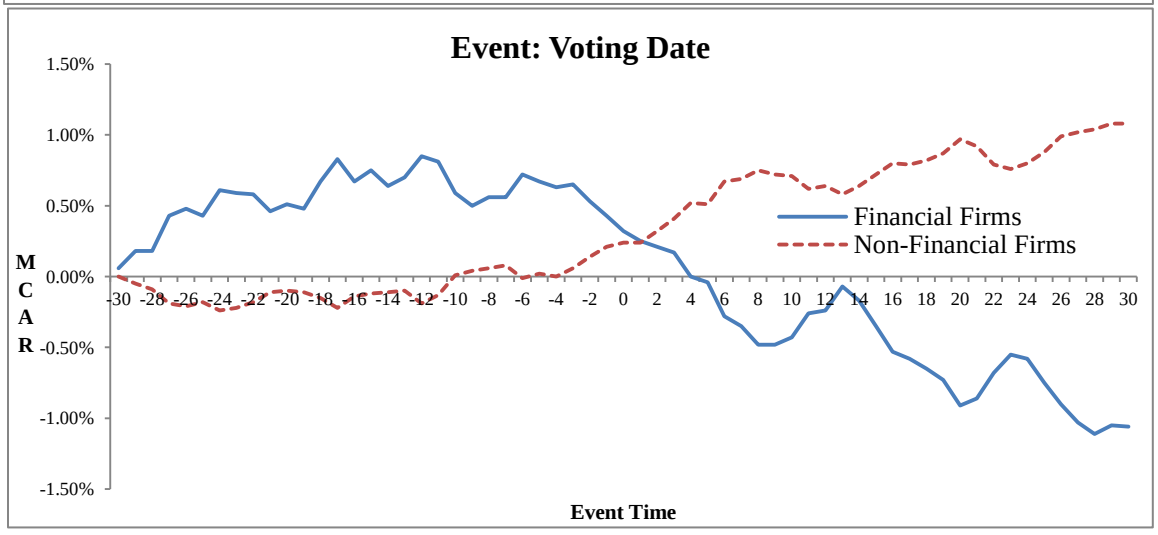


Figure 3.3:

Plot of Cumulative Mean Abnormal Return - Event Study Analysis of the SEC Short-term Borrowing Disclosure Rule Proposal - Bank Holding Companies

The MCARs are plotted on the announcement and voting dates. The MCARs for the pre-announcement (-30, -1), announcement (0,+1) and post-announcement (+2,+30) periods are reported with both parametric (Patell) and non-parametric (Generalized Sign Test) test statistics. A mean difference test is conducted using firm-level MCARs across the three event windows to verify that the mean MCAR of bank holding companies is not equal to that of all financial firms and T-Stat (MCAR Difference) reports the t-statistic. Note: The symbols *,**, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Announcement Date				Voting Date			
Event Window	**MCAR**	**Patell Z**	**GST Z**	**T-Stat (MCAR Difference)**	**MCAR**	**Patell Z**	**GST Z**	**T-Stat (MCAR Difference)**
(-30,-1)	8.15%	5.905***	7.673***	6.045***	-2.70%	-3.685***	-4.388***	-3.452***
(0,+1)	4.23%	8.619***	5.785***	5.747***	0.27%	2.821***	1.943**	1.175
(+2,+30)	5.53%	5.057***	5.667***	2.554***	-3.29%	-4.360***	-4.268***	-2.073**

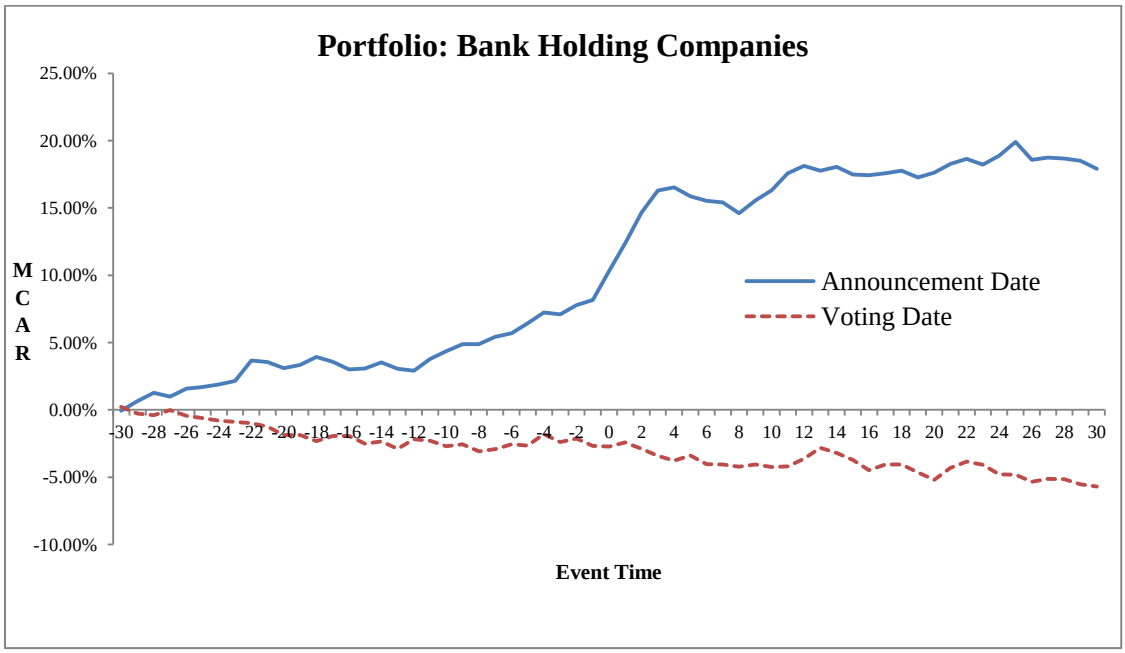
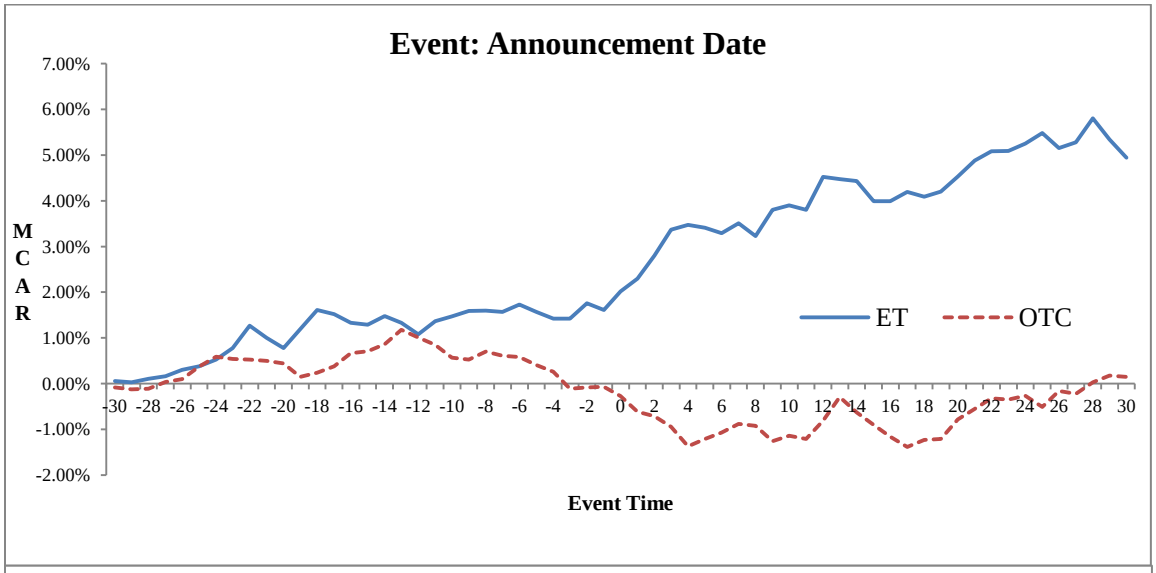


Figure 3.4:

Plot of Cumulative Mean Abnormal Return - Event Study Analysis of the SEC Short-term Borrowing Disclosure Rule Proposal - Exchange versus OTC Traded Firms

The MCARs are plotted on the announcement and voting dates. The MCARs for the pre-announcement (-30, -1), announcement (0,+1) and post-announcement (+2,+30) periods are reported with both parametric (Patell) and non-parametric (Generalized Sign Test) test statistics. A mean difference test is conducted using firm-level MCARs across the three event windows to verify that the mean MCAR of exchange traded firms is not equal to that of OTC traded firms and T-Stat (MCAR Difference) reports the t-statistic. Note: The symbols *,**, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Announcement Date							Voting Date						
		ET			OTC		T-Stat (MCAR		ET			OTC		T-Stat (MCAR
Event Window	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)
(-30,-1)	1.61%	1.841**	-0.55	-0.07%	2.451***	2.688***	3.984***	-0.28%	2.012**	1.939**	1.86%	13.302***	15.385***	-6.124***
(0,+1)	0.69%	0.100	-3.719***	-0.54%	-9.646***	-8.729***	7.289***	-0.07%	-0.187	-2.336***	-0.38%	-7.239***	-8.538***	2.989***
(+2,+30)	2.64%	9.045***	12.320***	0.76%	5.171***	4.206***	4.228***	-1.97%	-10.115***	-13.293***	0.10%	1.770**	2.827***	-6.533***



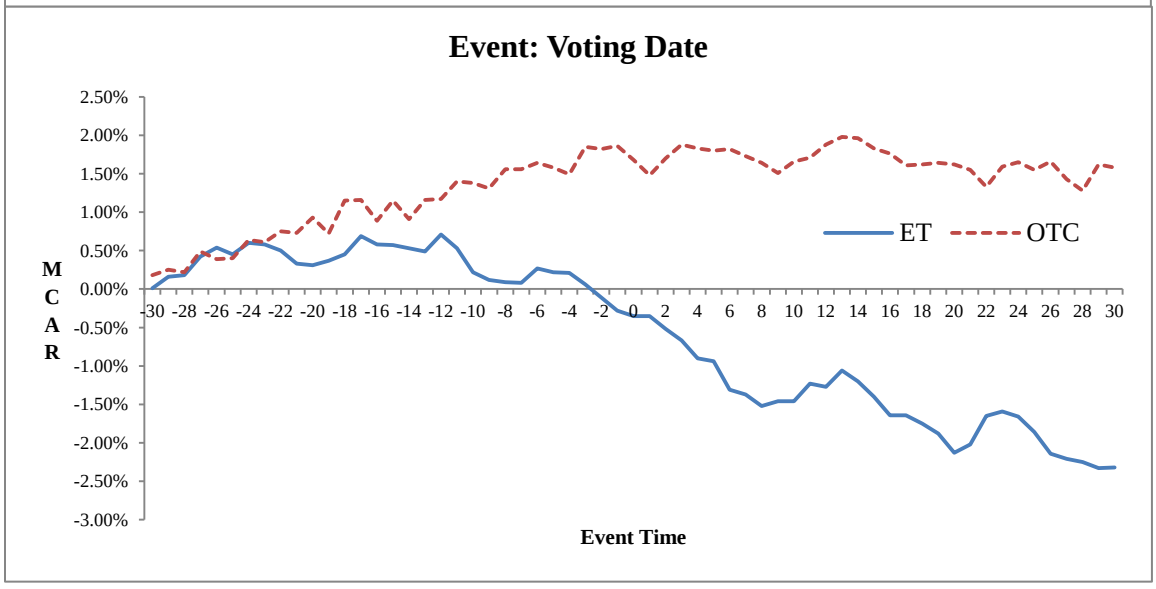
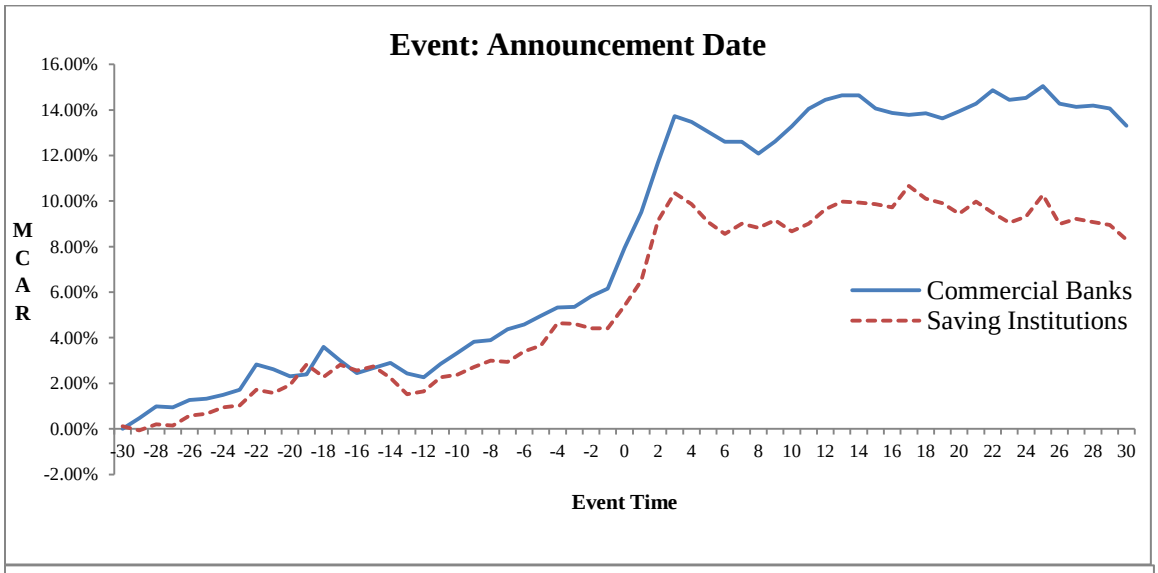


Figure 3.5:

Plot of Cumulative Mean Abnormal Return - Event Study Analysis of the SEC Short-term Borrowing Disclosure Rule Proposal - Commercial Banks versus Savings Institutions

The MCARs are plotted on the announcement and voting dates. The MCARs for the pre-announcement (-30, -1), announcement (0,+1) and post-announcement (+2,+30) periods are reported with both parametric (Patell) and non-parametric (Generalized Sign Test) test statistics. A mean difference test is conducted using firm-level MCARs across the three event windows to verify that the mean MCAR of commercial banks is not equal to that of savings institutions and T-Stat (MCAR Difference) reports the t-statistic. Note: The symbols *,**, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Announcement Date							Voting Date						
	Commercial Banks			Savings Institutions			T-Stat (MCAR	Commercial Banks			Savings Institutions			T-Stat (MCAR
Event Window	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)
(-30,-1)	6.16%	4.918***	6.990***	4.42%	2.493***	2.991***	0.971	-2.38%	-2.491***	-2.611***	-4.37%	-2.598***	-2.762***	1.327
(0,+1)	3.35%	7.143***	4.477***	2.09%	3.840***	2.991***	1.334	0.24%	1.994**	0.945	0.03%	1.142	1.105	0.378
(+2,+30)	3.79%	4.224***	5.133***	1.80%	1.697**	2.818***	1.092	-3.88%	-5.132***	-5.055***	-1.74%	-1.915**	-2.410***	-1.460



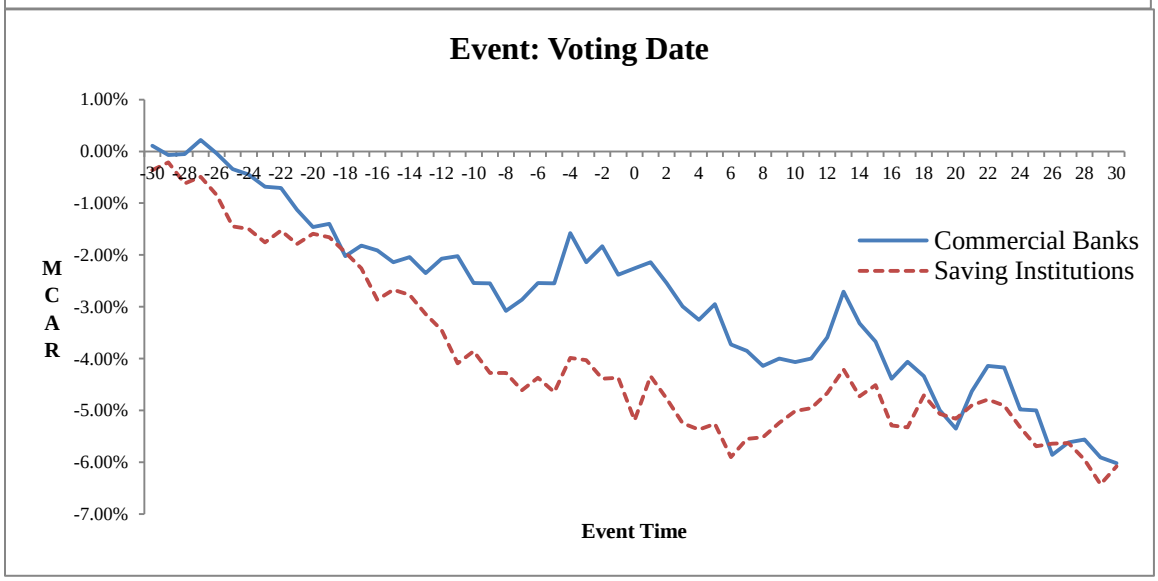


Figure 3.6.A:

Plot of Cumulative Mean Abnormal Return - Event Study Analysis of the SEC Short-term Borrowing Disclosure Rule Proposal - Size Portfolios of Financial Firms

The MCARs are plotted on the announcement and voting dates. The MCARs for the pre-announcement (-30, -1), announcement (0,+1) and post-announcement (+2,+30) periods are reported with both parametric (Patell) and non-parametric (Generalized Sign Test) test statistics. A mean difference test is conducted using firm-level MCARs across the three event windows to verify that the mean MCAR of small firms is not equal to that of large firms and T-Stat (MCAR Difference) reports the t-statistic. Note: The symbols *,**, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Announcement Date							Voting Date						
	Small Firms - Q 1			Large Firms - Q4			T-Stat (MCAR Difference)	Small Firms - Q 1			Large Firms - Q4			T-Stat (MCAR Difference)
Event Window	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z		MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	
(-30,-1)	1.06%	2.858***	3.550***	0.81%	1.656**	0.211	-0.276	0.16%	3.747***	4.576***	0.98%	6.206***	8.080***	1.058
(0,+1)	1.64%	0.692	-1.339*	-0.19%	-3.800***	-3.939***	-4.090***	-0.24%	-1.679**	-2.482***	-0.41%	-5.193***	-6.212***	-0.677
(+2,+30)	-1.22%	1.27	0.494	5.61%	11.148***	13.779***	7.292***	-0.06%	1.330*	-0.072	-3.36%	-8.662***	-8.447***	-5.492***

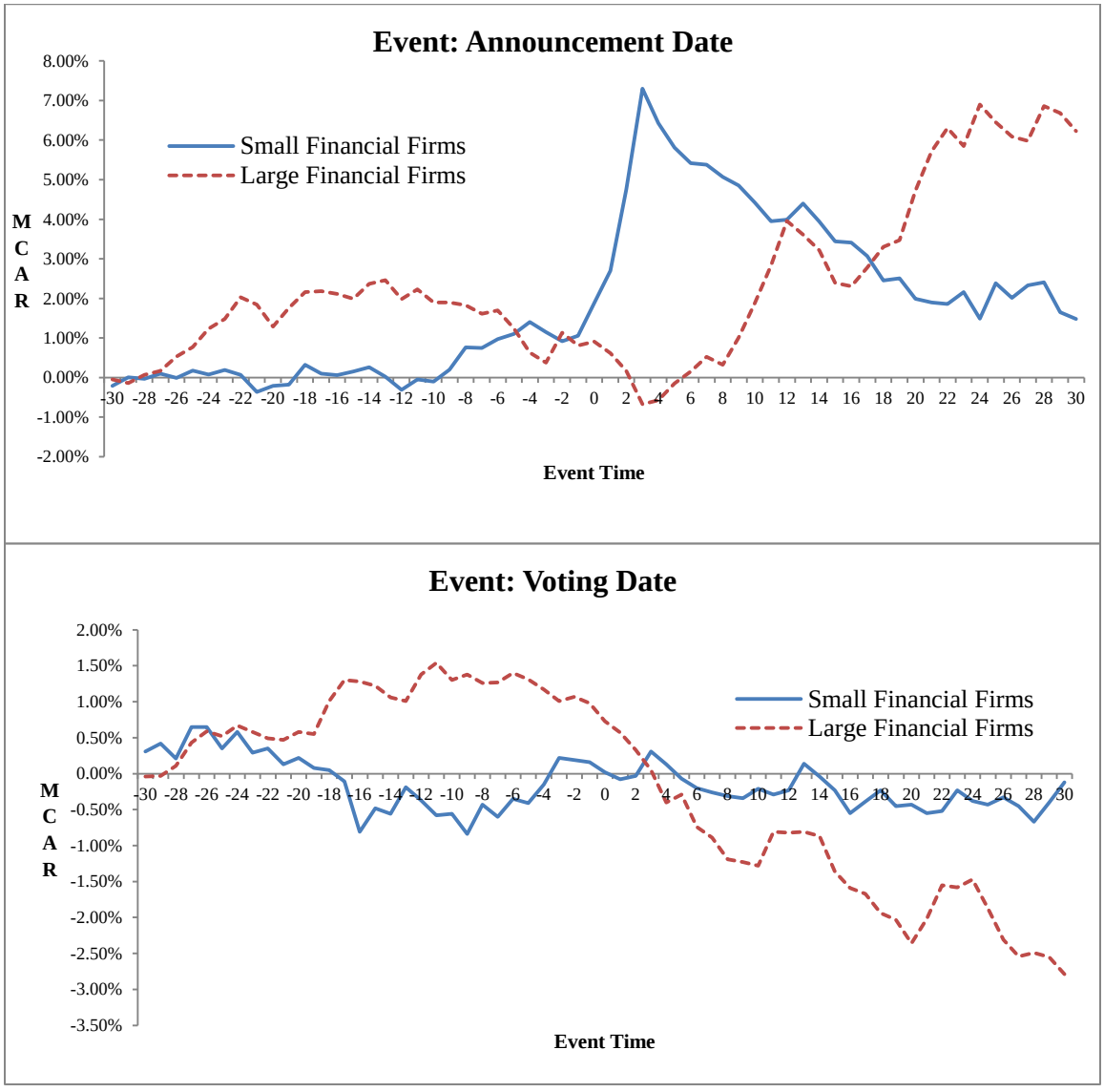
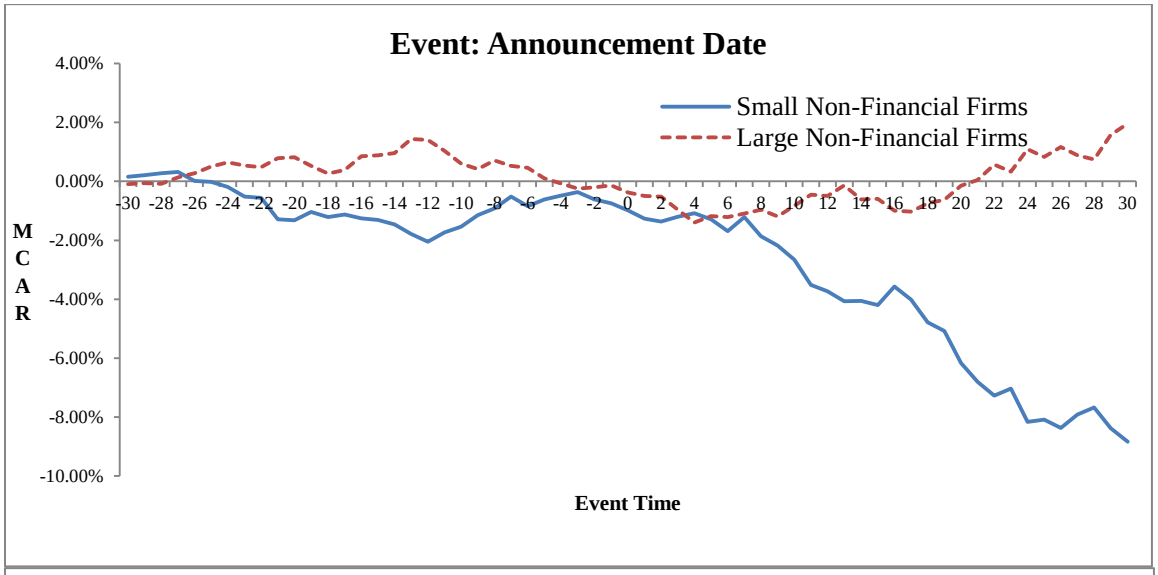


Figure 3.6.B:

Plot of Cumulative Mean Abnormal Return - Event Study Analysis of the SEC Short-term Borrowing Disclosure Rule Proposal - Size Portfolios of Non-Financial Firms

The MCARs are plotted on the announcement and voting dates. The MCARs for the pre-announcement (-30, -1), announcement (0,+1) and post-announcement (+2,+30) periods are reported with both parametric (Patell) and non-parametric (Generalized Sign Test) test statistics. A mean difference test is conducted using firm-level MCARs across the three event windows to verify that the mean MCAR of small firms is not equal to that of large firms and T-Stat (MCAR Difference) reports the t-statistic. Note: The symbols *,**, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Announcement Date							Voting Date						
	Small Firms - Q 1			Large Firms - Q4			T-Stat (MCAR	Small Firms - Q 1			Large Firms - Q4			T-Stat (MCAR
Event Window	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)
(-30,-1)	-0.74%	-0.1	0.856	-0.14%	1.543*	1.729**	0.650	-1.58%	-0.112	-1.144	2.21%	8.331***	11.039***	5.023***
(0,+1)	-0.53%	-1.351*	-5.113***	-0.35%	-3.911***	-5.781***	0.905	-0.21%	-0.68	-2.189**	-0.54%	-6.321***	-5.366***	-1.575***
(+2,+30)	-7.57%	-6.031***	-7.252***	2.45%	6.658***	8.988***	12.039***	3.24%	5.449***	5.422***	-0.39%	-0.686	-0.526	-4.279***



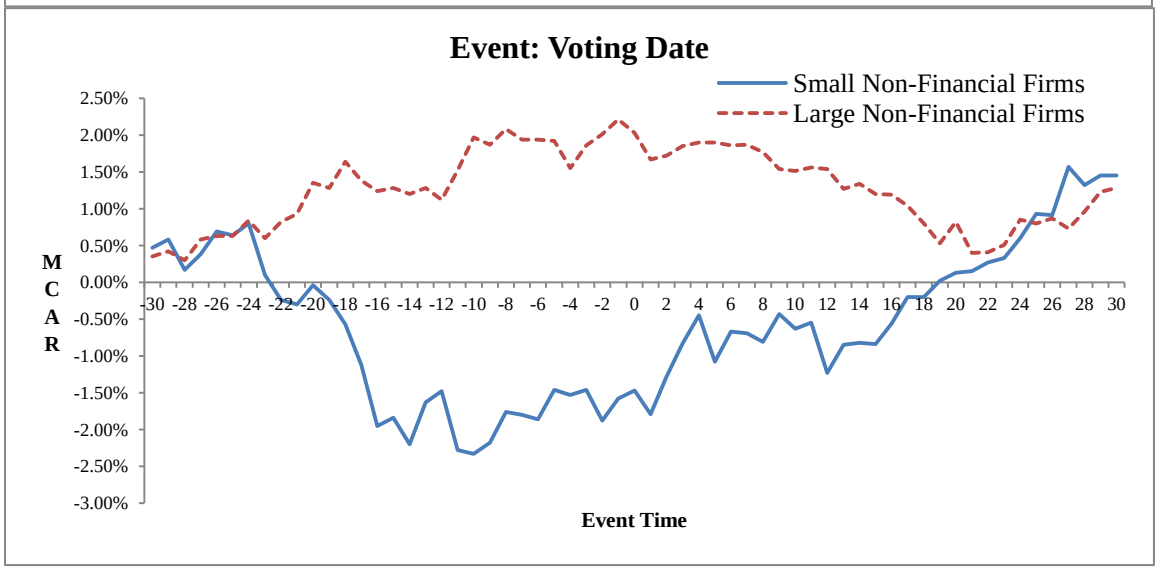
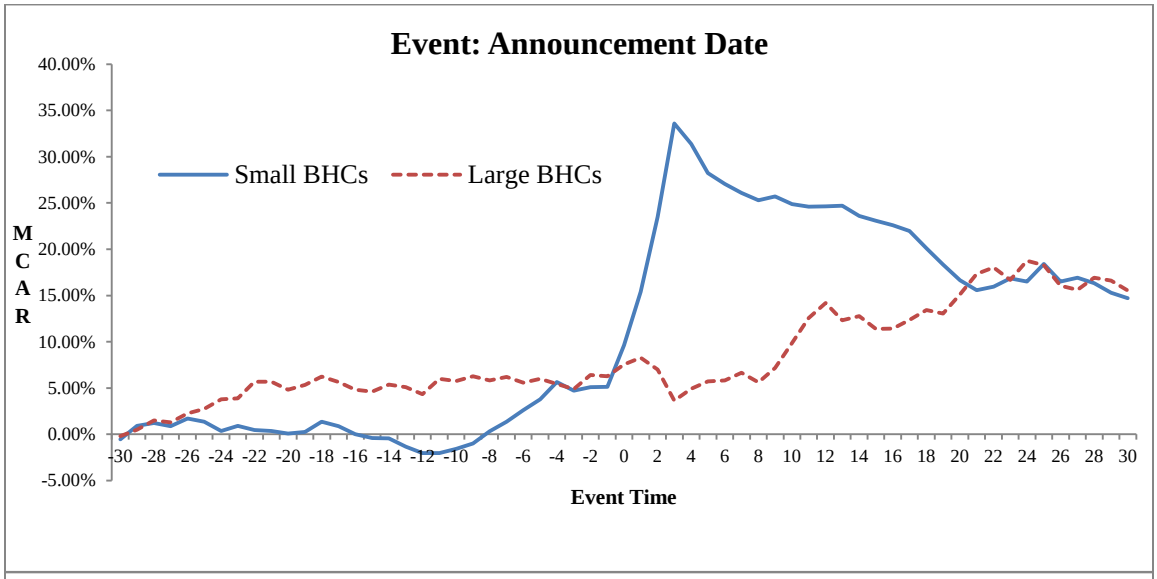


Figure 3.6.C:

Plot of Cumulative Mean Abnormal Return - Event Study Analysis of the SEC Short-term Borrowing Disclosure Rule Proposal - Size Portfolios of Bank Holding Companies

The MCARs are plotted on the announcement and voting dates. The MCARs for the pre-announcement (-30, -1), announcement (0,+1) and post-announcement (+2,+30) periods are reported with both parametric (Patell) and non-parametric (Generalized Sign Test) test statistics. A mean difference test is conducted using firm-level MCARs across the three event windows to verify that the mean MCAR of small firms is not equal to that of large firms and T-Stat (MCAR Difference) reports the t-statistic. Note: The symbols *,**, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Announcement Date							Voting Date						
	Small Firms - Q 1			Large Firms - Q4			T-Stat (MCAR	Small Firms - Q 1			Large Firms - Q4			T-Stat (MCAR
Event Window	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z	Difference)
(-30,-1)	5.14%	1.406*	0.916	6.27%	2.927***	4.931***	0.394	-0.45%	-0.551	-0.382	-3.77%	-2.899***	-3.131***	-1.071
(0,+1)	10.25%	7.434***	4.722***	2.00%	3.685***	2.809***	-3.457***	-0.11%	0.571	-0.382	-0.01%	0.394	-0.064	0.070
(+2,+30)	-0.69%	-0.478	-0.511	7.26%	3.632***	6.818***	1.958**	0.21%	0.341	0.612	-9.20%	-6.951***	-5.963***	-4.231***



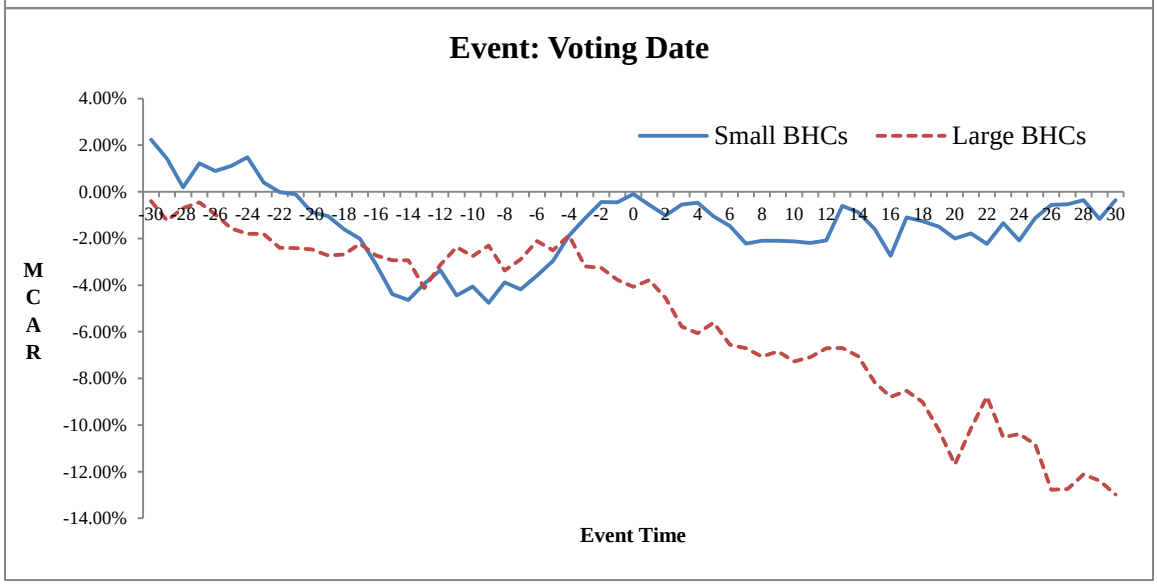


Table 3.1:

Abnormal Returns for the Event Study of the SEC Short-term Borrowing Disclosure Rule Proposal - Financial and Non-financial Portfolios

The sample consists of 2,450 financial and 3,985 non-financial firms. The market model is estimated using the CRSP equal-weighted index to calculate the abnormal returns. The event dates correspond to April 21, 2010 (the announcement date) and September 17, 2010 (the voting date). Mean abnormal return (MAR) is the portfolio average abnormal return for the specific day in event time and MCAR is the portfolio mean cumulative abnormal return for day -30 to the specified day.

	Panel A - Announcement Date				Panel B - Voting Date			
	Financial Firms		Non-Financial Firms		Financial Firms		Non-Financial Firms	
Event Day	MARs	MCARs	MARs	MCARs	MARs	MCARs	MARs	MCARs
-30	0.02%	0.02%	0.00%	0.00%	0.06%	0.06%	0.00%	0.00%
-29	-0.03%	-0.01%	0.02%	0.02%	0.12%	0.18%	-0.05%	-0.05%
-28	0.06%	0.05%	-0.01%	0.01%	0.00%	0.18%	-0.04%	-0.09%
-27	0.08%	0.13%	0.01%	0.02%	0.25%	0.43%	-0.10%	-0.19%
-26	0.11%	0.24%	-0.03%	-0.01%	0.05%	0.48%	-0.02%	-0.21%
-25	0.14%	0.38%	-0.02%	-0.03%	-0.05%	0.43%	0.03%	-0.18%
-24	0.17%	0.55%	-0.05%	-0.08%	0.18%	0.61%	-0.06%	-0.24%
-23	0.16%	0.71%	-0.08%	-0.16%	-0.02%	0.59%	0.02%	-0.22%
-22	0.33%	1.04%	-0.17%	-0.33%	-0.01%	0.58%	0.04%	-0.18%
-21	-0.20%	0.84%	0.12%	-0.21%	-0.12%	0.46%	0.07%	-0.11%
-20	-0.17%	0.67%	0.10%	-0.11%	0.05%	0.51%	0.01%	-0.10%
-19	0.19%	0.86%	-0.16%	-0.27%	-0.03%	0.48%	-0.01%	-0.11%
-18	0.31%	1.17%	-0.15%	-0.42%	0.19%	0.67%	-0.04%	-0.15%
-17	-0.02%	1.15%	0.05%	-0.37%	0.16%	0.83%	-0.07%	-0.22%
-16	-0.04%	1.11%	0.09%	-0.28%	-0.16%	0.67%	0.08%	-0.14%
-15	-0.02%	1.09%	0.03%	-0.25%	0.08%	0.75%	0.02%	-0.12%
-14	0.18%	1.27%	-0.07%	-0.32%	-0.11%	0.64%	0.01%	-0.11%
-13	0.00%	1.27%	0.06%	-0.26%	0.06%	0.70%	0.01%	-0.10%
-12	-0.23%	1.04%	0.09%	-0.17%	0.15%	0.85%	-0.09%	-0.19%
-11	0.15%	1.19%	-0.11%	-0.28%	-0.04%	0.81%	0.06%	-0.13%
-10	-0.02%	1.17%	-0.03%	-0.31%	-0.22%	0.59%	0.14%	0.01%
-9	0.07%	1.24%	-0.03%	-0.34%	-0.09%	0.50%	0.03%	0.04%
-8	0.06%	1.30%	-0.01%	-0.35%	0.06%	0.56%	0.02%	0.06%
-7	-0.05%	1.25%	0.02%	-0.33%	0.00%	0.56%	0.02%	0.08%
-6	0.10%	1.35%	-0.04%	-0.37%	0.16%	0.72%	-0.09%	-0.01%
-5	-0.17%	1.18%	0.08%	-0.29%	-0.05%	0.67%	0.03%	0.02%
-4	-0.15%	1.03%	0.07%	-0.22%	-0.04%	0.63%	-0.02%	0.00%
-3	-0.12%	0.91%	0.04%	-0.18%	0.02%	0.65%	0.06%	0.06%
-2	0.24%	1.15%	-0.11%	-0.29%	-0.12%	0.53%	0.08%	0.14%
-1	-0.10%	1.05%	0.05%	-0.24%	-0.10%	0.43%	0.07%	0.21%
0	0.22%	1.27%	-0.15%	-0.39%	-0.11%	0.32%	0.03%	0.24%
1	0.08%	1.35%	-0.10%	-0.49%	-0.07%	0.25%	0.00%	0.24%
2	0.32%	1.67%	-0.21%	-0.70%	-0.04%	0.21%	0.08%	0.32%
3	0.32%	1.99%	-0.22%	-0.92%	-0.04%	0.17%	0.09%	0.41%
4	-0.06%	1.93%	0.00%	-0.92%	-0.17%	0.00%	0.11%	0.52%
5	0.01%	1.94%	0.04%	-0.88%	-0.04%	-0.04%	-0.01%	0.51%
6	-0.04%	1.90%	0.06%	-0.82%	-0.24%	-0.28%	0.16%	0.67%
7	0.21%	2.11%	-0.06%	-0.88%	-0.07%	-0.35%	0.02%	0.69%
8	-0.21%	1.90%	0.13%	-0.75%	-0.13%	-0.48%	0.06%	0.75%
9	0.29%	2.19%	-0.18%	-0.93%	0.00%	-0.48%	-0.03%	0.72%
10	0.11%	2.30%	-0.01%	-0.94%	0.05%	-0.43%	-0.01%	0.71%
11	-0.09%	2.21%	0.13%	-0.81%	0.17%	-0.26%	-0.09%	0.62%
12	0.62%	2.83%	-0.26%	-1.07%	0.02%	-0.24%	0.02%	0.64%
13	0.13%	2.96%	-0.04%	-1.11%	0.17%	-0.07%	-0.06%	0.58%
14	-0.14%	2.82%	0.03%	-1.08%	-0.10%	-0.17%	0.06%	0.64%
15	-0.39%	2.43%	0.17%	-0.91%	-0.18%	-0.35%	0.08%	0.72%
16	-0.08%	2.35%	0.02%	-0.89%	-0.18%	-0.53%	0.08%	0.80%
17	0.07%	2.42%	-0.04%	-0.93%	-0.05%	-0.58%	-0.01%	0.79%
18	-0.02%	2.40%	0.08%	-0.85%	-0.07%	-0.65%	0.03%	0.82%
19	0.08%	2.48%	-0.01%	-0.86%	-0.08%	-0.73%	0.05%	0.87%
20	0.36%	2.84%	-0.08%	-0.94%	-0.18%	-0.91%	0.10%	0.97%
21	0.31%	3.15%	-0.07%	-1.01%	0.05%	-0.86%	-0.05%	0.92%
22	0.21%	3.36%	-0.06%	-1.07%	0.18%	-0.68%	-0.13%	0.79%
23	0.00%	3.36%	0.02%	-1.05%	0.13%	-0.55%	-0.03%	0.76%
24	0.14%	3.50%	-0.01%	-1.06%	-0.03%	-0.58%	0.04%	0.80%
25	0.08%	3.58%	-0.09%	-1.15%	-0.17%	-0.75%	0.08%	0.88%
26	-0.12%	3.46%	0.11%	-1.04%	-0.15%	-0.90%	0.11%	0.99%
27	0.07%	3.53%	-0.06%	-1.10%	-0.13%	-1.03%	0.03%	1.02%
28	0.44%	3.97%	-0.20%	-1.30%	-0.08%	-1.11%	0.02%	1.04%
29	-0.27%	3.70%	0.19%	-1.11%	0.06%	-1.05%	0.04%	1.08%
30	-0.29%	3.41%	0.16%	-0.95%	-0.01%	-1.06%	0.00%	1.08%

Appendix 3.1

Table 3.A.1:

Abnormal Returns for the Event Study of the SEC Short-term Borrowing Disclosure Rule Proposal – Bank Holding Companies Portfolio

The sample consists of 288 bank holding companies (BHCs). The market model is estimated using the CRSP equal-weighted index to calculate the abnormal returns. The event dates correspond to April 21, 2010 (the announcement date) and September 17, 2010 (the voting date). Mean abnormal return (MAR) is the portfolio average abnormal return for the specific day in event time and MCAR is the portfolio mean cumulative abnormal return for day -30 to the specified day.

	Panel A - Announcement Date BHCs		Panel B - Voting Date BHCs	
Event Day	**MARs**	**MCARs**	**MARs**	**MCARs**
-30	-0.07%	-0.07%	0.22%	0.22%
-29	0.73%	0.66%	-0.50%	-0.28%
-28	0.61%	1.27%	-0.12%	-0.40%
-27	-0.29%	0.98%	0.38%	-0.02%
-26	0.59%	1.57%	-0.42%	-0.44%
-25	0.13%	1.70%	-0.16%	-0.60%
-24	0.19%	1.89%	-0.20%	-0.80%
-23	0.25%	2.14%	-0.09%	-0.89%
-22	1.53%	3.67%	-0.10%	-0.99%
-21	-0.13%	3.54%	-0.26%	-1.25%
-20	-0.45%	3.09%	-0.61%	-1.86%
-19	0.25%	3.34%	-0.01%	-1.87%
-18	0.60%	3.94%	-0.46%	-2.33%
-17	-0.37%	3.57%	0.39%	-1.94%
-16	-0.56%	3.01%	-0.01%	-1.95%
-15	0.07%	3.08%	-0.55%	-2.50%
-14	0.45%	3.53%	0.15%	-2.35%
-13	-0.48%	3.05%	-0.54%	-2.89%
-12	-0.14%	2.91%	0.71%	-2.18%
-11	0.87%	3.78%	-0.11%	-2.29%
-10	0.58%	4.36%	-0.40%	-2.69%
-9	0.53%	4.89%	0.12%	-2.57%
-8	-0.02%	4.87%	-0.51%	-3.08%
-7	0.56%	5.43%	0.17%	-2.91%
-6	0.26%	5.69%	0.36%	-2.55%
-5	0.74%	6.43%	-0.11%	-2.66%
-4	0.80%	7.23%	0.86%	-1.80%
-3	-0.13%	7.10%	-0.60%	-2.40%
-2	0.69%	7.79%	0.26%	-2.14%
-1	0.36%	8.15%	-0.54%	-2.68%
0	2.18%	10.33%	-0.05%	-2.73%
1	2.05%	12.38%	0.32%	-2.41%
2	2.27%	14.65%	-0.49%	-2.90%
3	1.64%	16.29%	-0.52%	-3.42%
4	0.23%	16.52%	-0.35%	-3.77%
5	-0.66%	15.86%	0.39%	-3.38%
6	-0.32%	15.54%	-0.66%	-4.04%
7	-0.13%	15.41%	-0.01%	-4.05%
8	-0.80%	14.61%	-0.17%	-4.22%
9	0.95%	15.56%	0.16%	-4.06%
10	0.76%	16.32%	-0.18%	-4.24%
11	1.25%	17.57%	0.03%	-4.21%
12	0.54%	18.11%	0.59%	-3.62%
13	-0.35%	17.76%	0.79%	-2.83%
14	0.30%	18.06%	-0.36%	-3.19%
15	-0.57%	17.49%	-0.53%	-3.72%
16	-0.05%	17.44%	-0.77%	-4.49%
17	0.13%	17.57%	0.44%	-4.05%
18	0.19%	17.76%	0.00%	-4.05%
19	-0.49%	17.27%	-0.60%	-4.65%
20	0.35%	17.62%	-0.54%	-5.19%
21	0.64%	18.26%	0.87%	-4.32%
22	0.38%	18.64%	0.47%	-3.85%
23	-0.43%	18.21%	-0.24%	-4.09%
24	0.66%	18.87%	-0.71%	-4.80%
25	1.03%	19.90%	-0.02%	-4.82%
26	-1.32%	18.58%	-0.52%	-5.34%
27	0.16%	18.74%	0.21%	-5.13%
28	-0.07%	18.67%	-0.01%	-5.14%
29	-0.16%	18.51%	-0.39%	-5.53%
30	-0.60%	17.91%	-0.17%	-5.70%

Table 3.A.2:

Abnormal Returns for the Event Study of the SEC Short-term Borrowing Disclosure Rule Proposal - Exchange versus OTC Traded Firms' Portfolios

The sample consists of 1,684 exchange traded (ET) and 813 OTC traded firms.. The market model is estimated using the CRSP equal-weighted index to calculate the abnormal returns. The event dates correspond to April 21, 2010 (the announcement date) and September 17, 2010 (the voting date). Mean abnormal return (MAR) is the portfolio average abnormal return for the specific day in event time and MCAR is the portfolio mean cumulative abnormal return for day -30 to the specified day.

	Panel A - Announcement Date				Panel B - Voting Date			
	ET		OTC		ET		OTC	
Event Day	MARs	MCARs	MARs	MCARs	MARs	MCARs	MARs	MCARs
-30	0.06%	0.06%	-0.08%	-0.08%	0.01%	0.01%	0.18%	0.18%
-29	-0.03%	0.03%	-0.04%	-0.12%	0.15%	0.16%	0.07%	0.25%
-28	0.08%	0.11%	0.01%	-0.11%	0.02%	0.18%	-0.03%	0.22%
-27	0.05%	0.16%	0.15%	0.04%	0.24%	0.42%	0.27%	0.49%
-26	0.14%	0.30%	0.06%	0.10%	0.12%	0.54%	-0.10%	0.39%
-25	0.08%	0.38%	0.27%	0.37%	-0.09%	0.45%	0.01%	0.40%
-24	0.15%	0.53%	0.22%	0.59%	0.15%	0.60%	0.24%	0.64%
-23	0.25%	0.78%	-0.05%	0.54%	-0.02%	0.58%	-0.03%	0.61%
-22	0.49%	1.27%	-0.01%	0.53%	-0.08%	0.50%	0.14%	0.75%
-21	-0.27%	1.00%	-0.03%	0.50%	-0.17%	0.33%	-0.02%	0.73%
-20	-0.22%	0.78%	-0.06%	0.44%	-0.02%	0.31%	0.20%	0.93%
-19	0.41%	1.19%	-0.29%	0.15%	0.06%	0.37%	-0.21%	0.72%
-18	0.42%	1.61%	0.09%	0.24%	0.08%	0.45%	0.43%	1.15%
-17	-0.09%	1.52%	0.14%	0.38%	0.24%	0.69%	0.01%	1.16%
-16	-0.19%	1.33%	0.29%	0.67%	-0.11%	0.58%	-0.27%	0.89%
-15	-0.04%	1.29%	0.04%	0.71%	-0.01%	0.57%	0.26%	1.15%
-14	0.19%	1.48%	0.15%	0.86%	-0.04%	0.53%	-0.24%	0.91%
-13	-0.15%	1.33%	0.32%	1.18%	-0.04%	0.49%	0.25%	1.16%
-12	-0.25%	1.08%	-0.17%	1.01%	0.22%	0.71%	0.01%	1.17%
-11	0.29%	1.37%	-0.16%	0.85%	-0.18%	0.53%	0.23%	1.40%
-10	0.10%	1.47%	-0.28%	0.57%	-0.31%	0.22%	-0.02%	1.38%
-9	0.12%	1.59%	-0.04%	0.53%	-0.10%	0.12%	-0.07%	1.31%
-8	0.01%	1.60%	0.17%	0.70%	-0.03%	0.09%	0.25%	1.56%
-7	-0.03%	1.57%	-0.09%	0.61%	-0.01%	0.08%	0.00%	1.56%
-6	0.16%	1.73%	-0.03%	0.58%	0.19%	0.27%	0.08%	1.64%
-5	-0.16%	1.57%	-0.17%	0.41%	-0.05%	0.22%	-0.06%	1.58%
-4	-0.15%	1.42%	-0.15%	0.26%	-0.01%	0.21%	-0.09%	1.49%
-3	0.00%	1.42%	-0.37%	-0.11%	-0.15%	0.06%	0.36%	1.85%
-2	0.34%	1.76%	0.03%	-0.08%	-0.17%	-0.11%	-0.03%	1.82%
-1	-0.15%	1.61%	0.01%	-0.07%	-0.17%	-0.28%	0.04%	1.86%
0	0.41%	2.02%	-0.20%	-0.27%	-0.07%	-0.35%	-0.18%	1.68%
1	0.28%	2.30%	-0.34%	-0.61%	0.00%	-0.35%	-0.20%	1.48%
2	0.50%	2.80%	-0.10%	-0.71%	-0.17%	-0.52%	0.22%	1.70%
3	0.57%	3.37%	-0.23%	-0.94%	-0.15%	-0.67%	0.18%	1.88%
4	0.10%	3.47%	-0.43%	-1.37%	-0.23%	-0.90%	-0.05%	1.83%
5	-0.06%	3.41%	0.16%	-1.21%	-0.04%	-0.94%	-0.03%	1.80%
6	-0.12%	3.29%	0.14%	-1.07%	-0.37%	-1.31%	0.02%	1.82%
7	0.22%	3.51%	0.19%	-0.88%	-0.06%	-1.37%	-0.09%	1.73%
8	-0.28%	3.23%	-0.04%	-0.92%	-0.15%	-1.52%	-0.09%	1.64%
9	0.57%	3.80%	-0.34%	-1.26%	0.06%	-1.46%	-0.13%	1.51%
10	0.10%	3.90%	0.12%	-1.14%	0.00%	-1.46%	0.15%	1.66%
11	-0.10%	3.80%	-0.07%	-1.21%	0.23%	-1.23%	0.05%	1.71%
12	0.72%	4.52%	0.40%	-0.81%	-0.04%	-1.27%	0.17%	1.88%
13	-0.05%	4.47%	0.52%	-0.29%	0.21%	-1.06%	0.10%	1.98%
14	-0.04%	4.43%	-0.34%	-0.63%	-0.14%	-1.20%	-0.02%	1.96%
15	-0.44%	3.99%	-0.27%	-0.90%	-0.20%	-1.40%	-0.13%	1.83%
16	0.00%	3.99%	-0.26%	-1.16%	-0.24%	-1.64%	-0.07%	1.76%
17	0.20%	4.19%	-0.22%	-1.38%	0.00%	-1.64%	-0.15%	1.61%
18	-0.10%	4.09%	0.15%	-1.23%	-0.11%	-1.75%	0.01%	1.62%
19	0.11%	4.20%	0.02%	-1.21%	-0.13%	-1.88%	0.02%	1.64%
20	0.33%	4.53%	0.43%	-0.78%	-0.25%	-2.13%	-0.02%	1.62%
21	0.35%	4.88%	0.23%	-0.55%	0.11%	-2.02%	-0.07%	1.55%
22	0.20%	5.08%	0.23%	-0.32%	0.37%	-1.65%	-0.22%	1.33%
23	0.01%	5.09%	-0.03%	-0.35%	0.06%	-1.59%	0.26%	1.59%
24	0.16%	5.25%	0.09%	-0.26%	-0.07%	-1.66%	0.06%	1.65%
25	0.23%	5.48%	-0.25%	-0.51%	-0.20%	-1.86%	-0.10%	1.55%
26	-0.33%	5.15%	0.35%	-0.16%	-0.28%	-2.14%	0.11%	1.66%
27	0.13%	5.28%	-0.06%	-0.22%	-0.07%	-2.21%	-0.23%	1.43%
28	0.52%	5.80%	0.25%	0.03%	-0.04%	-2.25%	-0.15%	1.28%
29	-0.46%	5.34%	0.15%	0.18%	-0.08%	-2.33%	0.34%	1.62%
30	-0.40%	4.94%	-0.03%	0.15%	0.01%	-2.32%	-0.04%	1.58%

Table 3.A.3:

Abnormal Returns for the Event Study of the SEC Short-term Borrowing Disclosure Rule Proposal - Commercial Banks versus Savings Institutions Portfolios

The sample consists of 336 commercial banks and 134 savings institutions. The market model is estimated using the CRSP equal-weighted index to calculate the abnormal returns. The event dates correspond to April 21, 2010 (the announcement date) and September 17, 2010 (the voting date). Mean abnormal return (MAR) is the portfolio average abnormal return for the specific day in event time and MCAR is the portfolio mean cumulative abnormal return for day -30 to the specified day.

	Panel A - Announcement Date				Panel B - Voting Date			
	Commercial Banks		Saving Institutions		Commercial Banks		Saving Institutions	
Event Day	MARs	MCARs	MARs	MCARs	MARs	MCARs	MARs	MCARs
-30	0.00%	0.00%	0.11%	0.11%	0.11%	0.11%	-0.36%	-0.36%
-29	0.47%	0.47%	-0.17%	-0.06%	-0.18%	-0.07%	0.15%	-0.21%
-28	0.51%	0.98%	0.26%	0.20%	0.02%	-0.05%	-0.41%	-0.62%
-27	-0.04%	0.94%	-0.06%	0.14%	0.27%	0.22%	0.13%	-0.49%
-26	0.33%	1.27%	0.44%	0.58%	-0.26%	-0.04%	-0.35%	-0.84%
-25	0.05%	1.32%	0.08%	0.66%	-0.30%	-0.34%	-0.61%	-1.45%
-24	0.17%	1.49%	0.28%	0.94%	-0.11%	-0.45%	-0.05%	-1.50%
-23	0.23%	1.72%	0.09%	1.03%	-0.23%	-0.68%	-0.26%	-1.76%
-22	1.10%	2.82%	0.69%	1.72%	-0.03%	-0.71%	0.23%	-1.53%
-21	-0.20%	2.62%	-0.15%	1.57%	-0.42%	-1.13%	-0.26%	-1.79%
-20	-0.32%	2.30%	0.36%	1.93%	-0.33%	-1.46%	0.20%	-1.59%
-19	0.09%	2.39%	0.90%	2.83%	0.06%	-1.40%	-0.07%	-1.66%
-18	1.21%	3.60%	-0.55%	2.28%	-0.62%	-2.02%	-0.29%	-1.95%
-17	-0.60%	3.00%	0.53%	2.81%	0.20%	-1.82%	-0.31%	-2.26%
-16	-0.55%	2.45%	-0.25%	2.56%	-0.09%	-1.91%	-0.60%	-2.86%
-15	0.22%	2.67%	0.18%	2.74%	-0.23%	-2.14%	0.19%	-2.67%
-14	0.23%	2.90%	-0.50%	2.24%	0.10%	-2.04%	-0.10%	-2.77%
-13	-0.46%	2.44%	-0.72%	1.52%	-0.31%	-2.35%	-0.37%	-3.14%
-12	-0.17%	2.27%	0.12%	1.64%	0.28%	-2.07%	-0.31%	-3.45%
-11	0.58%	2.85%	0.63%	2.27%	0.05%	-2.02%	-0.64%	-4.09%
-10	0.48%	3.33%	0.11%	2.38%	-0.52%	-2.54%	0.23%	-3.86%
-9	0.49%	3.82%	0.34%	2.72%	-0.01%	-2.55%	-0.42%	-4.28%
-8	0.07%	3.89%	0.27%	2.99%	-0.53%	-3.08%	0.00%	-4.28%
-7	0.48%	4.37%	-0.05%	2.94%	0.22%	-2.86%	-0.33%	-4.61%
-6	0.21%	4.58%	0.46%	3.40%	0.32%	-2.54%	0.24%	-4.37%
-5	0.38%	4.96%	0.26%	3.66%	-0.01%	-2.55%	-0.28%	-4.65%
-4	0.37%	5.33%	0.98%	4.64%	0.97%	-1.58%	0.66%	-3.99%
-3	0.03%	5.36%	-0.03%	4.61%	-0.56%	-2.14%	-0.04%	-4.03%
-2	0.46%	5.82%	-0.20%	4.41%	0.31%	-1.83%	-0.36%	-4.39%
-1	0.34%	6.16%	0.01%	4.42%	-0.55%	-2.38%	0.02%	-4.37%
0	1.79%	7.95%	0.99%	5.41%	0.12%	-2.26%	-0.82%	-5.19%
1	1.56%	9.51%	1.10%	6.51%	0.12%	-2.14%	0.85%	-4.34%
2	2.18%	11.69%	2.62%	9.13%	-0.40%	-2.54%	-0.43%	-4.77%
3	2.03%	13.72%	1.22%	10.35%	-0.45%	-2.99%	-0.48%	-5.25%
4	-0.24%	13.48%	-0.48%	9.87%	-0.26%	-3.25%	-0.12%	-5.37%
5	-0.44%	13.04%	-0.80%	9.07%	0.30%	-2.95%	0.11%	-5.26%
6	-0.44%	12.60%	-0.51%	8.56%	-0.78%	-3.73%	-0.64%	-5.90%
7	0.00%	12.60%	0.45%	9.01%	-0.12%	-3.85%	0.35%	-5.55%
8	-0.52%	12.08%	-0.18%	8.83%	-0.29%	-4.14%	0.03%	-5.52%
9	0.53%	12.61%	0.33%	9.16%	0.14%	-4.00%	0.28%	-5.24%
10	0.66%	13.27%	-0.49%	8.67%	-0.07%	-4.07%	0.23%	-5.01%
11	0.78%	14.05%	0.34%	9.01%	0.07%	-4.00%	0.05%	-4.96%
12	0.39%	14.44%	0.63%	9.64%	0.41%	-3.59%	0.29%	-4.67%
13	0.20%	14.64%	0.33%	9.97%	0.88%	-2.71%	0.46%	-4.21%
14	0.00%	14.64%	-0.03%	9.94%	-0.61%	-3.32%	-0.52%	-4.73%
15	-0.58%	14.06%	-0.08%	9.86%	-0.35%	-3.67%	0.22%	-4.51%
16	-0.19%	13.87%	-0.14%	9.72%	-0.72%	-4.39%	-0.78%	-5.29%
17	-0.09%	13.78%	0.95%	10.67%	0.33%	-4.06%	-0.04%	-5.33%
18	0.07%	13.85%	-0.57%	10.10%	-0.28%	-4.34%	0.62%	-4.71%
19	-0.22%	13.63%	-0.19%	9.91%	-0.66%	-5.00%	-0.36%	-5.07%
20	0.30%	13.93%	-0.47%	9.44%	-0.35%	-5.35%	-0.09%	-5.16%
21	0.35%	14.28%	0.54%	9.98%	0.72%	-4.63%	0.26%	-4.90%
22	0.59%	14.87%	-0.49%	9.49%	0.49%	-4.14%	0.11%	-4.79%
23	-0.43%	14.44%	-0.44%	9.05%	-0.03%	-4.17%	-0.12%	-4.91%
24	0.08%	14.52%	0.27%	9.32%	-0.81%	-4.98%	-0.42%	-5.33%
25	0.52%	15.04%	0.95%	10.27%	-0.02%	-5.00%	-0.36%	-5.69%
26	-0.77%	14.27%	-1.28%	8.99%	-0.86%	-5.86%	0.05%	-5.64%
27	-0.13%	14.14%	0.23%	9.22%	0.24%	-5.62%	0.01%	-5.63%
28	0.05%	14.19%	-0.14%	9.08%	0.06%	-5.56%	-0.32%	-5.95%
29	-0.13%	14.06%	-0.13%	8.95%	-0.35%	-5.91%	-0.48%	-6.43%
30	-0.76%	13.30%	-0.64%	8.31%	-0.11%	-6.02%	0.35%	-6.08%

Table 3.A.4-I:

Abnormal Returns for the Event Study of the SEC Short-term Borrowing Disclosure Rule Proposal - Size Portfolios of Financial Firms

The sample consists of size quartiles of 2,450 financial firms. The abnormal returns of the two extreme size quartiles are reported here. The market model is estimated using the CRSP equal-weighted index to calculate the abnormal returns. The event dates correspond to April 21, 2010 (the announcement date) and September 17, 2010 (the voting date). Mean abnormal return (MAR) is the portfolio average abnormal return for the specific day in event time and MCAR is the portfolio mean cumulative abnormal return for day -30 to the specified day.

	Panel A - Announcement Date				Panel B - Voting Date			
	Small Financial Firms - Q1		Large Financial Firms - Q4		Small Financial Firms - Q1		Large Financial Firms - Q4	
Event Day	MARs	MCARs	MARs	MCARs	MARs	MCARs	MARs	MCARs
-30	-0.21%	-0.21%	-0.05%	-0.05%	0.31%	0.31%	-0.04%	-0.04%
-29	0.22%	0.01%	-0.09%	-0.14%	0.11%	0.42%	0.01%	-0.03%
-28	-0.04%	-0.03%	0.21%	0.07%	-0.21%	0.21%	0.14%	0.11%
-27	0.13%	0.10%	0.10%	0.17%	0.44%	0.65%	0.32%	0.43%
-26	-0.11%	-0.01%	0.36%	0.53%	0.00%	0.65%	0.16%	0.59%
-25	0.19%	0.18%	0.24%	0.77%	-0.30%	0.35%	-0.07%	0.52%
-24	-0.10%	0.08%	0.46%	1.23%	0.23%	0.58%	0.15%	0.67%
-23	0.11%	0.19%	0.25%	1.48%	-0.29%	0.29%	-0.09%	0.58%
-22	-0.12%	0.07%	0.55%	2.03%	0.06%	0.35%	-0.09%	0.49%
-21	-0.43%	-0.36%	-0.19%	1.84%	-0.22%	0.13%	-0.02%	0.47%
-20	0.15%	-0.21%	-0.55%	1.29%	0.09%	0.22%	0.11%	0.58%
-19	0.03%	-0.18%	0.47%	1.76%	-0.14%	0.08%	-0.03%	0.55%
-18	0.50%	0.32%	0.40%	2.16%	-0.03%	0.05%	0.46%	1.01%
-17	-0.22%	0.10%	0.02%	2.18%	-0.16%	-0.11%	0.29%	1.30%
-16	-0.04%	0.06%	-0.07%	2.11%	-0.70%	-0.81%	-0.02%	1.28%
-15	0.09%	0.15%	-0.12%	1.99%	0.33%	-0.48%	-0.06%	1.22%
-14	0.11%	0.26%	0.38%	2.37%	-0.08%	-0.56%	-0.16%	1.06%
-13	-0.24%	0.02%	0.09%	2.46%	0.37%	-0.19%	-0.05%	1.01%
-12	-0.33%	-0.31%	-0.48%	1.98%	-0.18%	-0.37%	0.37%	1.38%
-11	0.26%	-0.05%	0.25%	2.23%	-0.21%	-0.58%	0.16%	1.54%
-10	-0.05%	-0.10%	-0.33%	1.90%	0.02%	-0.56%	-0.24%	1.30%
-9	0.30%	0.20%	0.00%	1.90%	-0.28%	-0.84%	0.08%	1.38%
-8	0.56%	0.76%	-0.07%	1.83%	0.41%	-0.43%	-0.12%	1.26%
-7	-0.01%	0.75%	-0.22%	1.61%	-0.17%	-0.60%	0.01%	1.27%
-6	0.22%	0.97%	0.09%	1.70%	0.25%	-0.35%	0.13%	1.40%
-5	0.13%	1.10%	-0.46%	1.24%	-0.06%	-0.41%	-0.09%	1.31%
-4	0.30%	1.40%	-0.61%	0.63%	0.26%	-0.15%	-0.14%	1.17%
-3	-0.25%	1.15%	-0.25%	0.38%	0.37%	0.22%	-0.16%	1.01%
-2	-0.23%	0.92%	0.75%	1.13%	-0.03%	0.19%	0.06%	1.07%
-1	0.14%	1.06%	-0.32%	0.81%	-0.03%	0.16%	-0.09%	0.98%
0	0.82%	1.88%	0.10%	0.91%	-0.14%	0.02%	-0.25%	0.73%
1	0.82%	2.70%	-0.29%	0.62%	-0.10%	-0.08%	-0.16%	0.57%
2	2.05%	4.75%	-0.45%	0.17%	0.05%	-0.03%	-0.24%	0.33%
3	2.55%	7.30%	-0.84%	-0.67%	0.34%	0.31%	-0.28%	0.05%
4	-0.87%	6.43%	0.10%	-0.57%	-0.18%	0.13%	-0.45%	-0.40%
5	-0.62%	5.81%	0.42%	-0.15%	-0.20%	-0.07%	0.11%	-0.29%
6	-0.39%	5.42%	0.30%	0.15%	-0.13%	-0.20%	-0.45%	-0.74%
7	-0.04%	5.38%	0.37%	0.52%	-0.06%	-0.26%	-0.15%	-0.89%
8	-0.31%	5.07%	-0.20%	0.32%	-0.05%	-0.31%	-0.30%	-1.19%
9	-0.22%	4.85%	0.69%	1.01%	-0.03%	-0.34%	-0.04%	-1.23%
10	-0.43%	4.42%	0.87%	1.88%	0.13%	-0.21%	-0.05%	-1.28%
11	-0.47%	3.95%	0.95%	2.83%	-0.08%	-0.29%	0.47%	-0.81%
12	0.04%	3.99%	1.13%	3.96%	0.06%	-0.23%	-0.01%	-0.82%
13	0.41%	4.40%	-0.35%	3.61%	0.37%	0.14%	0.01%	-0.81%
14	-0.46%	3.94%	-0.39%	3.22%	-0.18%	-0.04%	-0.06%	-0.87%
15	-0.50%	3.44%	-0.83%	2.39%	-0.19%	-0.23%	-0.49%	-1.36%
16	-0.03%	3.41%	-0.08%	2.31%	-0.32%	-0.55%	-0.23%	-1.59%
17	-0.34%	3.07%	0.47%	2.78%	0.16%	-0.39%	-0.08%	-1.67%
18	-0.62%	2.45%	0.52%	3.30%	0.16%	-0.23%	-0.27%	-1.94%
19	0.06%	2.51%	0.17%	3.47%	-0.22%	-0.45%	-0.09%	-2.03%
20	-0.52%	1.99%	1.25%	4.72%	0.02%	-0.43%	-0.33%	-2.36%
21	-0.09%	1.90%	1.00%	5.72%	-0.12%	-0.55%	0.34%	-2.02%
22	-0.04%	1.86%	0.58%	6.30%	0.03%	-0.52%	0.47%	-1.55%
23	0.30%	2.16%	-0.45%	5.85%	0.29%	-0.23%	-0.03%	-1.58%
24	-0.67%	1.49%	1.05%	6.90%	-0.15%	-0.38%	0.11%	-1.47%
25	0.89%	2.38%	-0.45%	6.45%	-0.05%	-0.43%	-0.40%	-1.87%
26	-0.37%	2.01%	-0.36%	6.09%	0.10%	-0.33%	-0.44%	-2.31%
27	0.32%	2.33%	-0.11%	5.98%	-0.12%	-0.45%	-0.23%	-2.54%
28	0.08%	2.41%	0.88%	6.86%	-0.22%	-0.67%	0.05%	-2.49%
29	-0.76%	1.65%	-0.18%	6.68%	0.27%	-0.40%	-0.06%	-2.55%
30	-0.17%	1.48%	-0.45%	6.23%	0.28%	-0.12%	-0.24%	-2.79%

Table 3.A.4-II:

Abnormal Returns for the Event Study of the SEC Short-term Borrowing Disclosure Rule Proposal - Size Portfolios of Non-financial Firms

The sample consists of size quartiles of 3,975 non-financial firms. The abnormal returns of two extreme size quartiles are reported here. The market model is estimated using the CRSP equal-weighted index to calculate the abnormal returns. The event dates correspond to April 21, 2010 (the announcement date) and September 17, 2010 (the voting date). Mean abnormal return (MAR) is the portfolio average abnormal return for the specific day in event time and MCAR is the portfolio mean cumulative abnormal return for day -30 to the specified day.

	Panel A - Announcement Date				**Panel B - Voting Date**			
	Small Non-Financial Firms - Q1		**Large Non-Financial Firms - Q4**		**Small Non-Financial Firms - Q1**		**Large Non-Financial Firms - Q4**	
Event Day	**MARs**	**MCARs**	**MARs**	**MCARs**	**MARs**	**MCARs**	**MARs**	**MCARs**
-30	0.16%	0.16%	-0.09%	-0.09%	0.47%	0.47%	0.35%	0.35%
-29	0.05%	0.21%	0.03%	-0.06%	0.11%	0.58%	0.07%	0.42%
-28	0.07%	0.28%	-0.02%	-0.08%	-0.41%	0.17%	-0.12%	0.30%
-27	0.04%	0.32%	0.22%	0.14%	0.21%	0.38%	0.28%	0.58%
-26	-0.31%	0.01%	0.14%	0.28%	0.31%	0.69%	0.05%	0.63%
-25	-0.03%	-0.02%	0.22%	0.50%	-0.05%	0.64%	0.00%	0.63%
-24	-0.17%	-0.19%	0.15%	0.65%	0.16%	0.80%	0.21%	0.84%
-23	-0.33%	-0.52%	-0.11%	0.54%	-0.70%	0.10%	-0.24%	0.60%
-22	-0.04%	-0.56%	-0.06%	0.48%	-0.34%	-0.24%	0.22%	0.82%
-21	-0.73%	-1.29%	0.31%	0.79%	-0.06%	-0.30%	0.11%	0.93%
-20	-0.03%	-1.32%	0.03%	0.82%	0.26%	-0.04%	0.42%	1.35%
-19	0.28%	-1.04%	-0.29%	0.53%	-0.20%	-0.24%	-0.07%	1.28%
-18	-0.17%	-1.21%	-0.26%	0.27%	-0.33%	-0.57%	0.36%	1.64%
-17	0.09%	-1.12%	0.11%	0.38%	-0.55%	-1.12%	-0.26%	1.38%
-16	-0.14%	-1.26%	0.47%	0.85%	-0.83%	-1.95%	-0.14%	1.24%
-15	-0.05%	-1.31%	0.03%	0.88%	0.11%	-1.84%	0.04%	1.28%
-14	-0.15%	-1.46%	0.08%	0.96%	-0.36%	-2.20%	-0.08%	1.20%
-13	-0.33%	-1.79%	0.48%	1.44%	0.57%	-1.63%	0.08%	1.28%
-12	-0.26%	-2.05%	-0.03%	1.41%	0.15%	-1.48%	-0.16%	1.12%
-11	0.32%	-1.73%	-0.37%	1.04%	-0.80%	-2.28%	0.40%	1.52%
-10	0.19%	-1.54%	-0.44%	0.60%	-0.05%	-2.33%	0.45%	1.97%
-9	0.39%	-1.15%	-0.18%	0.42%	0.15%	-2.18%	-0.10%	1.87%
-8	0.23%	-0.92%	0.29%	0.71%	0.42%	-1.76%	0.21%	2.08%
-7	0.40%	-0.52%	-0.18%	0.53%	-0.04%	-1.80%	-0.14%	1.94%
-6	-0.32%	-0.84%	-0.07%	0.46%	-0.06%	-1.86%	0.00%	1.94%
-5	0.23%	-0.61%	-0.36%	0.10%	0.40%	-1.46%	-0.02%	1.92%
-4	0.13%	-0.48%	-0.17%	-0.07%	-0.07%	-1.53%	-0.37%	1.55%
-3	0.12%	-0.36%	-0.18%	-0.25%	0.07%	-1.46%	0.31%	1.86%
-2	-0.26%	-0.62%	0.05%	-0.20%	-0.42%	-1.88%	0.15%	2.01%
-1	-0.12%	-0.74%	0.06%	-0.14%	0.30%	-1.58%	0.20%	2.21%
0	-0.24%	-0.98%	-0.24%	-0.38%	0.11%	-1.47%	-0.18%	2.03%
1	-0.29%	-1.27%	-0.11%	-0.49%	-0.32%	-1.79%	-0.36%	1.67%
2	-0.09%	-1.36%	-0.03%	-0.52%	0.51%	-1.28%	0.05%	1.72%
3	0.16%	-1.20%	-0.44%	-0.96%	0.45%	-0.83%	0.13%	1.85%
4	0.12%	-1.08%	-0.44%	-1.40%	0.38%	-0.45%	0.05%	1.90%
5	-0.21%	-1.29%	0.22%	-1.18%	-0.63%	-1.08%	0.00%	1.90%
6	-0.40%	-1.69%	-0.03%	-1.21%	0.41%	-0.67%	-0.04%	1.86%
7	0.48%	-1.21%	0.12%	-1.09%	-0.02%	-0.69%	0.01%	1.87%
8	-0.65%	-1.86%	0.13%	-0.96%	-0.12%	-0.81%	-0.10%	1.77%
9	-0.32%	-2.18%	-0.23%	-1.19%	0.38%	-0.43%	-0.23%	1.54%
10	-0.48%	-2.66%	0.36%	-0.83%	-0.20%	-0.63%	-0.03%	1.51%
11	-0.85%	-3.51%	0.38%	-0.45%	0.08%	-0.55%	0.05%	1.56%
12	-0.22%	-3.73%	-0.05%	-0.50%	-0.68%	-1.23%	-0.02%	1.54%
13	-0.34%	-4.07%	0.36%	-0.14%	0.38%	-0.85%	-0.27%	1.27%
14	0.01%	-4.06%	-0.47%	-0.61%	0.03%	-0.82%	0.07%	1.34%
15	-0.14%	-4.20%	0.02%	-0.59%	-0.02%	-0.84%	-0.14%	1.20%
16	0.63%	-3.57%	-0.41%	-1.00%	0.28%	-0.56%	-0.01%	1.19%
17	-0.45%	-4.02%	-0.03%	-1.03%	0.36%	-0.20%	-0.15%	1.04%
18	-0.77%	-4.79%	0.29%	-0.74%	0.00%	-0.20%	-0.24%	0.80%
19	-0.29%	-5.08%	0.11%	-0.63%	0.22%	0.02%	-0.27%	0.53%
20	-1.09%	-6.17%	0.48%	-0.15%	0.11%	0.13%	0.29%	0.82%
21	-0.64%	-6.81%	0.20%	0.05%	0.02%	0.15%	-0.42%	0.40%
22	-0.46%	-7.27%	0.52%	0.57%	0.12%	0.27%	0.01%	0.41%
23	0.24%	-7.03%	-0.24%	0.33%	0.06%	0.33%	0.10%	0.51%
24	-1.13%	-8.16%	0.76%	1.09%	0.27%	0.60%	0.34%	0.85%
25	0.07%	-8.09%	-0.26%	0.83%	0.33%	0.93%	-0.05%	0.80%
26	-0.28%	-8.37%	0.34%	1.17%	-0.02%	0.91%	0.07%	0.87%
27	0.46%	-7.91%	-0.29%	0.88%	0.66%	1.57%	-0.14%	0.73%
28	0.24%	-7.67%	-0.14%	0.74%	-0.25%	1.32%	0.23%	0.96%
29	-0.71%	-8.38%	0.84%	1.58%	0.13%	1.45%	0.27%	1.23%
30	-0.46%	-8.84%	0.38%	1.96%	0.00%	1.45%	0.05%	1.28%

Table 3.A.4-III:

Abnormal Returns for the Event Study of the SEC Short-term Borrowing Disclosure Rule Proposal - Size Portfolios of Bank Holding Companies

The sample consists of size quartiles of 288 bank holding companies (BHCs). The abnormal returns of two extreme size quartiles are reported here. The market model is estimated using the CRSP equal-weighted index to calculate the abnormal returns. The event dates correspond to April 21, 2010 (the announcement date) and September 17, 2010 (the voting date). Mean abnormal return (MAR) is the portfolio average abnormal return for the specific day in event time and MCAR is the portfolio mean cumulative abnormal return for day -30 to the specified day.

	Panel A - Announcement Date				Panel B - Voting Date			
	Small BHCs - Q1		Large BHCs - Q4		Small BHCs - Q1		Large BHCs - Q4	
Event Day	MARs	MCARs	MARs	MCARs	MARs	MCARs	MARs	MCARs
-30	-0.55%	-0.55%	-0.22%	-0.22%	2.24%	2.24%	-0.39%	-0.39%
-29	1.45%	0.90%	0.70%	0.48%	-0.83%	1.41%	-0.85%	-1.24%
-28	0.30%	1.20%	1.02%	1.50%	-1.22%	0.19%	0.54%	-0.70%
-27	-0.33%	0.87%	-0.22%	1.28%	1.04%	1.23%	0.25%	-0.45%
-26	0.82%	1.69%	0.96%	2.24%	-0.33%	0.90%	-0.52%	-0.97%
-25	-0.33%	1.36%	0.48%	2.72%	0.21%	1.11%	-0.60%	-1.57%
-24	-1.01%	0.35%	1.06%	3.78%	0.38%	1.49%	-0.22%	-1.79%
-23	0.56%	0.91%	0.10%	3.88%	-1.09%	0.40%	-0.02%	-1.81%
-22	-0.45%	0.46%	1.79%	5.67%	-0.41%	-0.01%	-0.59%	-2.40%
-21	-0.12%	0.34%	0.01%	5.68%	-0.10%	-0.11%	-0.02%	-2.42%
-20	-0.28%	0.06%	-0.88%	4.80%	-0.77%	-0.88%	-0.05%	-2.47%
-19	0.18%	0.24%	0.54%	5.34%	-0.16%	-1.04%	-0.26%	-2.73%
-18	1.11%	1.35%	0.89%	6.23%	-0.56%	-1.60%	0.04%	-2.69%
-17	-0.47%	0.88%	-0.58%	5.65%	-0.42%	-2.02%	0.47%	-2.22%
-16	-0.88%	0.00%	-0.83%	4.82%	-1.09%	-3.11%	-0.51%	-2.73%
-15	-0.41%	-0.41%	-0.20%	4.62%	-1.28%	-4.39%	-0.20%	-2.93%
-14	-0.04%	-0.45%	0.75%	5.37%	-0.24%	-4.63%	0.00%	-2.93%
-13	-0.88%	-1.33%	-0.29%	5.08%	0.70%	-3.93%	-1.20%	-4.13%
-12	-0.70%	-2.03%	-0.74%	4.34%	0.57%	-3.36%	1.00%	-3.13%
-11	0.00%	-2.03%	1.65%	5.99%	-1.09%	-4.45%	0.76%	-2.37%
-10	0.46%	-1.57%	-0.25%	5.74%	0.39%	-4.06%	-0.39%	-2.76%
-9	0.57%	-1.00%	0.54%	6.28%	-0.70%	-4.76%	0.46%	-2.30%
-8	1.30%	0.30%	-0.47%	5.81%	0.88%	-3.88%	-1.08%	-3.38%
-7	1.04%	1.34%	0.39%	6.20%	-0.30%	-4.18%	0.49%	-2.89%
-6	1.25%	2.59%	-0.61%	5.59%	0.59%	-3.59%	0.78%	-2.11%
-5	1.20%	3.79%	0.40%	5.99%	0.63%	-2.96%	-0.40%	-2.51%
-4	1.85%	5.64%	-0.54%	5.45%	1.08%	-1.88%	0.64%	-1.87%
-3	-0.92%	4.72%	-0.56%	4.89%	0.74%	-1.14%	-1.32%	-3.19%
-2	0.38%	5.10%	1.50%	6.39%	0.70%	-0.44%	-0.07%	-3.26%
-1	0.04%	5.14%	-0.12%	6.27%	-0.01%	-0.45%	-0.51%	-3.77%
0	4.49%	9.63%	1.28%	7.55%	0.35%	-0.10%	-0.31%	-4.08%
1	5.76%	15.39%	0.72%	8.27%	-0.46%	-0.56%	0.30%	-3.78%
2	8.11%	23.50%	-1.28%	6.99%	-0.45%	-1.01%	-0.77%	-4.55%
3	10.11%	33.61%	-3.34%	3.65%	0.46%	-0.55%	-1.23%	-5.78%
4	-2.24%	31.37%	1.26%	4.91%	0.09%	-0.46%	-0.28%	-6.06%
5	-3.14%	28.23%	0.79%	5.70%	-0.59%	-1.05%	0.45%	-5.61%
6	-1.18%	27.05%	0.11%	5.81%	-0.42%	-1.47%	-0.95%	-6.56%
7	-0.96%	26.09%	0.83%	6.64%	-0.75%	-2.22%	-0.15%	-6.71%
8	-0.80%	25.29%	-1.03%	5.61%	0.12%	-2.10%	-0.35%	-7.06%
9	0.43%	25.72%	1.54%	7.15%	0.00%	-2.10%	0.22%	-6.84%
10	-0.85%	24.87%	2.71%	9.86%	-0.03%	-2.13%	-0.43%	-7.27%
11	-0.26%	24.61%	2.70%	12.56%	-0.07%	-2.20%	0.18%	-7.09%
12	0.03%	24.64%	1.63%	14.19%	0.12%	-2.08%	0.38%	-6.71%
13	0.07%	24.71%	-1.87%	12.32%	1.48%	-0.60%	0.02%	-6.69%
14	-1.11%	23.60%	0.44%	12.76%	-0.27%	-0.87%	-0.36%	-7.05%
15	-0.51%	23.09%	-1.38%	11.38%	-0.72%	-1.59%	-1.11%	-8.16%
16	-0.51%	22.58%	0.03%	11.41%	-1.15%	-2.74%	-0.64%	-8.80%
17	-0.60%	21.98%	0.96%	12.37%	1.64%	-1.10%	0.26%	-8.54%
18	-1.86%	20.12%	1.04%	13.41%	-0.16%	-1.26%	-0.48%	-9.02%
19	-1.79%	18.33%	-0.36%	13.05%	-0.24%	-1.50%	-1.20%	-10.22%
20	-1.67%	16.66%	2.08%	15.13%	-0.50%	-2.00%	-1.47%	-11.69%
21	-1.08%	15.58%	2.19%	17.32%	0.22%	-1.78%	1.54%	-10.15%
22	0.37%	15.95%	0.70%	18.02%	-0.46%	-2.24%	1.37%	-8.78%
23	0.91%	16.86%	-1.33%	16.69%	0.90%	-1.34%	-1.74%	-10.52%
24	-0.35%	16.51%	2.05%	18.74%	-0.74%	-2.08%	0.13%	-10.39%
25	1.89%	18.40%	-0.46%	18.28%	0.95%	-1.13%	-0.44%	-10.83%
26	-1.91%	16.49%	-2.24%	16.04%	0.57%	-0.56%	-1.95%	-12.78%
27	0.43%	16.92%	-0.45%	15.59%	0.02%	-0.54%	0.03%	-12.75%
28	-0.58%	16.34%	1.33%	16.92%	0.18%	-0.36%	0.64%	-12.11%
29	-1.03%	15.31%	-0.31%	16.61%	-0.80%	-1.16%	-0.28%	-12.39%
30	-0.61%	14.70%	-1.08%	15.53%	0.81%	-0.35%	-0.59%	-12.98%

4. Chapter Four

Information Asymmetry and Market Response to Dividend Change Announcements: Unregulated versus Regulated Firms

4.1. Introduction

In the last few decades, scholars have produced extensive research on the dividend policy of industrial firms, largely focusing on two areas. The first stream of dividend research has explored the determinants of dividend payouts and provided several explanations for firms' motivations to pay dividends. Another strand of dividend policy literature has focused on the wealth effects of dividend change, initiation and omission announcements. Despite a growing literature in this field, the research on the wealth effects of changes in dividend policy is still developing. Most of this research has focused on industrial firms, excluding regulated firms such as utilities and financial firms; this is probably based on the notion that the regulated firms are different because they face more scrutiny by regulators. Typically, the exclusion of regulated firms is based on the uniqueness assumption rather than empirical evidence validating the different nature of regulated firms with respect to dividend change announcements and their wealth effects. So far, only a few researchers have studied the market effect of dividend changes for regulated firms. However, such studies are limited because they focus on regulated firms, without any direct comparison with unregulated firms. The importance of dividend policies of regulated firms is further emphasized by Baker (2009), who argues that "compared to the voluminous work on non-regulated

industries, research examining dividend policy in regulated industries is relatively sparse". Baker lists two motivations for studying the dividend policies of regulated firms: 1) given that most researchers drop regulated firms, it is important to seek more insight into the dividend policies of regulated firms and investigate any differences in the dividend polices of regulated and unregulated firms, and 2) the research on the dividend policies of regulated firms allows for controls when investigating specific areas of dividend policies.

To the best of my knowledge, no empirical study has explored the differences in stock price reaction to the dividend change announcements using large-scale samples of unregulated and regulated firms. Similarly, inasmuch as no previous study has compared the wealth effects of dividend change announcements for unregulated and regulated firms, the extant literature lacks empirical evidence on determinant(s) of a different stock price reaction, if any, between unregulated and regulated firms. This study bridges this gap by empirically testing whether stock price reaction to the dividend changes is indeed different for unregulated and regulated firms and conducts cross-sectional analyses to identify the reason(s) for the difference, if any.

On one hand, the most plausible theory in the dividend literature, the information content hypothesis, suggests that asymmetric information between managers and investors affects the stock price reaction to dividend change announcements. It is argued that the level of asymmetric information positively affects the magnitude of investors' reaction to announcements of dividend

changes for several reasons. Bhattacharya (1979) contends that in the presence of information asymmetry, dividends are useful in signaling a firm's future prospects. Similarly, Miller and Rock (1982) provide a theoretical argument that the market reaction to dividend change announcements is a result of information asymmetry between investors and managers. Recently, Amihud and Li (2006) associate the decline in the information content of dividend change events to the decrease in the level of asymmetric information through the channel of institutional ownership. Overall, the theory predicts that the magnitude of investors' reaction is conditional on the asymmetric information between managers and shareholders, since a higher level of information asymmetry would result in a greater surprise for investors. In other words, dividend changes by firms with higher levels of information asymmetry would lead to relatively stronger stock price reactions.

On the other hand, extant literature provides evidence that unregulated firms have higher levels of information asymmetry compared to regulated firms. For instance, publically-listed utilities and bank holding companies (financial firms) are subject to additional disclosure requirements under SEC Guides 1 and 3, respectively. Similarly, Saxena (1999) claims that "regulators act as delegated monitors of firm behaviour", thus mitigating the asymmetric information between managers and investors. In addition, I argue that product, geographic and price regulations further mitigate the asymmetric information for regulated financial and utilities firms.

Taken together, the higher level of asymmetric information for unregulated firms predicts that the stock price reaction to dividend change events should be stronger for unregulated firms than regulated firms[10]. Accordingly, I use large samples of unregulated and regulated firms over the period 1960 to 2010 in order to investigate empirically this research question. Inasmuch as the regulatory environments of financial firms and utilities are different, I divide regulated firms into two subgroups. Specifically, I use an event study methodology and apply the market model to equal-weighted[11] portfolios of 22,838 (4,002), 19,200 (5,556) and 4,447 (333) firm-events of dividend increases (decreases) by unregulated, regulated-financial and regulated-utilities firms, respectively, during the period 1960 to 2010 to calculate mean cumulative abnormal stock returns (MCARs, hereafter) in response to dividend increase and decrease announcements. The stock price reaction, though in the same direction, for unregulated firms differs from those of regulated firms. I observe a stronger positive (negative) stock price reaction to the announcement of dividend increases (decreases) by investors in unregulated firms than by investors in financial and utilities firms.

Specifically, I find that for the dividend increase sample, abnormal returns for unregulated firms are almost twice as high as those of regulated-financial and

[10] The regulation brings its own risk in the form of uncertainty about regulators' future actions, however, both insiders (managers) and outsiders (shareholders) should be equally affected by such regulatory risk. Consequently, there should be no significant effect on the level of information asymmetry for the regulated firms.

[11] The findings are similar in an alternate specification (results not reported) when value-weighted portfolios of firm-events are used in the market model.

approximately 20% higher than those of regulated-utilities, for both 3-day and 21-day event windows. The mean difference tests generally confirm the significance of the difference between the MCARs of unregulated firms and each type of regulated firm. The results suggest that dividend increase announcements provide more information to the shareholders of unregulated firms compared to investors in regulated (financial and utilities) companies. For the dividend decrease sample, I also find that the magnitude of the average negative abnormal return for dividend decrease announcements by unregulated firms is at least twice as high as that for regulated-financial firms and at least 30% higher compared to regulated-utilities. I also observe that the difference in MCARs for unregulated and regulated firms is statistically significant, though not as strong as that observed for the dividend increase sample. This finding suggests that while dividend decrease events convey negative signals to investors of both regulated and unregulated firms, such announcements are perhaps more detrimental for shareholders of unregulated firms. Overall, higher abnormal returns around the dividend increase and decrease announcements of unregulated firms relative to financial and utilities companies provide support for my first hypothesis and suggest that the information content hypothesis has more explanatory power to determine the wealth effects of dividend changes for unregulated firms.

The evidence for a stronger reaction to dividend change announcements by unregulated firms could be attributed to differences in firm-specific and market-wide factors between unregulated and regulated firms. It is, therefore,

important to control for such factors and confirm if the stronger stock price reaction in response to dividend change announcements by unregulated firms is robust to differences in firm characteristics. Therefore, in cross-sectional analysis, I control for the factors believed to have an effect on the dividend policy, including firm size, dividend yield, profitability, firm age, market-to-book ratio, leverage, earnings volatility, net taxes and business cycle. I combine the unregulated and regulated samples of dividend increase and decrease events, create "firm type" dummy variables for unregulated, regulated-financial and regulated-utilities firms and estimate multivariate specifications, while excluding a dummy variable for unregulated firms. Since I typically expect negative abnormal returns in response to dividend decrease announcements, a modified specification is used with $(-1) * CAR$ as the dependent variable for the dividend decrease sample to establish a direct relationship between the dependent and independent variables. In such a specification, negative and significant coefficients on the "Financial" and "Utilities" dummies would confirm that the stock price reaction to dividend changes is significantly less for regulated firms compared to unregulated firms. Furthermore, extant literature highlights the importance of controlling the effect of contemporaneous earnings announcements[12] on the stock price reaction of banks. Therefore, to ensure the

[12] The literature provides weak evidence for the effect of contemporaneous earnings announcements on the stock price reaction to dividend change announcements. For instance, Asquith and Mullins (1983) do not control for contemporaneous earnings and argue that investors' reaction to dividend changes is not sensitive to other contemporaneous announcements. Most studies (Yoon and Starks, 1995; Denis et al, 1994; Bessler and Nohel, 1996; and Nissim & Ziv, 2001) do not control for earnings announcements. Bessler and Nohel (2000) argue that to test the

robustness of my main finding, I control for contemporaneous earnings announcement effects.

For the dividend increase events, I find that the coefficients on both regulated dummies (Financial and Utilities) are negative and mostly significant regardless of the choice of CAR measure (3-day or 21-day window) and control of contemporaneous earnings announcements, providing strong support for the first hypothesis. The results show that the stock price reaction to dividend increase announcements is significantly higher for unregulated firms than regulated firms. On the other hand, for the dividend decrease sample, I find that the coefficients on both regulated dummies (Financial and Utilities) are negative but insignificant in all specifications and control of earnings announcements. This result does not support the first hypothesis for dividend decrease announcements, as the difference in stock price reaction observed in the univariate analysis is not robust to control variables. The finding indicates that the dividend signaling hypothesis is perhaps equally important for unregulated and regulated firms when the announcement is for a dividend decrease. Taken together, I find the findings to be consistent with the information content hypothesis. It seems that the regulatory environment only plays a role in moderating investors' reaction to dividend increase events. In general, there is more standardized information available for regulated firms, so dividend increases by such firms are less surprising. However, when dividends are decreased it is often a surprise for

contagion effect in a bank's stock return it is important to control for contemporaneous earnings announcements.

investors for all types of firms since the even for the regulated firms with less information asymmetry the timing of the dividend decrease cannot be predicted. This evidence appears to be consistent with an argument by Lintner (1956), who found that all firms were reluctant to decrease dividends.

Next, given a stronger stock price reaction to the dividend increase announcements of unregulated firms, it is important to explore the factors that explain this result. Therefore, I examine the question of whether a stronger positive stock price reaction from the investors of unregulated firms for dividend increase announcements is a result of a higher level of information asymmetry. Borrowing from the literature, I use several measures of information asymmetry, including firm size, firm age, listing on the New York or American Stock Exchanges, presence of a debt rating and inclusion in the S&P 500 index. I then use a multivariate specification with CAR as the dependent variable and information asymmetry as the independent variable, while interacting the "unregulated" dummy and information asymmetry measures. A negative and significant coefficient on the interaction term between the information asymmetry measure and the "unregulated" dummy would support the hypothesis. I find that coefficients on most interaction terms are negative regardless of the choice of CAR measure and three out of five interaction terms (except between Rated/S&P and the unregulated dummy) are significant as well. Overall, I find support for the hypothesis that the higher stock price reaction to dividend increase announcements by unregulated firms is driven by the level of information

asymmetry between managers and stockholders. Furthermore, the results are qualitatively robust when I control for dividend yield and magnitude of dividend increase.

This study contributes to the dividend literature in several ways. First, this appears to be the first large-scale empirical study to compare stockholder reaction to dividend change announcements by unregulated and regulated firms. The empirical findings in this paper fill an important gap in the dividend literature and potentially help in resolving the puzzle whether the wealth effects of dividend changes differ for regulated and unregulated firms. Second, consistent with motivations presented in Baker (2009), this study not only provides an in-depth analysis about the differences between regulated and unregulated firms with respect to the wealth effects of dividend change announcements, but also offers a set of controls for future research on dividend policy. Third, given the evidence of a different stock price reaction for dividend increase announcements by unregulated firms compared to regulated firms, the findings of this study may have implications for short-term investors. Finally, my findings provide empirical evidence for and against the common assumption about the uniqueness of regulated firms compared to unregulated firms with respect to wealth effects of dividend policy changes, as I find that the uniqueness assumption only holds for dividend increase announcements.

The rest of the paper is organized as follows. Section 4.2 reviews the relevant literature on stock price reaction to dividend changes and on comparisons

of regulated and unregulated firms. In addition, this section develops the testable hypotheses. Section 4.3 compares the stock price reaction to dividend changes between unregulated and regulated firms. Section 4.4 explores the determinants of differences in market reaction to dividend increase announcements by unregulated and regulated firms, and Section 4.5 concludes the study.

4.2. Theory and Empirical Hypotheses

4.2.1. Literature Review

Extensive research has been conducted on the motivations and determinants of corporate dividend policy and the wealth effects of dividend change announcements. Researchers have presented several explanations for dividend policy based on the dividend cash-flow signaling or information content hypothesis (Lintner, 1956; Bhattacharya, 1979), the free cash flow or agency hypothesis (Jensen, 1986), the maturity hypothesis (Fama and French, 2001; Grullon et al, 2002 and DeAngelo and DeAngelo, 2006), the tax-based clientele hypothesis (Perez-Gonzalez, 2003), the bird-in-the-hand theory (Gordon, 1963; Baker and Powell, 1999) and, more recently, the catering hypothesis (Baker and Wurgler, 2004). Several studies have explored the stock price reaction to dividend changes, dividend initiations and dividend omissions[13] and examined determinants of the stock price reaction to announcements of such events.

[13] Dividend change studies include Aharony and Swary, 1980; Bajaj and Vijh, 1990; Filbeck and Mullineaux, 1993; Dhillon and Johnson, 1994; Denis et al, 1994; Black et al, 1995; Yoon and Starks, 1995; Amihud and Li, 2006; Bessler and Nohel, 1996; Nissim and Ziv, 2001; Lee and Yan, 2003; Docking and Koch, 2005; Li and Lie, 2006; Fracassi, 2008; Bulan, 2010; Charitou et al, 2011; and Choi et al, 2011. Asquith and Mullins, 1983, and Kohers, 1999, studied the stock price reaction to dividend initiation and omission.

Consistent with the purpose of this study, I mainly focus on a review of the literature on stock price reaction to dividend changes (increases and decreases) and the determinants of such reactions.

The extant research has predominantly explored the market reaction to dividend changes by unregulated (industrial) firms. The literature documents a positive relationship between dividend change announcements and the stock price reaction (Aharony and Swary, 1980; Asquith and Mullins, 1983). Dividend increase announcements have been shown to result in positive stock price reactions and dividend decrease announcements to negative stock price reactions. These findings are mainly consistent with the information content hypothesis; however, the literature provides a range of other explanations for the stock price reaction to dividend changes. For example, Fracassi (2008) finds that the dividend signaling, free-cash-flow, maturity and catering hypotheses all predict positive (negative) stock price reactions to announcements of dividend increases (decreases), albeit with different cross-sectional predictions. He further argues that the signaling, catering and free-cash-flow hypotheses better explain the reaction to dividend increases, whereas the maturity hypothesis better explains the reaction to dividend cuts. Nissim and Ziv (2001) provide support for the information content hypothesis even after controlling for incremental market and accounting factors. Lee and Yan (2003) argue that the market only responds to forward-looking (information signaling) dividend changes rather than backward-looking dividend changes. Li and Lie (2006) extend the catering theory of

dividends and show that the stock price reaction to dividend changes is a response to a dividend premium (that is, investor demand for dividends). Another study, by Denis et al (1994), shows support for the cash-flow signaling and dividend clientele hypotheses, but finds no support for the free-cash-flow (overinvestment) hypothesis.

Prior research uses cross-sectional analysis in order to identify the determinants of the stock price reaction to dividend changes and presents several firm-specific and market-wide factors mostly based on the element of surprise, a notion consistent with the information content hypothesis. Specifically, there is evidence for the effect of several firm-specific factors (size, contemporaneous dividend yield, profitability, age, magnitude of dividend change, growth opportunities, leverage, stock repurchases, and firm-specific risk) and market-wide factors (net taxes and business cycle) on the magnitude of the stock price reaction to dividend change announcements. For example, stock price reaction to dividend change events is related to firm size (Amihud and Li, 2006; Bessler and Nohel, 1996; and Eddy and Seifert, 1988), dividend yield (Bajaj and Vijh, 1990; Denis et al, 1994; and Amihud and Li), profitability (Amihud and Li), maturity (Amihud and Li, and Chartitou, 2011), magnitude of dividend change (Bulan, 2010; Black et al, 1995; Bessler and Nohel; Denis et al; and Yoon and Starks, 1995), growth opportunities (though lacks empirical support as per Denis et al), and leverage (Black et al and Casey et al, 2007). Similarly, the research documents that the magnitude of the stock price reaction is related to net taxes

(dividend tax minus capital gain tax) through a clientele effect (Bhattacharya, 1979 and Baker and Wurgler, 2004) and market direction, such as recession (Docking and Koch, 2005).

When it comes to comparing unregulated and regulated firms, the evidence from cross-sectional analysis is limited and mixed for several reasons. First, the magnitude of the stock price reaction for dividend increase announcements tends to be lower than that for dividend decrease announcements. Secondly, the determinants of stock price reaction to dividend increase and decrease announcements are not the same. Finally, despite the abundance of evidence with respect to the stock price reaction to dividend change announcements, no current research offers a direct comparison of market reaction to dividend change announcements by unregulated and regulated firms. Only a few studies have explored the stock price reaction to dividend change announcements using an independent sample of regulated firms such as banks. For instance, Black et al (1995) show that the stock price reaction to dividend decrease announcements by bank holding companies is greater than for non-financial firms during the years 1974 to 1977, but find little difference during the years 1978 to 1995. Further, it is argued that the announcement effect of dividend decreases should be more severe for banks than for non-financial firms as 1) bank customers may avoid financially weak institutions and discontinue the relationship when negative information is released (Bessler and Nohel, 1996) and

2) there exists a contagion effect among banks as dividend cuts induce a negative reaction for non-announcing money-center banks (Bessler and Nohel, 2000).

In related literature, a few researchers have explored the dividend policies, rather than the wealth effects, of dividend change announcements of unregulated versus regulated firms. This stream of literature provides indirect evidence for a comparison between the stock price reaction to dividend change announcements by unregulated and regulated firms. For example, Dickens et al (2002) find that bank dividend yield has a negative relationship with investment opportunities, insider ownership and risk, and a positive relationship with size. Casey and Dickens (2000) argue that bank dividend policy is different than that of other industries as it shows no relation to past growth, beta and insider ownership. Using survey research, Baker and Powell (1999) find similarities in firms' ranking of factors influencing dividend policies in unregulated versus regulated firms. However, they caution that their comparison only includes large, mature and dividend paying firms in the utilities and manufacturing sectors. Another survey, by Collins et al (1996), finds fundamental differences in the relationship between insiders' holdings and dividend policies for unregulated and utilities (regulated) companies. They argue, however, that the regulatory framework enhances the importance of the insiders' role (rather than mitigating it) for utilities. A recent survey by Baker et al (2008) concludes that there is a positive relationship between regulation and paying dividends. It further finds that dividends, being indicative of financial health, are important for financial firms. In addition,

industry effects are more important and leverage less important. Baker et al's (1985) survey study finds that opinions about dividend policy of utilities differ from those related to manufacturing and wholesale firms. They argue that it is better to segregate the unregulated firms from regulated firms when examining dividend policy. Finally, the only study (Saxena, 1999), to the best of my knowledge, to have empirically compared the dividend policies of regulated and unregulated firms, concludes that there are several differences. For instance, the study shows that insiders' ownership and expected future growth are negatively related to the dividend payout ratio for unregulated firms only. The study also finds that the investment opportunity set is positively related to the dividend payout of regulated firms. Overall, the author concludes that the determinants of dividend payout policy are different for unregulated and regulated firms. However, this study is different from the current one as I focus on the comparison of the stock price reaction to dividend change announcements, rather than contrasting the dividend policies of unregulated and regulated firms.

4.2.2. Empirical Hypotheses

The information content theory of dividends suggests that the level of asymmetric information between firms and investors affects the stock price reaction to dividend change announcements. For example, Bhattacharya (1979) argues that with asymmetric information dividends are a valuable signal of firm prospects, suggesting that the dividend changes of firms with a higher level of information asymmetry would result in stronger investor reaction compared to

those of firms with a lower level of asymmetric information. In a theoretical paper, Miller and Rock (1982) showed that market reaction to dividend change announcements is a result of information asymmetry between investors and managers. Similarly, Amihud and Li (2006) assert that a lower level of asymmetric information has resulted in declining information content in dividend change announcements in recent years. In other words, the level of information asymmetry between a firm and its investors determines the level of investors' surprise to dividend change announcement and, hence, affects the magnitude of stock price reaction. Overall, the preceding discussion suggests that the stock price reaction of unregulated versus regulated firms is conditional on the level of asymmetric information between managers and investors. More specifically, the dividend change announcement by firms with a higher level of information asymmetry should lead to a larger investor reaction than for firms with a lower level of asymmetric information.

Next, I argue that compared to unregulated (industrial) firms, regulated companies have lower levels of information asymmetry for multiple reasons. First, because of their nature, financial firms and utilities are subject to additional disclosure compared to unregulated industrial firms. For instance, utilities and bank holding companies are required to provide disclosure under SEC Industry Guides 1 and 3, respectively. Second, Saxena (1999) argues that "regulators act as delegated monitors of firm behaviour", thus mitigating the asymmetric information between managers and investors. Finally, I argue that the restrictions

imposed on regulated firms lead to relatively more transparent operations, further reducing information asymmetry. For example, financial firms face product and geographic market regulations, while utilities are subject to price, product and geographic market regulations (Collins et al, 1996).

Given the difference in information asymmetry for unregulated and regulated firms, I argue that the stock price reaction to dividend change announcements by these two types of firms would be different. Accordingly, I propose and test the following hypotheses.

H1: *The stock price reaction to dividend increase (decrease) announcements is relatively more positive (negative) for unregulated firms than for regulated firms.*

H2: *The more positive (negative) stock price reaction of unregulated firms relative to that of regulated firms for dividend increase (decrease) announcements is associated with greater information asymmetry for unregulated firms.*

4.3. Stock Price Reaction to Dividend Changes – Unregulated versus Regulated Firms

4.3.1. Univariate Analysis

4.3.1.1. Data and Summary Statistics

I use all regular quarterly dividend announcements for ordinary common stocks available in the Center for Research in Security Prices (CRSP) monthly file during the period January 1960 - December 2010. Consistent with the literature (Amihud and Li, 2006; Denis et al, 1994, and Yoon and Starks, 1995), I exclude special, year-end, interim, stock, or non-recurring dividends paid at other frequencies, dividend initiations and omissions. Dividend changes resulting from stock splits, mergers and acquisitions are also excluded. Dividend changes less than 0.5% are excluded as well, which may reflect the rounding of changes (Amihud and Li; Baker and Wurgler, 2004). Since most dividend studies exclude financial firms and utilities, I use this classification to define regulated firms. Typically, firms belonging to SIC codes 4900 to 4999 and SIC codes 6000 to 6999 are included in the regulated firm sample and the remaining firms are included in the unregulated firm sample. Financial firms and utilities are subject to different regulations and may be structurally different from each other in other ways. For instance, compared to financial firms, which are subject to product and geographic market regulations, utilities are only subject to price market regulations (Collins et al, 1996). As a result, I create sub-samples for dividend increases and decreases for unregulated, regulated-financial, and regulated-

utilities firms. This methodology yields 22,838 (4,002), 19,200 (5,556) and 4,447 (333) events of dividend increases (decreases) for unregulated, regulated-financial and regulated-utilities firms, respectively. The year-wise dividend change percentage[14] and dividend per share for dividend increase and decrease samples of unregulated and regulated firms are presented in Tables 4.1 and 4.2.

<Insert Table 4.1 and 4.2 Here>

Comparing the dividend changes, the average dividend increases for unregulated, regulated-financial and regulated-utilities firms are 19.5%, 22.0% and 8.0%. I observe that the magnitude of dividend increase is highest for financial firms, closely followed by unregulated firms. Interestingly, the average percentage dividend increase for utilities is substantially lower than the other two groups. On the other hand, the average dividend decreases are 41.5%, 32.8% and 42.3% for unregulated, regulated-financial and regulated-utilities firms. Overall, I do not observe substantial differences in the magnitude of dividend decreases among the three types of firms. However, in contrast to the magnitude of dividend increase, I observe that the utilities average percentage decrease in dividends is the highest. Although the firms in the utilities sector are conservative with respect to dividend increases, their dividend decreases are substantial. With respect to increase in dividend per share (DPS), the highest average DPS increase is observed for regulated-utilities (at 40 cents) compared to unregulated (25 cents)

[14] The average percentage quarterly dividend increase and decrease during 1961 and 2010 are similar in magnitude reported in previous literature (Denis et al, 1994 and Nissim and Ziv, 2001).

and regulated-financial firms (21 cents). Generally, the summary statistics reveal differences in the characteristics of dividend changes between unregulated and regulated firms.

4.3.1.2. Event Study Methodology

Stock price reaction to dividend change announcements is measured through event study analysis by calculating the abnormal returns (ARs, hereafter) around the event announcement date independently for unregulated and regulated firms. A single factor market model, which assumes that in the absence of an event a security earns a return equal to the return on the market portfolio (Henderson, 1990), is used to estimate the ARs. Campbell, Lo and MacKinlay (CLM, hereafter, 1997) argue that the market model is preferred to other models of measuring normal performance such as the constant-mean-return model or a multifactor economic model for two reasons. First, it has greater capacity for detecting event effects, especially compared to the constant-mean-return model, inasmuch as it reduces the variance of abnormal returns by removing the portion of return related to variations in market factors. Second, gains from applying multifactor economic models, such as APT, are limited because of the marginal increase in explanatory power of additional factors beyond the market factor. The further specification of the model and its assumptions are discussed in CLM (1997). The parameters of the model to estimate ARs are consistent with relevant literature about stock price reaction to dividend change announcements. I use the period between -30 and -110 to estimate the market model parameters with daily

data. The use of daily data with irregular returns could lead to a nonsynchronous trading issue (Henderson, 1990). To avoid this, my analysis uses a minimum of 30 days of return data for estimation of the market model parameters. This condition results in a slight reduction in the number of dividend changes. Specifically, the number of dividend increases (decreases) for unregulated, regulated-financials and regulated-utilities firms are 22,794 (3,991), 19,161 (5,548) and 4,444 (333), respectively. The estimation of the market model requires a market portfolio return and the literature, in general, suggests using either the CRSP equal-weighted or value-weighted index (CLM, 1997). However, Corrado and Truong (2008) argue that tests based on the CRSP equal-weighted index provide improved test specification over tests based on the CRSP value-weighted index for U.S. stocks. Therefore, I use the CRSP equal-weighted index for the model's parameter estimation. However, for robustness, I also use the CRSP value-weighted index and obtain qualitatively similar results (not reported).

Next, the study aggregates the ARs across time and across firm-events depending on whether a firm is unregulated or regulated (financial or utility) to calculate mean cumulative abnormal returns (MCARs). The ARs are, first, aggregated across time in two different event windows[15]; a 3-day event window of (-1, +1) and a 21-Day event window of (-10, +10). This aggregation helps to accommodate any leakage of information several days prior to, and market

[15] Several relevant studies aggregate abnormal returns across a 3-day window (Asquith and Mullins, 1983; Baker and Wurgler, 2004; Bessler and Nohel, 2000; Yoon and Starks, 1995; Black et al, 1995; and Grullon et al, 2002) and a 21-Day window (Asquith and Mullins, 1983 and Aharony and Swary, 1980).

correction after, the event announcement. Similarly, ARs are aggregated across unregulated, regulated-financials and regulated-utilities firms to explore any differences in stock price reaction to the dividend changes. As suggested by Boehmer et al (1991), this study chooses a combination of parametric and non-parametric test statistics to confirm the statistical significance of the MCARs. I use traditional Patell's Standardized Residual method as a parametric test statistic and the Generalized Sign Test as a non-parametric test statistic. This combination of tests is helpful to identify if the results are driven by a few firm-events. The statistical assumptions and properties of these test statistics are available in Boehmer et al (1991) and CLM (1997). Finally, to verify the statistical difference between the MCARs across various time-series event windows for unregulated and regulated-financial and regulated-utilities firms, I conduct mean difference tests with unequal variance using firm-event level cumulative abnormal returns (CARs).

4.3.1.3. Stock Price Reaction to Dividend Increases – Unregulated versus Regulated Firms

The daily mean abnormal returns (MARs) and cumulative mean abnormal returns (MCARs) during the 21-day period for the dividend increase announcements by unregulated and regulated firms are shown in Table 4.3 – Panel A.

<Insert Table 4.3 Here>

Consistent with prior evidence, I observe positive abnormal returns for dividend increase announcements for both the unregulated and regulated firms. The positive MCAR over the 3-day window (-1, +1) is 0.94% for unregulated, 0.52% for regulated-financial and 0.78% for regulated-utilities firms. The 3-day MCAR for each type of firm is significant at the one percent level regardless of the choice of parametric or non-parametric tests. The positive MCAR over the 21-day window (-10, +10) is at 1.50% for unregulated, 0.82% for regulated-financial and 1.26% for regulated-utilities firms. The magnitude of abnormal return is different for unregulated and regulated companies as I observe that the abnormal returns for unregulated firms are almost twice as high as those of regulated-financials and approximately 20% higher than regulated-utilities, for both 3-day and 21-day event windows. These findings confirm that dividend increase events convey positive information for the investors of unregulated and regulated firms, although with different signal strength. Specifically, a dividend increase

announcement provides a much stronger signal to the shareholders of unregulated firms compared to the investors of regulated (financial and utilities) companies. Consistent with the primary propose of the study, it is important to verify if the differences in MCARs of unregulated and regulated firm are statistically significant. For this reason, I conduct a mean difference test to compare the ARs of unregulated firms with those of regulated (financial and utilities) companies at the firm-event level. The results of the analysis generally confirm the statistical significance of the difference in the MCARs of unregulated firms and each type of regulated firm, as the MCAR for unregulated firms during the 3-day event window (-1, +1) is significantly higher (at one percent) compared to regulated-financial and regulated-utilities firms. The results of the MCARs mean difference tests for dividend increases are tabulated in Panel A in Figure 4.1, which also plots MCARs for dividend increase events of unregulated and regulated firms. A review of Figure 4.1 reveals that most of the difference in MCARs is observed during the announcement and post-announcement windows, suggesting the market mostly reacts to the dividend change on or after the announcement.

<Insert Figure 4.1 Here>

In addition, Figure 4.1 highlights two interesting findings. First the magnitude of abnormal returns of dividend increases across unregulated, financial and utilities firms are lower than that those of dividend decreases. This result suggests that investors, in general, are more wary of negative signals of dividend decrease announcements. Second, the investors of regulated-financial firms react

less than investors of regulated-utilities. This result may reflect the differences in level of information asymmetry between financial firms and utilities within the regulated industry segment. The differences in stock price reaction for unregulated and regulated firms are not always significant across the other two event windows (that is, (-10, -2) and (+2, +10)).

Overall, this section confirms that the stock price reaction to dividend increase announcements of unregulated firms is higher than those of regulated firms, providing support to my first hypothesis (H1). The higher abnormal return in response to dividend increases by unregulated versus regulated firms suggests the information content of dividend change is more important for investors of unregulated firms.

4.3.1.4. Stock Price Reaction to Dividend Decreases – Unregulated versus Regulated Firms

The daily MARs and MCARs during the 21-day period for the dividend decrease announcements by unregulated and regulated firms are plotted in Figure 4.1 and tabulated in Table 4.3 – Panel B. These results highlight two interesting trends. First, similar to the prior evidence, negative abnormal returns are observed for dividend decrease announcements for both the unregulated and regulated firms. The negative MCAR in 3-day window (-1, +1) is -2.22% for unregulated firms, -0.81% for regulated-financial and -1.65% for regulated-utilities firms, each significant at one percent. Secondly, the magnitude of the stock price

reaction to dividend decrease announcements is generally greater than that for dividend increase announcements, regardless of type of firm. This finding is consistent with prior findings that dividend decreases are strongly penalized by investors. The significance of the negative abnormal returns is equally robust for parametric and non-parametric tests. The MCAR over the 21-day window (-10, +10) is -3.30% for unregulated firms, -1.63% for regulated-financial and -2.11% for regulated-utilities firms, though the negative abnormal returns show weak significance, especially during the post announcement event window. Yet again, the magnitude of the negative abnormal return for dividend decrease announcements for unregulated firms is twice as high as that for regulated-financial firms and more than 30% higher than for regulated-utilities firms. This finding suggests that while dividend decreases convey negative signals to investors of both regulated and unregulated firms, such announcements are more detrimental for shareholders of unregulated firms.

The mean difference test to compare the CARs for each group at the firm level shows that the difference in MCARs is statistically weak compared to the findings for the dividend increase sample. For instance, comparing MCARs for unregulated and regulated-financial firms, only the difference during the (+2, +10) window is significant at ten percent, whereas the difference in MCARs between unregulated and regulated-utilities is significant during the (-1, +1) event window at the one percent level. Lack of statistical significance suggests there is no difference in the degree to which investors penalize unregulated and regulated

firms for dividend decrease announcements. There are two possible arguments for a weak difference in stock price reaction to dividend decrease announcements. One reason for the weak difference in MCARs of unregulated and financial firms could be a similar magnitude (17% for unregulated firms versus 20% for financial firms) in dividend decreases. Alternatively, the difference between the unregulated and utilities samples could be small because of a smaller number of dividend decreases by utilities (333 versus 4,002 events for financial and 5,556 events for unregulated firms, respectively).

Taken as a whole, the results suggest a dissimilar, though weak, stock price reaction for dividend change announcements by unregulated and regulated firms, with a stronger reaction coming from shareholders of unregulated firms, once again, providing initial support for the first hypothesis (H1).

4.3.2. Multivariate Analysis

Section 4.2.1 reviews evidence on the effect of several firm-specific and market-wide factors on the stock price reaction in response to dividend change announcements. Arguably, the stronger stock price reaction to dividend change announcements by unregulated firms compared to those by regulated (financial and utilities) firms observed in the previous section could be caused by differences in firm-specific factors. It is therefore important to control for the determinants of stock price reaction to dividend changes in testing the first hypothesis (H1). Accordingly, I use multivariate analysis to test H1 for dividend

increase and decrease announcements after controlling for several determinants of stock price reaction to dividend change announcements.

4.3.2.1. Data, Variables and Empirical Methodology

The data for the cross-sectional analysis is taken from multiple sources. First, quarterly financial statement and stock price data are gathered from Standard & Poor's (S&P) Compustat fundamental quarterly files. The business cycle and net tax data are downloaded from the NBER website. In order to be included in the cross-sectional analysis, the dividend change announcements must satisfy the conditions outlined in Section 4.3.1.1. Although the extant literature focusses mainly on cross-sectional analysis of dividend change reaction for unregulated firms, exploring similar factors to compare stock price reactions for unregulated and regulated firms is a reasonable starting point. The literature identifies several firm-specific and market-wide factors that help explain the stock price reaction to dividend changes. Therefore, I include the following variables in the cross-sectional analysis: size, dividend yield, profitability, age, net taxes, magnitude of dividend change, growth opportunities, leverage, earnings volatility and business cycle[16]. Consistent with prior research, the values for size, growth

[16] The literature also provides evidence for the effect of firm specific risk (Saxena, 1999), stock repurchases (Amihud and Li, 2006), governance structure (Choi et al, 2011), information asymmetry (Asquith and Mullins, 1983) and insider ownership (Saxena, 1999; Casey and Theis, 1997). In addition, I argue that dividend volatility could also affect the market reaction as a dividend change announcement from a firm with high dividend volatility will be less surprising. I originally included these additional variables, but later excluded them from the final analysis for two reasons. First, inclusion of these variables results in a substantial drop in the number of observations. Second, I find insignificant coefficients for these variables in cross-sectional analysis.

opportunities (market-to-book) and leverage measures are taken for a quarter prior to the dividend change announcement date, whereas values for dividend yield, profitability, age, net tax, magnitude of dividend change, and business cycle belong to the quarter of the dividend change announcement[17]. Kwan (1981) argues that given the proximity of earnings and dividend announcements, it is important to control for contemporaneous earnings announcements. Accordingly, I control for earnings announcements during the 10 days before and after the dividend change announcements. The quarterly earnings announcements data are sourced from the "detailed history – actuals" file of the I/B/E/S database. Matching the firm-events with quarterly cross-sectional data results in very few observations prior to 1971 due to limited data availability in Compustat. As a result, for the purpose of cross-sectional analysis, I start the sample period from the first fiscal quarter of 1971. Overall, this strategy yields 4,010 (638) unregulated, 3,273 (694) regulated-financial and 1,683 (156) regulated-utilities quarterly dividend increase (decrease) announcements during the period 1971 to 2010.

Subsequently, I use a multistep empirical approach to test the first hypothesis (H1). I start by comparing summary statistics to confirm if the firm-specific and market-wide factors highlight any structural differences between unregulated and regulated firms. In the second step, I use the ordinary least squares regression model with robust standard errors to estimate the following

[17] The variable definitions are provided in Appendix 4.A.

specification independently for unregulated and regulated (financial and utilities) firms for dividend increase announcements.

$$CAR_j = a_0 + \sum_{x=1}^{n} a_{1x} CONTROL_{jx} + e_j, \quad (4.1)$$

where j is the dividend change event, CAR_j is either the 3-day (CAR3) or 21-day (CAR21) cumulative abnormal return for announcement of the dividend change for event j, and $CONTROL_j$ is one of several firm characteristics around event j. I estimate a similar specification for the announcement of dividend decrease events with a slight modification, as shown below, to simplify the interpretation of the relationship between control variables and stock price reactions.

$$CAR_j * (-1) = a_0 + \sum_{x=1}^{n} a_{1x} CONTROL_{jx} + e_j \quad (4.2)$$

The typical reaction to dividend decrease announcements results in negative cumulative abnormal returns. Most values of CAR_j are negative in my sample, which could complicate the interpretation of the relationship between the independent variables and magnitude of stock price reaction. The modified specification (2) helps to establish a direct relationship between the dependent and independent variables. Furthermore, in order to control for effects of contemporaneous earnings announcements, I estimate models 4.1 and 4.2 in two alternate specifications. In one specification, I control for earnings announcements with a dummy variable, which equals 1 if the earnings announcement falls within 10 days of the dividend announcement - that is, during the (-10, +10) window - and 0 otherwise. The alternate specification drops those

dividend change events with a contemporaneous earnings announcement within the 21-day window (-10, +10).

Finally, I combine the regulated and unregulated samples of dividend increasing and decreasing firms and create two "firm type" dummy variables for unregulated, regulated-financial and regulated-utilities firms. I then estimate the following cross-sectional specification independently for dividend increase and decrease samples, using ordinary least squares regressions with robust standard errors, to confirm if the stock price reaction to dividend change announcements by unregulated firms is indeed stronger after controlling for firm-specific and market-wide factors:

$$CAR_j = b_0 + b_1\, Financials_j + b_2\, Utilities_j + \sum_{x=1}^{n} b_{3x} CONTROL_{jx} + u_j, \quad (4.3)$$

where j is the dividend increase or decrease event; CAR_j is either the 3-day (CAR3) or 21-day (CAR21) cumulative abnormal return for the announcement of a dividend increase for event j; $Financial_j$ is a dummy variable, which equals 1 for regulated-financial firm-events and 0 otherwise; $Utilities_j$ is a dummy variable, which equals 1 for regulated-utilities firm-events and 0 otherwise, and $CONTROL_j$ is one of the several control variables around the event j. For the reasons discussed above, I use the following modified specification for the combined sample for dividend decrease announcements.

$$CAR_j * (-1) = b_0 + b_1\, Financials_j + b_2\, Utilities_j + \sum_{x=1}^{n} b_{3x} CONTROL_{jx} + u_j \quad (4.4)$$

In models 4.3 and 4.4 negative and significant coefficients (b_1 and b_2) on the "Financial" and "Utilities" dummy variables would confirm that the stock price reaction to dividend changes is significantly less for regulated firms compared to unregulated firms. In addition, I use two alternative specifications, as discussed earlier, for models 4.3 and 4.4 to control for contemporaneous earnings announcement effects. First, I control using an earnings announcement dummy variable. Second, I drop the dividend change events with a contemporaneous earnings announcement within the 21-day window.

4.3.2.2. Stock Price Reaction to Dividend Increases - Unregulated versus Regulated Firms

The summary statistics for the control variables for the sample of dividend increase announcements is reported in Table 4.4 - Panel A.

<Insert Table 4.4 Here>

The comparison of firm characteristics confirms significant differences between unregulated and regulated firms. For instance, for the dividend increase sample, I find that compared to the unregulated firms, both types of regulated companies are smaller in size, have lower growth opportunities, are less profitable and have higher dividend yields. With respect to age, compared to unregulated firms, I find that financial firms are younger, whereas utilities companies are older. On average, the financial firms have lower net taxes than unregulated firms; however, the difference between the net taxes of unregulated and utilities

companies is not statistically significant. Magnitude of increase in dividend is similar for unregulated and financial firms, but for utilities companies, it is significantly lower compared to unregulated firms. Finally, the leverage and earning volatility highlight an interesting comparison, as both measures are lower for financial firms and higher for utilities relative to unregulated firms. I observe a similar trend in the cross-sectional regressions, estimating model 1 independently for unregulated, regulated-financial and regulated-utilities subsamples. The results are reported in Table 4.5.A.

<Insert Table 4.5.A Here>

Models in Panel A include all dividend increase announcements and a dummy for an earnings announcement, whereas, models in Panel B exclude the firm-events with earnings announcements within the 21-day window. Consistent with expectation, I observe that the determinants of the stock price reaction to dividend increases of unregulated and regulated firms differ with few exceptions. I also find that the results are generally similar regardless of the exclusion of firm-events contaminated because of the proximity of the earnings announcement. For instance, the coefficients on leverage and net taxes have opposite signs in the samples of unregulated and regulated firms. On the other hand, with respect to similarities in stock price reaction from unregulated and regulated firms, I find that firm size has a negative impact on the stock price reaction to dividend increase announcements by both unregulated and regulated firms. A negative relation between the firm size and CARs for dividend increase announcements,

both of regulated and unregulated firms, is consistent with the previous literature (Amihud and Li, 2006; Bessler and Nohel, 1996; and Eddy and Seifert, 1988). Generally, I observe differences in effects of characteristics on stock price reaction for unregulated and regulated firms. This analysis supports the argument that a dissimilar stock price reaction to dividend increases could reflect a fundamental difference between the two types of firms. Accordingly, it is important to investigate whether the difference in stock price reaction to dividend change announcements by regulated and unregulated firms is robust to a variety of controls. Therefore, I combine the unregulated and regulated firm samples and estimate three variants of model 3 in order to compare the stock price reaction to dividend increase announcements by unregulated and regulated firms. The regression results are reported in Table 4.6.A.

<Insert Table 4.6.A Here>

Models in Panel A include all dividend change announcements, models in Panel B control for earnings announcements within the 21-day window around the dividend increase events and models in Panel C exclude the firm-events with earnings announcements within the 21-day window. The coefficients on both regulated dummies (Financial and Utilities) are always negative and mostly significant regardless of the choice of CAR measure (3-day or 21-day window) and control of the contemporaneous earnings announcement. The analysis supports the first hypothesis, the stock price reaction to dividend increase announcements is more positive for unregulated firms compared to that for

regulated firms. This finding may suggest that a dividend increase announcement conveys positive information to the shareholders of regulated and unregulated firms; however, the intensity of the dividend signal varies depending on whether a firm is regulated or not.

Inasmuch as I use a combined sample of unregulated and regulated firms, I do not compare the coefficients on control variables with prior research, which used independent samples of unregulated, financial and utilities firms. Nevertheless, I note that the coefficients for some of the control variables (size and dividend yield) are consistent with prior literature.

4.3.2.3. Stock Price Reaction to Dividend Decreases - Unregulated versus Regulated Firms

Similar to the approach used in the previous section, a comparison of summary statistics of control variables for the sample of dividend decrease announcements, reported in Table 4.4 – Panel B, highlights significant differences between unregulated and regulated firms, with two exceptions. First, the differences across unregulated firms and regulated firms are not as strong compared to the dividend increase sample. Second, the differences in control variables for the dividend decrease sample are not always similar to those for the dividend increase sample. I find that compared to the unregulated firms, financial firms are smaller (younger) and utilities are larger (older) in size (age). Similarly, financial firms are less leveraged and utilities are more leveraged compared to

unregulated firms. Both the financials and utilities have lower dividend yields and net taxes than unregulated firms. I observe that the magnitudes of the dividend decrease and earnings volatility of unregulated firms are not statistically different from those of the financial and utilities firms. Financial firms have lower profitability and growth opportunities compared to unregulated firms, whereas profitability and growth opportunities of utilities are not significantly different from those of unregulated firms. In the cross-sectional regressions, estimating model 4.2 independently for unregulated, regulated-financial and regulated-utilities subsamples, I obtain a similar result, as reported in Table 4.5.B

<Insert Table 4.5.B Here>

Yet again, I observe that the determinants of stock price reaction to dividend decreases of unregulated and regulated firms differ regardless of whether I control for contemporaneous earnings announcements or use a restricted sample by excluding dividend decreases when contemporaneous earnings announcements occur. Compared to the dividend increase sample, coefficients on fewer factors are significant; however, I do observe different signs for one factor (magnitude of dividend decrease) for unregulated versus regulated firms. On the whole, I observe some differences in the characteristics of unregulated and regulated firm, which supports the argument that a significantly dissimilar stock price reaction to dividend decrease events could be due to differences in firm characteristics between the two types of firms.

Finally, to explore whether the differences in stock price reaction to dividend decrease announcements by unregulated and regulated firms are robust to a variety of controls, I pool the unregulated and regulated firm samples and estimate three alternate specifications of model 4.4. The estimation results are reported in Table 4.6.B.

<Insert Table 4.6.B Here>

Interestingly, I find that the coefficients on both regulated dummies (Financial and Utilities) are negative, but insignificant for both CAR measures. The results do not support the first hypothesis (H1) for dividend decrease announcements. The difference observed in the univariate analysis disappears once I control for various determinants of stock price reaction to dividend changes. This result indicates that the dividend signals may be of equal importance when the announcement is for dividend decreases across all types of firms. That is, the regulatory environment only seems to have an impact on information content for dividend increase announcements, a finding consistent with the information and signaling hypothesis. Typically, there is more standardized information available for regulated firms, so a dividend increase by such firms is less surprising. On the other hand, a dividend decrease announcement is often a surprise for investors of all types of firms, as all types of firms are reluctant to decrease dividends (Lintner, 1956).

4.4. Determinants of a Stronger Stock Price Reaction to a Dividend Increase Announcement by Unregulated Firms

A stronger stock price reaction, observed in Section 4.3.2.2, in response to dividend increase announcements by unregulated firms versus unregulated firms, necessitates further analysis. Consequently, I test my second hypothesis (H2) that a more positive stock price reaction for unregulated firms relative to that for regulated firms to dividend increase announcements is associated with a higher level of information asymmetry for unregulated firms. Inasmuch as I did not find support for my first hypothesis for dividend decrease announcements, this section only focuses on the dividend increase sample.

To test H2, I first construct multiple measures of information asymmetry. Since larger and more mature firms are subject to a larger analyst following, firm size and firm age are generally considered measures of information asymmetry. In addition, Mohd (2005) argues that firms in the S&P 500 index and firms that are listed on the New York or American Stock Exchanges are subject to more scrutiny and disclosure and, hence, have a lower level of information asymmetry. Bharath et al (2011) make a similar argument about firms with a debt rating and suggest that the presence of a debt rating lowers the level of asymmetric information between managers and investors. Therefore, I use five alternate measures of information asymmetry including firm size, firm age, listing on NYSE and/or AMEX, inclusion in the S&P 500 index and the presence of debt ratings. The definition for each of these measures is provided in Appendix 4.A.

In a univariate analysis, I first correlate two measures of abnormal returns (CAR3 and CAR21) with measures of information asymmetry. A negative and significant correlation between the abnormal return and information asymmetry measures would provide support for my second hypothesis (H2). The correlation matrix is presented in Table 4.7.

<Insert Table 4.7 Here>

Overall, I find strong support for H2 as all but one measure of information asymmetry have negative and significant correlation with stock price reaction, regardless of the choice of CAR measure. Size, age, debt rating and inclusion in S&P are negatively related to the CAR. Only the coefficient for listing on NYSE/AMEX is positive, though insignificant. The results suggest that larger and mature firms, firms with a debt rating and companies included in the S&P 500 index have a weaker investor reaction to dividend increase events. In other words, firms with lower levels of information asymmetry tend to observe lower abnormal returns in response to dividend increase announcements. Next, I conduct regression analysis using the following two alternate designs:

$$CAR_j = c_0 + c_1 IA_j + c_2 IA_j * Unregulated_j + c_3 Unregulated_j + e_j \,, \quad (4.5)$$

where j is the dividend increase event, CAR_j is either the 3-day (CAR3) or 21-day (CAR21) cumulative abnormal return for the announcement of a dividend increase for event j, and IA_j is one of several information asymmetry measures. $Unregulated_j$ is a dummy variable that equals 1 if the firm is unregulated and 0

otherwise. For robustness, I use an alternate specification by including the two most important determinants of stock price reaction to dividend increase announcements, dividend yield (DY) and magnitude of dividend increase (ΔD), in the multivariate analysis.

$$CAR_j = c_0 + c_1 IA_j + c_2 IA_j * Unregulated_j + c_3 Unregulated_j + c_4 DY_j + c_4 \Delta D_j + e_j \quad (4.6)$$

Since the information asymmetry measures are correlated, I estimate specifications 4.5 and 4.6 by including one measure of information asymmetry at a time. In this design, a negative and significant coefficient on the interaction term between information asymmetry and unregulated dummy would provide support for H2. The estimation results for models 4.5 and 4.6 are reported in Tables 4.8.B and 4.8.C, respectively.

<Insert Table 4.8.A and 4.8.B Here>

The regression results for both models provide support for my second hypothesis (H2). Coefficients on all the interaction terms (except the one with the S&P 500) are negative regardless of the choice of information asymmetry measure. For the CAR3 measure of abnormal returns, the interaction terms between unregulated dummy and size, age and listed are significant at 1%, whereas, for the CAR21 measure, the interaction terms between unregulated dummy and age and listed are significant at 5% and 1%, respectively. The interactions between unregulated dummy and two measures of information asymmetry (rated and S&P 500) are not significant, perhaps suggesting that these

are not very good proxies for information asymmetry. The results in Table 4.8.B, when I control for dividend yield and magnitude of dividend increase, are qualitatively similar, though, with weak statistical significance. Taken as a whole, the analysis in this section supports my hypothesis (H2) that the stronger stock price reaction from investors of unregulated firms to dividend increases is attributable to the higher level of asymmetric information between managers and investors in such firms.

4.5. Conclusions

This appears to be the first large-scale study to compare empirically the stock price reaction to dividend change announcements of unregulated versus regulated (financials and utilities) firms. I hypothesize that the difference in the degree of information asymmetry between managers and investors of unregulated versus regulated firms is likely to influence the stock price reaction to dividend change announcements. Consistent with my prediction and the information content hypothesis of dividend policy, I observe a stronger stock price reaction to dividend increase announcements of unregulated firms relative to those of regulated firms. The stronger reaction is robust to several firm-specific and market-wide factors including size, dividend yield, profitability, age, net taxes, magnitude of dividend increase, growth opportunities, leverage, business cycle, earnings volatility and contemporaneous earnings announcements. For dividend decrease announcements, I also observe that the stock price reaction is much stronger for unregulated firms compared to both types of regulated firms

(financials and utilities). However, when I control for firm-specific and market-wide characteristics, the difference in stock price reaction disappears. This suggests that the difference in investor reaction is explained by the structural differences between unregulated and regulated firms. I then conduct cross-sectional analysis to explore the reason for the stronger stock price reaction to dividend increases by unregulated firms. I observe that the difference in stock price reaction is indeed sensitive to the higher level of information asymmetry between managers and investors of unregulated firms. Overall, my results contribute to the literature on whether and, if so, why the wealth effects of dividend changes differ for regulated and unregulated firms, and have important implications for short-term investors.

References

Aharony, J., and I. Swary, 1980, Quarterly dividend and earnings announcements and stockholders' returns: An empirical analysis, *Journal of Finance* 35(1), 1-12.

Amihud, Y., and K. Li, 2006, The declining information content of dividend announcements and the effects of institutional holdings, *Journal of Financial and Quantitative Analysis* 41(3), 637-660.

Asquith, P., and D. W. Mullins Jr., 1983, The impact of initiating dividend payments on shareholders' wealth, *Journal of Business* 56(1), 77-96.

Bajaj, M., and A. M. Vijh, 1990, Dividend clienteles and the information content of dividend changes, *Journal of Financial Economics* 26(2), 193-219.

Baker, H. K., 2009, *Dividends and Dividends Policy*. Hoboken, NJ: Wiley and Sons.

Baker, H. K., S. Dutta, and S. Saadi, 2008, How managers of financial versus non-financial firms view dividends: The Canadian evidence, *Global Finance Journal* 19, 171-186.

Baker, H. K., G. E. Farrelly, and R.B. Edelman, 1985, A survey of management views on dividend policy, *Financial Management* 14(3), 78-84.

Baker, H. K., and G. H. Powell, 1999, Dividend policy issues in regulated and unregulated firms: A managerial perspective, *Managerial Finance* 25(6), 1-20.

Baker, M., and J. Wurgler, 2004, A catering theory of dividends. *Journal of Finance* 59(3), 1125-1165.

Bessler, W., and T. Nohel, 1996, The stock-market reaction to dividend cuts and omissions by commercial banks, *Journal of Banking and Finance* 20(9), 1485-1508.

Bessler, W., and T. Nohel, 2000, Asymmetric information, dividend reductions, and contagion effects in bank stock returns, *Journal of Banking and Finance* 24(11), 1831-1848.

Bharath, S. T., S. Dahiya, A. Saunders, and A. Srinivasan, 2011, Lending relationships and loan contract terms, *Review of Financial Studies* 24, 1141.

Bhattacharya, S., 1979, Imperfect information, dividend policy, and "the bird in the hand" fallacy, *Bell Journal of Economics* 10(1), 259-270.

Black, H. A., D.C. Ketcham, and R. Schweitzer, 1995, The reaction of bank holding company stock prices to dividend cuts or omissions, *The Mid-Atlantic Journal of Business* 31, 217.

Boehmer, E., J. Masumeci, and A. B. Poulsen, 1991, Event-study methodology under conditions of event-induced variance, *Journal of Financial Economics* 30, 253-272.

Bulan, L., 2010, To cut or not to cut a dividend. Unpublished working paper – SSRN.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay, 1997, *The Econometrics of Financial Markets* (Princeton, NJ: Princeton University Press)

Casey, K. M., and R. N. Dickens, 2000, The effects of tax and regulatory changes on commercial bank dividend policy, *The Quarterly Review of Economics and Finance* 40(2), 279-293.

Casey, K. M., and J. D. Theis, 1997, A note on the determinants of cash flow dividend payout in the petroleum industry, *Journal of Energy Finance and Development* 2, 239-248.

Casey, K., F. Smith, and V. Puleo, 2007, Dividend policy determinants in the insurance industry, *Journal of the Academy of Business and Economics* 7(1), 178-184.

Charitou, A., N. Lambertides, and G. Theodoulou, 2011, Losses, dividend reductions, and market reaction associated with past earnings and dividends patterns, *Journal of Accounting, Auditing and Finance* 26(2), 351-382.

Choi, Y. M., H. K. Joo, and Y. K. Park, 2011, Do dividend changes predict the future profitability of firms?, *Accounting and Finance* 51(4), 869-891.

Collins, M. C., A. K. Saxena, and J. W. Wansley, 1996. The role of insiders and dividend policy: A comparison of regulated and unregulated firms, *Journal of Financial and Strategic Decisions* 9(2), 1-9.

Corrado, C. J., and C. Truong, 2008, Conducting event studies with Asia-Pacific security market data, *Pacific-Basin Finance Journal* 16, 493-521.

DeAngelo, H., and L. DeAngelo, 2006, The irrelevance of the MM dividend irrelevance theorem, *Journal of Financial Economics* 79(2), 293-315.

Denis, D. J., D. K. Denis, and A. Sarin, 1994, The information content of dividend changes: Cash flow signaling, overinvestment, and dividend clienteles, *Journal of Financial and Quantitative Analysis* 29(4), 567-587.

Dhillon, U. S., and H. Johnson, 1994, The effect of dividend changes on stock and bond prices, *Journal of Finance* 49(1), 281-289.

Dickens, R. N., K. M. Casey, and J. A. Newman, 2002, Bank dividend policy: Explanatory factors, *Quarterly Journal of Business and Economics* 41(1/2), 3-12.

Docking, D. S., and P. D. Koch, 2005, Sensitivity of investor reaction to market direction and volatility: Dividend change announcements, *Journal of Financial Research* 28(1), 21-40.

Eddy, A., and B. Seifert, 1988, Firm size and dividend announcements, *Journal of Financial Research* 11(4), 295-302.

Fama, E. F., and K. R. French, 2001, Disappearing dividends: Changing firm characteristics or lower propensity to pay, *Journal of Financial Economics* 60(1), 3-43.

Filbeck, G., and D. J. Mullineaux, 1993, Regulatory monitoring and the impact of bank holding company dividend changes on equity returns, *Financial Review* 28(3), 403-415.

Fracassi, C.. 2008, *Stock Price Sensitivity to Dividend Changes,* Working paper, UCLA Anderson School of Management.

Gordon, M. J., 1963, Optimal investment and financing policy, *Journal of Finance* 18(2), 264-272.

Grullon, G., R. Michaely, and B. Swaminathan, 2002, Are dividend changes a sign of firm maturity?, *Journal of Business* 75(3), 387-424.

Henderson Jr., G. V., 1990, Problems and solutions in conducting event studies. *Journal of Risk and Insurance* 57(2), 282-306.

Jensen, M., 1986, Agency cost of free cash flow, corporate finance, and takeovers, *American Economic Review* 76(2), 322-329.

Kohers, N., 1999, The industry-wide implications of dividend omission and initiation announcements and the determinants of information transfer, *Financial Review* 34(1), 137-158.

Kwan, C., 1981, Efficient market tests of the informational content of dividend announcements: Critique and extension, *Journal of Financial and Quantitative Analysis* 16(2), 193-206.

Lee, B. S., and N. A. Yan, 2003, The market's differential reactions to forward-looking and backward-looking dividend changes. *Journal of Financial Research* 26(4), 449-468.

Li, W., and E. Lie, 2006, Dividend changes and catering incentives. *Journal of Financial Economics* 80(2), 293-308.

Lintner, J., 1956, Distribution of incomes of corporations among dividends, retained earnings, and taxes, *American Economic Review* 46, 97-113.

Miller, M. H., and K. Rock, 1985, Dividend policy under asymmetric information, *Journal of Finance* 40(4), 1031-1051.

Mohd, Emad, 2005, Accounting for Software Development Costs and Information Asymmetry, *Accounting Review* 80, 1211-1231.

Nissim, D., and A. Ziv, 2001, Dividend changes and future profitability, *Journal of Finance* 56(6), 2111-2133.

Perez-Gonzalez, F., 2003, Large shareholders and dividends: Evidence from US tax reforms, *Journal of Financial Research* 5, 249-259.

Saxena, A. K., 1999, Determinants of dividend payout policy: Regulated versus unregulated firms, *Journal of Applied Topics in Business and Economics* Retrieved from *http://www.westga.edu/~bquest/1999/payout.html*.

Yoon, P. S., and L. T. Starks, 1995, Signaling, investment opportunities, and dividend announcements, *Review of Financial Studies* 8(4), 995-1018.

Figure 4.1:
Plot of Cumulative Mean Abnormal Return - Event Study Analysis of the Dividend Changes: Unregulated versus Regulated Firms

The MCARs are plotted for Dividend Increases and Dividend Decreases. The MCARs for the pre-announcement (-10, -2), announcement (-1, +1) and post-announcement (+2,+10) periods are reported with both parametric (Patell) and non-parametric (Generalized Sign Test) test statistics. Mean difference tests are conducted using firm-level MCARs across three event windows to verify that the mean MCAR of unregulated firms is not equal to those of regulated (financial and utilities) firms and T-Stat (MCAR Difference) reports the t-statistic. Note: The symbols $, *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively.

	Dividend Increases										
	Unregulated Firms			Regulated - Financial Firms			T-Stat (MCAR Difference)	Regulated – Utilities Firms			T-Stat (MCAR Difference)
Event Window	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z		MCAR	Patell Z	GST Z	
(-10,-2)	0.17%	5.533***	7.404***	-0.09%	1.480$	5.846***	1.012	0.03%	0.495	1.458$	4.449***
(-1,+1)	0.94%	45.698***	35.352***	0.52%	26.576***	25.391***	2.461***	0.78%	25.457***	19.977***	6.973***
(+2,+10)	0.39%	13.644***	15.576***	0.39%	12.118***	16.636***	0.110	0.45%	9.397***	11.048***	-1.818
	Dividend Decreases										
	Unregulated Firms			Regulated - Financial Firms			T-Stat (MCAR Difference)	Regulated – Utilities Firms			T-Stat (MCAR Difference)
Event Window	MCAR	Patell Z	GST Z	MCAR	Patell Z	GST Z		MCAR	Patell Z	GST Z	
(-10,-2)	-0.43%	-4.481***	-2.489**	-0.33%	0.969	3.316***	-0.316	-0.51%	-2.717**	-0.089	2.185
(-1,+1)	-2.25%	-40.891***	-13.346***	-0.81%	-16.754***	-2.988**	-0.261	-1.65%	-7.666***	-0.199	-2.959***
(+2,+10)	-0.62%	-5.598***	-0.521	-0.49%	-4.009***	-1.563$	-1.234*	0.05%	0.165	0.569	0.251

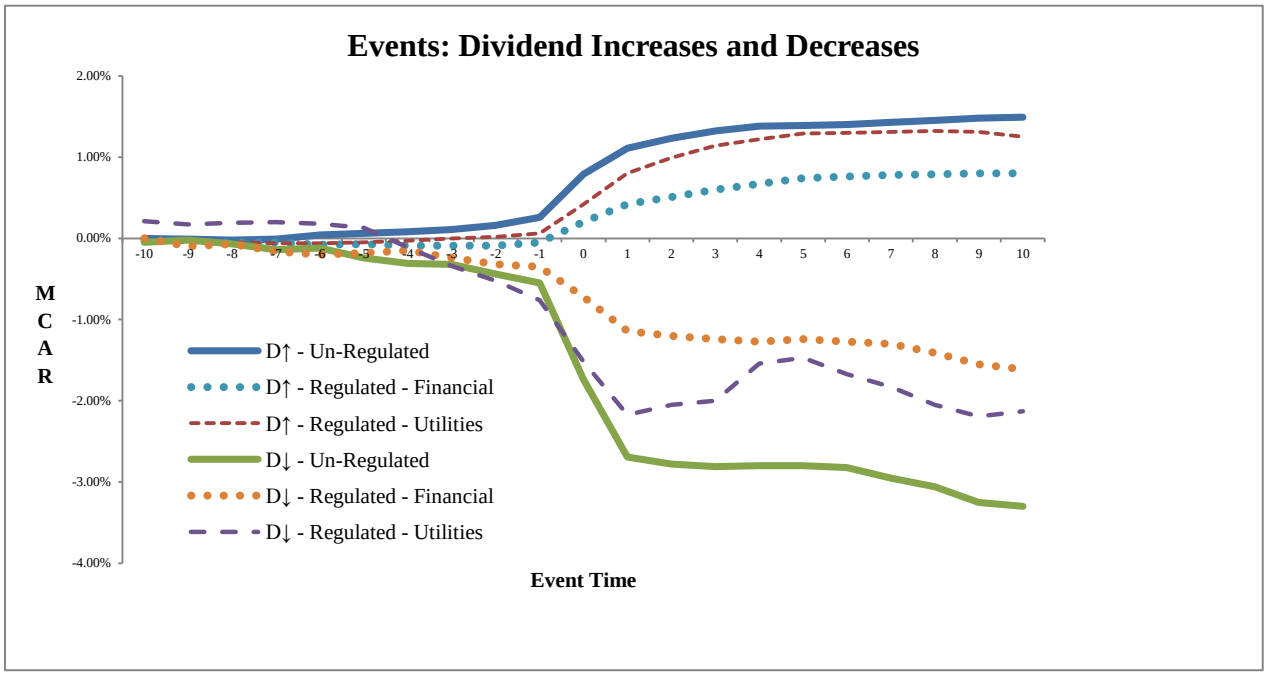


Table 4.1:

Percentage Dividend Changes: All Firms - 1960 to 2010

The sample consists of 22,838 Unregulated, 19,200 Regulated-Financials and 4,447 Regulated-Utilities firm-events of Quarterly Dividend Increases and 4,002 Unregulated, 5,556 Regulated-Financials and 333 Regulated-Utilities firm-events of Quarterly Dividend Decreases over a period of 1960 to 2010. The table reports the Mean and Median across each calendar year. N represents number of dividend change events.

	Dividend Increases - Dividend Amount Per Share									Dividend Decreases - Dividend Amount Per Share								
Calendar	Unregulated			Regulated - Financials			Regulated - Utilities			Unregulated			Regulated - Financials			Regulated - Utilities		
Year	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N
1960	24.4	20.0	69	10.6	10.0	5	9.3	7.7	37	-44.1	-44.4	62	-71.0	-71.0	1	-45.9	-48.1	4
1961	20.8	16.7	85	58.9	25.0	5	34.6	9.5	50	-40.9	-40.0	63	-48.8	-50.0	3	-50.9	-53.5	20
1962	25.4	16.7	81	14.3	11.1	7	24.6	8.8	46	-44.1	-47.7	32	-75.0	-75.0	1	-57.7	-60.0	15
1963	23.4	16.7	166	15.6	11.3	10	8.3	7.8	52	-38.7	-40.0	37	-50.3	-50.3	1	-49.0	-50.0	4
1964	21.2	16.7	316	17.5	10.0	17	9.6	8.2	64	-41.9	-43.3	50				-48.6	-49.0	4
1965	20.1	16.7	402	16.8	10.6	20	8.5	7.7	61	-38.9	-41.7	65	-20.9	-20.9	2	-48.7	-50.0	3
1966	19.0	16.7	354	14.6	13.3	18	8.8	8.3	60	-42.2	-42.9	71	-51.5	-50.0	3			
1967	18.4	14.3	267	14.2	9.1	15	7.4	6.5	67	-41.0	-43.8	47	-40.0	-40.0	1	-41.7	-41.7	2
1968	17.5	12.5	202	12.9	10.6	20	7.3	6.0	53	-42.2	-44.3	94	-39.3	-41.7	5	-24.7	-20.8	4
1969	16.4	12.5	181	14.7	11.6	18	6.5	5.8	48	-44.0	-45.5	90	-42.0	-45.5	9			
1970	17.0	11.1	127	16.7	11.4	20	6.1	5.5	52	-43.2	-45.8	97	-33.6	-33.3	7			
1971	17.6	11.1	113	11.3	10.6	24	5.4	4.8	39	-40.1	-40.0	108	-44.3	-50.0	10			
1972	11.2	5.0	296	14.5	5.8	62	5.5	3.7	67	-43.9	-50.0	75	-41.1	-47.2	10	-32.0	-44.4	3
1973	17.6	12.0	757	12.3	8.0	160	6.9	4.4	103	-39.0	-45.1	64	-27.1	-24.2	32	-50.0	-50.0	2
1974	22.7	16.7	892	15.7	11.1	147	8.9	5.9	74	-38.7	-40.0	71	-31.0	-29.1	47	-30.5	-37.0	3
1975	21.9	15.4	618	12.8	9.5	89	9.4	5.3	87	-39.8	-42.0	126	-36.1	-34.8	28	-44.5	-37.5	3
1976	22.2	16.7	1,069	19.0	12.0	165	9.0	6.1	124	-40.6	-44.1	74	-38.2	-44.1	23	-50.0	-50.0	2
1977	22.8	17.6	1,148	21.7	14.3	275	8.2	6.1	138	-39.9	-44.4	78	-28.6	-27.0	18	-50.0	-50.0	3
1978	19.8	16.7	1,178	19.7	14.9	332	7.6	6.0	143	-37.1	-40.0	71	-31.8	-33.3	23	-32.7	-28.2	4
1979	18.4	14.3	1,096	15.6	12.5	341	8.4	6.7	142	-41.2	-44.4	93	-32.7	-33.3	23	-44.2	-42.8	4
1980	16.7	13.6	838	14.5	12.5	287	8.0	6.5	132	-42.6	-42.3	113	-35.7	-33.3	27	-41.3	-48.0	5
1981	17.0	12.5	704	14.5	10.8	259	9.0	7.1	130	-42.6	-47.6	127	-35.9	-41.2	28	-37.8	-45.0	5
1982	16.4	12.5	490	14.7	10.0	264	7.8	6.7	126	-43.6	-45.8	164	-34.7	-33.3	36	-55.8	-50.0	3
1983	18.0	11.8	443	13.5	9.1	264	7.6	6.6	134	-40.6	-44.0	144	-40.9	-44.8	41	-44.1	-46.8	9
1984	17.8	13.3	554	12.7	9.8	266	7.3	6.1	132	-41.9	-46.5	62	-37.8	-44.0	43	-47.1	-50.0	13
1985	15.4	11.8	450	16.0	10.0	276	6.7	5.5	108	-38.2	-35.7	71	-35.6	-40.8	64	-45.7	-50.0	4
1986	17.4	11.8	361	14.3	9.1	262	5.9	4.8	101	-44.6	-45.8	130	-38.0	-37.8	108	-43.6	-50.0	18
1987	17.5	13.6	431	18.8	11.4	418	5.7	4.6	99	-40.5	-46.5	82	-33.4	-33.3	91	-46.5	-50.0	17
1988	19.3	14.3	530	20.2	12.0	534	9.3	4.5	113	-35.8	-40.0	61	-28.9	-26.7	70	-49.3	-49.0	4
1989	20.0	14.3	481	16.1	10.9	499	5.5	4.3	110	-37.9	-33.3	59	-32.2	-33.3	98	-40.3	-50.0	7
1990	19.5	11.7	391	15.9	10.0	408	5.8	4.2	112	-38.9	-42.6	71	-35.9	-40.0	146	-39.3	-45.5	9
1991	14.4	10.0	324	13.7	9.1	388	4.8	3.7	98	-43.5	-46.4	101	-34.2	-36.5	110	-37.3	-32.8	4
1992	16.5	10.5	364	17.3	10.0	402	4.3	3.0	92	-41.6	-50.0	111	-29.4	-30.6	116	-40.0	-33.3	17
1993	19.4	11.1	379	19.7	11.5	542	4.4	3.0	95	-40.8	-40.0	79	-28.3	-25.0	102	-48.6	-50.0	10
1994	18.8	12.0	442	21.5	12.5	676	4.0	3.0	89	-38.6	-33.5	60	-26.5	-17.0	97	-42.7	-50.0	7
1995	19.3	12.5	467	18.4	11.1	780	3.9	2.7	77	-39.1	-38.6	75	-26.3	-23.1	86	-40.9	-40.3	6
1996	17.5	12.5	424	17.0	11.1	809	4.2	3.1	88	-37.6	-36.7	75	-26.7	-21.8	106	-41.3	-41.0	4
1997	18.2	11.1	361	17.5	11.1	768	5.3	3.3	71	-42.1	-48.3	97	-33.2	-33.3	134	-37.3	-39.5	8
1998	14.7	9.5	259	15.9	10.9	594	8.1	3.5	53	-41.0	-42.9	74	-36.6	-40.0	172	-43.8	-46.1	14
1999	15.3	9.4	278	14.7	10.0	695	4.0	3.8	57	-44.5	-50.0	60	-25.0	-19.2	76	-45.9	-42.9	5
2000	17.7	9.1	227	13.4	9.1	541	7.0	3.2	44	-46.9	-50.0	50	-25.3	-19.7	84	-44.9	-43.9	3
2001	15.2	9.1	178	13.3	8.4	538	6.9	4.0	47	-45.0	-50.0	75	-25.2	-20.0	105	-34.9	-33.5	12
2002	16.0	7.8	246	16.9	8.3	688	8.5	3.5	56	-40.1	-46.4	56	-22.9	-16.7	159	-41.3	-45.8	12
2003	23.2	11.1	344	19.2	10.3	801	7.3	3.7	52	-41.2	-46.0	38	-26.0	-21.9	188	-40.1	-39.6	10
2004	24.5	14.3	461	23.8	10.1	766	16.5	4.9	75	-42.8	-48.5	42	-25.8	-23.2	187	-31.1	-46.7	7
2005	27.7	16.5	528	21.5	10.0	880	11.5	5.1	82	-37.6	-45.7	64	-29.7	-24.0	248	-33.9	-33.4	11
2006	21.6	13.0	554	25.3	10.0	941	16.1	5.4	111	-37.7	-33.5	58	-27.9	-23.5	287	-28.6	-33.3	6
2007	19.6	12.1	577	33.6	11.1	1,052	8.7	4.6	125	-31.2	-28.4	46	-32.3	-30.0	422	-26.9	-28.6	7
2008	19.3	10.0	535	40.8	13.8	789	7.2	4.1	123	-42.0	-44.4	95	-35.9	-33.3	763	-28.4	-20.6	3
2009	18.0	7.1	304	63.3	27.0	516	6.1	3.0	94	-53.2	-51.2	143	-39.0	-37.2	785	-39.3	-39.4	11
2010	28.0	10.5	496	55.8	20.0	547	6.9	2.9	114	-37.9	-37.5	51	-36.4	-33.3	330	-35.9	-35.9	2
Total	**19.5**	**13.3**	**22,838**	**22.0**	**11.1**	**19,200**	**8.0**	**5.1**	**4,447**	**-41.5**	**-44.4**	**4,002**	**-32.8**	**-30.6**	**5,556**	**-42.3**	**-47.9**	**333**

Table 4.2:

Dividend Per Share: All Firms - 1960 to 2010

The sample consists of 22,838 Unregulated, 19,200 Regulated-Financials and 4,447 Regulated-Utilities firm-events of Quarterly Dividend Increases and 4,002 Unregulated, 5,556 Regulated-Financials and 333 Regulated-Utilities firm-events of Quarterly Dividend Decreases over a period of 1960 to 2010. The table reports the Mean and Median across each calendar year. N represents number of dividend change events.

	Dividend Increases - Dividend Amount / Share									Dividend Decreases - Dividend Amount / Share								
Calendar	Unregulated			Regulated - Financials			Regulated - Utilities			Unregulated			Regulated - Financials			Regulated - Utilities		
Year	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N
1960	0.39	0.35	69	0.51	0.55	5	0.40	0.38	37	0.24	0.24	62	0.06	0.06	1	0.17	0.17	4
1961	0.38	0.35	85	0.32	0.25	5	0.42	0.41	50	0.21	0.20	63	0.22	0.23	3	0.18	0.18	20
1962	0.31	0.28	81	0.30	0.33	7	0.38	0.38	46	0.22	0.20	32	0.10	0.10	1	0.18	0.21	15
1963	0.32	0.30	166	0.24	0.24	10	0.36	0.34	52	0.25	0.20	37	0.18	0.18	1	0.22	0.22	4
1964	0.32	0.30	316	0.25	0.28	17	0.32	0.32	64	0.22	0.20	50				0.29	0.29	4
1965	0.31	0.30	402	0.27	0.26	20	0.35	0.35	61	0.25	0.25	65	0.23	0.23	2	0.28	0.25	3
1966	0.31	0.30	354	0.32	0.24	18	0.34	0.33	60	0.20	0.20	71	0.14	0.15	3	0.28	0.28	2
1967	0.30	0.30	267	0.30	0.28	15	0.35	0.35	67	0.22	0.20	47	0.15	0.15	1			
1968	0.32	0.30	202	0.34	0.30	20	0.35	0.35	53	0.18	0.15	94	0.19	0.21	5	0.32	0.31	4
1969	0.28	0.25	181	0.35	0.31	18	0.35	0.35	48	0.16	0.15	90	0.21	0.13	9			
1970	0.24	0.23	127	0.36	0.33	20	0.37	0.38	52	0.16	0.15	97	0.19	0.15	7			
1971	0.23	0.20	113	0.36	0.34	24	0.38	0.39	39	0.20	0.15	108	0.17	0.15	10			
1972	0.23	0.21	296	0.34	0.29	62	0.37	0.37	67	0.15	0.11	75	0.18	0.17	10	0.24	0.25	3
1973	0.21	0.17	757	0.33	0.27	160	0.35	0.34	103	0.14	0.13	64	0.25	0.21	32	0.18	0.18	2
1974	0.22	0.18	892	0.30	0.25	147	0.37	0.37	74	0.15	0.10	71	0.25	0.20	47	0.15	0.14	3
1975	0.20	0.15	618	0.26	0.24	89	0.37	0.36	87	0.15	0.10	126	0.31	0.23	28	0.08	0.05	3
1976	0.21	0.18	1,069	0.27	0.24	165	0.42	0.40	124	0.17	0.13	74	0.19	0.13	23	0.38	0.38	2
1977	0.23	0.20	1,148	0.26	0.25	275	0.41	0.43	138	0.17	0.15	78	0.31	0.23	18	0.36	0.35	3
1978	0.25	0.21	1,178	0.28	0.25	332	0.44	0.42	143	0.14	0.10	71	0.25	0.20	23	0.39	0.36	4
1979	0.27	0.25	1,096	0.32	0.30	341	0.45	0.45	142	0.17	0.13	93	0.23	0.20	23	0.23	0.25	4
1980	0.30	0.26	838	0.35	0.32	287	0.46	0.45	132	0.15	0.10	113	0.19	0.18	27	0.39	0.39	5
1981	0.29	0.25	704	0.37	0.35	259	0.49	0.49	130	0.15	0.13	127	0.21	0.23	28	0.31	0.22	5
1982	0.27	0.23	490	0.38	0.35	264	0.53	0.54	126	0.16	0.14	164	0.27	0.24	36	0.38	0.42	3
1983	0.27	0.21	443	0.39	0.36	264	0.54	0.55	134	0.13	0.10	144	0.25	0.23	41	0.30	0.32	9
1984	0.25	0.20	554	0.36	0.32	266	0.54	0.53	132	0.14	0.11	62	0.27	0.25	43	0.37	0.35	13
1985	0.25	0.20	450	0.34	0.30	276	0.56	0.56	108	0.13	0.09	71	0.24	0.20	64	0.43	0.44	4
1986	0.24	0.18	361	0.30	0.27	262	0.53	0.53	101	0.14	0.10	130	0.17	0.15	108	0.35	0.34	18
1987	0.23	0.18	431	0.27	0.24	418	0.50	0.49	99	0.16	0.13	82	0.22	0.20	91	0.29	0.30	17
1988	0.24	0.18	530	0.27	0.22	534	0.47	0.45	113	0.18	0.15	61	0.24	0.21	70	0.33	0.39	4
1989	0.25	0.20	481	0.29	0.23	499	0.46	0.45	110	0.20	0.10	59	0.25	0.20	98	0.34	0.38	7
1990	0.24	0.19	391	0.29	0.23	408	0.44	0.42	112	0.19	0.15	71	0.22	0.19	146	0.34	0.35	9
1991	0.24	0.19	324	0.28	0.23	388	0.46	0.44	98	0.13	0.10	101	0.21	0.17	110	0.25	0.24	4
1992	0.22	0.17	364	0.26	0.20	402	0.45	0.45	92	0.12	0.08	111	0.21	0.20	116	0.32	0.35	17
1993	0.21	0.15	379	0.23	0.20	542	0.42	0.42	95	0.13	0.08	79	0.20	0.17	102	0.24	0.26	10
1994	0.21	0.15	442	0.23	0.18	676	0.39	0.39	89	0.13	0.08	60	0.22	0.20	97	0.30	0.30	7
1995	0.21	0.15	467	0.24	0.19	780	0.39	0.38	77	0.19	0.08	75	0.23	0.19	86	0.27	0.26	6
1996	0.20	0.14	424	0.24	0.20	809	0.36	0.34	88	0.21	0.10	75	0.22	0.16	106	0.31	0.31	4
1997	0.21	0.16	361	0.25	0.20	768	0.37	0.35	71	0.15	0.09	97	0.19	0.14	134	0.24	0.25	8
1998	0.19	0.15	259	0.23	0.17	594	0.37	0.34	53	0.13	0.07	74	0.17	0.11	172	0.18	0.23	14
1999	0.19	0.15	278	0.22	0.15	695	0.34	0.32	57	0.09	0.05	60	0.22	0.22	76	0.20	0.22	5
2000	0.20	0.16	227	0.23	0.16	541	0.34	0.32	44	0.11	0.06	50	0.24	0.22	84	0.26	0.26	3
2001	0.22	0.16	178	0.24	0.17	538	0.35	0.30	47	0.15	0.09	75	0.25	0.21	105	0.42	0.35	12
2002	0.21	0.14	246	0.22	0.16	688	0.33	0.30	56	0.12	0.08	56	0.22	0.19	159	0.26	0.18	12
2003	0.22	0.15	344	0.22	0.17	801	0.38	0.33	52	0.18	0.09	38	0.21	0.16	188	0.26	0.21	10
2004	0.22	0.14	461	0.25	0.20	766	0.35	0.31	75	0.14	0.06	42	0.21	0.17	187	0.36	0.28	7
2005	0.24	0.16	528	0.26	0.20	880	0.35	0.31	82	0.30	0.12	64	0.22	0.18	248	0.20	0.07	11
2006	0.26	0.18	554	0.29	0.23	941	0.39	0.34	111	0.30	0.14	58	0.20	0.15	287	0.51	0.56	6
2007	0.29	0.23	577	0.30	0.24	1,052	0.42	0.36	125	0.41	0.39	46	0.23	0.16	422	0.41	0.42	7
2008	0.35	0.29	535	0.29	0.22	789	0.46	0.39	123	0.24	0.10	95	0.20	0.16	763	0.48	0.50	3
2009	0.33	0.25	304	0.24	0.17	516	0.37	0.34	94	0.18	0.08	143	0.14	0.09	785	0.28	0.25	11
2010	0.31	0.24	496	0.23	0.17	547	0.44	0.38	114	0.26	0.19	51	0.15	0.09	330	0.16	0.16	2
Total	**0.25**	**0.20**	**22,838**	**0.27**	**0.21**	**19,200**	**0.42**	**0.40**	**4,447**	**0.17**	**0.12**	**4,002**	**0.20**	**0.15**	**5,556**	**0.29**	**0.27**	**333**

Table 4.3:

Mean Abnormal and Mean Cumulative Abnormal Returns: All Firms - 1960 to 2010

The sample consists of 22,838 Unregulated, 19,200 Regulated-Financials and 4,447 Regulated-Utilities firm-events of Quarterly Dividend Increases and 4,002 Unregulated, 5,556 Regulated-Financials and 333 Regulated-Utilities firm-events of Quarterly Dividend Decreases over a period of 1960 to 2010. The market model is estimated using the CRSP Equal-Weighted Index to calculate the abnormal returns. The events dates correspond to "Dividend Declaration Dates". MAR is the portfolio average abnormal return for the specific day in the event time and MCAR is the portfolio mean cumulative abnormal return from day -10 to the specified day. Event time is days relative to the announcement date.

	Dividend Increase						**Dividend Decrease**					
	D↑-Unregulated Firms		**D↑- Financial Firms**		**D↑-Utilities Firms**		**D↓-Unregulated Firms**		**D↓- Financial Firms**		**D↓- Utilities Firms**	
Event Day	**MARs**	**MCARs**	**MARs**	**MCARs**	**MARs**	**MCARs**	**MARs**	**MCARs**	**MARs**	**MCARs**	**MARs**	**MCARs**
-10	0.00%	0.00%	-0.02%	-0.02%	-0.04%	-0.04%	-0.05%	-0.05%	0.00%	0.00%	0.21%	0.21%
-9	-0.01%	-0.01%	-0.02%	-0.04%	-0.01%	-0.05%	0.03%	-0.02%	-0.10%	-0.10%	-0.04%	0.17%
-8	-0.01%	-0.02%	-0.01%	-0.05%	0.00%	-0.05%	-0.05%	-0.07%	0.03%	-0.07%	0.02%	0.19%
-7	0.01%	-0.01%	0.00%	-0.05%	-0.01%	-0.06%	-0.07%	-0.14%	-0.09%	-0.16%	0.01%	0.20%
-6	0.05%	0.04%	-0.03%	-0.08%	0.00%	-0.06%	0.02%	-0.12%	-0.04%	-0.20%	-0.02%	0.18%
-5	0.02%	0.06%	0.01%	-0.07%	0.01%	-0.05%	-0.12%	-0.24%	0.02%	-0.18%	-0.05%	0.13%
-4	0.02%	0.08%	-0.02%	-0.09%	0.02%	-0.03%	-0.07%	-0.31%	0.03%	-0.15%	-0.24%	-0.11%
-3	0.03%	0.11%	0.00%	-0.09%	0.03%	0.00%	-0.01%	-0.32%	-0.09%	-0.24%	-0.23%	-0.34%
-2	0.05%	0.16%	0.00%	-0.09%	0.02%	0.02%	-0.12%	-0.44%	-0.08%	-0.32%	-0.18%	-0.52%
-1	**0.10%**	**0.26%**	**0.04%**	**-0.05%**	**0.04%**	**0.06%**	**-0.11%**	**-0.55%**	**-0.03%**	**-0.35%**	**-0.24%**	**-0.76%**
0	**0.53%**	**0.79%**	**0.25%**	**0.20%**	**0.36%**	**0.42%**	**-1.19%**	**-1.74%**	**-0.37%**	**-0.72%**	**-0.76%**	**-1.52%**
1	**0.32%**	**1.11%**	**0.22%**	**0.42%**	**0.38%**	**0.80%**	**-0.95%**	**-2.69%**	**-0.42%**	**-1.14%**	**-0.65%**	**-2.17%**
2	0.12%	1.23%	0.09%	0.51%	0.19%	0.99%	-0.09%	-2.78%	-0.06%	-1.20%	0.12%	-2.05%
3	0.09%	1.32%	0.09%	0.60%	0.15%	1.14%	-0.03%	-2.81%	-0.04%	-1.24%	0.05%	-2.00%
4	0.06%	1.38%	0.07%	0.67%	0.08%	1.22%	0.01%	-2.80%	-0.03%	-1.27%	0.46%	-1.54%
5	0.01%	1.39%	0.07%	0.74%	0.07%	1.29%	0.00%	-2.80%	0.03%	-1.24%	0.07%	-1.47%
6	0.01%	1.40%	0.02%	0.76%	0.01%	1.30%	-0.02%	-2.82%	-0.03%	-1.27%	-0.20%	-1.67%
7	0.03%	1.43%	0.02%	0.78%	0.01%	1.31%	-0.13%	-2.95%	-0.03%	-1.30%	-0.16%	-1.83%
8	0.02%	1.45%	0.01%	0.79%	0.01%	1.32%	-0.11%	-3.06%	-0.11%	-1.41%	-0.22%	-2.05%
9	0.03%	1.48%	0.01%	0.80%	-0.01%	1.31%	-0.19%	-3.25%	-0.14%	-1.55%	-0.14%	-2.19%
10	0.01%	1.49%	0.00%	0.80%	-0.06%	1.25%	-0.05%	-3.30%	-0.06%	-1.61%	0.06%	-2.13%

Table 4.4:

Firm-specific and Market-wide Characteristics - Unregulated versus Regulated Firms

All variables are quarterly and are calculated as follows: Size: natural log of market capitalization (shares outstanding times the stock price) in the quarter before the event announcement; Dividend Yield: increase in dividend amount over the previous quarter scaled by the stock price at the beginning of the quarter; Profitability: operating income scaled by total assets; Age: natural log of the difference (in years) between the event announcement date and the first reporting date in the CRSP database; Net Tax: difference between the dividend and capital gain tax rate; Magnitude of Dividend Change: percent increase in dividend amount over the previous quarter; Market-to-Book: (common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter)/total assets in the quarter before the event announcement; Leverage: debt in current liabilities plus long term debt divided by total assets in the quarter before the event announcement; and Earnings Volatility: coefficients of variation in quarterly operating earnings over the past four years. Note ***, **, * show that mean value for regulated firms (financial and utilities) is significantly lower than that of unregulated firms at 1%, 5% and 10% respectively; whereas aaa, aa, a show that the mean value for regulated firms (financial and utilities) is significantly higher than that of unregulated firms at 1%, 5% and 10% respectively.

Panel A - Dividend Increase Sample

Firm Type		Size	Dividend Yield	Profitability	Age	Net Taxes	Magnitude of Dividend Change	Market-to-Book	Leverage	Earnings Volatility
Unregulated	Mean	6.31	0.0009	0.0609	2.65	-0.569	14.75	1.89	0.22	0.36
	Median	6.31	0.0005	0.0454	2.74	-1.750	9.09	1.41	0.21	0.29
	Count	14,873	14,873	12,612	15,490	15,500	14,737	14,700	13,726	4,251
Regulated - Financials	Mean	5.86***	0.0011[aa]	0.0211***	2.17***	-2.540***	14.18	1.49***	0.19***	0.32***
	Median	5.74	0.0006	0.0072	2.28	-2.920	8.70	1.06	0.14	0.27
	Count	12,262	12,262	9,973	12,431	12,462	12,086	12,222	10,271	3,517
Regulated - Utilities	Mean	6.22***	0.0011[aaa]	0.0329***	2.86[aaa]	-0.621	6.32***	1.19***	0.37[aaa]	0.42[aaa]
	Median	6.36	0.0006	0.0294	3.00	-1.650	4.17	1.11	0.38	0.31
	Count	3,399	3,399	3,156	3,443	3,449	3,349	3,398	3,360	1,707

Panel B - Dividend Decrease Sample

Firm Type		Size	Dividend Yield	Profitability	Firm Age	Net Taxes	Magnitude of Dividend Change	Market-to-Book	Leverage	Earnings Volatility
Unregulated	Mean	5.81	-0.0049	0.1142	2.54	-0.923	-30.98	3.59	0.24	0.52
	Median	5.78	-0.0023	0.0356	2.69	-2.200	-33.33	1.30	0.23	0.42
	Count	2,362	2,362	2,070	2,469	2,472	2,329	2,318	2,223	689
Regulated - Financials	Mean	5.40***	-0.0066***	0.0518**	2.19***	-2.522***	-28.81	2.60*	0.21***	0.60
	Median	5.22	-0.0034	0.0073	2.33	-2.920	-32.20	1.04	0.13	0.38
	Count	2,126	2,126	1,730	2,154	2,160	2,097	2,116	1,808	733
Regulated - Utilities	Mean	6.23[aaa]	-0.0067***	0.0407	2.92[aaa]	-1.857***	-32.92	1.55	0.33[aaa]	0.47
	Median	6.26	-0.0057	0.0293	3.10	-2.610	-37.50	1.17	0.35	0.32
	Count	255	255	244	256	256	251	255	252	158

Table 4.5.A

Determinants of Stock Price Reaction to Dividend Increases

The dependent variable is 3-day (CAR3) or 21-day (CAR21) Cumulative Abnormal Return for the dividend increase announcements during the period 1971 to 2010. All variables are quarterly and are calculated as follows: Size: natural log of market capitalization (shares outstanding times the stock price) in the quarter before the event announcement; Dividend Yield: increase in dividend amount over the previous quarter scaled by the stock price at the beginning of the quarter; Profitability: operating income scaled by total assets; Firm Age: natural log of the difference (in years) between the event announcement date and the first reporting date in the CRSP database; Net Tax: difference between the dividend and capital gain tax rate; Magnitude of Dividend Change: percent increase in dividend amount over the previous quarter; Market-to-Book: (common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter)/total assets in the quarter before the event announcement; Leverage: debt in current liabilities plus long term debt divided by total assets in the quarter before the event announcement; Recession: dummy variable, which equals one for recession periods and zero otherwise; Earnings Volatility: coefficient of variation in quarterly operating earnings over the past four years and Earnings Announcement: dummy variable, which equals one for firm-event with earnings announcements within 21-day event window and zero otherwise. Models in Panel A include all dividend increase announcements and models in Panel B exclude the firm-events with earnings announcements within 21-day window. Note: ***, **, * show significance at 1%, 5% and 10% level respectively and standard errors are shown in parentheses.

	Panel A (Pooled Sample)						**Panel B (Sample Excluding EA Firm-Events)**					
	Unregulated		**Regulated - Financials**		**Regulated - Utilities**		**Unregulated**		**Regulated - Financials**		**Regulated - Utilities**	
	CAR3	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**
Size	-0.000940**	-0.00260***	-0.000483	-0.00329***	-0.00105**	-0.00253*	-0.000715	-0.00135	-0.000310	-0.00236**	-0.000483	-0.00329***
	(0.0004)	(0.0009)	(0.0004)	(0.0009)	(0.0005)	(0.0014)	(0.0004)	(0.0011)	(0.0004)	(0.0010)	(0.0004)	(0.0009)
Dividend Yield	0.799	0.667	0.518	1.387**	1.114	-1.776	1.332***	1.744**	1.150**	1.331	0.518	1.387**
	(0.4910)	(0.9234)	(0.3429)	(0.5947)	(1.0587)	(2.9282)	(0.3058)	(0.6784)	(0.4837)	(0.9882)	(0.3429)	(0.5947)
Profitability	0.000118	0.000172	0.0383**	0.0613*	0.0178	-0.0332	-0.000248	-0.00112	0.0209	0.0574	0.0383**	0.0613*
	(0.0011)	(0.0051)	(0.0186)	(0.0371)	(0.0429)	(0.1127)	(0.0011)	(0.0049)	(0.0198)	(0.0380)	(0.0186)	(0.0371)
Age	0.000832	0.00238	-0.000646	0.00942**	0.000298	-0.000393	0.00243	-0.0000433	-0.000486	0.0101**	-0.000646	0.00942**
	(0.0015)	(0.0037)	(0.0016)	(0.0039)	(0.0024)	(0.0065)	(0.0017)	(0.0045)	(0.0017)	(0.0044)	(0.0016)	(0.0039)
Net Tax	-0.000257	-0.000234	0.000325	0.000390	0.000145	0.000563	-0.000349	-0.000372	0.000377*	0.000623	0.000325	0.000390
	(0.0003)	(0.0007)	(0.0002)	(0.0005)	(0.0004)	(0.0011)	(0.0003)	(0.0008)	(0.0002)	(0.0005)	(0.0002)	(0.0005)
Magnitude of Dividend Increase	-0.00000966	0.00000427	0.0000129	0.0000486**	0.0000450	0.000435	-0.0000363**	-0.0000221	-0.0000374	0.0000794	0.0000129	0.0000486**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0004)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)
Market-to-Book	0.0000240	0.0000385	-0.000254	-0.000230	0.00364*	0.000375	0.0000398*	0.0000847	0.0000489	-0.000168	-0.000254	-0.000230
	(0.0000)	(0.0001)	(0.0003)	(0.0006)	(0.0019)	(0.0055)	(0.0000)	(0.0001)	(0.0004)	(0.0007)	(0.0003)	(0.0006)
Leverage	-0.00805**	-0.0147	0.00803*	0.0189*	0.0138**	0.00777	-0.00507	-0.0131	0.00400	0.0160	0.00803*	0.0189*
	(0.0040)	(0.0099)	(0.0047)	(0.0106)	(0.0067)	(0.0181)	(0.0046)	(0.0122)	(0.0050)	(0.0111)	(0.0047)	(0.0106)
Recession	-0.00104	-0.00414	-0.00104	-0.0115**	-0.00182	-0.00873	-0.00184	-0.00672	-0.00373*	-0.00942*	-0.00104	-0.0115**
	(0.0020)	(0.0050)	(0.0019)	(0.0045)	(0.0022)	(0.0059)	(0.0023)	(0.0060)	(0.0020)	(0.0050)	(0.0019)	(0.0045)
Earnings Volatility	0.00359	0.00672	0.00209*	-0.00192	-0.000984	0.000835	-0.00000202	0.00364	0.00251**	-0.00245	0.00209*	-0.00192
	(0.0023)	(0.0060)	(0.0011)	(0.0022)	(0.0024)	(0.0064)	(0.0024)	(0.0071)	(0.0013)	(0.0022)	(0.0011)	(0.0022)
Earnings Announcement	0.00255*	0.00567*	0.00174	0.00181	-0.00158	-0.00213					0.00174	0.00181
	(0.0013)	(0.0031)	(0.0013)	(0.0032)	(0.0014)	(0.0038)					(0.0013)	(0.0032)
Constant	0.00859*	0.0204*	0.00635*	-0.00265	0.00199	0.0226	0.00263	0.0194	0.00570	-0.0101	0.00635*	-0.00265
	(0.0046)	(0.0111)	(0.0038)	(0.0094)	(0.0075)	(0.0210)	(0.0052)	(0.0135)	(0.0041)	(0.0108)	(0.0038)	(0.0094)
No. of Observations	4010	4010	3273	3273	1683	1683	2653	2653	2299	2299	3273	3273
Adj. R-Squared	0.0080	0.0039	0.0205	0.0229	0.0149	0.0026	0.0093	0.0026	0.0330	0.0270	0.0205	0.0229

Table 4.5.B

Determinants of Stock Price Reaction to Dividend Decreases

The dependent variable is 3-day (CAR3) or 21-day (CAR21) Cumulative Abnormal Return times negative one for the dividend decrease announcements during the period 1971 to 2010. All variables are quarterly and are calculated as follows: Size: natural log of market capitalization (shares outstanding times the stock price) in the quarter before the event announcement; Dividend Yield: increase in dividend amount over the previous quarter scaled by the stock price at the beginning of the quarter; Profitability: operating income scaled by total assets; Firm Age: natural log of the difference (in years) between the event announcement date and the first reporting date in the CRSP database; Net Tax: difference between the dividend and capital gain tax rate; Magnitude of Dividend Change: percent increase in dividend amount over the previous quarter; Market-to-Book: (common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter)/total assets in the quarter before the event announcement; Leverage: debt in current liabilities plus long term debt divided by total assets in the quarter before the event announcement; Recession: dummy variable, which equals one for recession periods and zero otherwise; Earnings Volatility: coefficient of variation in quarterly operating earnings over the past four years and Earnings Announcement: dummy variable, which equals one for firm-event with earnings announcements within 21-day event window and zero otherwise. Models in Panel A include all dividend increase announcements and models in Panel B exclude the firm-events with earnings announcement within 21-day window. Note: ***, **, * show significance at 1%, 5% and 10% level respectively and standard errors are shown in parentheses.

	Panel A (Pooled Sample)						**Panel B (Sample Excluding EA Firm-Events)**					
	Unregulated		**Regulated - Financials**		**Regulated - Utilities**		**Unregulated**		**Regulated - Financials**		**Regulated - Utilities**	
	CAR3	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**
Size	0.00112	-0.00227	-0.000744	0.00588	-0.0147**	-0.0243**	0.00119	-0.00338	-0.00129	0.00356	-0.0120*	-0.0208*
	(0.0016)	(0.0033)	(0.0017)	(0.0039)	(0.0059)	(0.0098)	(0.0018)	(0.0033)	(0.0018)	(0.0039)	(0.0072)	(0.0119)
Dividend Yield	0.0913	-0.116	-0.413	-0.883	-0.886	2.197	0.387	-0.00283	-0.366	-1.147**	-1.060	-0.128
	(0.6299)	(0.6565)	(0.3433)	(0.5578)	(1.6480)	(2.5544)	(0.5599)	(0.5906)	(0.3418)	(0.5570)	(2.4281)	(3.8241)
Profitability	0.00314	-0.00488	-0.0720**	-0.136*	-0.390	0.0235	0.00347	-0.000883	-0.0742**	-0.131*	-0.140	0.0205
	(0.0025)	(0.0046)	(0.0352)	(0.0726)	(0.2598)	(0.4114)	(0.0024)	(0.0041)	(0.0357)	(0.0732)	(0.3755)	(0.7870)
Age	-0.00380	0.0208	0.00709	-0.0222	0.0427*	0.0615*	-0.00346	0.0149	0.00293	-0.0227	0.0212	0.0201
	(0.0069)	(0.0140)	(0.0074)	(0.0175)	(0.0218)	(0.0343)	(0.0083)	(0.0170)	(0.0074)	(0.0180)	(0.0271)	(0.0436)
Net Tax	0.00491**	0.00207	0.00176	0.00269	0.00293	0.00619	0.00590**	0.00239	0.00238	0.00319	0.00100	0.00459
	(0.0021)	(0.0029)	(0.0018)	(0.0024)	(0.0043)	(0.0080)	(0.0023)	(0.0030)	(0.0019)	(0.0024)	(0.0054)	(0.0095)
Magnitude of Dividend Increase	-0.000266**	-0.000130	0.0000313	0.000160***	0.0000119	-0.000409	-0.000243*	-0.000183	0.0000323*	0.000172***	0.000195	0.000180
	(0.0001)	(0.0002)	(0.0000)	(0.0000)	(0.0004)	(0.0006)	(0.0001)	(0.0002)	(0.0000)	(0.0000)	(0.0005)	(0.0008)
Market-to-Book	-0.000115	0.000147	0.00151*	0.00298*	-0.00533	-0.00759	-0.000125	-0.0000107	0.00162**	0.00286*	-0.0150	-0.00693
	(0.0001)	(0.0002)	(0.0008)	(0.0015)	(0.0084)	(0.0157)	(0.0001)	(0.0002)	(0.0008)	(0.0016)	(0.0152)	(0.0298)
Leverage	-0.0201	-0.0712*	-0.00997	-0.0384	-0.213**	-0.198	-0.00538	-0.0969**	0.00579	-0.0286	-0.204	-0.167
	(0.0192)	(0.0363)	(0.0183)	(0.0402)	(0.0881)	(0.1789)	(0.0217)	(0.0418)	(0.0167)	(0.0345)	(0.1297)	(0.2748)
Recession	0.00174	0.00427	0.0106	0.0242	0.0125	0.0371	0.0164*	0.0277	0.00871	0.0150	-0.00444	0.00968
	(0.0087)	(0.0170)	(0.0066)	(0.0157)	(0.0192)	(0.0345)	(0.0097)	(0.0191)	(0.0078)	(0.0177)	(0.0199)	(0.0340)
Earnings Volatility	0.0186*	0.0192	0.000138	0.00168	-0.00385	-0.0122	0.0282**	0.00848	0.000110	0.00204	-0.0259	-0.0349
	(0.0103)	(0.0172)	(0.0006)	(0.0015)	(0.0238)	(0.0457)	(0.0112)	(0.0135)	(0.0005)	(0.0016)	(0.0242)	(0.0528)
Earnings Announcement	0.00255	-0.00839	-0.00278	0.0150	0.00526	0.0106						
	(0.0066)	(0.0125)	(0.0074)	(0.0179)	(0.0153)	(0.0235)						
Constant	0.0202	-0.0152	-0.00120	0.0572	0.0643	0.0651	0.0125	0.0155	0.0136	0.0730	0.129	0.176
	(0.0231)	(0.0438)	(0.0219)	(0.0477)	(0.0619)	(0.0919)	(0.0268)	(0.0542)	(0.0225)	(0.0480)	(0.0897)	(0.1437)
No. of Observations	638	638	694	694	156	156	426	426	513	513	121	121
Adj. R-Squared	0.0223	0.0044	0.0030	0.0042	0.0503	0.0387	0.0512	0.0141	0.0033	0.0081	0.0106	-0.0020

Table 4.6.A

Difference in Stock Price Reaction to Dividend Increases: Unregulated versus Regulated Firms

The dependent variable is 3-day (CAR3) or 21-day (CAR21) Cumulative Abnormal Return for the dividend increase announcements during the period 1971 to 2010. All variables are quarterly and are calculated as follows: Non-Industrial - Utilities: dummy variable, which equals 1 for utilities firm-event and 0 otherwise; Non-Industrial - Financials: dummy variable, which equals 1 for financial firm-event and 0 otherwise; Size: natural log of market capitalization (shares outstanding times the stock price) in the quarter before the event announcement; Dividend Yield: increase in dividend amount over the previous quarter scaled by the stock price at the beginning of the quarter; Profitability: operating income scaled by total assets; Age: natural log of the difference (in years) between the event announcement date and the first reporting date in the CRSP database; Net Tax: difference between the dividend and capital gain tax rate; Magnitude of Dividend Change: percent increase in dividend amount over the previous quarter; Market-to-Book: (common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter)/total assets in the quarter before the event announcement; Leverage: debt in current liabilities plus long term debt divided by total assets in the quarter before the event announcement; Recession: dummy variable, which equals 1 for recession periods and 0 otherwise; Earnings Volatility: coefficient of variation in quarterly operating earnings over the past four years; and Earnings Announcement: dummy variable, which equals 1 if the firm announced earnings during 21-day (-10, +10) window around the dividend increase announcement and 0 otherwise. Models in Panel A include all dividend change announcements, models in Panel B control for earnings announcement dummy within the 21-day window and models in Panel C exclude the firm-events with earnings announcements within the 21-day window. Note: ***, **, * show significance at 1%, 5% and 10% level respectively and standard errors are shown in parentheses.

	Panel A		**Panel B**		**Panel C**	
	CAR3	CAR21	CAR3	CAR21	CAR3	CAR21
Utilities	**-0.000776**	**-0.00796*** **	**-0.000774**	**-0.00795*** **	**-0.000111**	**-0.00516***
	(0.0010)	(0.0025)	(0.0010)	(0.0025)	(0.0011)	(0.0029)
Financial	**-0.00236*** **	**-0.00536*** **	**-0.00232*** **	**-0.00530*** **	**-0.00159***	**-0.00362**
	(0.0008)	(0.0021)	(0.0008)	(0.0021)	(0.0009)	(0.0024)
Size	-0.000888***	-0.00298***	-0.000911***	-0.00302***	-0.000773***	-0.00224***
	(0.0002)	(0.0006)	(0.0002)	(0.0006)	(0.0003)	(0.0007)
Dividend Yield	0.825***	1.211**	0.829***	1.218**	1.351***	2.042***
	(0.3178)	(0.5881)	(0.3170)	(0.5867)	(0.2370)	(0.5191)
Profitability	-0.0000283	-0.000369	0.0000242	-0.000274	-0.000680	-0.00191
	(0.0014)	(0.0044)	(0.0014)	(0.0044)	(0.0015)	(0.0046)
Age	0.000630	0.00552**	0.000688	0.00562**	0.00214*	0.00483
	(0.0010)	(0.0025)	(0.0010)	(0.0025)	(0.0011)	(0.0029)
Net Tax	-0.0000161	0.0000609	0.0000382	0.000159	0.0000662	0.000241
	(0.0001)	(0.0004)	(0.0001)	(0.0004)	(0.0002)	(0.0004)
Magnitude of Dividend Increase	-0.00000109	0.0000241	-0.00000167	0.0000230	-0.0000377***	-0.00000968
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Market-to-Book	0.0000838**	0.000185**	0.0000855**	0.000188**	0.000104**	0.000237***
	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0000)	(0.0001)
Leverage	-0.00256	-0.00304	-0.00256	-0.00305	-0.00190	-0.00352
	(0.0028)	(0.0069)	(0.0028)	(0.0069)	(0.0032)	(0.0081)
Recession	-0.00112	-0.00778***	-0.00121	-0.00795***	-0.00293**	-0.00917***
	(0.0012)	(0.0030)	(0.0012)	(0.0030)	(0.0013)	(0.0034)
Earnings Volatility	0.00236**	0.00245	0.00242**	0.00256	0.00164	0.00204
	(0.0011)	(0.0028)	(0.0011)	(0.0028)	(0.0010)	(0.0029)
Earnings Announcements			0.00135*	0.00243		
			(0.0008)	(0.0019)		
Constant	0.00945***	0.0148**	0.00912***	0.0142**	0.00377	0.0105
	(0.0028)	(0.0069)	(0.0028)	(0.0069)	(0.0031)	(0.0082)
No. of Observations	8966	8966	8966	8966	6124	6124
Adj. R-Squared	0.0099	0.0089	0.0102	0.0090	0.0160	0.0101

Table 4.6.B

Difference in Stock Price Reaction to Dividend Decreases - Unregulated versus Regulated Firms

The dependent variable is 3-day (CAR3) or 21-day (CAR21) Cumulative Abnormal Return times negative one for the dividend decrease announcements during the period 1971 to 2010. All variables are quarterly and are calculated as follows: Non-Industrial – Utilities (Financial): dummy variable, which equals 1 for utilities (financial) firm-event and 0 otherwise; Size: natural log of market capitalization (shares outstanding times the stock price) in the quarter before the event announcement; Dividend Yield: decrease in dividend amount over the previous quarter scaled by the stock price at the beginning of the quarter; Profitability: operating income scaled by total assets; Age: natural log of the difference (in years) between the event announcement date and the first reporting date in the CRSP database; Net Tax: difference between the dividend and capital gain tax rate; Magnitude of Dividend Decrease: percent decrease in dividend amount over the previous quarter; Market-to-Book: (common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter)/total assets in the quarter before the event announcement; Leverage: debt in current liabilities plus long term debt divided by total assets in the quarter before the event announcement; Recession: dummy variable, which equals 1 for recession periods and 0 otherwise; Earnings Volatility: coefficient of variation in quarterly operating earnings over the past four years; and Earnings Announcement: dummy variable, which equals 1 if the firm announced earnings during the 21-day (-10, +10) window around the dividend increase announcement and 0 otherwise. Models in Panel A include all dividend change announcements, models in Panel B control for earnings announcement dummy within the 21-day window around and models in Panel C exclude the firm-events with earnings announcements within the 21-day window. Note: ***, **, * show significance at 1%, 5% and 10% level respectively and standard errors are shown in parentheses.

	Panel A		**Panel B**		**Panel C**	
	CAR3	CAR21	CAR3	CAR21	CAR3	CAR21
Utilities	**-0.00812**	**-0.00768**	**-0.00810**	**-0.00739**	**-0.00592**	**-0.00939**
	(0.0066)	(0.0117)	(0.0066)	(0.0116)	(0.0076)	(0.0137)
Financial	**-0.00560**	**-0.000848**	**-0.00558**	**-0.000549**	**-0.00494**	**-0.0122**
	(0.0045)	(0.0088)	(0.0045)	(0.0089)	(0.0049)	(0.0091)
Size	-0.00107	-0.000368	-0.00107	-0.000454	-0.00160	-0.00126
	(0.0011)	(0.0024)	(0.0012)	(0.0024)	(0.0013)	(0.0025)
Dividend Yield	-0.308	-0.484	-0.308	-0.486	-0.139	-0.742*
	(0.3565)	(0.4408)	(0.3566)	(0.4414)	(0.3584)	(0.4470)
Profitability	0.00184	-0.00416	0.00183	-0.00435	0.000805	-0.00380
	(0.0027)	(0.0049)	(0.0027)	(0.0049)	(0.0027)	(0.0045)
Age	0.00433	0.00573	0.00435	0.00597	0.00160	-0.00409
	(0.0047)	(0.0103)	(0.0048)	(0.0103)	(0.0053)	(0.0116)
Net Tax	0.00297**	0.00254	0.00298**	0.00268	0.00347**	0.00297
	(0.0013)	(0.0018)	(0.0013)	(0.0018)	(0.0014)	(0.0019)
Magnitude of Dividend Decrease	0.000000131	0.0000892**	0.000000201	0.0000900**	0.000000107	0.000113***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Market-to-Book	-0.0000814	0.000104	-0.0000806	0.000113	-0.0000394	0.0000876
	(0.0001)	(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0002)
Leverage	-0.0148	-0.0560**	-0.0149	-0.0561**	-0.00527	-0.0607**
	(0.0128)	(0.0255)	(0.0128)	(0.0255)	(0.0135)	(0.0268)
Recession	0.00700	0.0172	0.00696	0.0167	0.00990	0.0180
	(0.0052)	(0.0112)	(0.0052)	(0.0111)	(0.0061)	(0.0126)
Earnings Volatility	0.00137	0.00318**	0.00137	0.00317**	0.00126	0.00313**
	(0.0009)	(0.0016)	(0.0009)	(0.0016)	(0.0008)	(0.0014)
Earnings Announcements			0.000307	0.00348		
			(0.0046)	(0.0100)		
Constant	0.0187	0.0241	0.0187	0.0233	0.0289*	0.0641*
	(0.0154)	(0.0303)	(0.0154)	(0.0305)	(0.0169)	(0.0335)
No. of Observations	1488	1488	1488	1488	1060	1060
Adj. R-Squared	0.0066	0.0037	0.0059	0.0031	0.0081	0.0095

Table 4.7

Pairwise Correlation: Abnormal Returns versus Information Asymmetry Measures

All variables are quarterly and are calculated as follows: Size: natural log of market capitalization (shares outstanding times the stock price) in the quarter before the event announcement; Age: natural log of the difference (in years) between the event announcement date and the first reporting date in the CRSP database; Listed: dummy variable equals one if firm is listed on New York or American Stock Exchange and zero otherwise; Rated: dummy variable equals one if the firm has a S&P Senior Secured Debt rating in a given fiscal quarter and 0 otherwise; and S&P 500: dummy variable equals one if the firm is in the S&P 500 Index in a given fiscal quarter and zero otherwise. Note ***, **, * show the significance at 1%, 5% and 10% respectively and p-values are reported beneath the coefficients.

Dividend Increase Sample

	CAR3	CAR21	Size	Age	Listed	Rated	S&P 500
CAR3	1.00						
CAR21	0.429***	1.00					
	0.0000						
Size	**-0.083*** **	**-0.076*** **	1.00				
	0.0000	0.0000					
Age	**-0.0187*** **	**-0.015*** **	0.473***	1.00			
	0.0009	0.0093	0.0000				
Listed	**0.003**	**0.001**	0.313***	0.274***	1.00		
	0.5654	0.9470	0.0000	0.0000			
Rated	**-0.038*** **	**-0.031*** **	0.467***	0.261***	0.166***	1.00	
	0.0000	0.0000	0.0000	0.0000	0.0000		
SP 500	**-0.010* **	**-0.014** **	0.261***	0.179***	0.102***	0.107***	1.00
	0.0842	0.0137	0.0000	0.0000	0.0000	0.0000	

Table 4.8.A

Determinants of Stronger Stock Price Reaction to Dividend Increases by Unregulated Firms

The dependent variable is 3-day (CAR3) or 21-day (CAR21) Cumulative Abnormal Return for the dividend increase announcements during the period 1971 to 2010. All variables are quarterly and are calculated as follows: Unregulated: dummy variable equals one for unregulated firm-event and zero otherwise; Size: natural log of market capitalization (shares outstanding times the stock price) in the quarter before the event announcement; Age: natural log of the difference (in years) between the event announcement date and the first reporting date in the CRSP database; Listed: dummy variable equals one if the firm is listed on NYSE or AMEX and zero otherwise; Rated: dummy variable equals one for firms with rated debt and zero otherwise; and S&P: dummy variable equals one if the firm is included in S&P 500 Index and zero otherwise. Note: ***, **, * show significance at 1%, 5% and 10% level respectively, and standard errors are shown in parentheses.

	Panel A		**Panel B**		**Panel C**		**Panel D**		**Panel E**	
	CAR3	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**
Size	-0.00119***	-0.00352***								
	(0.0001)	(0.0004)								
Size * Unregulated	**-0.000708*** **	**0.0000400**								
	(0.0002)	**(0.0005)**								
Age			-0.000367	-0.000969						
			(0.0003)	(0.0007)						
Age * Unregulated			**-0.00192*** **	**-0.00292** **						
			(0.0005)	**(0.0012)**						
Listed					0.00130***	0.00167				
					(0.0005)	(0.0012)				
Listed * Unregulated					**-0.00409*** **	**-0.00657*** **				
					(0.0009)	**(0.0022)**				
Rated							-0.00360***	-0.00705***		
							(0.0007)	(0.0019)		
Rated * Unregulated							**-0.000585**	**-0.00141**		
							(0.0011)	**(0.0028)**		
S&P 500									-0.0000207	-0.00731
									(0.0018)	(0.0045)
S&P * Unregulated									**-0.00314**	**0.000174**
									(0.0020)	**(0.0052)**
Unregulated	0.00746***	0.00520	0.00794***	0.0129***	0.00558***	0.00944***	0.00282***	0.00497***	0.00301***	0.00525***
	(0.0014)	(0.0034)	(0.0014)	(0.0033)	(0.0008)	(0.0018)	(0.0004)	(0.0010)	(0.0004)	(0.0010)
Constant	0.0128***	0.0298***	0.00656***	0.0110***	0.00497***	0.00777***	0.00615***	0.00960***	0.00568***	0.00882***
	(0.0009)	(0.0022)	(0.0007)	(0.0018)	(0.0004)	(0.0009)	(0.0003)	(0.0006)	(0.0002)	(0.0006)
No. of Observations	30533	30533	31363	31363	31410	31410	31410	31410	31410	31410
Adj. R-Squared	0.0093	0.0066	0.0027	0.0013	0.0023	0.0011	0.0030	0.0017	0.0018	0.0011

Table 4.8.B

Determinants of Stronger Stock Price Reaction to Dividend Increases by Unregulated Firms

The dependent variable is 3-day (CAR3) or 21-day (CAR21) Cumulative Abnormal Return for the dividend increase announcements during the period of 1971 and 2010. All variables are quarterly and are calculated as follows: Unregulated: dummy variable equals one for unregulated firm-event and zero otherwise; Dividend Yield: increase in dividend amount over the previous quarter scaled by the stock price at the beginning of the quarter; Magnitude of Dividend Change: percent increase in dividend amount over the previous quarter; Size: natural log of market capitalization (shares outstanding times the stock price) in the quarter before the event announcement; Age: natural log of the difference (in years) between the event announcement date and the first reporting date in the CRSP database; Listed: dummy variable equals one if the firm is listed on NYSE or AMEX and zero otherwise; Rated: dummy variable equals one for firms with rated debt and zero otherwise; and S&P: dummy variable equals one if the firm is included in S&P 500 Index and zero otherwise. Note: ***, **, * show significance at 1%, 5% and 10% level respectively, and standard errors are shown in parentheses.

	Panel A		**Panel B**		**Panel C**		**Panel D**		**Panel E**	
	CAR3	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**	**CAR3**	**CAR21**
Size	-0.00108***	-0.00330***								
	(0.0001)	(0.0004)								
Size * Unregulated	**-0.000785*** **	**-0.0000995**								
	(0.0002)	**(0.0005)**								
Age			-0.000313	-0.00128*						
			(0.0003)	(0.0007)						
Age * Unregulated			**-0.00181*** **	**-0.00205**						
			(0.0005)	**(0.0012)**						
Listed					0.00128***	0.00164				
					(0.0005)	(0.0012)				
Listed * Unregulated					**-0.00387*** **	**-0.00547** **				
					(0.0009)	**(0.0022)**				
Rated							-0.00327***	-0.00657***		
							(0.0007)	(0.0019)		
Rated * Unregulated							**-0.000757**	**-0.00126**		
							(0.0011)	**(0.0028)**		
S&P 500									0.000262	-0.00754*
									(0.0018)	(0.0045)
S&P * Unregulated									**-0.00321**	**0.00118**
									(0.0021)	**(0.0052)**
Unregulated	0.00797***	0.00614*	0.00760***	0.0103***	0.00527***	0.00808***	0.00271***	0.00444***	0.00285***	0.00464***
	(0.0014)	(0.0034)	(0.0014)	(0.0034)	(0.0008)	(0.0018)	(0.0004)	(0.0010)	(0.0004)	(0.0010)
Dividend Yield	0.383***	0.811***	0.428***	0.919***	0.428***	0.918***	0.421***	0.903***	0.431***	0.920***
	(0.1149)	(0.1669)	(0.1195)	(0.1746)	(0.1197)	(0.1748)	(0.1193)	(0.1737)	(0.1206)	(0.1753)
Magnitude of Dividend Increase	0.00000560	0.00000825	0.00000417	0.00000522	0.00000496	0.00000696	0.00000526	0.00000762	0.00000485	0.00000684
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Constant	0.0117***	0.0276***	0.00599***	0.0109***	0.00454***	0.00704***	0.00568***	0.00880***	0.00524***	0.00808***
	(0.0009)	(0.0022)	(0.0008)	(0.0018)	(0.0004)	(0.0009)	(0.0003)	(0.0007)	(0.0003)	(0.0006)
No. of Observations	30171	30171	30171	30171	30171	30171	30171	30171	30171	30171
Adj. R-Squared	0.0131	0.0092	0.0067	0.0041	0.0064	0.0039	0.0070	0.0045	0.0060	0.0039

Appendix 4.A:

Variable Definitions

- Size: Natural log of the market capitalization (shares outstanding times the stock price) in the quarter before the dividend change announcement.
- Dividend Yield: Increase in the dividend amount over the previous quarter scaled by the stock price at the beginning of the quarter of dividend change announcement.
- Profitability: Quarterly operating income scaled by total assets during the quarter of dividend change announcement.
- Firm Age: Natural log of the difference (in years) between the dividend change announcement date and first reporting date in the CRSP database.
- Net Tax: The difference between the dividend and the capital gain tax rate taken from the NBER website.
- Magnitude of Dividend Change: Percent change in dividend amount over the previous quarter in the quarter of dividend change announcement.
- Market-to-Book: (Common shares outstanding times stock price plus total assets net of common equity at the beginning of quarter) divided by the total assets in the quarter before the dividend change announcement.
- Leverage: Debt in current liabilities plus long term debt divided by total assets in the quarter before the dividend change announcement.
- Regulated-Financial: Dummy variable for financial firms, which equals 1 for financial firms and 0 otherwise.
- Regulated-Utilities: Dummy variable for utilities, which equals 1 for utilities and 0 otherwise.
- Unregulated: Dummy variable for unregulated firms, which equals 1 for unregulated firms and 0 otherwise.
- Earnings Volatility: Coefficient of variation in quarterly operating earnings over the past four years.
- Earnings Announcement: Dummy variable, which equals 1 if the firm announced earnings during the 21-day (-10, +10) window around the dividend change announcement and 0 otherwise.

- Information Asymmetry Measures:
    - Listed: Following Mohd (2005), listing of a firm on New York or American Stock Exchange is used as a measure for information asymmetry. A listed firm is expected to have a lower level of asymmetric information.
    - S&P 500: Following Bharath et al (2011), inclusion of a firm in the S&P 500 is used as a measure of information asymmetry. This dummy variable equals 1 if the firm is in the S&P 500 Index in a given fiscal quarter and 0 otherwise. A firm in the S&P 500 Index means that the firm has lower asymmetric information.
    - Debt Rating: Following Bharath et al (2011), this measure depends on whether or not a firm has an S&P Debt Rating. A dummy variable equal to 1 is used if the firm has a S&P Senior Secured Debt rating in a given fiscal quarter and 0 otherwise. A firm with no debt rating would indicate higher asymmetric information.

5. Chapter Five

Conclusions

The thesis makes several contributions to the field of corporate finance. The first essay finds that firms have higher cash holdings in the fourth quarter even after controlling for cash holdings determinants and seasonal effects. Given that cash holdings revert to a normal quarterly level in the subsequent quarter, I argue that this represents systematic upward window dressing behaviour. Moreover, consistent with the evidence on the manipulation of accruals for the purpose of earnings management, this study finds that industrial firms manipulate accruals to dress up their fourth quarter cash holdings. Finally, in terms of the consequences of window dressing cash holdings, the analysis indicates that such behaviour benefits industrial firms in achieving more favourable credit terms for short-term private debt. However, more research is warranted to investigate further the consequences of such window dressing. The findings of this essay have two important corporate policy implications. First, the users of financial reports such as shareholders, banks, rating agencies, and regulators need to be cautious of reported fourth quarter liquidity. Second, firms' tendency to manipulate reported liquidity has implications for financial disclosure, highlighting the fact that opaque balance sheet accounts such as "accruals and other liabilities" provide an opportunity to engage in discretionary manipulation.

The second essay explores the effect of the announcement of the SEC's proposed short-term borrowing disclosure rule on stock prices, and argues that

investor reaction on the announcement and voting dates to the news about the proposed rule provides an objective tool for assessing its expected benefits and costs. The positive reaction to the announcement of the proposed rule indicates that its benefits surpass the costs for financial firms, whereas for non-financial firms, the negative reaction suggests that the costs of the proposed rule outweigh the benefits. A stronger positive share price reaction for the subsample of bank holding companies implies that the market expects a higher net benefit from the proposed rule for this subgroup of financial firms. On the voting date, the market reaction is reversed for both financial and non-financial firms, suggesting that the market, though in favour of additional disclosure, is wary of its scope and structure. Further analysis confirms cross-sectional differences in stockholder reaction depending on firm size, listing and type of business. This is consistent with existing literature indicating disproportionate effects of SEC regulation depending on firm characteristics. Overall, the second essay raises important issues concerning the implementation of the proposed short-term borrowing disclosure rule and suggests that before finalizing its implementation, the SEC needs to consider carefully the extent and scope of the additional disclosure as well as its one-size-fits-all approach to regulation.

Finally, the third essay is the first large-scale study to compare empirically the stock price reaction to dividend change announcements of unregulated versus regulated (financials and utilities) firms. The essay examines whether the difference in the degree of information asymmetry between managers and

investors of unregulated versus regulated firms is likely to influence the stock price reaction to dividend change announcements by the two types of firms. The results are consistent with this prediction and the information content hypothesis of dividend policy, as a stronger stock price reaction to dividend increase announcements of unregulated firms relative to those of regulated firms is indicated even after controlling for several firm-specific and market-wide factors. For dividend decrease announcements, the stock price reaction is much stronger for unregulated firms compared to both types of regulated firms (financials and utilities); however, the difference is not robust to control variables. This finding suggests that the difference in investor reaction to dividend decreases is explained by the structural differences between unregulated and regulated firms. The cross-sectional analysis highlights that the stronger stock price reaction to dividend increases by unregulated firms is associated with a higher level of information asymmetry between managers and investors of unregulated firms. Taken as a whole, the results contribute to the literature on whether and, if so, why the wealth effects of dividend changes differ for regulated and unregulated firms, and have important implications for short-term investors.