THREE ESSAYS IN CORPORATE SHARE REPURCHASES

by

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ABSTRACT

CHARLES EDWARD TEAGUE. Three Essays in Corporate Share Repurchases. (Under the direction of DR. TAO-HSIEN DOLLY KING)

In a series of three related essays, my dissertation examines several unresolved issues in the corporate finance literature relating to the firm's use of share repurchases. These include the mitigating effects of creditor-manager alignment on increases in the firm's cost of debt surrounding entrenched managers use of defensive open market share repurchases (OMR), the question of short-term bondholder wealth expropriation around the announcement date of an OMR, and management's motivation for the use of a relatively new form of share repurchase, a privately-negotiated Accelerated Share Repurchase (ASR) contract.

As recent literature suggests that creditors' interests may be more aligned with those of entrenched managers, in my first essay, I use TRACE daily bond data over the period from 2002 thru 2015 to empirically examine how *creditor-manager incentive alignment* affects changes in the firm's cost of debt over a 3-quarter period surrounding 1,251 open market repurchase (OMR) announcements. Using the "E-index" from Bebchuk, Cohen, and Ferrell (2009) as the primary measure of managerial entrenchment, I find that increases in average quarterly yield spreads on the firm's seasoned public bonds surrounding the announcement of an OMR are significantly reduced by 42.86% in the presence of entrenched management. Further, conditional on the presence of a blockholder, I find significant increases in the cost of debt are directly proportional to the concentration of total blockholder ownership as well as the total number of blockholders present. However, when the firm's management is protected from takeovers (i.e., entrenched), the effect is more than offset. The mitigating effects of creditor-manager incentive alignment, however, appear limited only to firms that repurchase at least 1% of their outstanding equity during the announcement quarter. Lastly, I find that changes in the firm's cost of debt are not the result of

OMR announcements, but are instead driven by actual share repurchases. Overall, the results suggest that creditors may regard OMRs conducted by entrenched managers as defensive mechanisms that protect their interests as well in the presence of an effective external market for corporate control.

In my second essay, using TRACE daily transactional bond data from 2002 thru 2015, I follow the prescribed methodology of Bessembinder et al. (2009) to calculate both 3-day and 5-day bond CARs around 553 open market repurchase (OMR) announcements to examine the unresolved issue of whether shareholders expropriate bondholder wealth around an OMR announcement. By calculating 3-day (and 5-day) bond CARs around the *actual* announcement date of an OMR, I can examine the direct interaction of *short-term* wealth effects between the firm's shareholders and bondholders without the potential noise impounded in abnormal bond returns found in earlier studies. While I find mean bond (equity) CARs are slightly negative (positive), I find no statistical evidence of negative correlations between equity and bond CARs using traditional bond classification schemes, casting doubt on the wealth transfer hypothesis. However, I do uncover univariate evidence of negative correlations among bond and equity CARs when I focus on the joint stakeholder responses (e.g., negative bondholder/positive equity response) to an OMR announcement providing some support for the wealth transfer hypothesis. Additionally, in contrast to Jun et al. (2009), I find that bond and equity abnormal responses are highly positively correlated when management is protected from the external market for control, i.e., entrenched. However, this positive relationship is diminished in the presence of good governance, i.e., strong external shareholder control. Overall, my results suggest that agency conflicts as well as creditor-manager incentive alignment may play a more important role than previously thought in understanding the abnormal responses of different classes of stakeholders to the announcement of OMR.

Finally, in my third essay, I examine management's motivations for the increased use of a relatively new form of share repurchase, a privately-negotiated Accelerated Share Repurchase

(ASR) contract. As no centralized database of ASR contracts exist, I hand-collect the largest sample of ASR contracts in the literature to date, 716 ASRs over the period from 2004 to 2015, to use in my study. I find that ASRs have now become the second largest method of share repurchase in the U.S. representing approximately 10% of all (common) shares repurchased over the last several years. As an ASR provides for the immediacy of share repurchase as well as sending a more credible signal of the intent to follow through with actual repurchases (i.e. an ASR is a legal contract to repurchase), the focus of my study is on possible motivations tied to these two potential ASR features, e.g., quarterly earnings management and/or signaling, either in the traditional sense of undervaluation (asymmetric information) or, as in Grullon and Michaely (2004), to signal management's commitment to avoid the agency costs of overinvestment by returning excess free cash. While I find some univariate support for quarterly EPS management, multivariate logit results indicate that firms are more likely to initiate an ASR if they would have met EPS forecasts without the accretive effects of a share repurchase. Instead, my results primarily support the agency theory of free cash flow as I find the likelihood of conducting an ASR increasing in firms that are larger, have higher levels of cash and free cash flow, higher operating performance, but are facing declining investment sets as reflected by slowing sales growth and lower M/B ratios. Contrary to the nascent ASR literature, I find CARs surrounding ASR announcements are significantly higher than those of OMR firms. However, post-announcement operating performance is declining for both groups.

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DEDICATION

I would like to dedicate this work to my sweet wife, Diana, for without her love and support, none of this would have been possible. Thank you, sweetheart!

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INTRODUCTION

In a series of three related essays, I examine several issues in the finance literature surrounding the continued proliferation of U.S. firms buying back (repurchasing) their own shares in recent years. Corporate America's ostensible love affair with share buybacks can be traced to 1982 when the Securities and Exchange Commission (SEC) amended Rule 10b-18 of the Securities Exchange Act of 1934 to allow managers "safe harbor" from charges of share price manipulation when repurchasing their own shares in the open market (Grullon and Michaely, 2002). Since then, share repurchases have become a mainstay of corporate payout policy, supplanting traditional stock dividends in 1997 as the primary form of payout (Farre-Mensa, Michaely, and Schmalz, 2014). As recently as 2016, S&P 500 firms, alone, repurchased over $536.38 billion of their own shares, and over the last ten years, have returned over $4.31 trillion to investors through share buybacks (Source: S&P Dow Jones Indices, 2017). As share repurchases continue to occupy such a major role in corporate payout policy, in this dissertation, I focus on three unresolved issues in the repurchase literature that have received very little attention due to both the availability and frequency of data.

In the first essay, using recently available transactional-level daily bond data from FINRA's TRACE database, I examine how creditor-manager incentive alignment affects changes in the firm's longer-term cost of debt over the immediate quarters surrounding the announcement of an open market share repurchase (OMR). Recent empirical research suggests that creditor interests may be more aligned with those of entrenched managers due to the protection from takeovers afforded by the presence of multiple anti-takeover provisions (ATP) in the firm's charter (see e.g., Klock, Mansi, and Maxwell, 2005; Cremers, Nair, and Wei, 2007; and Chava, Livdan, and Purnanandam, 2009). Empirical research also reveals that these same entrenched managers often conduct *defensive* share repurchases intended to deter disciplinary actions (including

takeovers) by external shareholders when faced with an effective threat from the market for control (e.g., Berger, Ofek, and Yermack, 1997; Fluck, 1999; Hu and Kumar, 2004; and Billet and Xu, 2007). As such, I propose that the alignment of creditor-manager interests may have a *mitigating effect* on changes in the cost of debt surrounding entrenched managements use of open market share repurchases, as creditors may view these as defensive measures that serve to further protect their interests from the threat of takeover as well. I refer to this as the c*reditor-manager alignment hypothesis*.

To test this hypothesis, I examine changes in average quarterly yield spreads ($\Delta\overline{YS}$) for 5,587 seasoned public bonds matched to 1,251 OMR announcements over a three-quarter event window during the period from July 1, 2002 through Dec. 31, 2015. I find evidence that increases in average yield spreads ($\Delta\overline{YS}$) surrounding OMR announcements are significantly reduced by 42.86% when management is protected from the external market for control (i.e., entrenched). However, the mitigating effects of creditor-manager alignment, as proxied by managerial entrenchment (while greater in magnitude), appear limited only to those firms that repurchase significant amounts of equity in the announcement quarter (i.e., greater than 1% of outstanding equity). Additionally, when management is more exposed (non-entrenched) to the governing influence of an *effective* market for control, as proxied by concentrated blockholder ownership, I find that $\Delta\overline{YS}$ are significantly increasing. However, the increases in $\Delta\overline{YS}$ attributable to total blockholder ownership and/or the number of blockholders present are completely offset when management is shielded from takeovers. The mitigating effects of creditor-manager alignment appears limited, however, to only (significantly) offsetting those increases in $\Delta\overline{YS}$ resulting from either aggregate blockholder ownership or the presence of multiple blockholders where governance (or the threat of governance) through exit strategies (i.e., selling blocks of shares) is seen as more effective (Edmans and Manso, 2011). Overall, the results in this study provide strong support for

the creditor-manager alignment hypothesis.

In my second essay, I address the unresolved issue of whether bondholder wealth is expropriated by shareholders (wealth transfer hypothesis) around the announcement date of an OMR. Extant bondholder-OMR studies yield conflicting results dealing with both the direction and possible drivers of abnormal bondholder responses primarily due to confounding issues involving both the availability and frequency of transactional bond data as well as the researchers' choice of method to compute abnormal bond returns (e.g., Maxwell and Stephens, 2003; Jun, Jung, and Walkling, 2009; and Nishikawa, Prevost, and Rao, 2011). Using a methodology, prescribed by Bessembinder, Kahle, Maxwell and Xu (2009), that results in the lowest Type I (false positive) and Type II (false negative) errors in reported test statistics, I calculate both 3-day and 5-day risk-adjusted cumulative abnormal bond returns (CARs) (based on daily benchmark portfolios constructed from the universe of all bond transactions in TRACE) surrounding the announcement of 553 OMRs over the period from July 2002 thru December 2015. By calculating 3-day (and 5-day) bond CARs around the *actual* announcement date of an OMR, I can examine the direct interaction of *short-term* wealth effects between the firm's shareholders and bondholders without the potential noise impounded in abnormal bond returns found in earlier studies.

Consistent with prior literature, I find 3-day and 5-day equity CARs are significantly positive surrounding the announcement of an OMR. However, I find 3-day and 5-day bond CARs are slightly negative at both the issue and aggregate firm levels. Prior studies claim that this finding supports the wealth transfer hypothesis (e.g., Maxwell and Stephens, 2003). However, to verify a wealth transfer, evidence of statistically significant negative correlations between equity and bond CARs must exist. To date, no direct evidence of this inverse relationship has been uncovered in the extant bondholder-OMR literature. Therefore, I focus on identifying this negative relationship in my research. I find some univariate evidence that a distinct subclass of bonds, i.e., short-term/high yield (ST/HY), may suffer from wealth expropriation, as equity and ST/HY bond CARs are

negatively correlated (although not significantly) However, in multivariate analysis, the relationship, although still negative, is not significant. As such, using traditional debt classification schemes, I am unable to find any significant evidence of a negative correlation between short-term abnormal returns to bondholders and shareholders around the announcement of an OMR, further casting doubt on the wealth transfer hypothesis.

As a robustness check, following the direction of Maxwell and Stephens (2003), I examine the combined (joint) abnormal responses of bondholders and shareholders taken as distinct subgroups (bondholder-shareholder response) in an effort to discern how stakeholders jointly interpret the information content of an OMR announcement. Based on joint responses (e.g., positive-positive), I find that mean bond and equity CARs are now much larger in absolute magnitude. More importantly, I find significant negative correlations among subgroups where the abnormal responses are diametrically opposed (i.e., positive-negative and negative-positive), thus providing univariate evidence of potential wealth transfers among stakeholders in these two subgroups. While the negative relationship still exists between abnormal returns (CARs) for these two subgroups in a multivariate setting, I again find that the coefficients of interest are not statistically significant. Overall, while I find some univariate evidence of potential wealth transfers, my results further cast doubt on the wealth transfer hypothesis as an explanation for the abnormal responses of bondholders and shareholders to the announcement of an OMR. However, the results from the examination of joint stakeholder responses offer the most promise for future research examining the short-term wealth effects of OMR announcements.

Lastly, in my third essay, I examine a relatively new method of share repurchase, a privately-negotiated Accelerated Share Repurchase (ASR) contract. An ASR can best be described as a hybrid form of repurchase that combines the immediacy of share delivery, like that of a tender offer (but without the associated premium), with a repurchase price similar to that of an OMR (Michel, Oded, and Shaked, 2010). Since 2004, ASR contracts have increasingly been used by

U.S. firms to quickly repurchase (and retire) large amounts of their outstanding equity. While several researchers have examined the use of ASRs (e.g., Akyol, Kim, and Shekhar, 2014; Bargeron, Kulchania, and Thomas, 2011; Chemmanur, Cheng, and Zhang 2010; Michel et al., 2010; Kurt 2015; Marquardt, Tan, and Young, 2011; and Dickinson, Kimmel, and Warfield, 2012), substantial variation exist among the results found in this nascent literature due to the fact that no centralized database exist for ASRs. As such, researchers have been forced to hand-collect data about ASRs which has led to substantial differences among datasets due to multiple identification problems. As a result of these issues, Farre-Mensa, Michaely, and Schmalz (2014), in a recent survey of payout literature, state emphatically that "*the literature has not settled on the importance of the signaling value, or more generally, the information content, of ARSs relative to conventional OMRs* … [nor has] *the matter regarding the market impact of ASRs … been settled.*" (p.125)

To address this unresolved issue in the literature, I hand-collected the largest sample of ASR contracts (716 distinct contracts by 346 distinct firms) to date covering a period from 2004 to 2015. I find that, in the last several years, ASRs have now become the second largest method of share repurchase in the U.S., representing 10 percent of all shares repurchased. For example, in the recent years 2013 and 2014, I find that, out of all common share repurchases, ASRs comprise 9.5% ($58.95 billion) and 10.53% ($71.21 billion), respectively.

As ASR contracts allow for immediacy of share delivery as well as representing a legal (credible) repurchase commitment, I focus my examination on repurchase motives related to these two characteristics including quarterly earnings management, and/or signaling: either the firm's commitment to disgorge excess cash (agency theory) or undervaluation (asymmetric information hypothesis). Following the methodology of Hribar, Jenkins and Johnson (2006), I construct "*AS-IF*" measures of pre-repurchase earnings per share to determine if a firm would have missed its quarterly consensus analyst EPS forecast without the accretive effects of an ASR. I find some univariate evidence to suggest that some firms may be utilizing ASRs in an effort to meet or beat

quarterly analyst EPS forecasts. However, multivariate analysis reveals that the likelihood of initiating an ASR is increasing in both the accretive (increasing reported EPS by at least $0.01) nature of the repurchase and the *positive* pre-repurchase earning surprise. As such, I find that a firm is more likely to initiate an accretive ASR in the quarter if it would have met or exceeded its EPS forecast *without* the accretive effects of the repurchase. Thus, while results provide evidence that ASRs are used for short-term earnings management for some firms, they are also employed for other motives, especially for those firms with strong earnings performance prior to the repurchase.

Univariate results are more consistent with the agency theory of free cash flow, as I find that ASR firms are larger, have similar levels of cash and leverage, have higher levels of free cash flow and higher pre-repurchase operating performance, but are facing declining investment opportunity sets as reflected in slowing rates of sales growth and lower market-to-book ratios as compared to non-ASR firms. Also, I find that pre-repurchase abnormal returns for ASR firms are indistinguishable from zero and are not significantly different from those of non-ASR firms, casting doubt on signaling undervaluation as a primary motive for ASRs. Multivariate results further strengthen the case for the free cash flow hypothesis as I find the likelihood that firms initiate an ASR are increasing in the levels of cash and free cash flow to assets, as well as operating performance, but are decreasing in both the rate of sales growth and market-to-book ratios, both proxies for the firm's growth opportunities.

I further extend our analysis of the signaling effects of an ASR by examining both the short-term market response to the announcement of an ASR as well as the post-announcement operating performance. In contrast to prior literature, I find cumulative abnormal returns (CARs) surrounding ASR announcements are positive and significantly higher than those of firms that only announce open market repurchases. However, I find that post-repurchase announcement operating performance for both ASR and non-ASR firms is declining over the subsequent 8-quarter. However, the difference is not significant between the two groups. Taken together, these findings

suggest that ASR announcements lead to a more positive short-term market reaction than OMR announcements. In addition, the market responds more favorably to a repurchase conducted by firms with strong operating performance at or prior to the announcement and/or more cash on hand. Thus, I find that ASR firms tend to be those with solid profitability, but reduced investment opportunity sets. The market appears to respond favorably to these firms due to their commitment to distribute excess cash, thus avoiding agency cost of overinvestment. However, both ASR and OMR firms experience declines in long-term operating performance after the announcement. Overall, results provide support for management's use of an ASR to mitigate the agency costs of free cash flow, but not primarily as a means to signal undervaluation.

CHAPTER 1: MANAGERIAL ENTRENCHMENT AND SHARE REPURCHASES: THE IMPACT OF CREDITOR-ALIGNMENT ON THE COST OF DEBT

1. Introduction

Recent finance literature tends to coalesce around agency theory as the most empirically robust explanation for management's use of open market share repurchases (OMR) (Farre-Mensa, Michaely and Schmalz, 2014). While several researchers have considered the mitigating effect of share repurchases on agency costs of equity (e.g., Jensen, 1986; Nohel and Tarhan, 1998; Dittmar, 2000; and Grullon and Michaely, 2004), very little empirical research examining the implications for share repurchases on agency costs of debt is found in the literature.[1] In this paper, we address this deficiency by examining how creditor-manager alignment affects the firm's cost of debt surrounding open market share repurchase (OMR) announcements.

Jensen and Meckling (1976) argue that the introduction of risky debt into the firm creates agency conflicts between shareholders and creditors, as managers, acting in the interests of shareholders (shareholder-manager alignment), engage in risk-shifting behavior (asset substitution) or enact financial policies that increase leverage and/or result in excessive payouts that are detrimental to the firm's creditors. However, the interests of *entrenched* managers (i.e., protected from the external market for control), by definition, are not closely aligned with those of external shareholders. Therefore, agency conflicts between entrenched managers and creditors are expected to be less severe. In fact, recent empirical evidence suggests that the interests of creditors may be more closely aligned with those of entrenched managers (creditor-manager alignment). For example, both Klock, Mansi, and Maxwell (2005) and Chava, Livdan, and Purnanandam (2009)

[1] In a related work, Billet, Hribar, and Liu (2015) investigate the interactions among the agency costs of debt and equity by examining the effects of dual class equity structures on the cost of debt.

find evidence that the cost of debt is lower (seasoned public bonds and bank loans, respectively) in firms where management is shielded (entrenched) from the market for corporate control through charter-level anti-takeover provisions (ATP). Similarly, Cremers, Nair, and Wei (2007) find that the cost of debt is reduced in the presence of a large external blockholder only if management is protected from takeovers. Ji, Mauer, and Zhang (2017) argue that being insulated from the market for corporate control allows entrenched managers to invest in lower risk, negative NPV projects (i.e., empire building) that results in reductions in default risk for bondholders through a diversification effect as well as providing additional collateral in the event of default. However, while creditors may benefit from risk reduction through a diversification channel, empirical evidence suggests that the primary channel aligning creditor and entrenched managerial interests is protection from takeovers (e.g., Billet, King, and Mauer 2004; Klock et al., 2005; Chava et al., 2009; Klein and Zur, 2011; and Sunder, Sunder and Wongsunwai, 2014). Therefore, if creditor-manager alignment results from creditors being indirectly shielded from takeovers by managements' entrenchment umbrella, then we expect the level of managerial entrenchment to have a first-order effect on creditors' responses to OMR announcements.

While there exists voluminous literature examining share repurchases,[2] only a few studies examine the effects of OMRs on the firm's creditors, primarily its bondholders (e.g., Dann, 1981; Vermaelen, 1981; Maxwell and Stephens, 2003; Eberhart and Siddique, 2004; Jun, Jung, and Walkling, 2009; Nishikawa, Prevost, and Rao, 2011; and Billet, Elkamhi, Mauer, and Pungaliya, 2016). These studies tend to focus on short-term creditor responses to OMR announcements in an effort to determine if share repurchases result in creditor wealth expropriation.[3] Of these, only one

[2] See e.g., Grullon and Ikenberry (2000), Allen and Michaely (2003), DeAngelo, DeAngelo, and Skinner (2007) and Farre-Mensa, Michaely, and Schmaltz (2014) for comprehensive reviews of finance literature dealing with share repurchases.

[3] Eberhart and Siddique (2004) consider long-term returns to bondholders following an OMR announcement, but focus on abnormal returns similar to those in the equity literature and not on changes in the firm's cost of debt capital.

study, Jun et al. (2009), considers the implications of creditor-manager alignment on creditors responses to an OMR. Jun et al. argue that if the interests of creditors are more aligned with entrenched managers, then creditors would view an OMR announcement by entrenched managers as a *realignment* of the manager's interests with those of external shareholders. As such, Jun et al. suggest that creditors would be expected to react more negatively to an OMR announced by entrenched managers than by managers who are exposed to the external market for control (not effectively shielded by ATPs). Again, here, as in other OMR studies, the underlying premise is that share repurchases help (re)align the interests of managers with those of external shareholders. However, empirical evidence has found that entrenched managers often conduct *defensive* share repurchases intended to deter disciplinary actions (including takeovers) by external shareholders when faced with an effective threat from the market for control (e.g., Berger, Ofek, and Yermack, 1997; Fluck, 1999; Hu and Kumar, 2004; Billet and Xu, 2007; and Lambrecht and Myers, 2012). Therefore, if the takeover (protection) channel is primarily responsible for aligning creditor interests with those of entrenched managers, we suggest that creditors may regard OMRs conducted by entrenched managers as defensive measures that help safeguard their own interests from the external market for control. As such, contrary to Jun et al.'s realignment hypothesis, we propose that creditor-manager alignment should have a *mitigating* effect on changes in the cost of debt (reduction in yield spreads) surrounding OMRs announced by entrenched management. We refer to this as our c*reditor-manager alignment hypothesis.*

To test this hypothesis, we examine changes in average quarterly yield spreads ($\Delta\overline{YS}$) for 5,587 seasoned public bonds matched to 1,251 OMR announcements over a three-quarter (fiscal) event window during the period from July 1, 2002 through Dec. 31, 2015. Using daily bond transaction data from the Financial Industry Regulatory Authority's (FINRA) Trade Reporting and Compliance Engine (TRACE) database, for each bond issue, we calculate an average quarterly yield spread ($\overline{YS}$) for each quarter in the event window [-1, 0, +1]. To calculate our primary variable

of interest, changes in average quarterly yield spreads ($\Delta\overline{YS}$), we simply take the difference in $\overline{YS}$ between the pre [-1] and post [+1] quarters. We choose to focus on changes in the firm's cost of existing debt (i.e., seasoned public bonds) for several reasons. First, by focusing on $\Delta\overline{YS}$ over the immediate quarters (instead of short-term point estimates) surrounding an OMR announcement, we allow the bond market time to *learn* about the firm's actual repurchase activity during the announcement quarter,[4] thereby enabling us to identify which determinants drive changes in yield spreads. Second, by focusing on $\Delta\overline{YS}$ on the firm's *seasoned* publically traded bonds, we avoid endogeneity issues of reverse causality associated with the firm's decision to repurchase and/or to issue new debt.[5] Lastly, as Chen and King (2014) argue, firms rely heavily on current yields on their outstanding publicly traded bonds for estimates of the component cost of long-term debt used in capital budgeting, as publicly traded bonds, with average maturities of over 10 years, typically comprise the firm's largest component of long-term debt.[6]

We use the entrenchment index (*E-Index*) found in Bebchuk, Cohen, and Ferrell (2009) as our proxy for creditor-manager alignment. The E_Index is based on the presence (or absence) of six (6) firm-level ATPs found to effectively insulate management from the market for control. In our study, a firm's management is considered entrenched (i.e., effectively shielded from the threat of takeover) if its E-index score is greater than or equal to the median E-Index score for all sample firms. Next, as a proxy for an effective external market for control (threat of takeover), we focus on concentrated institutional (blockholder) ownership. While Bhojraj and Sengupta (2003) find that

[4] Lie (2005) argues that inconsistencies in short-term (equity) responses (3-day and 5-day CARs) to OMR announcements reveal that markets are unable to discern whether a firm will follow through with actual share repurchases post-announcement.

[5] The firm's decision to repurchase as well as the method of financing should impact credit spreads on outstanding bonds; however, average changes in credit spreads on outstanding bonds should not drive the firm's decision to repurchase. We require that public bonds have trades in both the quarters before and after the OMR announcement quarter to avoid endogeneity issues surrounding the choice to issue new debt in conjunction with share repurchases.

[6] Colla, Ippolito, and Li (2013) find that public bonds account for approximately 20.8% of a firm's average long-term debt. Additionally, Sufi (2010) reports that publically traded bonds make up over 19% of a firm's capital structure while the next largest group of creditors, syndicated bank loans, only comprise 13%.

yield spreads on the firm's bonds are decreasing in overall institutional ownership (%), they report that the cost of debt is increasing in the *concentration* of institutional ownership (i.e., presence of blockholders who control (own) at least 5% of the firm's outstanding equity). Also, Edmans (2014) argues that effective governance from the external market for control need not come from direct intervention or exit (selling blocks of shares), but instead, can be found in the mere *threat* of such actions by the firm's blockholders. Lastly, as share repurchases must ultimately be financed with either assets on hand or through increased borrowing, expectations are that losses in collateral and/or increases in leverage associated with repurchases will increase default probability (credit risk), and thus, the firm's cost of debt. To control for credit risk, we create several variables based on changes in levels for asset (unlevered) beta, market leverage, cash-to-assets, profitability, earnings volatility, and average credit ratings, as changes in these variables are predicted by traditional structural models of bond pricing to affect changes in default risk.[7]

Univariate analysis reveals that, overall, mean changes in average yield spreads ($\Delta\overline{YS}$) are significantly increasing by 14.7 bps over the three-quarter event window surrounding the announcement of an OMR. While relatively small, the increase in $\Delta\overline{YS}$ is nevertheless economically significant as an average firm refinancing its outstanding bonds would incur additional annual interest expenses of $4.23 million.[8] When we subdivide our sample based on entrenchment, we find that mean $\Delta\overline{YS}$ are 3.81 bps higher (15.47 bps) when management is protected from takeover, although the difference is insignificant, casting initial doubt on our creditor-manager alignment hypothesis. However, in pooled OLS regressions, we find that $\Delta\overline{YS}$ are significantly reduced by 6.3 bps (42.86% reduction from the mean) when the firm's management is firmly entrenched, thus

[7] Traditional structural models of bond pricing imply that increases in either asset risk, leverage, or volatility of earnings can push the firm closer to a default threshold, thereby resulting in increased credit (yield) spreads (Merton, 1974).

[8] The average firm in our sample has a mean of 4.47 (seasoned) public bonds outstanding with an average market value of $644.27 million per issue at the time of OMR announcement (4.47 X $644.27 x 0.00147 = $4.162 mil). Extending this hypothetical to our entire sample of 5,587 bonds would represent additional annual interest expenses of over $5.29 billion. Total (hypothetical) additional interest expense is calculated as: 5,587 x $644.27 x 0.00147 = $5,291.32 million.

providing support for our creditor-manager alignment hypothesis.

Following Lie (2005), we propose that if entrenched managers announce OMRs as defensive measures, either to deter takeover or merely to appease shareholder demands, we expect them to follow through with substantial repurchases during the announcement quarter or else suffer disciplinary actions by external shareholders.[9] In fact, when we further segment our data by actual repurchases during the announcement quarter, we find that the effects of managerial entrenchment are only significant, 10.73 bps (72.99%) reduction , for firms that repurchase at least 1% of their shares. Based on this finding, we explicitly test for the interaction of managerial entrenchment with the percent of equity repurchased (*CSHOPQ*). Again, in support of the creditor-manager alignment hypothesis, for firms that actively repurchase in the quarter (*CSHOPQ>=1%*), we find that, in the absence of entrenched management, $\Delta\overline{YS}$ increase significantly by 14.25 bps. However, when the firm's management is entrenched, the net increase in $\Delta\overline{YS}$ is only 3.29 bps, representing a significant mitigation of 10.96 bps (or 76.91%).

Next, we examine the interaction between creditor-manager alignment (entrenchment) and the threat of takeover using several proxies based on measures of blockholder ownership concentration. As our first proxy, we use the ownership percentage of the firm's largest blockholder (*LrgBlockOwn*) as the ability to take corrective action by direct intervention (voice) has been shown to be increasing in the block size (ownership) of the firm's largest blockholder (e.g., Shleifer and Vishny, 1986; and Edmans, 2014). Here, we find that in those firms with greater exposure to external governance (non-entrenched) $\Delta\overline{YS}$ are significantly increasing in *LrgBlockOwn*. However, while we find that the presence of entrenched management helps to offset these increases, the coefficients on the interaction terms (while having the predicted negative sign) are statistically

[9] Lie (2005) finds significant operational differences between firms that repurchase at least 1% of their outstanding equity during the announcement quarter of an OMR and those firms that repurchase only negligible amounts or no shares at all. As such, Lie proposes that firms attempting to convey information (signal) through their OMR announcement do so by following through with large share repurchases (greater than 1.0% of equity) in the announcement quarter.

insignificant. Next, we focus on aggregate ownership of all the firm's blockholder(s) (*TotBlockOwn*). Edmans (2009) and Edmans and Manso (2011) suggest that several smaller blockholders, while reducing the effectiveness of direct intervention, may still provide effective governance through increased trading (exit strategies) which better impounds blockholders' inside information into the price. We find that the mitigating effects of entrenchment are significantly increasing in *TotBlockOwn***.** For example, absent protection from entrenched management, a one-standard deviation increase in *TotBlockOwn* leads to a significant increase in $\Delta\overline{YS}$ of 7.99 bps. However, when management is protected from takeovers, the increase in $\Delta\overline{YS}$ is more than offset with a significant *net reduction* in $\Delta\overline{YS}$ of 2.35 bps (129.37% reduction) and a total reduction of 9.21 bps when including the coefficient on *Entrenched*. We also find that the presence of entrenched managers results in significant reductions in $\Delta\overline{YS}$ as the number of blockholders (*TotBlockHldrs*) increases. Again, for those firms without the protection of entrenched management, we find that $\Delta\overline{YS}$ are increasing significantly by 4.84 bps for each additional blockholder present. However, when management is protected from takeovers, each additional blockholder results in significant net decreases of 3.84 bps (179.34% reduction).

Lastly, as we argue that protection from takeovers is the primary channel aligning the interests of creditors with entrenched managers, we attempt to quantify the threat of takeover following the methodology of Billet and Xue (2007) to estimate *ex-ante* takeover probability (i.e., the likelihood that a firm receives a takeover bid in the same year as the OMR announcement). We find that $\Delta\overline{YS}$ are significantly increasing in ex-ante takeover probability (*TOPROB*). In fact, when the firm's management is totally exposed to the market for control (i.e., *E_Index*=0), a one-standard deviation increase in *TOPROB* significantly increases $\Delta\overline{YS}$ by approximately 9.03 bps. However, we find that, holding *TOPROB* constant, a one-standard deviation increase in *E_Index* scores significantly decreases $\Delta\overline{YS}$ by approx. 10.0 bps. When we interact ex-ante takeover probability

with total blockholder ownership (*TotBlockOwn*), we find that given *TOPROB*, $\Delta\overline{YS}$ are significantly increasing as *TotBlockOwn* increases. However, the increase is only significant for the subsample of bonds where management is more exposed to the market for control (non-entrenched). Finally, we examine the interaction of ex-ante takeover probability with the firm's total number of external blockholders (*TotBlockHldrs*) and find the results are similar to those for *TotBlockOwn*. Here, given ex-ante takeover probability, we find that $\Delta\overline{YS}$ are significantly increasing as either the number of blockholders increase or the firm has two or more blockholders present. In contrast to *TotBlockOwn*, we find that the effect is present regardless of whether the firm's management is considered entrenched. However, the magnitude of the effect (coefficient on the interaction term) as well as the statistical significance is reduced by over half when management is shielded from the market for control. These findings support the notion that creditors consider both the relative strength (blockholder ownership concentration) of the external market for control and the potential threat of takeover (ex-ante takeover probability) in relation to the level of takeover protection afforded by presence of firm-level ATPs (managerial entrenchment) when responding to the announcement of an OMR.

This study contributes to the finance literature in several important ways. First, our study extends the extant literature examining the effects of external corporate governance of the firm's cost of debt (e.g. Bhojraj and Sengupta, 2003; Klock et al., 2005; and Cremers et al., 2007). While several studies provide cross-sectional evidence that creditor interests are aligned with those of entrenched management, our study is the first to demonstrate how creditor-manager alignment affects the firm's cost of debt in relation to financial policies (e.g. defensive share repurchases) aimed at reducing the effectiveness (takeover threat) of the external market for control. Next, our study contributes to the existing bond pricing literature as we provide direct support for traditional structural models of bond pricing by confirming firm-specific determinants of changes in credit risk (yield spreads) resulting from share repurchases. Lastly, we contribute to the debate in the bond

literature dealing with the effects of OMRs on bondholder wealth. While these studies (e.g., Maxwell and Stephens, 2003; Jun, et al., 2009; and Nishikawa, et al., 2011) focus on short-term abnormal bondholder responses to an OMR announcement, their results are inconclusive. Thus, the question of how bondholders respond to an OMR announcement remains an unresolved issue in the literature. We find, however, that assessing bondholder responses to an OMR is a multi-faceted problem requiring consideration of both the level of takeover protection afforded by management (entrenchment) and the strength of the takeover threat coming from the external market for control (blockholders). Additionally, we find that actual repurchases in the OMR announcement quarter, and not the announcement by itself, is what drives longer-term bondholder responses to an OMR.

The remainder of the paper proceeds as follows. Section 2 provides background and hypothesis development. Section 3 provides details about the data sample and methodology used to calculate changes in quarterly yield spreads. Section 4 provides initial univariate results. Section 5 presents the results of multivariate analysis as well as our discussion of ex-ante takeover probability. Section 6 offers concluding remarks. Appendix A provides variable definitions.

2. Literature Review and Hypothesis Development

Jensen (1986) argues that agency costs of free cash flows stem directly from self-interested managers seeking to protect their undiversified human capital by investing in value-destroying, negative net present value projects (i.e., overinvestment or empire building) to fortify their positions within the firm (see e.g., Amihud and Lev, 1981; Fama, 1980; and Shleifer and Vishny, 1989). To ameliorate this issue, Jensen proposes that management bind its commitment to payout future free cash flows by issuing debt and using the proceeds in entirety to repurchase the firm's outstanding equity.[10] As such, by announcing an OMR, management would be viewed as

[10] Jensen (1986) proposes a debt for equity exchange; however, the same result (i.e., leveraging the firm up) is accomplished by using the proceeds of a new debt issue, in its entirety, to repurchase the firm's shares in the open market.

realigning its interests with those of external shareholders. Supporting this proposition, Grullon and Michaely (2004) argue that the equity markets' positive initial response to the announcement of an open market repurchase (OMR) program is thus a reaction to management's "*commitment*" to avoid the agency cost of overinvestment. However, an agency theory of share repurchases begs the question of what could possibly drive entrenched managers to disgorge excess free cash? Farre-Mensa et al. (2014) suggest that this "*driving mechanism*" may be found in the external market for corporate control.

Corporate finance literature promulgates the notion that managers who are more exposed to the external market for control naturally have interests that are more aligned with those of external shareholders. As such, these managers are expected to payout excess cash to avoid overinvestment. However, empirical evidence finds that entrenched managers who are shielded from the external market for control through charter level anti-takeover provisions (ATPs) often make *defensive* (and/or consolidating) repurchases either to deter unsolicited takeover attempts or simply to appease demands of external shareholders in order to maintain the status quo.[11] For example, Berger, Ofek, and Yermack (1997) find that entrenched managers commit to defensive restructurings involving increases in leverage financed repurchases. Fluck (1999) demonstrates that entrenched managers increase payouts when faced with an effective external market for control. Hu and Kumar (2004) find that entrenched managers are more likely to voluntarily commit to payouts to avoid disciplinary actions by outside shareholders. Billet and Xue (2007) show that OMRs are an effective deterrent against unsolicited takeover attempts. Lastly, Lambrecht and Myers (2012) theorize that, in presence of an effective external market for control, "*entirely self-interested managers…*, [having] *no loyalty to outside shareholders,*" choose a total level of payouts

[11] Golbe and Nyman (2013) report that a repurchase of 1% of the firm's outstanding equity disproportionately reduces ownership concentration among the firm's largest institutional blockholders by approximately one and a half percent (1.5%).

to maximize their own "*flow of rents.*" (pgs.1762-3)[12] Given that managers may have entirely different motives for initiating an OMR based on their level of entrenchment, we seek to examine how managerial entrenchment interacts with the interests of creditors around the announcement quarter of an OMR.

2.1 Creditor-Manager Alignment hypothesis

Early agency theories of debt focus on wealth expropriation of creditors by managers, who, acting in the interests of shareholders, either overinvest in excessively risky projects, i.e., asset substitution (Jensen and Meckling, 1976), or, when faced with debt overhang, make suboptimal investment decisions, i.e. underinvestment (Myers, 1977). However, the interests of entrenched managers, by definition, are not closely aligned with those of external shareholders; therefore, agency conflicts between entrenched managers and creditors are expected to be less severe. In fact, recent empirical work has shown that creditors' interests may be more aligned with those of entrenched managers, where shareholder-manager conflicts, and thus, the resulting agency costs of equity, are expected to be higher. For example, Klock, Mansi, and Maxwell (2005) find that the cost of debt is lower in firms where management is shielded from the market for corporate control through charter level ATPs. Chava, Livdan, and Purnanandam (2009) find that firms with higher takeover defenses, as proxied by higher GIM-index scores (Gompers, Ishii, and Metrick, 2003**),** experience significant reductions in credit spreads on new bank loans.[13] Sunder, Sunder and Wongsunwai (2014) find evidence that lenders require higher price protection in the form of increased loan spreads for firms that have high ex-ante takeover risk as proxied by the absence of

[12] Lambrecht and Myers (2012) define the "*flow of rents*" as the appropriation of firm resources such as "*above-market salaries, job security, generous pensions, and perks.*"

[13] See Gompers, Ishii, and Metrick (2003) and Bebchuk, Cohen, and Farrell (2009) for a complete discussion of anti-takeover provisions (ATP) and the indices that are constructed in each work, the GIM index and the E-index, respectively, to measure the level of shareholder control (managerial entrenchment) in the firm.

a classified (staggered) board [14] or low market-to-value ratios.[15] Ji, Mauer, and Zhang (2017) argue that being insulated from the market for corporate control allows entrenched managers to invest in lower risk, negative NPV projects in order to build diversified empires. They suggest that these non-synergistic acquisitions result in reductions in default risk for bondholders through a diversification effect (see e.g., Lewellen, 1971) as well as providing additional collateral in the event of default. As such, Ji et al. (2017) propose that agency costs of equity resulting from anti-takeover provisions indirectly align the interest of creditors with those of entrenched managers. However, while creditors may benefit from risk reduction through a diversification channel, evidence suggests that the primary channel aligning creditor and entrenched managerial interests is protection from takeovers.

Multiple studies have shown that leverage increases dramatically after a takeover, whether unsolicited or actively sought.[16] As such, creditors (bondholders) stand to lose significantly if takeover-induced increases in leverage also result in increases in default risk (e.g., Warga and Welch, 1993; Billet, King, and Mauer, 2004; Chava et al., 2009; Klein and Zur, 2011; Sunder et al., 2014). Additionally, bondholders of target firms may suffer from ratings downgrades if the acquiring firm has a lower credit rating or if the time to maturity of the acquirers' debt is less than that of the target, effectively changing the priority schedule of the combined debt. Billet et al. (2004) find that, while holders of non-investment grade debt in target firms react positively to an acquisition or merger, holders of investment grade bonds in target firms experience significant

[14] Bebchuk, Coates, and Subramanian (2002) find that the presence of a classified board (or staggered board) effectively insulates management from the market for corporate control as it reduces the odds of a successful takeover by over 50%.

[15] Low (high) values of the market-to-value ratio (Rhodes-Kropf, Robinson, and Viswanathan, 2005) represent under-valued (over-valued) firms that have high (lower) takeover vulnerability.

[16] Several studies have shown that leverage increases dramatically after a takeover (see e.g. Kim and McConnell, 1977; Cook and Martin, 1991; and Ghosh and Jain, 2000).

losses.[17] Specifically, they find that bondholders in target firms that experience increases in asset risk or downgrades in credit ratings experience significant negative returns around the announcement of a takeover. Additionally, in an extreme example of a leverage-induced takeover, (i.e., a leveraged buyout or LBO), Billet, Jiang, and Lie (2010) find that bondholders who are unprotected from the effects of increased leverage through the absence of change of control covenants suffer significant losses around the announcement of an LBO.[18]

While bondholders would normally be expected to react negatively to a share repurchase if it increases credit (default) risk, we suggest that these same bondholders, if their interests are more aligned with entrenched managers, may regard an OMR announced by entrenched management as a defensive measure that helps to safeguard their interests from the external market for corporate control as well, thereby *mitigating* the negative response to an any increase in default risk. This leads to our first hypothesis:

H1: *If bondholder (creditor) interests are more aligned with those of entrenched managers, we expect creditor-manager alignment to have a mitigating effect (reduction in yield spreads) on the reaction of existing bondholders to an open market share repurchase announced by entrenched managers.*

Therefore, the real question facing bondholders is whether the reduction in the perceived threat of takeover in the presence of entrenched management *outweighs* the actual increase in default risk resulting from defensive share repurchases. If, as we hypothesis, bondholders react less negatively to an actual share repurchase when the firm's management is entrenched, then

[17] Billet, King, and Mauer (2004) argue that non-investment grade bondholders of targeted firms in mergers and acquisitions benefit from a "*co-insurance*" effect (Lewellen, 1971) due to the reduction in credit (default) risk from non-synergistic (or imperfectly correlated) diversification.

[18] In a related study, Barron and King (2010) also find significant negative returns to bondholders around the announcement of a levered buyout; however, they find that negative bondholder returns are limited to those LBOs where the acquirer is considered a "reputable buyout firm." See Asquith and Wizman (1990); Cook, Easterwood, and Martin (1992); and Warga and Welch (1993) for a discussion of bondholder losses in earlier literature surrounding the effects of leveraged buyouts (LBOs).

bondholders must perceive a threat to their interests from the external market for corporate control. We argue that as the level of external shareholder control increases through ownership (i.e., increased voting rights) bondholders' degree of perceived threat should also increase (e.g., Shleifer and Vishny, 1986; and Grossman and Hart, 1980).[19] Following the corporate governance literature (e.g., Edmans, 2014), we proxy for an *effective* external market for control (i.e., external threat of takeover) by the presence of a large institutional investors, i.e. blockholders owning at least 5% or more of the firm's outstanding equity.[20]

While research has shown that the presence of institutional ownership often provides beneficial monitoring for both shareholders and creditors, the benefits to creditors may become diminished as ownership concentration increases, especially as large institutional blockholders emerge (Shleifer and Vishny, 1986; and Bhojraj and Sengupta, 2003). For example, Bhojraj and Sengupta (2003) find that the cost of debt is lower for firms with higher institutional ownership, supporting the notion that active monitoring by institutional owners passively benefits creditors. However, Bhojraj and Sengupta find that, as the concentration of blockholder ownership increases, yield spreads on the firm's debt also increase.[21] Cremers, Nair, and Wei (2007) find that the cost of debt is reduced (increased) in the presence of a blockholder only if the firm's management is protected (unprotected) from takeovers. Sunder et al. (2014) find that when activist hedge funds, identified in 13D filings as blockholders, rely on the market for corporate control to force (attempt) takeovers or mergers of the target firm, lenders respond by increasing credit spreads on subsequent bank loans by approximately 78 bps. More importantly, Sunder et al. (2014) find that, when hedge

[19] Shleifer and Vishny (1986) argue that large institutional investors, i.e. blockholders, by nature of their large equity holdings, have significant voting control of the firm, thus enabling them to effectively monitor management and take corrective actions if needed, including facilitating takeovers.

[20] The Securities and Exchange Commission (SEC), through enforcement of the Securities Exchange Act of 1934, Sections 13(d) and 13(g), requires shareholders to fill form 13D (13G) within 10 days of actively (passively) acquiring 5% or more of a firm's outstanding equity in an effort (while not seeking) to influence control of the issuing firm.

[21] Bhojraj and Sengupta (2003) also report that credit ratings are inversely related to the concentration of institutional ownership.

fund activism results in increases in either leverage or payouts (including share repurchases), credit spreads on bank loans increase in the post hedge fund intervention period; however, the increase in credit spreads for payouts is only significant in the subsample of target firms having the highest takeover risk as proxied by the absence of a classified board.[22] This leads us to augment our original creditor-manager alignment hypothesis to include the effects of concentrated institutional ownership:

H1(a): *If bondholder interests are more aligned with those of entrenched managers, then we expect the mitigating effects of creditor-manager alignment (H1) to the announcement of an OMR to be greater as the concentration of blockholder ownership increases.*

2.2 Shareholder-Manager Realignment hypothesis

Jun, Jung and Walkling (2009), in their study of short-term announcement effects of OMRs on bondholder wealth, argue that, if creditors' interests are more aligned with those of entrenched managers, bondholders would thus be expected to respond *more* negatively to an OMR announcement by entrenched versus non-entrenched managers since they would interpret the announcement as a signal of the *realignment* of entrenched managers' interests with those of external shareholders.[23] As the presence of concentrated institutional ownership (i.e., blockholders) in the external market for control has been shown to be a proxy for shareholder-manager alignment (Edmans, 2014), Jun et al.'s argument presupposes that governance provided through blockholder ownership serves to realign entrenched managers' interests towards those of external shareholders, thereby reducing the efficacy of the takeover umbrella that, heretofore, helped shield creditors from the external market for control. In their study, Jun et al. find some univariate evidence that short-

[22] Classified (or staggered) boards (of directors) are one of six ATPs found in BCF (2009)'s Entrenchment Index. Bates, Becher, and Lemmon (2008) find that the presence of a classified board significantly reduces the probability of becoming a takeover target.

[23] To our knowledge, Jun, et al. (2009) is the only study in the literature to date to empirically examine bondholder's short-term abnormal responses to an OMR announcement by entrenched management.

term yield spreads are increasing during the event month surrounding the announcement of an OMR for firms with the weakest shareholder rights (i.e., entrenched management), which they suggest provides evidence for their realignment hypothesis.[24] However, they do not control for the interaction of managerial entrenchment with the presence of an effective external market for control (blockholders) to test the effects of this proxy for shareholder-manager alignment on bondholder responses to an OMR. So, for completeness, we extend Jun et al.'s realignment hypothesis to control for the interaction of managerial entrenchment with blockholder ownership in the following *modified* realignment hypothesis:

H2: *If bondholder interests are more aligned with those of entrenched managers, then in the presence of an effective external market for control (i.e. concentrated blockholder ownership), bondholders should react more negatively to the announcement of an open market share repurchase by entrenched management as they would perceive this announcement as a realignment of entrenched managers' interest with those of external shareholders.*

2.3 Credit risk hypothesis

The degree of shareholder-manager alignment (conflicts) is expected to influence the degree of credit risk generated by an OMR. Managers, whose interests are more closely aligned with external shareholders may elect financial policies that increase leverage and/or result in *excessive* payouts that are detrimental to the firm's creditors (Jensen and Meckling, 1976). While at the other end of shareholder-manager alignment spectrum, if entrenched managers, faced with an effective market for control, choose to initiate a defensive OMR, they may still seek to maintain lower levels of leverage as well as reduced asset risk (e.g., Amihud and Lev, 1981). Regardless of the motivation, share repurchases must ultimately be financed either with existing assets (cash on

[24] Jun et al. (2009) report that bond returns are significantly negative for firms in the highest quartile of the GIM and BCF indices as well as those with staggered (classified) boards. However, in multivariate analysis, Jun et al. report that the coefficient on the entrenchment (dummy) variable is insignificant.

hand or proceeds from asset sales, or both), through increased borrowing (existing credit lines or new debt issues, or both), or some combination thereof.[25] If the targeted repurchase amount in an OMR announcement exceeds expectations of future or current free cash flows, the reduction in cash or physical assets (i.e., loss of collateral), along with increases in firm leverage (occurring either mechanically and/or directly through the issuance of new debt), will result in a reduction in expectations about the firm's ability to service its debt, thereby increasing default risk. Any perceived increase in default risk by bondholders may result in an increase in yield spreads (cost of debt) as bondholders demand higher premiums for assuming the additional credit risk. As such, we include the following hypothesis:

H3: *Share repurchases (OMR) that increase default risk through either a loss of collateral and/or increases in leverage will have an adverse effect on the firm's cost of debt (increase in yield spreads).*

2.4 Actual versus Announced Repurchases

While several event studies have examined the short-term impact of OMR announcements on bondholder wealth, none of these examine the bond market's response to actual share repurchases. As an OMR announcement is not legally binding, managers have the *flexibility* to decide when and if they will repurchase their shares (e.g. Stephens and Weisbach, 1998; Fenn and Liang, 2001; and Jagannathan, Stephens and Weisbach, 2000). Due to this inherent flexibility, OMR announcements are often only seen as "*authorizations*" and not absolute commitments to repurchase (Chan, Ikenberry, Lee, and Wang, 2010). In fact, research has shown that managers often take several years to complete an OMR program, if at all.[26] For example, in a study of 19,500

[25] Farre-Mensa, Michaely, and Schmalz (2015) report that 32% of aggregate payouts (dividends and share repurchases) are financed through new debt and equity issues during the payout year. However, only 3% of aggregate payouts are funded by "*firm-initiated equity issuances.*" (p.2)

[26] Stephens and Weisbach (1998) find that firms that complete their OMR program often take up to three years and end up repurchasing significantly less shares than originally targeted in their OMR announcement (only 74% to 82%). They find that only 57% of firms repurchase the (stated) targeted share amount during this three-year period, while 10% of

OMR announcements over a 30-year period from 1979 to 2010, Bargeron, Bonaimé, and Thomas (2017) find that only 41.5% of firms complete their entire (targeted) repurchase program within three (3) years of the announcement.[27] Thus, in the majority of cases, the initial reaction of bondholders (and shareholders) to an OMR announcement is based solely on expectations and not actual repurchases.[28] Unless management gives early guidance of its repurchase activity during the announcement quarter, bondholders (and shareholders) will only be made aware of the actual share repurchases in subsequent quarterly and/or annual financial statements.[29]

While firms may have valid reasons for announcing an OMR and then postponing the actual repurchase of their shares (e.g., share prices initially rise beyond management's expectations; some other unforeseen financing requirement supplants that of repurchasing shares; etc.), Lie (2005) argues that the information content of a repurchase announcement may actually be discerned by the firm's actual repurchase activity during the OMR announcement quarter. In a sample of 4,729 OMRs from 1981 to 2000, Lie (2005) finds significant differences in relative post-announcement operating performance among firms that repurchase a substantial amount of their outstanding equity (i.e., at least 1% or more) during the announcement quarter and those that only repurchase only a negligible amount or no shares at all.[30] Based on this finding, Lie (2005) suggests

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firms repurchase less than 5% of their targeted shares with a substantial number of firms failing to repurchase any shares at all.

[27] Of the 19,500 OMR announcements, Bargeron et al. (2017) are only able to estimate actual share repurchases for 14,710 authorizations. Of these, they infer that 8,091 (55.0%) complete their programs within three-years, which is similar to the 57% reported in Stephens and Weisbach (1998).

[28] Lie (2005) reports that 3-day mean (median) equity CARs for firms that fail to repurchase any shares during the quarter of OMR announcement are 4.2% (2.5%), while firms that repurchase over 1% of their outstanding equity in the announcement quarter only have 3-day mean (median) equity CARs of 2.5% (1.6%). Lie, thus, argues that "*there is no evidence that the capital market can predict at the time of the repurchase announcement which firms will actually repurchase shares.*" (p.423)

[29] In the first fiscal quarter of 2004, the SEC began requiring firms to report all quarterly repurchase activity, including the number of shares repurchased, the average repurchase price, and the number of shares still available to repurchase under outstanding open market repurchase (OMR) programs in quarterly (and annual) financial statements (10-Qs and 10-Ks). Additionally, any privately negotiated repurchases have to be disclosed in a footnote in the same section.

[30] Lie (2005) finds that, out of 4,729 OMR announcements, only 39% of announcing firms repurchase 1.0% or more of their shares during the announcement quarter. Surprisingly, he finds that 24% (1,119) of the announcing firms fail to

that firms attempting to convey information to the market through their OMR announcement do so by following through with large actual repurchases in the announcement quarter. As such, we propose that if entrenched managers announce OMRs as defensive measures, we expect them to follow through with substantial repurchases during the announcement quarter. Otherwise, external shareholders (blockholders) would be able to discern management's lack of intent within one quarter and take disciplinary actions. However, as the amount of actual repurchases increase, we expect that increases in default risk resulting from larger increases in leverage and/or the loss of collateral will also result in greater increases in yield spreads (i.e., *credit-risk hypothesis*). This leads us to the following two (joint) hypotheses:

H4(a): *If entrenched managers announce OMRs as a defensive measure against the external market for corporate control, and if creditors' interest are more aligned with entrenched managers, then we expect the mitigating effects of managerial entrenchment on the cost of debt (reduced yield spreads) to be greater for firms that repurchase at least 1% of outstanding equity in the announcement quarter relative to those firms that repurchase only small amounts of equity or no shares at all.*

H4(b): *As the amount of actual share repurchases increase during the announcement quarter, we expect the negative impact on credit spreads (default risk) to be greater as larger repurchases result in greater losses of collateral and/or larger increases in leverage.*

3. Data & Methodology

3.1 Data Sample

We collect data on open market repurchase (OMR) announcements from the SDC Platinum Mergers and Acquisitions database over the period from July 01, 2002 thru December 31, 2015.

repurchase any shares during the announcement quarter. Of the remaining 37% (1,767) of firms, Lie (2005) reports that they either repurchase small amounts (less than 1%) or that the repurchase activity was unverifiable.

We choose our beginning date to coincide with the initial availability of TRACE daily bond data.[31] We next eliminate any (duplicate) announcements occurring within 90 days of the original announcement as well as records flagged as either *withdrawn* or *complete*.[32] We require that each announcement have detailed information about the program size (i.e., targeted equity) as well as matching financial and returns data available through Compustat/CRSP. Additionally, following Hribar, Jenkins and Johnson (2006), we eliminate any repurchase announcements that seek to target 20% or more of the firm's outstanding equity as these programs, while often designated as an OMR, may have implications for the firm's bondholders that are more synonymous with those of a tender offer. This results in an initial sample of 5,606 OMR announcements. Lastly, to mitigate the effects of confounding events, we further require that no OMR announcement occur within one quarter before or after the announcement quarter, effectively creating a (3) three-quarter event window for analysis [-1, 0, +1].[33] This results in the elimination of an additional 228 observations leaving a final sample of 5,378 OMR announcements.[34]

Next, we attempt to match each OMR-firm with all daily transaction-level bond data from TRACE over the period extending one fiscal quarter before through one fiscal quarter after the

[31] In 2001, the U.S. Securities and Exchange Commission (SEC) adopted rules requiring the National Association of Security Dealers (NASD) to report all over-the-counter (OTC) bond transactions in secondary markets. The NASD (later merging with the regulatory division of the NYSE to become the FINRA) began reporting these OTC bond transactions for a limited number of bonds (498) with floats that exceeded $1 billion dollars through its Trade Reporting and Compliance Engine (TRACE) on July 1st, 2002.

[32] Banyi, Dyl, and Kahle (2008) frequently find duplicate OMR announcements occurring in the SDC database several months after the original announcement, which they attribute to the SDC's reliance on multiple media sources for its (OMR) data.

[33] For robustness, we also extend our analysis to include windows with no confounding OMR announcements occurring within 6-months (2-quarters) and 1-year (4-quarters) before and after the primary OMR announcement; however, this substantially reduces the sample size. Untabulated results for both samples are qualitatively similar and are available upon request.

[34] Following Maxwell and Stephens (2003), Grullon and Michaely (2004), and many others in the literature, we do not exclude financial and other regulated industries because they represent over 28.75% of the sample. As a robustness check, we further eliminate announcements from firms with 4-digit SIC codes classified as financials and/or utilities. Our primary results are qualitatively similar.

OMR announcement quarter.[35] TRACE contains information on intraday corporate bond trades in the over-the-counter (OTC) market including price, volume, yield, transaction date and time, and other transaction specific information.[36] Following the methodology outlined in Asquith, Covert, and Pathak (2013), we thoroughly clean the matched TRACE data, eliminating any trades that (1) are later reversed, modified, or cancelled, (2) represent duplicates, (3) have incorrectly reported price or volume data, or (4) that could not have occurred based on the reported transaction date.[37] We next match each remaining TRACE transaction-level record to a unique bond issue in the Mergent FISD database, allowing us to obtain bond characteristics such as offering amount, offering date, maturity, amount outstanding, coupon, callability, convertibility, putability, covenants, credit ratings, and all other issue specific details. We further eliminate any issues labeled as *perpetual*, *preferred*, *Yankee*, *Canadian*, *unit deals*, and *Rule 144A private issues* (i.e., private placements) as these are outside the scope of our current research. As a final step, using Bessembinder, Kahle, Maxwell and Xu (2009)'s construction of a "*daily trade-weighted price*" as a precept, we construct a *daily trade-weighted yield* for each bond issue based on the calculated yield from each intraday trade (reported trade price), using the volume of each trade as a weight.[38] This process ultimately results in a final sample of 1,251 OMR announcements (from 576 distinct firms) matched with 5,587 publicly traded bonds (representing 3,031 distinct issues) from TRACE.

[35] To calculate changes in the firm's cost of debt (average yield spreads) surrounding the announcement of an OMR, we require that each matched bond issue have valid trades in both the quarters before [-1] and after [+1] the announcement quarter [0].

[36] Since January 9, 2006, TRACE has been providing the immediate dissemination of transaction-level data on 100% of (OTC) trades in over 30,000 U.S. corporate bonds representing approximately 99% of the U.S. Corporate Bond Market (SOURCE: 2015 TRACE Fact Book).

[37] As TRACE is entirely comprised of self-reported bond trades by FINRA member firms, both buyers and sellers, it often contains duplicate trades, trades that never actually occur and have to later be reversed, and/or trades that have to be later modified or canceled as well as trades containing incorrect dates, prices, and volume data. We refer the reader to Appendix A in Asquith, Covert, and Pathak (2013) for a complete description of the process used to clean the TRACE data.

[38] Bessembinder et al. (2009) suggest calculating a "*daily trade-weighted price*" based on all daily intraday trades found in TRACE for use in the calculation of daily abnormal bond returns. They argue that "this approach puts more weight on the institutional trades that incur lower execution costs and should more accurately reflect the underlying price of the bond." (p.4225)

Table 1 (Panel A) reports the number of matched OMR announcements as well as the number of matched bond issues by year. We see that the number of matched OMRs increases almost monotonically from 2002 (33) to a pre-crisis peak in 2007 (155) as TRACE coverage of bond trades became increasingly available over this period. Panel B of Table 1 displays a distribution of OMRs by Fama/French-12 industry classifications. Financials (22.94%) comprise the largest category of firms announcing OMRs, followed by the Wholesale and Retail industry (13.59%). Utilities (2.24%), Consumer Durables (2.24%) and Television and Telecom (2.32%) are among the industries with the lowest number of announced OMRs (with matching bond data) during this period. However, all 12 Fama/French industries are represented.

Table 2 presents summary descriptive statistics for our sample. In Panel A, we see that, on average (median), sample firms target approximately 7.32% (6.27%) of their outstanding equity in an OMR announcement representing a mean (median) dollar amount of $1.514 billion ($500.00 million). Most firms in our sample appear to have significant experience repurchasing their shares as the middle 50% of firms have conducted between two and six OMR programs prior to the current OMR announcement.[39] Additionally, we find that, on average (median), firms repurchase approximately 3.85% (2.60%) of their outstanding equity over the (4) four-quarter period prior to the OMR announcement quarter, with repurchases occurring, on average (median), in 2.84 (4.0) out of the prior four quarters. As such, in multivariate analysis, we control for the both the number of prior OMR announcements as well as the recent (prior 4-qtr) repurchase activity. We expect bondholders to have already priced *ex ante* increases in default probability (higher yield spreads) resulting from significant prior repurchase activity. Therefore, we expect negative coefficients on both variables as the bond market may react more strongly to the announcement of an OMR by an

[39] Although our sample period only covers from July 1, 2002 through December 31, 2015, we collect data on all repurchases announcements found in the SDC beginning in 1984, which is the first year the SDC began coding repurchase announcements as "*Open Market.*"

infrequent (novice) repurchaser. Additionally, as we argue that actual repurchases, and not merely the announcement of an OMR, is what drives changes in the longer-term cost of debt (average yield spreads), we report that firms repurchase, on average (median), 1.65% (1.11%) of their outstanding shares during the announcement quarter. Following Lie (2005), we further segment our sample of OMR firms into three (3) sub-groups based on the level of actual repurchases in the announcement quarter.[40] In slight contrast to Lie (2005)'s findings, we find that, in our sample, 53.64% of firms make substantial repurchases (CSHOPQ >=1%) during the announcement quarter, while only 9.91% fail to repurchase any shares at all (CSHOPQ=0.0%). The remaining 36.45% of firms only repurchase small share amounts (CSHOPQ<1.0%) during the announcement quarter

Panel B displays summary financial statistics for OMR announcing firms in levels as of the end of the fiscal quarter [-2] just prior to our event window [-1, 0, +1]. We collect all firm-level financial data from Compustat as well as returns data from CRSP. While many of the variables in Panel B as used as controls in our multivariate analysis, the focus of our current research is on how several of these accounting variables (ratios) change due to the repurchase of firm shares and the resultant impact on default risk (*credit risk hypothesis*). As such, we defer discussion of changes in these variables until the next section.

Panel C (Table 2) displays summary bond issue characteristics. We find that, as of the time of each OMR announcement, firms have, on average (median), 4.47 (3.0) bond issues outstanding with a mean (median) market value of $644.27 ($460.60) million per issue. The mean (median) seasoning of bonds in our sample is 4.57 (3.24) years with a remaining time to maturity of 9.89 (6.49) years. We follow the bond literature (see e.g., Klock, Mansi, and Maxwell, 2005; and Chen and King, 2014) by assigning numerical values to represent the various character-based credit

[40] We choose to follow Lie (2005)'s definition of substantial repurchases (>=1%) as he finds statistically significant differences in these firms and those who purchase less than 1%. For robustness, we also use median shares repurchased (1.11%) to distinguish between only two groups. We find qualitatively similar results.

ratings reported by Credit Reporting Agencies (CRA).[41] The numerical values for the credit ratings start at 1 for (S&P) AAA-rated debt and range up to 20 for CC-rated bonds, as this is the lowest credit rating in our sample. Using this scale, an increase (decrease) in the numerical credit rating represents a downgrade (upgrade) in the actual character-based rating, and thus, an increase (decrease) in default risk. Therefore, we expect changes in credit ratings over our event window to be positively related to yield spreads. The average bond in our sample has a numerical credit rating of 7.59 representing a character-based rating of slightly between A^- to BBB^+. However, 87.10% of all bonds in the sample are considered investment-grade (BBB^- or above). Also, of note, while we find that 69.89% of the bonds are callable, only a relatively small percentage of bonds have options that are valuable to bondholders, e.g., convertible (1.66%) or puttable (1.90%).

Cremers et al. (2007) find protective bond covenants serve to mitigate the agency conflict between shareholder and bondholder interest in the presence of strong external governance (blockholders). As such, we control for the mitigating effects of protective covenants by following Billet, King, and Mauer (2007) in grouping all restrictive bond covenants into (15) distinct categories based on type of restriction (protection). We then form an overall covenant index using all 15 categories as inputs, as well as forming three (3) additional sub-group covenant indices involving payouts, financing, and investment restrictions. As the focus of study is on repurchases, we limit our discussion to those covenants directly related to payouts.[42] We find that only 9.41% (5.19%) of bond issues have covenants placing restrictions on share repurchase (dividends). Additionally, we find that the total payout covenants per issue (either 0, 1, or 2) is extremely low

[41] We use historical credit ratings from the FISD database to assign credit ratings as of the date of the actual bond transaction from the three primary credit ratings agencies: Moody's, Standard and Poor's, and Fitch. We eliminate any bonds that are indicated as "*in default*". We then average the individual reported ratings (if available) to arrive an overall *average* credit rating for each bond.

[42] In untabulated multivariate analysis, we include both individual covenants (all) as well as all group indices. However, we only find significant results among those covenants dealing with payouts. Overall, covenant inclusion is sparse in our sample, due possibly to the overall high number of investment grade bonds.

with a mean (median) number of only 0.146 (0.00) covenants. As such, while we control for the use of covenants, we do not anticipate that our results will be affected by covenant inclusion.

Lastly, Panel D (Table 2) presents descriptive statistics for various proxies of managerial entrenchment as well as measures of external governance (blockholder ownership). We collect data on charter-level anti-takeover provisions from Institutional Shareholder Services (ISS), formerly RiskMetrics. Institutional (blockholder) ownership data is obtained from a combination of Thompson Reuters' (formerly CDA/Spectrum) SP34 feeds (S34 datasets) augmented with data from actual SEC 13F fillings (as of June 2013 and forward) provided through a supplemental dataset on the WRDS server.[43] Additionally, CEO equity ownership data used in the calculation of several alternative proxies for entrenchment is obtained from ExecuComp. Borrowing from Bebchuk, Cohen, and Ferrell (2009), we construct the entrenchment index (*E-Index*) of antitakeover provisions as our primary measure of managerial entrenchment. Bebchuk et al. (2009) argue that of the original (24) governance measures used in the much larger GIM Index (Gompers, Ishii, and Metrick, 2003) only six (6) measures are significantly correlated with losses in firm value attributable to managerial entrenchment.[44] These anti-takeover provisions (ATP) include (1) classified (or staggered) boards, (2) poison pills, (3) golden parachutes, (4) supermajority voting rules in mergers and acquisitions, and limits to shareholder amendments of the (5) corporate charter and (6) bylaws. The *E-index* is uniformly constructed by starting at zero and adding a value of one for each ATP present at the time of the repurchase announcement, thereby establishing a possible range of index values between 0 and 6, with larger values representing greater firm-level takeover

[43] Ben-David, Franzoni, Moussawi, and Sedunov (2016) document serious problems occurring after June 2013 with the Thompson-Reuters' SP34 feeds (13F institutional ownership data) including stale and omitted institutional 13F reports as well as excluded securities (e.g., Thompson_Reuters' dropped coverage for approximately 30% of securities previously followed, representing about 15% of the U.S. equity market capitalization, as well as all exchange-traded funds (ETF) in recent quarters). Ben-David et al. detail steps in their paper to remedy these data issues using actual SEC 13F fillings from June 2013 forward provided in a dataset on WRDS (WRDS SEC 13F Holdings).

[44] We are unable to use the GIM-Index (Gompers et al.,2003) in our current study as ISS discontinues data coverage after 2006 for several of the variables needed to construct the index.

protection (managerial entrenchment). Of the 1,251 OMRs in our sample, data on ATPs is available for 1,168 (93.37%) firms (OMRs). The mean (median) *E-index* value for these firms is 2.77 (3.0). We segment our sample of OMR-firms by creating a dummy variable, *Entrenched*, that takes a value of one if the *E-index* is greater than or equal to the median value, and zero otherwise. As many of the sample firms with *E-index* scores are clustered at the median, entrenched firms make up 61.30% of our sample.

We next collect data on external governance (i.e., institutional equity ownership). Most firms in our sample have high overall institutional ownership, with mean (median) total ownership of 79.34% (81.44%). In order to examine the effects of *concentrated* institutional ownership (i.e. blockholders), we follow the empirical literature by constructing variables for (1) the presence of a blockholder (*Blockholder*), i.e., an institutional owner possessing at least 5% of the firm's outstanding equity. (2) the firm's largest blockholder (*LrgBlockOwn*), (3) total blockholder ownership (*TotBlockOwn*), and (4) the total number of blockholders present (*TotBlockHldrs*).[45] As endogeneity issues in empirical studies (simultaneity and omitted variables bias) surrounding the use of blockholders are well known in the literature, we follow Edmans (2014) suggestion to use lagged values of blockholder ownership in an attempt to mitigate endogeneity issues. Therefore, we use blockholder ownership data reported as of the quarter-end prior to the event window in our study.[46] Of those firms with available institutional ownership data, 85.75% (1,071 out of 1,249) have at least one blockholder present with mean (median) ownership of 9.67% (8.43%). The presence, as well as ownership concentration, of blockholders in our sample appears very similar

[45] See e.g., Edmans (2014) for a recent survey of literature dealing with effects of blockholders on corporate governance.

[46] Edmans (2014), in the same survey, notes that while some studies have attempted to instrument for individual blockholders, he is "*unaware of instruments for blockholders in general.*" (p.34) For robustness, we also examine measures of contemporaneous blockholder ownership as of the end of the OMR announcement qtr. [0] as well as changes in blockholder ownership across the entire event window [-1, 0, +1]. In untabulated results, we find that changes in blockholder ownership during the announcement quarter [-1, 0] drive increases in yield spreads; however, any attempt to infer causality using these results is clearly subject to simultaneity bias.

to other blockholder studies in the literature as Holderness (2009) reports that approximately 96% of all US firms have at least one blockholder present with median (largest) blockholder ownership of 8.9%. Mean (median) aggregate blockholder ownership represents approximately 19.0% (16.84%) of the firm's outstanding equity. Additionally, we find that firms have, on average (median), 2.41 (2.0) blockholders present. Here again, blockholder representation in our sample closely mirrors that of other findings in the literature.[47] Additionally, Panel D includes statistics for three additional proxies for managerial entrenchment often used in the literature: *CEO_Tenure*; *PBC* (private benefits of control); and *Powerful_CEO* (see e.g., Eckbo and Thorburn, 2003; Ji et al., 2017). Panel D concludes with statistics for *ex-ante* takeover probability (*TOPROB*) calculated from probit regressions of actual takeovers on lagged values of variables found to affect the likelihood that a firm receives a takeover (or merger) bid (Billet and Xu, 2007). We defer further discussion of these variables until later sections of the paper.

3.2 Calculating Changes in Average Yield Spreads

In this paper, we focus on the effects of actual share (OMR) repurchases on the firm's cost of debt. As such, we employ an event study methodology. However, in contrast to previous bond (OMR) studies, we focus on changes in the firm's *average* cost of debt over a three-quarter window [-1, 0, +1] to allow the bond market sufficient time to learn of the firm's actual repurchase activity during the quarter of an OMR announcement. Following conventions in the bond literature, we use the yield spread above a maturity matched constant U.S. Treasury rate on the firm's seasoned public bonds as our measure of the cost of debt (see e.g., Chen and King, 2014; Cremers et al., 2007; Jun et al., 2009; and Klock et al., 2005).[48] However, instead of focusing on point estimates, we

[47] Edmans and Manso (2011) find that approximately 70% of US firms have multiple blockholders. In our sample, conditional on the presence of a blockholder, 70.03% of firms have two or more blockholders present, with a maximum number of eight (8).

[48] Historical daily constant U.S. Treasury rates are obtained from the *H.15 Selected Interest Rates* table published by the Board of Governors of the Federal Reserve System.

differentiate our study by averaging yield spreads over each quarter and then calculating the *change* in average quarterly yield spreads over the three-quarter period to measure the impact of share repurchases on the firm's cost of debt.[49] By focusing on changes in the yield (credit) spreads of seasoned bonds over the fiscal quarters surrounding the announcement of an OMR, we further avoid the endogeneity issues associated with the firm's decision to repurchase or issue new debt.

To calculate our primary dependent variable of interest, $\Delta\overline{YS}_{j,[-1,+1]}$, we begin by using our calculated daily trade-weighted yield from TRACE transaction data to calculate a *daily trade-weighted yield spread (YS)* for each bond issue by subtracting the interpolated daily treasury rate (yield) matched by the bond's remaining time to maturity. We closely follow the methodology outlined in Jun et al. (2009) to extrapolate daily constant maturity U.S. treasury rates.[50] Next, we simply average the treasury-adjusted yield spreads for each bond issue across each of the (3) three fiscal quarters to arrive at an average quarterly yield spread ($\overline{YS}_{j,Qtr[i]}$) for each bond j, $i \in \{-1, 0, +1\}$. Finally, we calculate the change in average quarterly yield spreads as:

$$\Delta\overline{YS}_{j,[-1,+1]} = \overline{YS}_{j,Qtr[+1]} - \overline{YS}_{j,Qtr[-1]} \quad (1)$$

3.2 Credit Risk Variables: changes in levels

Next, we examine changes in levels of several of the accounting variables (ratios) presented in Panel B of Table 2 over the three-quarter event period surrounding the announcement of an OMR. Specifically, we seek to identify which determinants (i.e. increased leverage, loss of collateral, asset risk, etc.) lead to changes in the firm's cost of (existing) debt capital resulting from actual repurchases of firm shares. Structural models of bond pricing suggest that increases in default

[49] We choose to focus on average quarterly yield spreads due to the infrequent nature of bond trades. Bessembinder et al. (2009) report that for 2006, the first full year of TRACE implementation, "*the average bond only trades 52 days a year, and conditional on trading, only 4.62 times per day*." (pg. 4225)

[50] To conserve space, we refer the reader to Jun et al. (2009) for a complete description of the interpolation methodology (pg. 217).

risk (driven by increases in leverage, volatility of earnings, or asset risk) push the firm closer to a default threshold, the result of which is an increase in yield spreads, i.e. the firm's cost of debt (Merton, 1974). Therefore, to control (test) our credit-risk hypothesis, we create variables for changes in levels of asset (unlevered) beta, market leverage, book leverage, cash-to-assets, earnings volatility, profitability, and credit ratings. All change variables are calculated by subtracting the values taken from Compustat (or calculated) at the end of fiscal quarter [-2] from the reported values at the end of quarter [+1], thus representing changes in levels across the entire event window [-1, 0, +1]. We discuss the univariate analysis of these variables in the next section as well as employ them as regressors throughout multivariate analysis.

4. Univariate Results

4.1 Changes in average yield spreads (cost of debt)

Table 3 reports changes in the average yield spreads ($\Delta\overline{YS}$) over the three-quarter event window surrounding an OMR announcement [-1, 0, +1].[51] In Panel A, we find that, overall, the cost of debt increases surrounding OMR repurchases as the mean (median) change in average quarterly yield spreads ($\Delta\overline{YS}$) for all bonds in the sample is 14.70 bps (0.91 bps). Additionally, providing some initial support for hypothesis H4(b), we find that firms that repurchase at least 1% or more of their outstanding equity during the announcement quarter experience significant increases in mean $\Delta\overline{YS}$ (18.80 bps) that are 97.3% higher than firms that make small or no repurchases at all (9.53 bps).[52] In Panel B, we follow normal conventions in the bond literature by

[51] In untabulated results, we find that the differences in $\Delta\overline{YS}$ between the two subgroups (0<CSHOPQ<1%) and (CSHOPQ=0.0%) are not statistically significant, while $\Delta\overline{YS}$ between the group (CSHOPQ>=1%) and the two remaining groups are, each, significantly different. Therefore, to conserve space and make the analysis easier to understand, we group the two subgroups, (0<CSHOPQ<1%) and (CSHOPQ=0.0%), into one group (0<=CSHOPQ<1%) for comparison in Tables 3 & 4.

[52] Bessembinder et al. (2009) suggest aggregating bond-level transactions at the firm level to mitigate the issue of upwardly biased t-statistics due to the cross correlation of errors for firms with multiple bond issues. As the purpose of our study is to identify specific factors that influence bond yields (cost of debt), we choose to focus our examination at

investigating differences in $\Delta\overline{YS}$ based on the credit rating (investment grade) of the firm's debt. While only 12.73% of the sample bonds (711 of 5,587) are considered non-investment grade, we find highly significant differences in $\Delta\overline{YS}$ for all OMRs as well as both subsets of repurchase activity. For the entire sample of bonds, we find that the mean (median) increase in $\Delta\overline{YS}$ for non-investment grade debt is approximately 49.66 bps (19.82 bps) higher than that of investment grade debt. In Panel C, we start to investigate the effects of managerial entrenchment on changes in the cost of debt. We find that $\Delta\overline{YS}$ are slightly larger for firms with entrenched managers, however; differences are only significant for the entire sample of bonds (OMRs) at the median level (1.95 bps). This is basically the finding that led Jun et al. (2009) to suggest that in the presence of managerial entrenchment OMR announcements lead to increases in yield spreads. However, again, here we are only considering entrenchment by itself and not the interaction with an effective external market for control. Once again, we find support for the notion that larger actual repurchases lead to greater increases in the cost of debt, H4(b), as mean $\Delta\overline{YS}$ are significantly higher for both entrenched and non-entrenched firms that repurchase at least 1% of shares.

In Panels D, E, and F, we examine bondholder reactions to OMRs in the presence of blockholder ownership (our proxy for an effective external market for control). In each panel, we create a dummy variable equal to one if blockholder equity ownership or number of blockholders is greater than or equal to median levels of the variable of interest, i.e., *LrgBlockOwn*, *TotBlockOwn*, and *TotBlockHldrs*, respectively. In our hypothesis development, we suggest that bondholders view the external market for control in light of potential takeover risk. As such, we expect the reaction of bondholders to the presence of this *perceived threat* to be increasingly

the bond-level. However, for robustness and to address this issue, we also aggregate all changes in average yield spreads ($\Delta\overline{YS}$) at the firm-level using the relative dollar amounts of each outstanding issue as weights. In untabulated results, we find that aggregating at the firm level substantially increases the reported changes in average yield spreads and further strengthens our results. For example, at the firm-OMR level (1,251 obs.), we find mean (median) $\Delta\overline{YS}$ of 24.03 bps (2.69 bps) versus 14.70 bps (0.91 bps) at the bond-level, still significant at the 1% level. All results are available upon request.

negative (increasing yield spreads) as the concentration of blockholder ownership increases. Edmans (2014) argues that blockholders do not need to exert governance through actual acts of voice (direct intervention) or exit ("*voting with their feet*"), but instead can govern (realign interests) through the threat of either intervention or selling blocks of shares. In support of this notion, we find that, in all three panels, $\Delta\overline{YS}$ are significantly higher (increasing) in the presence of blockholder ownership (except for median increases when only one blockholder is present). Interestingly, while we find that mean (and median) differences in $\Delta\overline{YS}$ are significantly higher (1% significance level) when total blockholder ownership (*High_TotBlockOwn*) is in the upper 50th percentile, 13.19 bps (107.94%), or when there are two (2) or more blockholders present (*High_TotBlockHldrs*), 17.57 bps (298.70%), differences in $\Delta\overline{YS}$ are not statistically significant between above and below median ownership for the firm's largest blockholder (*High_LrgBlockOwn*). La Porta, Lopez-de-Silanes & Shleifer (1999) argue that single blockholder ownership must exceed a threshold of 20% in order to exert (external) control. If true, then this finding is not surprising given that median block ownership for the firm's largest blockholder is only 8.43%, while 95% of all blockholders individually own less than 17.3% of firm equity. While the results in Table 3 reveal that the cost of debt increases in both the presence of entrenched management as well as that of a blockholder (concentrated ownership), our primary interest lies in how the *interaction* between entrenched management and creditor-manager alignment affects the cost of debt when share repurchases occur in the presence (or absence) of an effective external market for control. As such, we turn to a multivariate setting to further examine this issue. But first, we discuss our proxy variables for changes in credit risk in the next section.

4.2 Changes in levels of financial variables

Table 4 displays summary statistics for the changes in levels of credit risk variables over the three-quarter OMR event window as well as levels of these (and other) variables just prior to

the beginning of the event window. Here, our interests lie in how these variables change in relation to actual share repurchases. Additionally, by examining differences in how these variables change among entrenched versus non-entrenched firms, we hope to identify whether the change in these variables is driving the differences in yield spread changes between the two groups. The conventional assumption in the literature is that entrenched managers avoid high levels of leverage as well as choose lower risk diversification strategies both to protect their undiversified human capital as well as protect their private benefits of control (see e.g., Amihud and Lev, 1981; Jensen, 1986; Stulz, 1990; and Berger, Ofek, and Yermack, 1997), while managers who are more exposed (fewer firm-level ATPs) to the discipling effects of the market for control are expected to employ higher levels of leverage as well as seek riskier projects to increase equity returns. On the other hand, recent empirical studies suggest that creditor-manager alignment may lead entrenched managers to employ higher leverage than those firms with stronger shareholder-manager alignment (e.g., Nielsen, 2006; John and Litov, 2010; and Ji et al., 2017).[53] Thus, changes in variables that directly affect credit risk will be endogenously determined by management (with the exception of external credit ratings) based on their respective degree of shareholder-manager (creditor-manager) alignment. In this section, we discuss univariate results addressing this issue. Additionally, we attempt to control for this possible source of endogeneity in our multivariate analysis.

In Table 4, for all firms that announce OMRs, we find slight (significant) decreases in median asset risk over the event window (-0.0041) along with significant increases in mean (0.41%) and median (0.13%) market leverage. We also find that share repurchases are associated with significant decreases in cash (loss of collateral) at both the mean and median levels. However, we

[53] Nielsen (2006) and John and Litov (2010) find that firms with higher GIM-Index scores (i.e., strong managerial control/weaker shareholder rights) have higher leverage than firms with lower GIM-Index scores (weak managerial control/stronger shareholder rights). Additionally, Ji. et al. (2017) find that firms with weaker corporate governance structures (i.e., entrenched/strong managerial control) increase leverage in diversified firms relative to comparable single-segment "focused" firms in the same industry, a finding consistent with the notion that creditor (manager) alignment leads to better access to debt financing.

find that changes in average credit ratings are slow to react to share repurchases. In fact, mean credit ratings are slightly improving over the event window. While median changes in both earnings (operating) volatility and profitability are statistically significant, they are not economically significant: 0.01% and -0.11%, respectively. When juxtaposing entrenched versus non-entrenched firms, we find that the only significant difference (10% level) occurs among mean changes in asset beta. However, when examining levels of these variables prior to the OMR event window, we find that entrenched firms are significantly smaller in terms of mean total assets (difference of $58.914 billion) as well as (mean) market capitalization (difference of $20.462 billion). We also find that entrenched firms tend to have slightly smaller investment opportunity sets as both mean and median market-to-book values are significantly smaller than those of non-entrenched firms. Overall, though, we don't find that the differences in $\Delta\overline{YS}$ (cost of debt) among entrenched and non-entrenched firms are being driven by (significant) differences in changes in leverage or in the loss of collateral stemming from endogenous financing choices based on the level of shareholder-manager alignment.

However, in Table 4, we do find support for hypothesis H4(b), in that firms that repurchase large amounts of equity in the announcement quarter (CSHOPQ>=1%) have significantly higher increases in market leverage, along with significantly larger reductions in cash, as compared to firms that only conduct relatively small repurchases. Again, we find that these same (CSHOPQ>=1%) firms also experience significantly larger decreases in median values of unlevered (asset) beta. These results are not surprising as larger repurchases should require a larger commitment of firm resources, either cash on hand (loss of collateral) or increased leverage, both of which are expected to increase default risk. Also, we find that firms that repurchase more shares have significantly lower levels of market leverage (-2.31%) prior to the repurchase event window as compared to small repurchasers.

Table 5 displays correlation coefficients for our main variables of interest. Here again, we don't find any significant relationship between our proxy variables for changes in credit risk and managerial entrenchment. We do see, however, that while institutional ownership is positively correlated with entrenchment, blockholder ownership is (slightly significant) negatively correlated with the level of managerial control. This finding seems to suggest that external (institutional) shareholders may be less inclined to accumulate large equity stakes in firms with entrenched management as it would be costlier to exert change through interventionist policies in the presence of multiple firm-level ATPs. In the next section, we turn to multivariate analysis to examine whether bondholders view OMRs conducted by entrenched management as defensive measures that simultaneously protect their interests in the presence of an effective market for control (i.e., concentrated blockholder ownership).

5. Multivariate Analysis

5.1 Methodology

We examine the effects of creditor-manager alignment using pooled OLS regressions. As we seek to identify determinants of changes in the cost of debt, the dependent variable in all primary specifications is the change in average yield spreads ($\Delta\overline{YS}$) over the three-quarter event window. As structural models of bond pricing imply that changes in yield spreads are driven by increases in default risk, we control for changes in credit risk (H3) by including our complete set of credit risk (Δ) variables (e.g. Merton, 1974; Longstaff and Schwartz, 1995; Collin-Dufresne and Goldstein, 2001). Additionally, following Chen and King (2014), we include an extensive set of control variables that have also been shown in the literature to also influence yield spreads. These are grouped into firm specific variables (levels), repurchase related activity, bond characteristics, and systematic risk factors.

At the firm level, we control for firm size using the log of total assets. As firm size has been shown to be inversely related to financial constraints (Hadlock and Pierce, 2010), we expect larger firms to have a lower cost of debt. We control for a firm's growth opportunities using the market-to-book ratio. Greater growth opportunities should lead to increases in cash flows (profitability) that reduce the probability of default and thus reduce credit spreads (Pastor and Veronesi, 2003). However, as Chen and King (2014) point out, firms with greater growth prospects suffer from greater agency conflicts often resulting in an increased cost of debt. Last, at the firm level, we control for whether the firm pays regular dividends. Empirical results suggest that dividend paying firms typically use repurchases to payout fluctuations in excess cash flows or as a substitute for dividend increases (e.g. Grullon and Michaely, 2002; Skinner, 2008). If bondholders share this view, then we expect little to no increase in yield spreads as unexpected dividend increases have been shown to have only minimal (asymmetric) effects on bond prices (e.g. Handjinicolaou and Kalay, 1984; Benartzi, Michaely, and Thaler, 1997). However, bondholders may view payouts (repurchases) beyond current dividend levels as a transfer of wealth to shareholders, thus resulting in increased yield spreads (Maxwell and Stephens, 2003).

In relation to repurchase activity, we control for the percent of equity sought in an OMR announcement as Maxwell and Stephens (2003) find that short-term abnormal bond returns are negatively related to the OMR program size (%). As discussed in Section 3.2, we further control for the prior number of announced OMR programs (Announced frequency) as well as the most recent repurchase activity. We create a dummy variable, *Frequent_Rep*, that takes a value of one if the firm conducted repurchases in all 4-quarters prior to the OMR event window (median value), and zero otherwise. We also include a variable for repurchases in the lead quarter (*CSHOPQ_Lead*), as information about repurchase activity in quarter [+1] may be disseminated prior to the filing of subsequent quarterly reports, further affecting yield spreads.

At the bond level, we control for investment-grade, coupon rate, bond age, changes in levels of duration and convexity, option features, and payout related covenants. While we examine changes (Δ) in levels of actual credit ratings as they relate to the credit risk hypothesis, we also include an indicator variable for investment grade debt as we expect $\Delta\overline{YS}$ to be significantly reduced for investment grade debt. We include coupon rate to control for tax-related effects on yields (Elton, Gruber, Agrawal, and Mann, 2001; Chen and King, 2014). Bond age is used to proxy for liquidity risk. We also measure changes over the event window in modified duration (convexity) to control for changes in the linear (non-linear) price-yield relationship (Klock et al., 2005). We also include dummy variables for both callability and convertibility as these option features should be priced by bondholders. Finally, we include payout related protective covenants as these have been shown to alleviate creditor-shareholder agency conflicts (Cremers et al., 2007, Billet, King, and Mauer, 2007).

Lastly, we also compute changes in levels of systematic risk factors over the three-quarter event window. As an overall factor to account for the systematic impact of economic conditions on credit spreads, we use the market credit premium, defined as the differential in yields between Moody's Aaa and Baa rated debt. As economic activity improves (deteriorates), the market credit premium should narrow (widen) as recovery rates on debt improve (worsen). We also include changes in both spot rates as well as the slope of the yield curve to control for the effects of term structure on credit spreads. Longstaff and Schwartz (1995) find that changes in spot rates are inversely related to credit spreads (see also Duffee, 1998). As spot rates rise, the probability of default is reduced as higher reinvestment rates result in increased firm values. To proxy for spot rates, we use the 10-year constant maturity Treasury rates. Additionally, as the slope of the yield curve predicts changes in future spot rates and, thus, credit spreads, we proxy for changes in the slope by calculating changes in the differential between 10-year and 2-year constant maturity Treasury rates. Form expectations theory, a steepening of the yield curve implies increases in future

spot rates, which should as before, lead to decreases in expected default probability and, therefore, reductions in credit spreads. Additionally, as increases in the slope of the yield curve portend improvements in overall economic activity, this should also lead to reductions in credit risk (Fama and French, 1989). However, from a different perspective, an increase in future spot rates implied by a steepening of the yield curve increases the firm's cost of capital and, thus, may result in a reduced investment opportunity set as previously positive NPV projects are no longer acceptable. This results in a reduction in expected future cash flows, and therefore firm valuation, leading to increased credit spreads (Avramov, Jostova, and Philipov, 2007). Finally, we also include changes in the Fama and French (1993) equity market risk factors (equity market premium, HML and SMB) as these have also been shown to affect bond yields (e.g. Elton, Gruber, Agrawal, and Mann, 2001; Campbell and Taksler (2003); and King and Khang, 2005).[54]

5.2 Pooled OLS Regressions

To test our two competing hypotheses (H1 and H2) dealing with the effects of creditor-manager alignment surrounding OMRs, we include the indicator variable for managerial entrenchment, *Entrenched*, as our primary variable of interest in our first set of regressions. If bondholders view the announcement of an OMR by entrenched management as a defensive move that helps to protect their interests as well, i.e., creditor-manager alignment hypothesis (H1), then we expect the coefficient on *Entrenched* to be significantly negative (mitigating the cost of debt). However, if instead, bondholders view the OMR as a realignment of entrenched managers interests with those of external shareholders, thereby threating the protection heretofore provided by entrenched management, i.e., Jun et al. (2009)'s realignment hypothesis (H2), then we expect the coefficient on *Entrenched* to be significantly positive (increasing the cost of debt). As our baseline specification, we estimate the following regression(s):

[54] We thank Eugene Fama and Kenneth French for providing data on equity market risk factors through Ken French's website at Dartmouth: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

$$\Delta\overline{YS}_{j,[-1,+1]} = \beta_0 + \beta_1 Entrenched_{j,t} + \gamma\Delta Y_{j,[-1,+1]} + \lambda X_{j,t} + \alpha_{Ind} + \alpha_T + \varepsilon_{j,t} \qquad (2)$$

where j indexes bond issue, $\Delta Y_{j,[-1,+1]}$ represents the set of credit risk (Δ) variables, and X_{it} is the set of all other control variables. We also control for year, α_T, and industry, α_{Ind}, fixed effects. We control for biased (inflated) t-statistics resulting from the cross correlation of standard errors among bonds from firms with multiple outstanding issues by adjusting standard errors to control for both heteroskedasticity and correlation-clustering as described in Williams (2000). Table 6 displays the results of these regressions. In models (1) through (4), we estimate the above specification by incrementally adding each of the four subsets of control variables described in Section 5.1. Providing strong support for the creditor-manager alignment hypothesis (H1), we find that, in all four models, the coefficient on *Entrenched* is negative and highly significant at the 1% level, indicating that the presence of entrenched management has a *mitigating* effect on the firm's cost of debt around open market share repurchases, resulting in a reduction in $\Delta\overline{YS}$ of 6.3 bps (42.86%). The results also provide strong support for the credit risk hypothesis (H3), as all the coefficients on credit risk variables ($\Delta Y_{j,[-1,+1]}$) are highly significant with the predicted signs. In models (5) thru (7), we subdivide our sample based on the actual shares repurchases in the announcement quarter (*CSHOPQ*). In support of hypothesis H4(a), we find that managerial entrenchment only has a mitigating effect on $\Delta\overline{YS}$ for firms that repurchase at least 1% of their outstanding equity in the announcement quarter. For this group, we find that the presence of entrenched management results in a significant (1% level) reduction in $\Delta\overline{YS}$ of 10.73 bps (73.0%). For firms that repurchase less than 1% of their shares or no shares at all, entrenchment appears to have no significant effect on yield spread changes.

In Section 4.2, we introduced the concern that changes in financial variables that have been shown to affect credit risk are endogenously determined by the firm's management and therefore may differ significantly based on the degree of shareholder-manager alignment. Therefore,

including both our variable for entrenchment (Entrenched) and our proxy variables for changes in credit risk (($\Delta Y_{j,[-1,+1]}$) as regressors in equation (2) may lead to biased estimators. Although, in univariate analysis (in Table 4), we fail to find any significant differences in the changes in the credit risk variables between entrenched and non-entrenched management (in Table 5, there also appears to be no significant evidence of correlations between entrenchment and the set of credit risk (Δ) variables), we attempt to control for this issue by orthogonalizing each credit risk (Δ) variable against managerial entrenchment. First, we regress each credit risk (Δ) variable against the indicator variable Entrenched. We then use the orthogonalized residuals from these first-stage regressions as regressors in our baseline regression specification replacing the original credit risk (Δ) variable. The results from Table 7 confirm that changes in theses credit risk variables are not significantly related to the level of managerial entrenchment as the coefficients are basically unchanged when we rerun the regressions using the orthogonalized residuals.

Next, as the mitigating effects of creditor-manager alignment appear to be driven by the percent of shares repurchased, we further test hypotheses H1 and H4(a) by examining the interaction of entrenchment with levels of repurchase activity using the entire sample of bonds. Specifically, in Table 8, we interact our indicator variable for entrenchment with both the continuous variable for shares repurchased in the announcement quarter (*CSHOPQ*) as well as three (3) indicator variables for subgroups based on repurchase activity: *CSHOPQ>=1%, CSHOPQ=0,* and *0<CSHOPQ<1%.* As in Table 6, we include both the set of credit risk variables (($\Delta Y_{j,[-1,+1]}$) and the complete set of control variables (X_{it}) as well as year (α_T) and industry (α_{Ind}) fixed effects. To conserve space, we only display the results for our primary variables of interest from the following regression specification:

$$\Delta\overline{YS}_{j,[-1,+1]} = \beta_0 + \beta_1 Entrenched_{jt} + \beta_2 CSHOPQ_{j,[0]} + \beta_3(Entrenched_{jt} \times CSHOPQ_{j,[0]}) + \gamma\Delta Y_{j,[-1,+1]} + \lambda X_{j,t} + \alpha_{Ind} + \alpha_T + \varepsilon_{j,t} \quad (3)$$

In models (3) thru (8), we substitute (as indicated) dummy variables for the three subgroups based on repurchase activity for $CSHOPQ_{j,[0]}$. In model (1), we find the coefficient on *Entrenched* is negative and highly significant when we control for the percentage of shares repurchased in the quarter, although the continuous variable (*CSHOPQ*), itself, is not significant. However, in model (2), when we interact *Entrenched* with *CSHOPQ*, we find that when firms are more exposed to the market for control (i.e., have only two or less firm-level ATPs) the cost of debt is significantly increasing in the percent of shares purchased in the announcement quarter. However, in the presence of entrenched management, we find that the effect is no longer significant.[55] In model (3) we find that the cost of debt significantly increases for those firms that repurchase at least 1% of shares ($\Delta\overline{YS}$ increases by 7.98 bps), while the presence of entrenched management continues to be a mitigating factor (-6.75 bps) on changes in the cost of debt. In model (4), when we interact *Entrenched* with our dummy variable for large repurchases (*CSHOPQ>=1%*), we find, again, that for those firms that are more exposed to the market for control, $\Delta\overline{YS}$ increase significantly by 14.25 bps, almost double the amount for the entire sample. However, while we find that $\Delta\overline{YS}$ are still increasing in the presence of entrenched management, the net increase is only 3.29 bps, a significant reduction of 10.96 bps (or 76.91%). Here again, we find significant evidence that managerial entrenchment mitigates increases in credit risk resulting from large share repurchases providing support for both hypotheses H1 and H4(a).

In models (7) and (8) of Table 8, where the firm has positive, but small repurchases, we find that the coefficient on our dummy variable, (*0<CSHOPQ<1%*), is negative and highly

[55] An F-test of the joint significance of the coefficients β_2 and β_3 fails to reject the null hypothesis that ($\beta_2 = \beta_3 = 0$).

significant. Thus, bondholders react favorably (reduction in the $\Delta\overline{YS}$ of 6.51 bps) upon learning the firm didn't actually repurchase a large percentage of shares during the quarter. In model (8), we see that for non-entrenched management, the reduction in $\Delta\overline{YS}$ is almost 48% larger (-9.63 bps) when the firm only makes small repurchases. However, again, in the presence of entrenched management, we find that $\Delta\overline{YS}$ are further significantly reduced by an additional 8.69 bps (total reduction of 18.32 bps). In model (6), surprisingly, we find that, absent the protection provided from multiple ATPs, the bond market reacts very positively to firms that announce an OMR, but that fail to repurchase shares in the announcement quarter (significant reduction in $\Delta\overline{YS}$ of 20.39 bps). However, if management is entrenched and fails to repurchase shares after announcing an OMR, it appears as if bondholders *punish* entrenched management with increases in the cost of debt, as the differential between entrenched and non-entrenched management is significantly positive. While overall in model (6), $\Delta\overline{YS}$ are still reduced by 4.44 bps in the presence of entrenched management, this represents an *increase* in $\Delta\overline{YS}$ above non-entrenched management of 15.95 bps (or 78.22%).[56]

So far, we have found significant evidence that supports our hypothesis (H1) that managerial entrenchment mitigates increases in the cost of debt surrounding OMRs. Next, we turn our attention to why bondholders react favorably (or at least less negatively) to share repurchases conducted by entrenched managers. In hypothesis H1(a), we suggest that the presence of concentrated institutional ownership (i.e., blockholders) represents a potential threat to the firm's creditors. As such, we expect the mitigating effects of creditor-manager alignment (managerial entrenchment) to be greater as the concentration of blockholder ownership increases. In Tables 9

[56] This finding somewhat supports our premise (H4(a)) that, if entrenched managers announce an OMR as a defensive measure, they must follow through with actual repurchases or else be exposed to disciplinary action by external shareholders as early as the next quarter. As such, creditors may punish entrenched managers (by selling) with a higher yield spread if they fail to repurchase, thus exposing the firm, and the creditor's claims, to the governing forces of the market for control.

and 10, we test this hypothesis by examining the interaction of entrenched management with our three (3) proxies for blockholder ownership: *LrgBlockOwn*, *TotBlockOwn*, and *TotBlockHldrs*.[57] Again, we are faced with potential endogeneity issues (simultaneity bias) arising from the interaction of managerial entrenchment with blockholder ownership. For example, does greater takeover protection provided by higher levels of ATPs lead to lower blockholder ownership or do blockholders increase their equity stakes in anticipation of reducing entrenchment levels through direct intervention (voice) or the threat of driving down the stock price through large block sales (exit). Also, as we presuppose, the announcement of an OMR by entrenched managers may be in response (defensive repurchases) to increased blockholder ownership (threat of direct intervention). In Table 5, we have already shown that blockholder ownership concentration (number of blockholders) is negatively (positively) correlated with managerial entrenchment which suggests that blockholders are aware of how costly direct intervention would be in the presence of strong managerial entrenchment (ATPs), and therefore, choose governance by exit or the threat of exit (i.e., "*voting with their feet*"), imposed by the presence of multiple smaller blockholders (see e.g., Edmans, 2009; and Edmans and Manso, 2011). We take several steps to address this issue. First, data on anti-takeover provisions (entrenchment) is as of the last annual shareholder meeting prior to the OMR announcement quarter. This ensures that all firm-level ATPs were effective before management chose to announce an OMR. Second, as mentioned previously, we use lagged blockholder ownership data as of the end of the quarter prior to our event window (Edmans, 2014). While blockholder ownership does change over the event window,[58] anti-takeover provisions do

[57] Edmans and Manso (2011) demonstrate that the presence of multiple blockholders, while reducing the efficiency of direct intervention (voice) by splitting the size of the block, increases blockholder trading, thereby impounding private information from multiple (smaller) blockholders into the stock price and moving it "*toward fundamental value, and thus cause it to more closely reflect the effort exerted by the manager to enhance firm value*." (p.2396)

[58] For robustness, we also examine the effect of changes in total blockholder ownership (number) on the cost of debt. In untabulated results, we find that mean (median) total blockholder ownership (*TotBlockOwn*) significantly increases by only 0.77% (0.28%) over the three-quarter event window, while the mean (median) total number of blockholders (*TotBlockHldrs*) only increases by 0.09 (0.00). However, in OLS regressions, we find that neither the change in the

not. So, while it is possible that blockholders may anticipate the possibility of removing an ATP at the next board meeting (e.g., declassification of the board), we do not expect issues of reverse causality from blockholder ownership backwards to entrenchment. Regardless, our primary interest is how the cost of debt is changing around an OMR given the level of managerial entrenchment and the presence of concentrated blockholder ownership. As such, since entrenchment and blockholder ownership are both right-hand side variables, we orthogonalize blockholder ownership (as well as number of blockholders) against *Entrenched* and use the orthogonalized residuals in our regressions. In Table 9, our primary specification(s) is:

$$\Delta\overline{YS}_{j,[-1,+1]} = \beta_0 + \beta_1 Entrenched_{jt} + \beta_2 Block_{j,t} + \beta_3 (Entrenched_{jt} \times Block_{j,t}) + \gamma \Delta Y_{j,[-1,+1]} + \lambda X_{j,t} + \alpha_{Ind} + \alpha_T + \varepsilon_{j,t} \quad (4)$$

where Block is a placeholder for each of three proxies for blockholder ownership (orthogonalized residuals). In models (1, 4, and 7), using the original values of our blockholder proxies, we find that bondholders react negatively to increases in ownership concentration among both the firm's largest blockholder and the total amount of blockholder ownership. Using orthogonalized residuals for *LrgBlockOwn* in models (2) and (3), we find that, in those firms with greater exposure (i.e., non-entrenched) to governance imposed by the firm's largest blockholders, $\Delta\overline{YS}$ are significantly increasing. For example, absent entrenched management, a one-standard deviation increase in *LrgBlockOwn* leads to significant increases in $\Delta\overline{YS}$ of 7.66 bps and 10.53 bps in models (2) and (3), respectively. While we find that the presence of entrenched management helps to offset these increases (coefficients on the *Entrenched* variable represent reductions of 7.43 bps and 10.52 bps, respectively), the coefficients on the interaction terms, while having the predicted negative sign, are statistically insignificant in both models. However, in models (5) and (6), using orthogonalized

concentration of ownership nor the number of blockholders is significantly related to the change in yield spreads over the three-quarter OMR event window.

residuals for *TotBlockOwn*, we find that the presence of entrenched management more than offsets increases in $\Delta\overline{YS}$ arising from increases in *total* blockholder ownership. Without the protection provided by entrenched management, a one-standard deviation increase in *TotBlockOwn* increases $\Delta\overline{YS}$ by 7.99 bps and 15.33 bps, respectively. However, when management is shielded from the market for control, the effect is more than eliminated as a one-standard deviation increase in *TotBlockOwn* results in net *reductions* in $\Delta\overline{YS}$ of 2.35 bps (a reduction of 129.37%) and 1.0 bps (reduction of 106.53%), respectively. The significant reductions in $\Delta\overline{YS}$ in models (5) and (6) are even more astounding in the presence of entrenched management when we consider the coefficients on the Entrenched variable which result in additional reductions of 6.86 bps and 9.29 bps, thus bringing total reductions in $\Delta\overline{YS}$ for a one-standard deviation increase in *TotBlockOwn* to 9.21 bps (215.27% reduction) and 10.29 bps (167.12% reduction), respectively. In models (8) and (9), we also find that the presence of entrenched managers results in significant reductions in $\Delta\overline{YS}$ as the number of blockholders (*TotBlockHldrs*) increases. Again, for those firms whose management are more exposed to the market for control (non-entrenched), we find that $\Delta\overline{YS}$ are increasing by 4.84 bps and 8.27 bps, respectively, for each additional blockholder present. However, when management has greater protection from takeovers (entrenched), each additional blockholder results in significant net decreases of 3.84 bps (179.34% reduction) and 3.86 bps (146.67% reduction), respectively. Again, when we consider the additional reductions of 6.48 bps and 8.91 bps based on the coefficients on the *Entrenched* variable, we find that managerial entrenchment significantly and economically reduces the changes in yield spreads as the total number of blockholders increases.

In Table 10, we further examine the perceived threat to the firm's creditors by examining how yield spreads change around OMRs in the presence of *high* total blockholder ownership (number). As the mitigating effects (significance) of entrenchment on $\Delta\overline{YS}$ appear limited to total

blockholder ownership as well as the total number of blockholders present, we create (2) dummy variables, *High_TotBlockOwn* and *High_TotBlockHldrs* equal to one if *TotBlockOwn* and *TotBlockHldrs*, respectively, are greater than or equal to median *TotBlockOwn* and *TotBlockHldrs*, and zero otherwise. Again, as in Table 9, we attempt to mitigate the effects of endogeneity by first orthogonalizing *TotBlockOwn* (and *TotBlockHldrs*) against *Entrenched* and then using the orthogonalized residuals to calculate our dummy variables for high blockholder ownership (number). In Table 10, we use the same regression specification found in Table 9, simply substituting our (2) dummy variables for high blockholder ownership in place of Block in Eq. (4). In models (2) and (3), we find that, in the absence of protection afforded by entrenched management, $\Delta\overline{YS}$ are significantly increasing by 15.66 bps and 19.02 bps, respectively, when total blockholder ownership is at or above median levels. However, for those bonds whose management are shielded from takeovers, we find significant overall net reductions in $\Delta\overline{YS}$ of 12.31 bps (178.61%) and 15.39 bps (180.91%), respectively. We find similar results in model (5) when the firm has two or more blockholders present (i.e., High_TotBlockHldrs=1). In the absence of entrenched managers, $\Delta\overline{YS}$ are significantly increasing by 7.69 bps; however, when management is entrenched, this increase is more than offset with a total net reduction of 15.26 bps, almost a three-fold (298.44%) decrease in $\Delta\overline{YS}$. While the net reduction in model (6) is much larger (reduction of 31.84 bps) when entrenched management repurchases at least 1% of equity in the announcement quarter, the increase in $\Delta\overline{YS}$ in the absence of managerial entrenchment just escapes being significant at the 10% level. Overall the results in Tables 9 and 10 provide strong support for hypotheses H1, H1(a) and H4(a), suggesting that bondholders regard repurchases by entrenched managers as beneficial to their interests, especially as the perceived threat of takeover (blockholder ownership concentration) increases. In the next section, we directly examine the ex-ante likelihood of a takeover.

5.3 Ex-ante Takeover Probability

The central tenent underlying our presupposition that creditors view share repurchases conducted by entrenched management as defensive measures is that creditors evaluate the external market for control in consideration of its potential for takeover (i.e., takeover probability), with the threat of takeover increasing as either the concentration of blockholder ownership or the number of blockholders increases. Therefore, in this section, we examine how takeover risk directly affects bondholder's reactions to an OMR. As our proxy for takeover risk, we follow the methodology of Billet and Xue (2007) by estimating the *ex-ante* takeover probability (*TOPROB*) of each OMR-firm in our sample. We begin by collecting all data on takeover bids from the SDC Mergers and Acquisitions database for the period from 2001 through 2015. Using this data, we create a dummy variable, *TODUM*, that takes a value of one if a firm receives a takeover bid in year t, and zero otherwise. We then match these records to the entire merged Compustat/CRSP database over the same period to arrive at a sample of 77,715 firm-year observations. Using our takeover dummy as the dependent variable, we estimate a probit model of the likelihood that a firm receives a takeover offer in year t. Again, following Billet and Xue, our set of dependent variables include firm-level financial variables *ROAIA*, *SIZEEQ*, *LEVBIA*, *MKBK*, *SALEGR*, and *NPPE*, as well as *ITODUM*, a dummy variable equal to one if any firm within the same 2-digit SIC code received a takeover bid in year t-1, and zero otherwise.[59] We use lagged values of all dependent variables (year t-1) in order to estimate the ex-ante takeover probability at of the beginning of year t in which the OMR announcement occurs. We refer the reader to Billet and Xue (2007) for a complete discussion of the estimation of ex-ante takeover probability.

In Table 11, we examine how average yield spreads are changing around an OMR in relation to our estimate of ex-ante takeover probability interacted with our proxies for managerial

[59] All variables definitions as well as construction is described in Appendix A.

entrenchment. While Billet and Xue (2007) did not explicitly include the level of takeover protection afforded through firm-level anti-takeover provisions (entrenchment) when estimating ex-ante takeover probability, correlations exist between their choice of financial variables and managerial entrenchment (e.g., firm size, market-to-book, ROA, etc.) that may result in endogeneity issues (simultaneity bias and/or omitted variable bias).[60] In fact, we find that *TOPROB* is significantly (albeit weakly) positively related to the *E_Index* as well as our indicator variable for entrenchment. Additionally, as we argue that bondholders explicitly consider the effects of ATPs when assessing the likelihood of a takeover, in our pooled OLS regressions, we again attempt to mitigate endogeneity by first orthogonalizing *TOPROB* against each of our proxies for managerial entrenchment, and then using the orthogonalized residuals in our regressions.[61] We estimate the following regression specification:

$$\Delta\overline{YS}_{j,[-1,+1]} = \beta_0 + \beta_1 TOPROB_{jt} + \beta_2 Entrenched_{jt} + \beta_3 (TOPROB_{j,t} \times Entrenched_{jt}) + \gamma \Delta Y_{j,[-1,+1]} + \lambda X_{j,t} + \alpha_{Ind} + \alpha_T + \varepsilon_{j,t} \quad (5)$$

where Entrenched is a placeholder for both the *E_Index* variable as well as the dummy variable *Entrenched*. In the first three models in Table 11, we find that $\Delta\overline{YS}$ are significantly increasing in ex-ante takeover probability (*TOPROB*). In model (3), we find that when the firm's management is totally exposed to the market for control (*E_Index*=0), a one-standard deviation increase in *TOPROB* significantly increases $\Delta\overline{YS}$ by 9.03 bps. However, we find that a one-standard deviation increase in *E_Index* values (holding *TOPROB* constant) significantly decreases $\Delta\overline{YS}$ by 9.99 bps

[60] In untabulated results, we include various measures of managerial entrenchment as well as the six (6) individual ATPs that comprise the E-Index as regressors in probit models of ex-ante takeover probability and find that the likelihood of a takeover bid is significantly negatively related to entrenchment (measured as the presence of 3 or more ATPs) only if classified (staggered) board is one of the ATPs present. In fact, we find that takeover probability is significantly increasing in the presence of entrenchment if classified board (ATP) is not present. Results are available upon request.

[61] Results from "first-stage" regressions to orthogonalize TOPROB against measures of entrenchment are available upon request.

(in addition to the reduction of 4.15 bps based on the coefficient on the *E_Index* variable). In models (4) and (5), when we interact *TOPROB* with our indicator variable, *Entrenched*, we find that the coefficient on *TOPROB* is positive, albeit insignificant. However, in the presence of entrenched management, we find that a one-standard deviation increase in *TOPROB* results in a significant reduction in $\Delta\overline{YS}$ of 6.87 bps in model (5). Thus, the take-away from Table 11 is that, when the ex-ante probability that a firm will become a takeover target is high, takeover protection provided by firm-level ATPs appears to mitigate increases in the cost of debt surrounding managements use of OMRs.

In Tables 12 and 13, we interact ex-ante takeover probability with our proxies for blockholder ownership (number) concentration using the same basic regression specification in Eq. 5. Again, since the estimation of ex-ante takeover probability does not control for institutional nor blockholder ownership, we attempt to mitigate endogeneity in two ways.[62] First, our measure of ex-ante takeover probability is as of the end of the prior fiscal year which predates our observations of blockholder ownership. So, we assume here that *TOPROB* may influence blockholder ownership, but we do not expect reverse causality to be an issue. Second, to control for the explained variation in blockholder ownership attributable to *TOPROB*, we orthogonalize total blockholder ownership (number) against *TOPROB* and use the residuals in pooled OLS regressions. Surprisingly, in Table 12, absent either blockholder ownership in models (1) thru (3) or when total blockholder ownership (%) is below median levels in models (4) thru (6), we find that ex-ante takeover probability is statistically insignificant. However, in model (1), we find that the interaction term is positive and highly significant, thus confirming that given ex-ante takeover probability

[62] Here again, for robustness, we also control for institutional ownership as well as concentrated blockholder ownership when estimating (probit regressions) ex-ante takeover probability. We find evidence that takeover probability is increasing in institutional ownership as well as positively related to the presence of a blockholder. However, interestingly, we find that as the concentration of either the firm's largest blockholder or total blockholder ownership increases, ex-ante takeover probability is significantly reduced. We don't find any significant relationship between the total number of blockholders and takeover probability.

(*TOPROB*), $\Delta\overline{YS}$ are increasing as total blockholder ownership (*TotBlockOwn*) increases. While the effect of the interaction of two continuous variables is often difficult to interpret, we find that, holding *TOPROB* (*TotBlockOwn*) constant at its mean, a one-standard deviation increase in *TotBlockOwn* (*TOPROB*) from its mean increases $\Delta\overline{YS}$ by 32.14 bps (13.20 bps). However, interesting, we find that the coefficient on *TotBlockOwn* is negative and highly significant. As such, this would reduce the total effect of a one standard deviation increase of *TotBlockOwn* from its mean (again, holding *TOPROB* constant at its mean) to a net increase in $\Delta\overline{YS}$ of 3.73 bps (32.14 bps – 28.41 bps). Since we know that *TotBlockOwn* is significantly correlated with entrenchment, instead of attempting to control for multiple (3-way) interactions, in models (2) and (3), we simply divide our sample of bonds based on entrenchment. In model (2), when the firm's bondholders are more exposed to the market for control (*Entrenched*=0), we find that the magnitude of the coefficient on the interaction term increases by 41.2%, thereby further increasing $\Delta\overline{YS}$ as the concentration of total blockholder ownership increases. However, in model (3) where the subsample of bonds are shielded by higher ATPs (*Entrenched*=1), the magnitude of the coefficient on the interaction term is 42.69% smaller than that of the non-entrenched sample in model (2), and more importantly, is no longer statistically significant.

In models (4) thru (6) of Table 12, we interact *TOPROB* with our indicator variable for at or above median (high) levels of total blockholder ownership (*High_TotBlockOwn*). We find very similar results to those for *TotBlockOwn* interacted with *TOPROB*. Again, when we divide the sample by entrenchment, we find that, in model (5) where bondholders are more exposed to the market for control, the magnitude of the interaction variable more than doubles (103.61% increase), i.e., when total blockholder ownership percentage is high and firm bondholders are not shielded by entrenched management, a 1% increase in *TOPROB* results in $\Delta\overline{YS}$ significantly increasing by 42.10 bps versus only 20.68 bps for the sample taken as a whole. Again, and more

importantly, we find that, in model (6), the magnitude of the coefficient on the interaction term is substantially reduced (71.50% reduction) and is no longer statistically significant when management is considered entrenched.

In Table 13, we extend the examination of ex-ante takeover probability by considering its relationship to changes in yield spreads based on a firm's total number of external blockholders (*TotBlockHldrs*). While the results of this exercise are very similar to those in Table 12, several interesting observations can be made. First, as in Table 12, in the absence of a blockholder or when there is only one blockholder present, we find that the coefficient on *TOPROB* is statistically insignificant. However, again, we find that the interaction of *TotBlockHldrs* as well as *High_TotBlockHldrs*, separately, with *TOPROB* is positive and highly significant suggesting that as the number of blockholders increase, the ex-ante probability of takeover drives increases in $\Delta\overline{YS}$. Additionally, when we subdivide our sample based on entrenchment, we find that, while now the coefficients are statistically significant for the entrenched sample, the magnitude of the coefficients on the interaction terms in models (3) and (6) (*Entrenched* samples) are reduced by 45.78% and 54.17%, respectively, relative to the coefficients for the sample of bonds with greater exposure to the market for control (non-entrenched). The findings in Tables 11, 12, and 13 provide additional support for the notion that bondholders consider the relative strength (blockholder ownership concentration) of the external market for control as well as the potential threat of takeover (ex-ante takeover probability) in relation to their level of takeover protection afforded by the presence of firm-level ATPs (managerial entrenchment) when responding to the announcement of an OMR.

6. Conclusion

In this study, we examine how creditor-manager incentive alignment affects changes in the firm's cost of debt over the immediate quarters surrounding the announcement of an OMR. We propose that, when agency costs of equity are high (i.e., management is protected (entrenched)

from the external market for control through multiple firm-level anti-takeover provisions), the alignment of creditor-manager interests may have a *mitigating effect* on changes in the cost of debt surrounding entrenched managements use of defensive share repurchases, as creditors may view these as defensive measures that serve to further protect their interests from the threat of takeover as well. We refer to this as the creditor-manager alignment hypothesis.

We find multivariate evidence that increases in the cost of debt (changes in average yield spreads ($\Delta\overline{YS}$) on the firms seasoned public bonds) surrounding OMR announcements are significantly reduced by 42.86% when management is protected from the external market for control. However, the mitigating effects of creditor-manager alignment (as proxied by managerial entrenchment), while greater in magnitude, appear limited only to those firms that repurchase significant amounts of equity in the announcement quarter (greater than 1%). Additionally, when management is more exposed (non-entrenched) to the governing influence of an *effective* market for control (as proxied by concentrated blockholder ownership), we find that $\Delta\overline{YS}$ are significantly increasing. However, the increases in $\Delta\overline{YS}$ attributable to total blockholder ownership (and/or the total number of blockholders) are completely offset when management is shielded from takeovers (entrenched). The mitigating effects of creditor-manager alignment appear limited, though, to only (significantly) offsetting those increases in $\Delta\overline{YS}$ resulting from either aggregate blockholder ownership or the presence of multiple blockholders where governance (or the threat of governance) through exit strategies (i.e., selling blocks of shares) is seen as more effective (Edmans and Manso, 2011). Overall, the results in this study provide strong support for the creditor-manager alignment hypothesis.

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Appendix A: Variable construction

Variable name	Description
$\Delta\overline{YS}$	Change in average quarterly yields spreads ($\overline{YS}$)
ΔBeta unlevered	Change in unlevered beta over the 3-qtr event window - calculated by subtracting the ending value in quarter [-2] from the ending value in quarter [+1]
ΔMarket leverage	Change in market leverage over the 3-qtr event window - calculated by subtracting the ending value in quarter [-2] from the ending value in quarter [+1]
ΔCash/Assets	Change in cash/assets over the 3-qtr event window - calculated by subtracting the ending value in quarter [-2] from the ending value in quarter [+1]
ΔCredit ratings	Change in average credit ratings over the 3-qtr event window - calculated by subtracting the ending value in quarter [-2] from the ending value in quarter [+1]
ΔEarnings volatility	Change in earnings volatility over the 3-qtr event window - calculated by subtracting the ending value in quarter [-2] from the ending value in quarter [+1]
ΔProfitability	Change in quarterly return on equity (ROE) over the 3-qtr event window - calculated by subtracting the ending value in quarter [-2] from the ending value in quarter [+1]
Repurchase variables	
Per_Sght	Percent of equity targeted in OMR announcement
Announced frequency	Number of prior OMR announcement (1984 to present)
CSHOPQ	Common shares outstanding purchased in quarter
CSHOPQ>=1.0%	Dummy variable equal to one if firm repurchased 1% or more of its outstanding equity during the announcement quarter, and zero otherwise
0<CSHOPQ<1.0%	Dummy variable equal to one if firm had positive repurchases of less than 1% of it outstanding equity during the announcement quarter, and zero otherwise
CSHOPQ=0.0%	Dummy variable equal to one if firm repurchased no shares during the announcement quarter, and zero otherwise
CSHOPQ (Total_Prior4qtrs)	Cumulative percentage of outstanding equity repurchased in the 4-quarters prior to the event window
ActiveRepQtrs (Prior4qtrs)	Cumulative number of quarters in which the firm had positive repurchase activity in the 4-quarters prior to the event window
Frequent_Rep	Dummy variable equal to one if the value of ActiveRepQtrs is greater than or equal to the median value of ActiveRepQtr, and zero otherwise
Firm-level variables	
Total assets	Book value of total assets (ATQ) adjusted to 2015 dollars (CPI)
Market value of equity	Calculated as common shares outstanding (CSHOQ) multiplied by fiscal quarter-end closing share price (PRCC_Q) adjusted to 2015 dollars (CPI)

Market-to-book	Calculated as the market value of assets (common shares outstanding quarter (CSHOQ) multiplied by fiscal quarter-end closing price (PRCC_Q) plus total assets (ATQ) minus common equity (CEQQ) minus book value of deferred taxes (TXDBQ)) divided by the book value of total assets (ATQ).
Market leverage	Calculated as long-term debt (DLTTQ) divided by long-term debt (DLTTQ) plus market value of equity (CSHOQ x PRCC_Q)
Cash/Assets	Calculated as cash and cash equivalents (CHE) divided by total assets (AT).
EBIT/Sales	Operating profit margin - calculated as operating income after depreciation and amortization (OIADPQ) divided by sales (SALEQ)
Profitability	Return on equity - calculated as net income before extraordinary items (IBQ) divided by book equity (BEQ)
Earnings volatility	Standard deviation of operating profit margin after tax over the four quarters prior to the event window
PPE/AT	Total net property, plant, and equipment (PPENT) divided by total assets (AT). Used in the calculation of PBC.
Size*	Standardized measure of firm size used in the calculation of PBC. Calculated as the natural log of total assets (AT) minus the mean value of ln(AT) all divided by the standard deviation of ln(AT). The book value of total assets (AT) is adjusted to 2015 dollars using CPI before taking (natural) logarithms.
ROAIA	Industry-adjusted Return on Assets – calculated as operating income before depreciation (OIBDP) divided by total assets (AT), minus the median value of ROA for all firms in the same 2-digit SIC industry. All values are as of the prior fiscal-year-end. Used in estimation of TOPROB.
SIZEEQ	Size of (common) equity – calculated as the natural log of the market value of equity as of the prior fiscal year-end. Used in estimation of TOPROB.
LEVBIA	Industry-adjusted book value of leverage – calculated as the book value of total debt (DLLT + DLC) divided by total assets (AT), minus the median value of book leverage for all firms in the same 2-digit SIC industry. All values are as of the prior fiscal-year-end. Used in estimation of TOPROB.
SALEGR	Calculated as the rate of sales (SALE) growth over the prior year. Used in estimation of TOPROB.
NPPE	Total net property, plant, and equipment (PPENT) as of the prior fiscal year-end. Used in estimation of TOPROB.
Beta unlevered	Calculated using Hamada's equation as market levered Beta divided by one plus (one minus the marginal corporate tax rate multiplied by the debt-to-equity ratio).
Beta levered	Measure of systematic market risk estimated from the market model over the 255 trading days before the event window
Dividend payer	Dummy variable equal to one if the firm paid common dividends during the four quarters prior to the event window, and zero otherwise

Bond variables

Market value outstanding	Calculated as amount outstanding (issue id) multiplied by the daily trade-weighted price on the last business day in the fiscal quarter [-2] adjusted to 2015 dollars (CPI)
Time to maturity	Remaining time to maturity (years) of the outstanding issue as of the beginning of the event window
Bond age	The number of years elapsed from the original issue date until the last day before the beginning of the event window
Average rating	The simple average of the credit ratings of the three CRA(s): Moody's, Standard and Poor's, and Fitch. Character based ratings are converted to numeric values starting at 1 for AAA rated debt and ending at 22 for CC. The average rating is calculated as of the end of each quarter in the event window.
Coupon rate	Annual interest rate as of the date of the bond transaction used to establish coupon payments
ΔDuration	Change in modified duration (calculated using conventional methodology) over the 3-qtr event window
ΔConvexity	Change in convexity (calculated using conventional methodology) over the 3-qtr event window
Investment grade	Dummy variable equal to one if the average credit rating is equal to BBB- or higher, and zero otherwise
Callable	Dummy variable equal to one if the bond issue is flagged as redeemable, and zero otherwise
Convertible	Dummy variable equal to one if the bond issue is flagged as convertible or exchangeable, and zero otherwise
Putable	Dummy variable equal to one if the bond issue is flagged as putable, and zero otherwise
Total payout covenants	Total number of payout related covenants in bond indenture (0-2)
Dividend restrictive covenants	Dummy variable equal to one if bond indenture includes covenants restricting dividend payments made to shareholders or other entities may be limited, and zero otherwise
Repurchase restrictive covenants	Dummy variable equal to one if bond indenture includes covenants restricting issuer's freedom to make payments (other than dividends) to shareholders and others, and zero otherwise
Governance variables	
E-Index	Bebchuk, Cohen, and Ferrell (2009) "*entrenchment index*" - constructed by adding one (initial value of zero) for each of the following (6) anti-takeover provisions present: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments.
Entrenched	Dummy variable equal to one if the E-index value is greater than or equal to the median E-index value for all firms, and zero otherwise
TotInstOwn	Total percentage of equity held by external institutional owners
Blockholder	Dummy variable equal to one if at least one external shareholder owns at least 5% of the firms outstanding equity, and zero otherwise

LrgBlockOwn	Conditional on the presence of a blockholder, the percentage of equity ownership of the firm's largest blockholder
TotBlockOwn	Conditional on the presence of a blockholder, the combined total percentage of equity ownership of all the firm's blockholders
High_TotBlockOwn	Dummy variable equal to one if TotBlockOwn is greater than or equal to median TotBlockOwn for all sample firms, and zero otherwise
TotBlockHldrs	Total number of external shareholders that report owning at least 5% of the firm's outstanding equity (i.e. Total number of Blockholders)
High_TotBlockHldrs	Dummy variable equal to one if TotBlockHldrs is greater than or equal to median TotBlockHldrs for all sample firms, and zero otherwise
Staggered board	Also referred to as Classified board. Anti-takeover provision separating directors into distinct classes (typically three). Limits the election of directors in any one year to one class with overlapping terms.
Poison pill	Anti-takeover provision that is triggered in the event of an unauthorized takeover that gives creditors the right to demand redemption of all outstanding debt or that dilutes the acquirers' effective voting power
Limits_Bylaws	Anti-takeover provision that limits the ability of shareholders to make changes to the firm's bylaws.
Limits_Charter	Anti-takeover provision that limits the ability of shareholders to make changes to the firm's charter.
Super_Majority	Anti-takeover provision that requires a "super" majority (e.g., two-thirds) of shareholder votes to approve the acquisition of the firm by an external bidder.
Golden_Parachute	Anti-takeover provision that guarantees a substantial severance package including large cash payments and/or other financial awards to upper management if they are dismissed as the result of a merger or acquisition (takeover).
TOPROB	Ex-ante takeover probability. Calculated per Billet and Xue (2007) as the probability of takeover in year t obtained through Probit regressions of the variable TODUM against lagged (1-year) values of financial variables in year t-1 shown to influence the likelihood of a takeover bid.
TODUM	Dummy variable equal to one if a firm receives a takeover (or merger) bid in year t, and zero otherwise. Used in estimation of TOPROB.
ITODUM	Dummy variable equal to one if any firm within the same 2-digit SIC (code) industry received a takeover (or merger) bid in year t-1, and zero otherwise. Used in estimation of TOPROB.
Tenure	Total number of years CEO has held current position as of the date of the OMR announcement. Proxy variable for managerial control.
High_Tenure	Dummy variable equal to one if Tenure is greater than or equal to median Tenure for all sample firms, and zero otherwise
PBC	Private benefits of control – as defined in Eckbo and Thorburn (2003), PBC is a factor control (proxy) variable for managerial control. The variable is constructed as the sum of CEO_Ownership and CEO_Tenure minus PPE/AT and SIZE*.
Powerful_CEO	Defined as a CEO who simultaneously holds the positions of CEO, Chairman of the Board (COB), and President, as well as serving as the only insider on the Board of Directors

CEO_Ownership	Total percentage of equity held (including options) by the firm's CEO. Ownership data collected from ExecuComp.
Systematic risk variables	
ΔMkt credit premium	Change in market credit premium (defined as the difference in yields on Moody's Baa-rated and Aaa-rated corporate bonds) over the 3-qtr event window
ΔInterest rate	Change in spot interest rates (defined as the constant maturity 10-yr Treasury yield) over the 3-qtr event window
ΔSlope	Change in the slope of the Treasury yield curve (defined as the difference in yields between the 10-yr and 2-yr constant maturity Treasury yields) over the 3-qtr event window
ΔEquity market premium	Change in the equity market premium (from Fama and French 3-factor model-obtained from Ken French's website) over the 3-qtr event window
ΔSMB	Change in SMB (from Fama and French 3-factor model-obtained from Ken French's website) over the 3-qtr event window
ΔHML	Change in HML (from Fama and French 3-factor model-obtained from Ken French's website) over the 3-qtr event window

Appendix B: Alternative proxies for managerial entrenchment

In our study, we argue that creditor-manager alignment stems from the protection from takeovers provided by entrenched management, who are, themselves, shielded from the external market for control through multiple firm-level anti-takeover provisions (ATPs). We find evidence that managerial entrenchment (i.e., protection provided by ATPs) results in significant mitigation of increases in average yield spreads ($\Delta\overline{YS}$) on the firm's seasoned public bonds surrounding OMR announcements. For robustness, we further examine whether the mitigating effects of creditor-manager alignment extend to other proxies of managerial control (entrenchment) found in the literature including CEO tenure, PBC (private benefits of control), and the presence of a powerful CEO (see e.g., Eckbo and Thorburn, 2003; and Ji et al., 2017).

We begin by collecting data on CEO tenure from Execucomp. The rationale for using CEO tenure as a measure of managerial entrenchment is based on the premise that the length of time a CEO is able to remain (entrenched) in her position reflects her ability to effectively deter external governance from the market for control. As our proxy for CEO tenure, we create a dummy variable, *High_Tenure*, that takes a value of one if CEO tenure is greater than or equal to median CEO tenure for the entire sample, and zero otherwise.

We next follow the methodology in Eckbo and Thorburn (2003) to construct a factor variable to represent the CEO's private benefits of control (*PBC*). Eckbo and Thorburn argue that if firm-specific private benefits of control are high (e.g., power to hide incompetence, shirking, perquisite consumption, wealth expropriation, etc.), this will induce "*managerial conservatism*" (i.e., agency costs of equity associated with reductions in risk-shifting incentives) resulting in "*value-reducing managerial entrenchment*."(p.229) Private benefits of control (*PBC*) is simply a factor representation of four (4) characteristics related to the ability of the CEO to extract private benefits including CEO equity ownership, CEO tenure, asset tangibility (*PPE/AT*), and the size of the firm (*Size**). Eckbo and Thorburn argue that both CEO ownership and tenure should be

positively related to the ability of the CEO to extract private benefits of control, while higher levels of asset tangibility as well as larger firm size make it more difficult. While we attempt to closely follow Eckbo and Thorburn in their construction of the *PBC* factor variable,[63] we make the following adjustments to our measure of *PBC*. First, we only use the amount of CEO equity ownership, including options, found in Execucomp as our measure of CEO ownership. Eckbo and Thorburn also include the ownership of named spouses as well as children in their measure. Next, we rely on our dummy variable, *High_Tenure*, as our measure of control related to CEO tenure, which takes a value of one only if CEO tenure is at or above median levels. In contrast, Eckbo and Thorburn assign a value of one to their variable for CEO tenure if the CEO has been in her position for at least two (2) years.[64] Lastly, as a measure of asset tangibility, we use the ratio of the firm's net property, plant, and equipment (NPPE) to total assets (AT) calculated from data in Compustat. Eckbo and Thorburn alternatively rely on the proportion of total debt indicated as "*secured*" as their effective measure of asset tangibility. Thus, in our study, private benefits of control (*PBC*) is constructed as:

$$PBC = CEO\ Ownership + High\ Tenure + PPE/AT + Size^{*} \qquad (6)$$

Finally, following Ji et al. (2017), we construct a measure of CEO control (entrenchment), *Powerful_CEO*, which takes a value of one if the CEO also shares the joint roles of Chairman of the Board (COB) and President, while additionally being the only insider on the Board of Directors, and zero otherwise. The construction of all variables used in this section is found in Appendix A.

In Table 2, we see that the average (median) tenure for our CEO at the time of an OMR announcement is approximately 6.42 yrs. (4.89 yrs.). As a factor representation, our proxy variable for CEO private benefits of control, *PBC*, falls within a range of -3.02 to 3.31 with a mean (median)

[63] See Eckbo and Thorburn (2003), pgs. 240-241, for a complete description of their methodology to calculate private benefits of control (PBC).

[64] For robustness, we also follow this convention in construction of CEO_tenure; however, this results in substantially increased values of PBC which may over bias regression estimates.

value of 0.23 (0.20). Higher values of *PBC* represent stronger incentives for CEOs to reduce risk shifting incentives (i.e., higher levels of managerial entrenchment). Lastly, we find that only 15.44% of the CEOs in our sample meet the criteria to be considered a *Powerful_CEO*. The correlation analysis from Table 5 reveals that both *PBC* and *Powerful_CEO* are significantly positively correlated with our main proxy for managerial entrenchment, the *E_Index* (as well as the dummy variable *Entrenched*). However, CEO tenure appears to be unrelated to the level of managerial protection provide through ATPs.

In Table 14, we examine the effects of our three additional proxies for managerial control (entrenchment) on changes in average quarterly yield spreads ($\Delta\overline{YS}$), both individually as well as including the interaction effects of each proxy with our dummy variable, *Entrenched*, as it proxies for managerial control (entrenchment) based solely on greater protection from the market for control afforded through the presence of multiple ATPs. Overall, we find that the results from Table 14 add further support for our notion that the protection provided by ATPs (i.e., takeover channel) is primarily responsible for aligning the interests of creditors with those of *entrenched* managers as we find that several of the additional proxies for managerial control actually lead to significant increases in $\Delta\overline{YS}$, while our proxy for entrenchment results in significant reductions (in most cases) in $\Delta\overline{YS}$. In columns (1) and (2), we find that creditors respond negatively to OMRs when announced by CEOs who have at or above median levels of tenure. However, in column (3), we find that when CEOs are in the earlier stages of their tenure with the firm (*High_Tenure*=0), the takeover protection afforded by ATPs (*Entrenched*) results in significant reductions in $\Delta\overline{YS}$ (8.38 bps). In columns (4) thru (6), we find that creditors also respond negatively when the CEO's private benefits of control are high, as the coefficient on PBC is significantly positively related to increases in $\Delta\overline{YS}$ in all three models. Even when management is shielded from takeover in column (6), the effects of *PBC* outweigh the protection provided by ATPs as the coefficients on both *Entrenched* and the

interaction variable, *Entrenched x PBC*, while having the correct (negative) sign, are not statistically significant. Instead, we find that a one-standard deviation increase in *PBC* results in an increase of 9.08 bps in $\Delta\overline{YS}$. Interestingly, in column (9), we find that, in firms with more exposure to external control (i.e., non-entrenched), the presence of a powerful CEO actually results in reductions in $\Delta\overline{YS}$ of 7.23 bps (although just barely significant at the 10% level). However, when the CEO is protected against takeovers through ATPs, the net reduction in $\Delta\overline{YS}$ is only 2.51 bps (representing an overall increase of 65.28% versus when the powerful CEO is unshielded by ATPs). This result is somewhat difficult to interpret as the presence of a *Powerful_CEO* acts as a substitute for takeover protection provided by anti-takeover provisions. However, since only a small percentage (15.44%) of firms have a *Powerful_CEO* and the statistical significance of the results is somewhat small, it is unwise to draw inferences from this sample alone.

Again, overall, we suggest that these results provide evidence that creditors do not blindly respond positively (or less negatively) to share repurchases by managers based on their level of managerial control, but instead, we suggest that the alignment of creditor-manager interests stems from the protection from takeovers provided by the presence of firm-level anti-takeover provisions. As such, attaching the label of "*entrenched*" to management regardless of the proxies for managerial control may result in spurious finding like those in Table 14.

Table 1: OMR distribution by year announced and Fama-French industry classification.

The sample contains 1,251 distinct open market repurchase (OMR) announcements over the period from July 01, 2002 thru December 31, 2015 that have matching public bond data available through FINRA's TRACE database. All OMR announcements are obtained from the Thomson Reuters SDC Platinum Mergers & Acquisitions database. Panel A reports both the number of OMR announcements by year and the number of associated (matched) bond issues per year. Panel B reports the distribution of OMRs by Fama-French 12-Industry classifications.

Panel A: OMR announcements by year

Year	OMR No.	%	Bond No.	%
2002	33	2.64	101	1.81
2003	42	3.36	129	2.31
2004	65	5.20	267	4.78
2005	112	8.95	398	7.12
2006	97	7.75	462	8.27
2007	155	12.39	628	11.24
2008	111	8.87	399	7.14
2009	51	4.08	208	3.72
2010	80	6.39	378	6.77
2011	128	10.23	560	10.02
2012	98	7.83	522	9.34
2013	81	6.47	463	8.29
2014	104	8.31	537	9.61
2015	94	7.51	535	9.58
Total	1,251	100.00	5,587	100.00

Panel B: OMR announcements by Fama-French 12-Industries

Ind_Code	Fama-French Industry	OMR No.	%
1	Consumer non-durables	93	7.43
2	Consumer durables	28	2.24
3	Manufacturing	139	11.11
4	Energy	37	2.96
5	Chemicals	78	6.24
6	Business Equipment	131	10.47
7	Television and telecom	29	2.32
8	Utilities	28	2.24
9	Wholesale and retail	170	13.59
10	Healthcare	96	7.67
11	Finance	287	22.94
12	Other	135	10.79
	Total	1,251	100.00

Table 2: Sample descriptive statistics

This table reports descriptive statistics for a sample of 1,251 OMR announcements over the period from July 1, 2002 to December 31, 2015 matched with bond data from FINRA's TRACE database over a 3-quarter period [-1, 0, +1]. Panel A displays OMR program characteristics. Panel B displays firm characteristics in levels as of the end of the fiscal quarter [-2] prior to our event window. Panel C displays bond-level descriptive characteristics, and Panel D displays governance characteristics. Appendix A describes the construction of all variables. All continuous variables have been winsorized at the 1% level to mitigate the effect of outliers. All dollar amounts have been adjusted to 2015 dollars (U-CPI) to account for inflation.

Panel A: OMR program characteristics (N=1,251)

	Mean	Std. Dev.	Q1	Median	Q3
Repurchase Authorization Amt ($mil)	1,514.64	3,474.41	200.00	500.00	1,100.00
Percent Equity Sought (%)	7.32	4.20	4.23	6.27	9.89
Announced Frequency (No.)	4.40	4.37	2.00	4.00	6.00
CSHOPQ (Ann. Qtr.) (%)	1.65	1.96	0.31	1.11	2.16
CSHOPQ>=0.01 (%)	53.64				
CSHOPQ<0.01 (%)	36.45				
CSHOPQ=0.00 (%)	9.91				
CSHOPQ (Total_Prior4qtrs) (%)	3.85	4.52	0.22	2.60	5.70
Active Repurchase Qtrs. (Prior4qtrs)	2.84	1.53	2.00	4.00	4.00
Bond Issues (per OMR)	4.47	5.33	1.00	3.00	6.00

Panel B: Firm characteristics (N=1,251)

	Mean	Std. Dev.	Q1	Median	Q3
Total assets ($bil)	58.79	182.70	4.02	10.27	31.32
Market value of equity ($bil)	24.43	48.05	3.45	9.56	22.42
Market-to-book	3.153	3.841	1.319	2.096	3.394
Market leverage	0.240	0.170	0.114	0.195	0.329
Cash/Assets	0.103	0.111	0.028	0.063	0.140
EBIT/Sales	0.175	0.148	0.086	0.144	0.222
Profitability	0.046	0.124	0.020	0.035	0.055
Earnings volatility	0.032	0.066	0.011	0.018	0.033
Beta unlevered	0.418	0.273	0.211	0.368	0.565
Beta levered	1.030	0.384	0.764	0.986	1.250
Dividend payer	0.747				

Table 2: Sample descriptive statistics (cont'd)

Panel C: Bond issue characteristics (N=5,587)

	Mean	Std. Dev.	Q1	Median	Q3
$\Delta\overline{YS}$ (%)	0.147	0.928	-0.170	0.009	0.257
Market value outstanding ($mil)	644.27	627.12	272.95	460.60	780.14
Time to maturity (yrs.)	9.89	10.77	3.20	6.49	10.46
Bond age (yrs.)	4.57	4.30	1.42	3.24	6.48
Average rating	7.59	2.74	5.67	7.33	9.00
Coupon rate (%)	5.697	1.797	4.750	5.875	6.875
Duration	6.13	4.12	2.91	5.29	8.03
Convexity	76.87	102.02	10.34	33.96	78.28
Investment grade (%)	87.10				
Callable (%)	69.89				
Convertible (%)	1.66				
Putable (%)	1.90				
Total payout covenants (0-2)	0.146	0.470	0.000	0.000	0.000
Dividend restrictive covenants (%)	5.19				
Repurchase restrictive covenants (%)	9.41				

Panel D: Governance characteristics (1,251 OMRs)

	N	Mean	Std. Dev.	Q1	Median	Q3
E-Index (0-6)	1,168	2.77	1.44	2.00	3.00	4.00
Entrenched (%)	1,168	61.30				
Institutional Ownership (%)	1,249	79.34	17.18	69.69	81.44	89.82
Blockholder (%)	1,071	85.61				
Largest Block Ownership (%)	1,071	9.67	5.28	6.54	8.43	10.98
Total Block Ownership (%)	1,071	19.03	11.76	10.34	16.84	25.55
Total Blockholders (No.)	1,071	2.41	1.36	1.00	2.00	3.00
Staggered board (%)	1,168	43.58				
Poison pill (%)	1,168	26.80				
Limits_Bylaws (%)	1,168	70.03				
Limits_Charter (%)	1,168	64.04				
Super_Major (%)	1,168	26.20				

Table 2: Sample descriptive statistics (cont'd)
Panel D: Governance characteristics (1,251 OMRs)

	N	Mean	Std. Dev.	Q1	Median	Q3
Golden_Parachute (%)	1,168	46.58				
TOPROB (%)	1,097	1.96	0.50	1.63	1.94	2.25
Tenure (Yrs.)	1,079	6.42	6.39	2.26	4.89	8.56
PBC (-3.02 to 3.31)	826	0.23	1.05	-0.43	0.20	0.96
Powerful_CEO (%)	1,036	15.44				

Table 3: Average yield spread changes ($\Delta\overline{YS}$)

This table reports changes in average yield spreads ($\Delta\overline{YS}$) of firm's seasoned publically traded bonds over the (3) quarters [-1, 0, +1] surrounding the announcement quarter of 1,251 open market repurchase (OMR) announcements from June 30, 2002 thru Dec 31, 2015. Following Lie (2005), we also disaggregate OMRs into subgroups based on the percentage of common equity purchased (CSHOPQ) in the announcement quarter. Panel A displays bond-level yield spread changes ($\Delta\overline{YS}$) for all 5,587 bonds in the sample. Panel B reports bond-level $\Delta\overline{YS}$ further segmented by investment grade. Panel C reports bond-level $\Delta\overline{YS}$ segmented by managerial entrenchment. Panel D reports bond-level $\Delta\overline{YS}$ segmented by High_LrgBlockOwn, a dummy variable equal to one if equity ownership of the firm's single largest blockholder (LrgBlockOwn) is greater than or equal to median LrgBlockOwn, and zero otherwise. Panel E reports bond-level $\Delta\overline{YS}$ segmented by High_TotBlockOwn, a dummy variable equal to one if the percent of total blockholder ownership (TotBlockOwn) is greater than or equal to median TotBlockOwn, and zero otherwise. Panel F reports bond-level $\Delta\overline{YS}$ segmented by High_TotBlockHldrs, a dummy variable equal to one if the total number of blockholders (TotBlockHldrs) is greater than or equal to median TotBlockHldrs, and zero otherwise. All variables are defined in Appendix A. Yield spreads have been winsorized at the 1% level to mitigate the effect of outliers. Significance of means (medians) are determined using standard t-tests (Wilcoxon signed rank test). We use *, **, and *** to denote significance at the 10%, 5%, and 1% level (two-sided), respectively.

	All-OMRs			CSHOPQ>=1% (a)			0<=CSHOPQ<1% (b)			Differences (a-b)	
Sample	N	Mean	Median	N	Mean	Median	N	Mean	Median	Mean	Median
Panel A: Change in average yield spreads ($\Delta\overline{YS}$) - all publicly traded bonds (%)											
All bonds	5587	0.1470***	0.0091***	3114	0.1880***	0.0247***	2473	0.0953***	-0.0101	0.0927***	0.0348***
		(0.0000)	(0.0000)		(0.0000)	(0.0000)		(0.0000)	(0.4461)	(0.0002)	(0.0000)
Panel B: Change in average yield spreads ($\Delta\overline{YS}$) by Investment Grade (%)											
Investment	4876	0.0833***	0.0018***	2741	0.1204***	0.0187***	2135	0.0359**	-0.0158*	0.0845***	0.0345***
Grade (c)		(0.0000)	(0.0003)		(0.0000)	(0.0000)		(0.0130)	(0.0892)	(0.0000)	(0.0000)
Non-Investment	711	0.5830***	0.2000**	373	0.6847***	0.1841***	338	0.4708***	0.2267***	0.2140	-0.0426
Grade (d)		(0.0000)	(0.0000)		(0.0000)	(0.0000)		(0.0000)	(0.0000)	(0.1081)	(0.3706)
Differences	5587	-0.4966***	-0.1982***		-0.5644***	-0.1654***		-0.4349***	-0.2425***		
(c-d)		(0.0000)	(0.0000)		(0.0000)	(0.0000)		(0.0000)	(0.0000)		
Panel C: Change in average yield spreads ($\Delta\overline{YS}$) by Entrenchment (%)											
Entrenched=1	3022	0.1547***	0.0188***	1745	0.1935***	0.0385***	1277	0.1016***	-0.0183	0.0920***	0.0568***
(c)		(0.0000)	(0.0003)		(0.0000)	(0.0000)		(0.0005)	(0.5258)	(0.0091)	(0.0000)
Entrenched=0	2433	0.1166***	-0.0007*	1312	0.1571***	0.0086**	1121	0.0691***	-0.0068	0.0880***	0.0154
(d)		(0.0000)	(0.0005)		(0.0000)	(0.0136)		(0.0002)	(0.9360)	(0.0067)	(0.1642)
Differences	5455	0.0381	0.0195**		0.0364	0.0299		0.0324	-0.0115		
(c-d)		(0.1147)	(0.0200)		(0.2857)	(0.3006)		(0.3469)	(0.6193)		

Table 3: Average yield spread changes ($\Delta\overline{YS}$) (cont'd)

	All-OMRs			CSHOPQ>=1% (a)			0<=CSHOPQ<1% (b)			Differences (a-b)	
Sample	N	Mean	Median	N	Mean	Median	N	Mean	Median	Mean	Median
Panel D: Change in average yield spreads ($\Delta\overline{YS}$) by High_LrgBlockOwn (%)											
High =1	1819	0.1982***	0.0121***	1142	0.2350***	0.0284***	677	0.1363***	-0.0221	0.0987*	0.0505***
(c)		(0.0000)	(0.0000)		(0.0000)	(0.0000)		(0.0017)	(0.9841)	(0.0650)	(0.0003)
High =0	2391	0.1527***	0.0190***	1299	0.1778***	0.0274***	1092	0.1229***	0.0064**	0.0548	0.0210*
(d)		(0.0000)	(0.0000)		(0.0000)	(0.0000)		(0.0000)	(0.0173)	(0.1585)	(0.0560)
Differences	4210	0.0455	-0.0069		0.0572	0.0010		0.0134	-0.0285*		
(c-d)		(0.1534)	(0.6866)		(0.1521)	(0.6704)		(0.7995)	(0.0628)		
Panel E: Change in average yield spreads ($\Delta\overline{YS}$) by High_TotBlockOwn (%)											
High =1	1603	0.2541***	0.0343***	1014	0.2568***	0.0331***	589	0.2494***	0.0387***	0.0075	-0.0056
(c)		(0.0000)	(0.0009)		(0.0000)	(0.0000)		(0.0000)	(0.0003)	(0.9086)	(0.7931)
High =0	2607	0.1222***	0.0050***	1427	0.1674***	0.0253***	1180	0.0675***	-0.0091	0.0999***	0.0344***
(d)		(0.0000)	(0.0000)		(0.0000)	(0.0000)		(0.0085)	(0.4285)	(0.0030)	(0.0000)
Differences	4210	0.1319***	0.0293***		0.0895**	0.0078		0.1819***	0.0478***		
(c-d)		(0.0000)	(0.0026)		(0.0324)	(0.4826)		(0.0024)	(0.0017)		
Panel F: Change in average yield spreads ($\Delta\overline{YS}$) by High_TotBlockHldrs (%)											
High =1	2474	0.2448***	0.0349***	1462	0.2644***	0.0354***	1012	0.2166***	0.0337***	0.0478	0.0017
(c)		(0.0000)	(0.0000)		(0.0000)	(0.0000)		(0.0000)	(0.0000)	(0.3095)	(0.1007)
High =0	1736	0.0614***	-0.0041	979	0.1151***	0.0159***	757	0.0097	-0.0161**	0.1055***	0.0320***
(d)		(0.0003)	(0.2357)		(0.0000)	(0.0006)		(0.7230)	(0.0136)	(0.0058)	(0.0002)
Differences	4210	0.1757***	0.0390***		0.1492***	0.0195**		0.2070***	0.0498***		
(c-d)		(0.0000)	(0.0000)		(0.0000)	(0.0211)		(0.0000)	(0.0002)		

Table 4: Firm-level variables: changes in levels

This table displays summary statistics for both (Panel A) changes (Δ) in levels and (Panel B) absolute levels (at the end of prior quarter [-2]) of financial variables shown to affect credit (yield) spreads of publicly traded corporate bonds based on the structural model of bond pricing. All variables are described in detail in Appendix A. Changes in levels as the difference between the value at the end of fiscal quarter [+1] and the value in levels as of the end of fiscal quarter [-2] just prior to the OMR event window [-1, 0, +1]. Variables have been winsorized at the 1% level to mitigate the effect of outliers. Significance of means (medians) are determined using standard t-tests (Wilcoxon signed rank test). Statistical significance of changes in levels as well as all differences at the 1%, 5%, and 10% levels are indicated by ***, **, and * respectively.

Variable		All OMRs (1)	Entrenched (2)	Non-Entrenched (3)	Differences (3) - (2)	CSHOPQ>=1% (4)	CSHOPQ<1% (5)	Differences (5) - (4)
Panel A: Changes in levels of firm-level financial variables								
Beta unlevered [-1, +1]	Mean	-0.0026	-0.0110**	0.0064	0.0174*	-0.0092	0.0051	0.0143
	Median	-0.0041*	-0.0058***	0.0009	0.0067	-0.0125***	(0.0051)	0.0176***
Market leverage [-1, +1]		0.0086***	0.0069***	0.0078**	0.0008	0.0160***	0.0002	-0.0158***
		0.0013***	0.0019**	0.0002*	-0.0017	0.0048***	-0.0013	-0.0061***
Book leverage [-1, +1]		0.0036*	0.0059**	0.0009	-0.0053	0.0154***	-0.0097***	-0.0252***
		0.0000	-0.0001	-0.0008	-0.0007	0.0061***	-0.0080***	-0.0141***
Cash/Assets [-1, +1]		-0.0030**	-0.0025	-0.0037	-0.0012	-0.0075***	0.0022	0.0096***
		-0.0008*	-0.0008	-0.0007	0.0001	-0.0021***	0.0008	0.0029***
Credit ratings [-1, +1]		-0.0171*	-0.0183	-0.0178	0.0004	-0.0221*	-0.0113	0.0107
		0.0000***	0.0000**	0.0000*	0.0000	0.0000**	0.0000	0.0000
Earnings volatility [-1, +1]		0.0025	0.0024	0.0028	0.0004	0.0000	0.0054*	0.0054
		0.0001*	0.0003*	0.0001	-0.0002	-0.0001	0.0007**	0.0008
Profitability [-1, +1]		-0.0029	-0.0045	0.0002	0.0047	-0.0019	-0.0042	-0.0023
		-0.0011**	-0.0011*	-0.0009	0.0002)	-0.0006	-0.0015**	-0.0009
Panel B: Firm financial variables in levels								
Total assets ($bil)	Mean	58.792	39.292	98.206	58.914***	51.573	67.143	15.570
	Median	10.272	10.505	11.313	0.8080	10.114	10.392	0.278
Market-to-book		3.1527	3.0158	3.4004	0.3846*	3.1948	3.1037	-0.0911
		2.0963	1.9925	2.3828	0.3903***	2.1294	2.0672	-0.0622
Market value equity ($bil)		24.426	17.901	38.363	20.462***	22.627	26.507	3.8795
		9.555	9.585	12.645	1.3192***	10.139	8.587	-1.552
Market leverage		0.2402	0.2278	0.2298	0.0021	0.2295	0.2526	0.0231**
		0.1954	0.1926	0.1810	-0.0116	0.1868	0.2053	0.0185**

Table 4: Firm-level variables: changes in levels (cont'd)

Variable		All OMRs (1)	Entrenched (2)	Non-Entrenched (3)	Differences (3) - (2)	CSHOPQ>=1% (4)	CSHOPQ<1% (5)	Differences (5) - (4)
Panel B: Firm financial variables in levels (as of the end of prior fiscal quarter [-2]) (*continued*)								
Cash/Assets	Mean	0.1030	0.1016	0.1054	0.0037	0.1042	0.1017	-0.0025
	Median	0.0628	0.0644	0.0645	0.0001	0.0637	0.0614	-0.0023
EBIT/Sales		0.1747	0.1700	0.1782	0.0082	0.1753	0.1741	-0.0013
		0.1442	0.1406	0.1466	0.0060	0.1455	0.1435	-0.0020
Return on equity		0.0456	0.0438	0.0534	0.0097	0.0498	0.0408	-0.0090
		0.0353	0.0337	0.0420	0.0083***	0.0362	0.0340	-0.0022*
Earnings volatility		0.0319	0.0322	0.0290	-0.0032	0.0312	0.0329	0.0017
		0.0184	0.0181	0.0183	0.0002	0.0181	0.0191	0.0010
Beta unlevered		0.4182	0.4172	0.4227	0.0055	0.4198	0.4164	-0.0034
		0.3677	0.3700	0.3813	0.0113	0.3785	0.3509	-0.0276
Observations		1,251	716	452		671	580	

Table 5: Correlation matrix

This table displays correlations among dependent variables of interest used in multivariate regressions. Pearson (Spearman) correlations are located on the lower (upper) triangular section of the matrix. All variables are defined in Appendix A. All continuous variables have been winsorized at the 1% level to mitigate the effect of outliers. Significance at the 5% and 1% levels is denoted by * and **, respectively.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
E_Index [1]	1.00	0.87**	0.05	0.00	-0.03	0.03	0.02	-0.01	0.02	-0.04
Entrenched [2]	0.82**	1.00	0.04	0.02	-0.04	-0.01	0.02	0.00	0.01	-0.00
Per_sght [3]	0.05	0.03	1.00	0.19**	-0.09**	0.07*	-0.07	0.05	0.01	0.01
CSHOPQ [4]	-0.01	0.00	0.19**	1.00	-0.11**	0.13**	-0.11**	0.02	-0.04	0.04
ΔBeta unlevered [5]	-0.04	-0.05	-0.06	-0.08**	1.00	-0.17**	0.07*	-0.07*	-0.00	0.02
ΔMarket leverage [6]	0.03	-0.01	0.06*	0.11**	-0.10**	1.00	-0.05	0.12**	0.11**	-0.14**
ΔCash/Assets [7]	0.03	0.01	-0.01	-0.08**	0.04	-0.11**	1.00	0.06*	0.01	-0.00
ΔCredit ratings [8]	-0.03	-0.00	0.07*	0.08**	0.01	0.17**	0.02	1.00	0.03	0.02
ΔEarnings volatility [9]	-0.02	-0.00	-0.01	-0.03	0.01	0.18**	-0.06*	0.05	1.00	-0.08**
ΔProfitability [10]	-0.04	-0.03	0.01	0.03	0.11**	-0.21**	0.01	0.00	-0.10**	1.00
TotInstOwn [11]	0.20**	0.19**	0.11**	0.10**	-0.06*	0.03	-0.01	-0.01	0.00	0.00
LrgBlockOwn [12]	-0.16**	-0.19**	0.02	0.10**	0.03	0.05	0.02	-0.02	0.01	0.03
TotBlockOwn [13]	-0.04	-0.07*	0.09**	0.10**	-0.01	0.09**	0.01	0.04	0.01	0.03
TotBlockHldrs [14]	0.06*	0.04	0.11**	0.08**	-0.04	0.07*	-0.00	0.07*	0.01	0.02
High_TotBlockOwn [15]	-0.03	-0.05	0.08*	0.07*	0.01	0.07*	-0.00	0.04	0.00	0.03
High_TotBlockHldrs [16]	0.09**	0.04	0.06*	0.03	-0.01	0.04	-0.01	-0.01	0.04	-0.05
TOPROB [17]	0.23**	0.17**	0.13**	0.11**	-0.10**	0.07*	0.06*	0.00	0.01	-0.03
PBC [18]	0.12**	0.10**	0.07*	0.04	-0.06	0.10**	-0.10**	-0.07*	-0.03	-0.09**
Tenure [19]	0.00	0.03	0.02	0.01	0.02	0.03	-0.01	-0.03	-0.03	-0.06
Powerful_CEO [20]	0.11**	0.10**	-0.01	-0.04	-0.02	-0.06*	-0.05	-0.03	-0.01	-0.01

Table 5: Correlation matrix (cont'd)

This table displays correlations among dependent variables of interest used in multivariate regressions. Pearson (Spearman) correlations are located on the lower (upper) triangular of the matrix. All variables are defined in Appendix A. All continuous variables have been winsorized at the 1% level to mitigate the effect of outliers. Significance at the 5% and 1% levels is denoted by * and **, respectively.

	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
E_Index [1]	0.18**	-0.12**	-0.03	0.07*	-0.03	0.08*	0.24**	0.14**	-0.02	0.11**
Entrenched [2]	0.18**	-0.14**	-0.05	0.04	-0.05	0.04	0.17**	0.08*	-0.00	0.10**
Per_sght [3]	0.10**	0.09**	0.10**	0.09**	0.08**	0.05	0.13***	0.08*	0.03	-0.03
CSHOPQ [4]	0.07*	0.05	0.04	0.01	0.04	0.01	0.10**	-0.00	0.01	-0.06
ΔBeta unlevered [5]	-0.03	0.02	0.00	-0.01	0.01	0.01	-0.07*	-0.08*	-0.01	0.01
ΔMarket leverage [6]	0.03	0.07*	0.06*	0.05	0.05	0.02	0.11**	0.11**	0.02	-0.07*
ΔCash/Assets [7]	-0.04	-0.03	-0.03	-0.03	-0.02	-0.03	-0.02	-0.05	-0.01	-0.00
ΔCredit ratings [8]	-0.03	-0.03	0.01	0.03	0.01	-0.02	0.01	-0.07*	-0.05	-0.00
ΔEarnings volatility [9]	0.01	-0.00	0.01	0.01	0.01	0.02	0.02	0.01	-0.04	-0.03
ΔProfitability [10]	-0.03	-0.02	-0.01	-0.01	0.02	-0.04	-0.02	-0.03	-0.02	0.00
TotInstOwn [11]	1.00	0.34**	0.54**	0.50**	0.47**	0.37**	0.18**	0.32**	0.01	0.05
LrgBlockOwn [12]	0.24**	1.00	0.72**	0.36**	0.58**	0.32**	0.06	0.17**	0.02	0.01
TotBlockOwn [13]	0.52**	0.62**	1.00	0.87**	0.87**	0.72**	0.18**	0.30**	0.01	-0.01
TotBlockHldrs [14]	0.50**	0.14**	0.85**	1.00	0.77**	0.82**	0.21**	0.29**	-0.00	-0.01
High_TotBlockOwn [15]	0.44**	0.43**	0.77**	0.71**	1.00	0.59**	0.16**	0.25**	0.03	0.02
High_TotBlockHldrs [16]	0.36**	0.15**	0.59**	0.68**	0.59**	1.00	0.14**	0.21**	-0.02	0.00
TOPROB [17]	0.17**	0.04	0.21**	0.24**	0.17**	0.14**	1.00	0.19**	-0.04	-0.01
PBC [18]	0.28**	0.12**	0.30**	0.30**	0.25**	0.22**	0.18**	1.00	0.41**	-0.00
Tenure [19]	-0.01	0.03	0.00	-0.01	0.00	-0.02	-0.02	0.35**	1.00	0.05
Powerful_CEO [20]	0.06*	-0.00	-0.01	-0.01	0.02	0.00	-0.01	-0.02	-0.02	1.00

Table 6: Pooled OLS regressions of changes in yield spreads (ΔYS)

This table reports results from pooled OLS regressions. The dependent variable in all specifications is the change in yield spreads (ΔYS) over the three quarters [-1, 0, +1] surrounding the announcement of 1,251 open market repurchase programs from 2002 through 2015. Our primary variables of interest include (managerial) entrenchment as well as changes (Δ) over the same three-quarter period in levels of asset (unlevered) beta, market leverage, cash-to-assets, credit ratings, earnings volatility, and profitability. Firm level control variables as well as variables that have previously been shown in the literature to influence changes in yield spreads are also included. All variable definitions as well as the construction and source of data are described in Appendix A. Industry level as well as calendar year fixed effects are also included in all specifications. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	Pred. Sign	All Bonds (1)	All Bonds (2)	All Bonds (3)	All Bonds (4)	Rep>=1.0% (5)	Rep=0.0% (6)	0<Rep<1% (7)
Entrenched	+/-	-0.0683***	-0.0641***	-0.0647***	-0.0631***	-0.1073***	0.1175	-0.0277
		(-2.82)	(-2.69)	(-2.68)	(-2.84)	(-3.25)	(0.86)	(-0.76)
ΔBeta unlevered [-1, +1]	+	0.4279***	0.4951***	0.4388**	0.4598***	0.7616***	0.0041	0.1068
		(2.59)	(2.90)	(2.52)	(2.77)	(3.32)	(0.01)	(0.51)
ΔMarket leverage [-1, +1]	+	3.2674***	3.2457***	3.2469***	2.4442***	2.5410***	4.7536***	2.0353***
		(10.98)	(10.86)	(10.83)	(9.00)	(5.40)	(3.25)	(6.98)
ΔCash/Assets [-1, +1]	-	-0.7128**	-0.7501**	-0.7918***	-0.5838**	-0.3073	1.6985	-0.7621
		(-2.42)	(-2.51)	(-2.59)	(-2.00)	(-0.69)	(1.19)	(-1.13)
ΔCredit ratings [-1, +1]	+	0.2242***	0.1959***	0.1819***	0.1663***	0.1731***	0.3021***	0.0903
		(6.22)	(5.56)	(4.86)	(5.10)	(3.74)	(2.77)	(1.34)
ΔEarnings volatility [-1, +1]	+	0.8433***	0.8103***	0.6779**	0.4793**	0.7863*	-1.2829	0.2918
		(2.72)	(2.84)	(2.45)	(2.23)	(1.84)	(-1.49)	(1.31)
ΔProfitability [-1, +1]	-	-0.6983**	-0.7363**	-0.6632**	-0.5756*	-1.1285***	3.0671***	-0.6602
		(-2.10)	(-2.22)	(-2.01)	(-1.94)	(-3.75)	(3.21)	(-1.57)
Total assets	-	-0.0298***	-0.0184**	-0.0095	0.0133	0.0101	0.0366	-0.0114
		(-3.54)	(-2.27)	(-1.02)	(1.52)	(0.77)	(0.81)	(-0.81)
Market-to-book	+/-	0.0007	0.0031	0.0038	0.0024	0.0092**	-0.0073	-0.0019
		(0.24)	(0.89)	(1.05)	(0.76)	(2.18)	(-0.54)	(-0.63)
Dividend payer	+/-	-0.0837	-0.0708	-0.0553	-0.0461	-0.2001***	0.2552	0.1585**
		(-1.58)	(-1.37)	(-1.17)	(-1.02)	(-3.03)	(1.13)	(2.44)
Percent equity sought	+		0.3278	0.3161	0.0101	-0.0060	4.8185***	0.0954
			(1.50)	(1.40)	(0.059)	(-0.02)	(3.30)	(0.25)
Announced frequency	-		-0.0055**	-0.0035	-0.0046	-0.0063	-0.0161	-0.0063
			(-1.99)	(-1.22)	(-1.58)	(-1.57)	(-0.99)	(-1.36)

Table 6: Pooled OLS regressions of changes in yield spreads (ΔYS) (cont'd)

Specification	Pred. Sign	All Bonds (1)	All Bonds (2)	All Bonds (3)	All Bonds (4)	Rep>=1.0% (5)	Rep=0.0% (6)	0<Rep<1% (7)
Frequent_Rep	-		-0.0901***	-0.0732***	-0.0663***	-0.0876***	-0.2015	-0.0269
			(-4.05)	(-3.30)	(-3.11)	(-2.72)	(-1.30)	(-0.73)
CSHOPQ_Lead	+		1.7734**	1.4873*	1.6968**	2.0426**	-5.1114***	-3.1467***
			(2.16)	(1.77)	(2.39)	(2.20)	(-2.35)	(-2.83)
Investment-grade	-			-0.1496***	-0.1227**	-0.0783	-0.4994***	-0.1482*
				(-3.02)	(-2.50)	(-1.12)	(-2.82)	(-1.88)
Coupon	+			0.0282***	0.0283***	0.0361***	0.0297	0.01685*
				(3.44)	(3.62)	(2.98)	(1.23)	(1.76)
Bond age	+			0.0026	0.0020	0.0028	-0.0174*	0.0001
				(0.89)	(0.72)	(0.67)	(-1.80)	(0.04)
ΔModified duration [-1, +1]	-			-0.5487***	-0.6003***	-0.6065***	0.0834	-0.4965***
				(-8.96)	(-9.95)	(-7.49)	(0.24)	(-5.59)
ΔConvexity [-1, +1]	-			0.0083***	0.0091***	0.0094***	-0.0048	0.0077***
				(5.01)	(5.50)	(4.07)	(-0.60)	(3.29)
Callable	+			-0.0124	-0.0252	-0.0476	-0.3130**	-0.0111
				(-0.42)	(-0.90)	(-1.14)	(-2.45)	(-0.25)
Convertible	-			-0.1347	-0.1389	0.1669	-0.6311	-0.0584
				(-0.41)	(-0.45)	(0.44)	(-0.86)	(-0.09)
Total payout covenants (0-2)	-			-0.0750*	-0.0354	-0.0340	-0.0428	-0.0664
				(-1.65)	(-1.05)	(-0.73)	(-0.41)	(-1.49)
ΔMkt credit premium [-1, +1]	+				0.7529***	0.8149***	1.3367***	0.5031***
					(8.01)	(7.48)	(3.97)	(2.74)
ΔInterest rate [-1, +1]	-				-0.1441***	-0.1445***	-0.2289	-0.2099***
					(-4.58)	(-3.98)	(-1.62)	(-3.29)
ΔSlope [-1, +1]	+/-				0.7898**	0.4811	-1.2562	1.2112**
					(2.44)	(1.29)	(-0.76)	(2.06)
ΔEquity mkt premium [-1, +1]	-				0.1064	-0.1730	-3.0538*	0.0424
					(0.36)	(-0.44)	(-1.95)	(0.07)

Table 6: Pooled OLS regressions of changes in yield spreads (ΔYS) (cont'd)

Specification	Pred. Sign	All Bonds (1)	All Bonds (2)	All Bonds (3)	All Bonds (4)	Rep>=1.0% (5)	Rep=0.0% (6)	0<Rep<1% (7)
ΔSMB [-1, +1]	-				-0.2704	-0.3325	-4.2237**	0.6360
					(-0.77)	(-0.74)	(-2.25)	(1.01)
ΔHML [-1, +1]	-				-0.8580*	-0.8047	4.4598**	-1.0464
					(-1.89)	(-1.21)	(2.08)	(-1.31)
		(-0.85)	(-2.11)	(-3.16)	(-4.67)	(-3.04)	(0.76)	(-1.46)
Industry & year controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square		0.4098	0.4135	0.4292	0.5061	0.5533	0.7473	0.4296
Observations		5,170	5,170	4,981	4,962	2,746	325	1,891

Table 7: Changes in credit risk

This table reports results from pooled OLS regressions using the original set of credit risk change variables ($\Delta Y_{j,[-1,+1]}$) as well as the residuals (denoted by ‡) obtained from orthogonalizing these variables against managerial entrenchment (Entrenched). First-stage regression results are available upon request. All variable definitions as well as the construction and source of data are described in Appendix A. The complete set of all control variables used in Table 6 are also included. Industry level as well as year fixed effects are also included in all specifications. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Entrenched	0.0631***	-0.0502**	0.0654***	-0.0544**	-0.0744***	-0.0498**	-0.0629***
	-2.84	-2.06	-2.93	-2.36	-3.35	-2.07	-2.83
ΔBeta_Unlevered	0.4598***				0.4598***		0.4598***
	2.77				2.77		2.77
ΔBeta_Unlevered‡		0.0616	0.4598***				
		0.32	2.77				
ΔMarket Leverage	2.4442***		2.4442***				2.4442***
	9.00		9.00				9.00
ΔMarket Leverage‡				3.1865***	2.4442***		
				10.51	9.00		
ΔCash/Assets	-0.5838**		-0.5838**		-0.5838**		
	-2.00		-2.00		-2.00		
ΔCash/Assets‡						-0.0472	-0.5838**
						-0.15	-2.00
ΔCredit Ratings	0.1663***		0.1663***		0.1663***		0.1663***
	5.10		5.10		5.10		5.10
ΔCredit Ratings‡							
ΔEarnings Volatility	0.4793**		0.4793**		0.4793**		0.4793**
	2.23		2.23		2.23		2.23
ΔEarnings Volatility‡							
ΔProfitability	-0.5756*		-0.5756*		-0.5756*		-0.5756*
	-1.94		-1.94		-1.94		-1.94
ΔProfitability‡							
Constant	-0.6344***	-0.4034***	0.6344***	-0.3567***	-0.6193***	-0.3119**	-0.6339***
	(-4.67)	(-2.84)	(-4.67)	(-2.62)	(-4.56)	(-2.24)	(-4.66)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry & Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.5061	0.4406	0.5061	0.4765	0.5061	0.4396	0.5061
Observations	4,962	5,094	4,962	5,125	4,962	5,125	4,962

Table 7: Changes in credit risk (cont'd)

Specification	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Entrenched	-0.0555**	-0.0636***	-0.0425*	-0.0630***	-0.0673***	-0.0633***	-0.0771***
	-2.37	-2.86	-1.77	-2.84	-2.95	-2.85	-3.45
ΔBeta_Unlevered		0.4598***		0.4598***		0.4598***	
		2.77		2.77		2.77	
ΔBeta_Unlevered‡							0.4598***
							2.77
ΔMarket Leverage		2.4442***		2.4442***		2.4442***	
		9.00		9.00		9.00	
ΔMarket Leverage‡							2.4442***
							9.00
ΔCash/Assets		-0.5838**		-0.5838**		-0.5838**	
		-2.00		-2.00		-2.00	
ΔCash/Assets‡							-0.5838**
							-2.00
ΔCredit Ratings				0.1663***		0.1663***	
				5.10		5.10	
ΔCredit Ratings‡	0.3876***	0.1663***					0.1663***
	5.19	5.10					5.10
ΔEarnings Volatility		0.4793**				0.4793**	
		2.23				2.23	
ΔEarnings Volatility‡			0.9492***	0.4793**			0.4793**
			3.44	2.23			2.23
ΔProfitability		-0.5756*		-0.5756*			
		-1.94		-1.94			
ΔProfitability‡					-1.0586***	-0.5756*	-0.5756*
					-3.300	-1.94	-1.94
Constant	-0.3169**	-0.6337***	-0.3584***	-0.6324***	-0.4524***	-0.6343***	-0.6154***
	(-2.29)	(-4.66)	(-2.59)	(-4.65)	(-3.24)	(-4.66)	(-4.53)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry & Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.4593	0.5061	0.4429	0.5061	0.4749	0.5061	0.5061
Observations	5,099	4,962	5,064	4,962	5,079	4,962	4,962

Table 8: Common shares purchased in announcement quarter (CSHOPQ)

This table reports results from pooled OLS regressions. The dependent variable in all specifications is the change in yield spreads (ΔYS) over the three quarters [-1, 0, +1] surrounding the announcement of 1,251 open market repurchase programs from 2002 through 2015. In these regressions, our primary focus is on the interaction of CSHOPQ (percent of common shares outstanding purchased in the announcement quarter) with our indicator variable for (managerial) entrenchment. As in Table 6, all control variables (not reported to conserve space) as well as firm and year fixed effects are included. All variable definitions are described in Appendix A. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Entrenched	-0.0636***	-0.0404	-0.0675***	-0.0043	-0.0624***	-0.0785***	-0.0674***	-0.0869***
	(-2.85)	(-1.40)	(-3.00)	(-0.14)	(-2.82)	(-3.53)	(-2.98)	(-3.08)
CSHOPQ	0.7649	1.6441*						
	(1.23)	(1.66)						
Entrenched x CSHOPQ		-1.4268						
		(-1.14)						
CSHOPQ>=1%			0.0798***	0.1425***				
			(3.61)	(4.90)				
Entrenched x (CSHOPQ>=1%)				-0.1096***				
				(-2.86)				
CSHOPQ=0%					-0.0634	-0.2039***		
					(-1.46)	(3.40)		
Entrenched x (CSHOPQ=0%)						0.2380***		
						(2.83)		
0<CSHOPQ<1%							-0.0651***	-0.0963***
							(-3.07)	(3.43)
Entrenched x (0<CSHOPQ<1%)								0.0550
								(1.39)
Constant	-0.6461***	-0.6593***	-0.6305***	-0.6648***	-0.6259***	-0.6059***	-0.5748***	-0.5653***
	(-4.72)	(-4.84)	(-4.63)	(-4.95)	(-4.60)	(-4.42)	(-4.26)	(-4.17)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry & year controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.5062	0.5063	0.5076	0.5084	0.5063	0.5072	0.5071	0.5072
Observations	4,962	4,962	4,962	4,962	4,962	4,962	4,962	4,962

Table 9: Blockholder Ownership Concentration

This table reports results from pooled OLS regressions. The dependent variable in all specifications is the change in average yield spreads (ΔYS) of the firm's seasoned public bonds over the three quarters [-1, 0, +1] surrounding the announcement of 1,251 open market repurchase programs from 2002 through 2015. Our primary variables of interest include measures for blockholder ownership concentration (i.e., LrgBlockOwn, TotBlockOwn, and TotBlockHldrs) as well as the interaction of these variables with the dummy variable Entrenched. To mitigate endogeneity, in models 2, 3, 5, 6, 8, and 9, we use orthogonalized residuals from regressions where the variable of interest is regressed against the variable Entrenched. Orthogonalization results are available upon request. The complete set of all control variables used in Table 6 are also included. All variable definitions as well as the construction and source of data are described in Appendix A. Industry level as well as calendar year fixed effects are also included in all specifications. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Rep>=1%			Rep>=1%			Rep>=1%
Entrenched		-0.0743***	-0.1052***		-0.0686**	-0.0929**		-0.0648**	-0.0891**
		(-2.63)	(-2.68)		(-2.45)	(-2.38)		(-2.34)	(-2.22)
LrgBlockOwn	1.1148***	1.4506***	1.9938***						
	(3.16)	(4.51)	(5.17)						
Entrenched*LrgBlockOwn		-0.9063	-1.3247						
		(-0.99)	(-1.14)						
TotBlockOwn				0.3528**	0.6793***	1.3037***			
				(2.16)	(3.47)	(4.66)			
Entrenched*TotBlockOwn					-0.8788***	-1.3888***			
					(-2.69)	(-3.49)			
TotBlockHldrs							0.0126	0.0484***	0.0827***
							(0.81)	(2.58)	(3.00)
Entrenched*TotBlockHldrs								-0.0868***	-0.1213***
								(-3.15)	(-3.46)
Constant	-1.0598***	-0.7554***	-0.6752**	-0.9720***	-0.7235***	-0.6984***	-0.8679***	-0.6384***	-0.5771**
	(-5.48)	(-4.35)	(-2.49)	(-5.18)	(-4.27)	(-2.63)	(-4.86)	(-3.88)	(-2.18)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry & Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.5034	0.4966	0.5286	0.5022	0.4963	0.5300	0.5013	0.4962	0.5278
Observations	3,794	3,717	2,129	3,794	3,717	2,129	3,794	3,717	2,129

Table 10: High blockholder ownership concentration

This table reports results from pooled OLS regressions. The dependent variable in all specifications is the change in average yield spreads (ΔYS) of the firm's seasoned public bonds over the three quarters [-1, 0, +1] surrounding the announcement of 1,251 open market repurchase programs from 2002 through 2015. We create (2) dummy variables, High_TotBlockOwn and High_TotBlockHldrs, both of which are equal to one (1) if TotBlockOwn and TotBlockHldrs, respectively, are greater than or equal to median TotBlockOwn and TotBlockHldrs, and zero otherwise. In these regressions, we are primarily interested in the interaction of these variables with the indicator variable for managerial entrenchment, Entrenched. We attempt to mitigate the effects of endogeneity by first orthogonalizing TotBlockOwn as well as TotBlockHldrs against Entrenched, and then, use the orthogonalized residuals to calculate our dummy variables for high blockholder ownership (number). Orthogonalization results are available upon request. The complete set of all control variables used in Table 6 are also included. All variable definitions as well as the construction and source of data are described in Appendix A. Industry level as well as calendar year fixed effects are also included in all specifications. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2) Rep>=1%	(3)	(4) Rep>=1%
Entrenched	-0.0664**	-0.0922**	-0.0610**	-0.0873**
	(-2.37)	(-2.33)	(-2.20)	(-2.17)
High_TotBlockOwn	0.1566***	0.1902***		
	(4.10)	(3.72)		
Ent*High_TotBlockOwn	-0.2133***	-0.2519***		
	(-4.04)	(-3.68)		
High_TotBlockHldrs			0.0769**	0.0833
			(2.24)	(1.63)
Ent*High_TotBlockHldrs			-0.1685***	-0.2319***
			(-3.51)	(-3.45)
Constant	-0.6963***	-0.6473**	-0.6375***	-0.5027*
	(-4.13)	(-2.47)	(-3.86)	(-1.89)
Control Variables	Yes	Yes	Yes	Yes
Industry & Year Controls	Yes	Yes	Yes	Yes
Adjusted R-square	0.4966	0.5271	0.4956	0.5270
Observations	3,717	2,129	3,717	2,129

Table 11: Ex-Ante takeover probability interacted with entrenchment

This table reports results from pooled OLS regressions of ex-ante takeover probability interacted with proxies for managerial entrenchment based on the presence of anti-takeover provisions (ATP). All variable definitions as well as the construction and source of data are described in Appendix A. The complete set of all control variables used in Table 6 are also included. Industry level as well as calendar year fixed effects are also included in all specifications. ‡ denotes orthogonalized residuals obtained from regressing TOPROB against measures of entrenchment. First-stage regression (orthogonalization) results are available upon request. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)
TOPROB	17.6569***	15.4030**		6.815454	
	(3.43)	(2.15)		(1.13)	
TOPROB‡			18.1343**		7.2781
			(2.29)		(1.22)
E_Index		0.0888**	-0.0288**		
		(2.18)	(-2.57)		
E_Index*TOPROB		-6.0414***			
		(-2.74)			
E_Index*TOPROB‡			-6.9412***		
			(-2.68)		
Entrenched				0.2182*	-0.0512**
				(1.83)	(-2.07)
Entrenched*TOPROB				-14.4029**	
				(-2.23)	
Entrenched*TOPROB‡					-13.8009**
					(-2.11)
Constant	-0.1185	-0.7813***	-0.4842***	-0.7029***	-0.5652***
	(-1.61)	(-4.23)	(-2.89)	(-3.99)	(-3.41)
Control Variables	No	Yes	Yes	Yes	Yes
Industry & Year Controls	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.2951	0.5136	0.5135	0.5141	0.5128
Observations	4,714	4,197	4,197	4,197	4,197

Table 12: Ex-ante takeover probability interacted with total blockholder ownership concentration

This table reports results from pooled OLS regressions of ex-ante takeover probability (TOPROB) interacted with measures of total blockholder ownership concentration. Variable names followed by ‡ indicate that regression specifications use orthogonalized residuals from regressions of the variable of interest against TOPROB. First-stage regression results are available upon request. All variable definitions as well as the construction and source of data are described in Appendix A. The complete set of all control variables used in Table 6 are also included. Industry level as well as calendar year fixed effects are also included in all specifications. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)
		Entrenched=0	Entrenched=1		Entrenched=0	Entrenched=1
TOPROB	-1.8844	2.7986	-8.8731	-2.3105	-3.6542	-9.0061
	(-0.34)	(0.41)	(-1.00)	(-0.41)	(-0.53)	(-1.02)
TotBlockOwn‡	-2.4162***	-2.8796***	-2.3108*			
	(-3.08)	(-4.68)	(-1.69)			
TOPROB*TotBlockOwn‡	139.4583***	196.8876***	112.8428			
	(3.14)	(5.15)	(1.60)			
High_TotBlockOwn‡				-0.3788***	-0.6098***	-0.3145
				(-2.71)	(-3.68)	(-1.45)
TOPROB*High_TotBlockOwn‡				20.6782***	42.1036***	12.0012
				(2.86)	(4.45)	(1.13)
Constant	-0.8061***	-0.7427**	-0.6306**	-0.7963***	-0.5882*	-0.5703*
	(-3.81)	(-2.31)	(-2.03)	(-3.68)	(-1.81)	(-1.81)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry & Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.5024	0.6282	0.4632	0.4985	0.6258	0.4622
Observations	3,328	1,316	2,012	3,328	1,316	2,012

Table 13: Ex-ante takeover probability interacted with total blockholders

This table reports results from pooled OLS regressions of ex-ante takeover probability interacted with the total number of blockholders. Variable names followed by ‡ indicate that regression specifications use orthogonalized residuals from regressions of the variable of interest against TOPROB. First-stage regression results are available upon request. All variable definitions as well as the construction and source of data are described in Appendix A. The complete set of all control variables used in Table 6 are also included. Industry level as well as calendar year fixed effects are also included in all specifications. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)
		Entrenched=0	Entrenched=1		Entrenched=0	Entrenched=1
TOPROB	-1.8548	2.9174	-9.9093	1.5933	3.3371	-10.0283
	(-0.33)	(0.42)	(-1.12)	(-0.28)	(0.48)	(-1.15)
TotBlockHldrs‡	-0.3148***	-0.3245***	-0.2471*			
	(-3.73)	(-4.46)	(-1.95)			
TOPROB*TotBlockHldrs‡	15.6395***	19.7148***	10.6893*			
	(3.55)	(4.98)	(1.73)			
High_TotBlockHldrs‡				-0.4885***	-0.5839***	-0.4306***
				(-4.41)	(-3.61)	(-2.59)
TOPROB*High_TotBlockHldrs‡				23.3194***	37.8239***	17.3346**
				(4.07)	(4.32)	(2.03)
Constant	-0.7536***	-0.6871**	-0.5577*	-0.7446***	-0.5699*	-0.5263*
	(-3.63)	(-2.13)	(-1.86)	(-3.53)	(-1.78)	(-1.72)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry & Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.5030	0.6268	0.4638	0.4990	0.6213	0.4633
Observations	3,328	1,316	2,012	3,328	1,316	2,012

Table 14: Additional proxies for managerial entrenchment

This table reports results from pooled OLS regressions. The dependent variable in all specifications is the change in average yield spreads (ΔYS) of the firm's seasoned public bonds over the three quarters [-1, 0, +1] surrounding the announcement of 1,251 open market repurchase programs from 2002 through 2015. Our primary variables of interest are three additional proxies for managerial control (entrenchment) including CEO tenure (High_Tenure), private benefits of control (PBC), and the presence of a Powerful_CEO. All variable definitions as well as the construction and source of data are described in Appendix A. Variable names followed by ‡ indicate that regression specifications use orthogonalized residuals from regressions of the variable of interest against Entrenched. First-stage regression results are available upon request. The complete set of all control variables used in Table 6 is also included. Industry level as well as year fixed effects are also included in all specifications. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics (in parentheses) are calculated using robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Entrenched		-0.0568**	-0.0838***		-0.0085	-0.0062		-0.0522**	-0.0517**
		(-2.33)	(-2.62)		(-0.26)	(-0.19)		(-2.18)	(-2.16)
High_Tenure	0.0591***	0.0585***	0.0288						
	(3.04)	(3.03)	(1.11)						
Entrenched*High_Tenure			0.0538						
			(1.39)						
PBC‡				0.0662***	0.0630***	0.0865***			
				(2.79)	(2.66)	(3.06)			
Entrenched*PBC‡						-0.0362			
						(-1.28)			
Powerful_CEO‡							-0.0062	-0.0034	-0.0723*
							-0.25	(-0.13)	(-1.72)
Entrenched*Powerful_CEO‡									0.0989*
									(1.77)
Constant	-0.7569***	-0.6597***	-0.6338***	-0.3582	-0.2832	-0.3181	-0.6730017	-0.6132***	-0.6205***
	(-4.96)	(-4.28)	(-4.0)	(-1.58)	(-1.12)	(-1.26)	-4.78	(-4.40)	(-4.45)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry & Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.5055	0.5048	0.5049	0.5291	0.5277	0.5279	0.4917	0.4922	0.4925
Observations	4,702	4,657	4,657	3,689	3,660	3,660	4,554	4,536	4,536

CHAPTER 2: OPEN MARKET REPURCHASES AND BONDHOLDER WEALTH: TO EXPROPRIATE OR NOT TO EXPROPRIATE – THAT IS THE QUESTION?

I. Introduction

Shareholder wealth effects surrounding open market repurchase (OMR) announcements have been extensively examined in the literature.[1] While the motives for conducting an OMR are still subject to debate, the equity markets' positive short-term response to an OMR announcement is widely accepted as a stylized fact (Farre-Mensa, Michaely, and Schmalz, 2014). However, as the value of the firm is the combination of both the firm's debt and equity, researchers have also sought to determine the short-term impact of OMR announcements on bondholder wealth (e.g., Dann, 1981; Maxwell and Stephens, 2003; Eberhart and Siddique, 2004; Jun, Jung, and Walkling, 2009; and Nishikawa, Prevost, and Rao, 2011).[2] These studies focus on whether bondholders perceive the information content of an OMR as a positive signal of future profitability (*signaling hypothesis*) or negatively as an expropriation of firm assets by managers, acting in the interests of shareholders (*wealth transfer hypothesis*). While these studies all report the characteristic positive equity response to an OMR announcement, bondholder reactions exhibit substantial variation which can be attributed primarily to confounding issues involving both the availability and frequency of transactional bond data as well as the researcher's choice of methodology to measure abnormal bond returns. Additionally, several researchers argue that signaling effects cannot be disentangled from those of a wealth transfer as they propose that these two hypotheses are not mutually exclusive (e.g., Jun et al., 2009; and Maxwell and Stephens, 2003). As a result of these

[1] See e.g., Grullon and Ikenberry (2000), Allen and Michaely (2003), and DeAngelo, DeAngelo, and Skinner (2009) for a review of the early finance literature dealing with share repurchases. Farre-Mensa, Michaely, and Schmaltz (2014) provide a more recent, comprehensive review of payout literature with attention focused on the growth of share repurchases relative to dividends.

[2] In a related working paper, Billet, Elkamhi, Mauer, and Pungaliya (2016) examine the impact of OMR announcements on traded syndicated loans and find evidence indicative of a wealth transfer.

issues, the short-term impact of an OMR announcement on bondholder wealth remains an *unresolved question* in the literature.

In a recent study, Bessembinder, Kahle, Maxwell and Xu (2009) examine the various methodologies used to calculate abnormal bondholder returns in the literature. The authors suggest that inferences drawn from the results in many of the early bondholder wealth studies may suffer from bias due to both the methodology and the source of data used to calculate abnormal bond returns.[3] Utilizing daily transactional bond data from the Financial Industry Regulatory Authority's (FINRA) Trade Reporting and Compliance Engine (TRACE),[4] Bessembinder et al. outline a methodology to calculate abnormal bond returns that minimizes both Type I (*false positive*) and Type II (*false negative*) errors in reported test statistics. Utilizing this prescribed methodology, we construct both 3-day and 5-day risk-adjusted cumulative abnormal bond returns (CARs) surrounding the announcement date of 553 OMRs over the period from July 2002 thru December 2015 using both value-weighted (VW) and equal-weighted (EW) daily benchmark portfolios constructed from the universe of all daily bond transactions in TRACE.[5] To our knowledge, we are the first paper in the literature to use 3-day (5-day) bond CARs to examine the direct interaction of wealth effects between the firm's shareholders and bondholders around the *actual* announcement

[3] See Bessembinder et al. (2009) for a review of early bondholder event studies in the literature. A review of more recent bond event studies can be found in Ederington, Guan, and Yang (2015).

[4] In 2001, the U.S. Securities and Exchange Commission (SEC) adopted rules requiring the National Association of Security Dealers (NASD) to report all over-the-counter (OTC) bond transactions in secondary markets. The NASD began reporting these OTC bond transactions for a limited number of bonds (498) with floats that exceeded $1 billion dollars through its Trade Reporting and Compliance Engine (TRACE) on July 1st, 2002. Bessembinder, Maxwell, and Venkataraman, (2006) report that by 2006 TRACE included most corporate bonds that traded at least once daily. On July 26, 2007, the NASD and the member regulation, enforcement, and arbitration operations of the New York Stock Exchange (NYSE) combined to form the Financial Industry Regulatory Authority (FINRA), the largest non-governmental regulatory organization for securities dealers (and brokers) in the United States.

[5] Following Bessembinder et al. (2009), we further segment the daily value-weighted (and equal-weighted) benchmark portfolios by credit ratings; however, as in Bessembinder et al., we are unable to segment by time to maturity due to the lack of breadth of available daily bond trades.

date of an OMR without the potential "*noise*" impounded in abnormal bond returns found in earlier studies using *mismatched* event windows for equity and bondholder abnormal returns.[6]

If, as much of the early repurchase literature suggests, OMR announcements convey positive signals about future growth prospects (signaling hypothesis), one could argue that increases in resultant cash flows should be positive for bondholders, as this increases the ability of the firm to both service and ultimately repay its debt. Therefore, this should lead to a decrease in the probability of default, i.e. the old adage "*a rising tide lifts all boats*." However, share repurchases must ultimately be financed either with cash on hand, through asset sales, or with debt (either the use of existing credit lines or the issuance of new debt), or some combination thereof.[7] The loss of collateral (cash or asset sales), accompanied by increases in firm leverage (either occurring mechanically and/or directly through debt financing), has the potential to increase the probability of default on the firm's existing debt, which, in turn, leads to higher credit spreads, thus driving down the price of the firm's existing bonds resulting in negative returns for bondholders. As such, prior bondholder wealth studies have suggested that negative abnormal bondholder returns accompanied by positive abnormal equity returns around the announcement of a corporate payout event represents a wealth transfer from bondholders to shareholders (e.g., Handjinicolaou and Kalay, 1984). However, to verify a wealth transfer surrounding the announcement of an OMR, statistically significant evidence of an inverse relationship between the cumulative abnormal returns to shareholders and bondholders must exist (see e.g., Maxwell and Stephens, 2003; Jun et

[6] Most of the early studies examining the impact of OMRs on bondholder wealth rely on monthly dealer quotes for bond prices from either the Lehman Brothers Fixed Income database or Moody's Bond Records to calculate *monthly* abnormal bondholder returns which are then matched to standard 3-day equity CARs for comparison. Nishikawa et al. (2011) use daily bond data from Mergent's FISD database of NAIC (National Association of Insurance Companies) trades. However, due to the infrequency of bond trades among insurance companies, Nishikawa et al. are forced to use a window of up to 30 days before and after the OMR announcement date to find the two closest matched trades (before and after the announcement date) for the same bond.

[7] Farre-Mensa, Michaely, and Schmalz (2015) report that 32% of aggregate payouts (dividends and share repurchases) are financed through new debt and equity issues during the payout year. The percentage of financed payouts increases to 41% if the proceeds of employee stock options are included as a source of funds. However, only 3% of aggregate payouts are funded by "*firm-initiated equity issuances*". (p.2)

al., 2009; and Billet et al., 2016). As such, the question of whether a wealth transfer occurs between the firm's shareholders and bondholders around the announcement of an OMR is very much a matter of contention in the extant literature. In the current study, we seek to resolve this issue by directly examining the relationship (correlation) among shareholder and bondholder CARs in the 3-day (and 5-day) window surrounding the announcement date of an OMR.

Consistent with prior literature, we find that 3-day and 5-day equity CARs are positive and statistically significant surrounding the announcement of an OMR. Also, similar to the findings of Maxwell and Stephens (2003) and Jun et al. (2009), we find that mean 3-day (and 5-day) bond CARs are slightly negative and highly significant at both the individual bond and aggregate firm levels.[8] However, as Billet et al. (2016) argue, the finding of positive mean abnormal returns to shareholders accompanied by negative mean abnormal returns to bondholders "*does not prove* (*or even imply*) *an inverse relationship between stock and bond price reactions to OMRs* (*i.e., a wealth transfer*)." (p.5) As such, we turn our attention to an analysis of correlation between the two groups. While Bessembinder et al. (2009) argue that individual bond-level transactions should be aggregated at the firm level to avoid biasing *t*-statistics upward, an examination of the correlation between individual bonds and equity CARs may help to shed light on subsets of bondholders that respond differently to the announcement of an OMR.[9] Therefore, we examine correlations at both the issue (bond) and firm levels. Additionally, the impact of an OMR on the value of non-investment grade (high-yield) debt may be very different than that of investment grade debt.[10] As

[8] Firm level abnormal bond returns are obtained by aggregating bond level CARs using the market value of the outstanding bond issues as weights.

[9] Bessembinder et al. (2009) argue that t-stats may be biased upward due to cross-correlation of errors in bonds issued by the same firm. They also point out that the use of bond-level data will overweight the results from firms with multiple outstanding issues.

[10] For instance, if the information content of a payout is perceived to be positive (negative) for the firm, then the holders of short-term, non-investment grade debt should respond more favorably (negatively) to the immediate reduction (increase) in the probability of default, while holders of investment grade debt are not expected to materially benefit (suffer) as their claim on firm assets is limited to the value of interest and principal payments and is already considered relatively secure.

such, we divide our sample of bonds (firms) by investment grade (IG) versus high-yield (HY) as well as median remaining time to maturity (TTM), thus creating (4) four distinct classes of bond holders for analysis.

At the bond-level, we find the correlation among 3-day (5-day) equity and bond CARs is positive and highly statistically significant in all categories except one, those of short-term/high-yield (ST/HY) bonds. Here we find some univariate evidence of negative correlation between abnormal returns, although it is not statistically significant. We next examine the correlation of abnormal equity and bond returns aggregated at the firm level. Here, our results are somewhat mixed. At the firm-level, we find 3-day (5-day) equity and bond CARs are significantly positively correlated. Upon segmenting firms by the average remaining TTM on all firm bonds, as well as investment grade, we find that, while still positive, several of the correlations are no longer statistically significant. Nonetheless, we find no significant statistical univariate evidence of negative correlations at either the bond or firm levels between 3-day (5-day) equity and bond CARs around the announcement of an OMR.

Using pooled OLS regressions at the bond-level, we next regress 3-day (5-day) equity CARs on 3-day (5-day) bond CARs, as well as a set of control variables that have been shown to affect equity returns around OMR announcements in the literature. To continue our analysis along differences in the four segments based on TTM and investment grade, we interact 3-day and 5-day bond CARs with indicator variables for both non-investment grade (HY) and short-term (ST) bonds. Our multivariate analysis reveals that, out of the four subsets of bondholders, only short-term/high-yield (ST/HY) 3-day bond CARs are slightly negatively correlated with 3-day equity CARs, although they are not statistically significant. The 3-day (5-day) CARs for the remaining three subsets of bonds are all significantly positively correlated with equity CARs around the announcement of an OMR. We next conduct multivariate regressions at the firm level by directly regressing 3-day (5-day) equity CARs on the 3-day (5-day) bond CARs of the four subsets of

bondholders, aggregated from bond-level CARs.[11] When we control for factors related to equity returns, we find that only long-term/high yield (short-term/high yield) 3-day (5-day) firm-level bond CARs are significantly positively related to 3-day (5-day) equity CARs. However, all other coefficients on the 3-day and 5-day firm-level bond CARs, while statistically insignificant, are still positive. As such, when considering the relationship between equity and bond abnormal returns around the announcement of an OMR, we do not find any statistically significant evidence of wealth expropriation using traditional categorizations of debt based on credit ratings and time to maturity casting doubt on the wealth transfer hypothesis.

As a robustness check, we further divide our initial sample of bonds (firms) into four subgroups based on the *joint response* of bondholders and shareholders to the announcement of an OMR (i.e., bondholder-shareholder joint response).[12] By focusing on the subgroups formed by joint bondholder and shareholder responses, we now find that 3-day and 5-day bond and equity CARs are exceedingly large in absolute magnitude as compared to the sample as a whole, suggesting that the information content of an OMR announcement may be better discerned when considered in light of its implications for both classes of stakeholders. Further, our joint response analysis uncovers the first significant univariate evidence of a wealth transfer among shareholders and bondholders in those subgroups where the initial responses (3-day CARs) are diametrically opposed (i.e., negative-positive and positive-negative subgroups).[13] However, while the inverse relationship between 3-day equity and bond CARs is confirmed among these two subgroups in a multivariate setting, the coefficients on our variables of interest are statistically insignificant. While

[11] Here, we use the average (market-weighted) time to maturity (TTM) on all the firm's outstanding debt to determine if the firm's debt is, on average, above (long-term) or below (short-term) the median TTM when classifying the firm.

[12] Maxwell and Stephens (2003) postulate how the joint responses of bondholders and shareholders to an OMR announcement provides evidence for either the signaling hypothesis or the wealth transfer hypothesis or both (see Table 1, p.898).

[13] Maxwell and Stephens (2003) suggest that evidence of a "*pure wealth transfer*" should be most evident in the case of negative abnormal returns to bondholders accompanied by positive returns to shareholders, with no discernable change in firm value.

this joint analysis does not find significant (multivariate) evidence of a wealth transfer, we do, however, uncover an interesting subgroup of joint bondholder-shareholder responses, those of Positive-Negative. The finding of such a subgroup raises the interesting question of what information contained in an OMR announcement could possibly drive bondholders to react favorably while, at the same time, incite equity holders to respond so negatively. To address this question, we next examine the influence of agency conflicts and corporate governance on shared responses to an OMR.

Recent empirical evidence suggests that creditors' interests may be more closely aligned with those of entrenched managers (strong managerial control/ weak external shareholder rights).[14] To date, Jun et al. (2009) is the only study in the extant literature to examine the interaction of managerial entrenchment and OMRs on bondholder wealth. Jun et al. argue that if creditors' interests are more aligned with those of entrenched managers, then creditors would be expected to respond very negatively to an OMR announcement as they would see this as a *realignment* of managers' interest with those of external shareholders. In contrast, several empirical studies have found that entrenched managers announce OMRs in an effort to avoid disciplinary actions (including takeovers) by the external market for corporate control and not to cede control to external shareholders through a realignment of managerial interests.[15]

To examine the implications of managerial entrenchment, we follow Ji, Mauer, and Zhang (2017) by constructing several dummy variables to proxy as measures of "*good governance*." We then use these proxies to gauge the difference in responses to an OMR announcement by both shareholders and bondholders based on the level of managerial (external shareholder) control. As expected, we find that shareholders respond more favorably to the announcement of an OMR when managements' interest are more aligned with external shareholders (e.g., mean 3-day equity CARs

[14] See e.g., Klock, Mansi, and Maxwell (2005), Cremers, Nair, and Wei (2007), and Ji, Mauer, and Zhang (2017).
[15] See e.g., Fluck (1999), Hu and Kumar (2004), and Billet and Xue (2007).

are 67.91 bps greater). However, in contrast to Jun et al. (2009), we find no significant difference among 3-day (negative) bond CARs based on the level of managerial entrenchment. However, we do find that bondholders respond more negatively at both the bond and firm levels to higher levels of institutional ownership (strong external governance). Additionally, we find that bondholders at the firm level respond more negatively, in general, to an overall index of good governance as median 3-day bond CARs are 13.68 bps more negative than CARs for firms with poor governance (strong managerial control). Multivariate results confirm that, in the absence of good governance, bond CARs are positively related to equity CARs. We find, however, that the interaction of our proxy variables for good governance weaken the relationship between equity and bond abnormal returns, suggesting that bondholders view stronger external shareholder control as detrimental to their own interests.

This study makes several important contributions to the literature. First, ours is the first study to use TRACE daily bond data to calculate 3-day and 5-day bond CARs (matched to 3-day and 5-day equity CARs) around the *actual* announcement date of an OMR, allowing us to examine the reaction of bondholders and shareholders without the *noise* impounded in bond prices found in earlier studies using monthly bond data (e.g., Maxwell and Stephens (2003), and Jun et al. (2009)). While Nishikawa et al. (2011) also use daily (NAIC) bond data in their study, they only use a single "*representative bond*" approach as well as using event windows that extend up to thirty (30) days before and after the actual OMR announcement date to calculate changes in yield spreads due to the infrequency of bond trades by insurance companies. Second, by examining subgroups based on the joint (abnormal) response of bondholders and shareholders to OMR announcement (i.e., bondholder-shareholder response), we find univariate evidence of potential wealth transfers among those subgroups whose responses are diametrically opposed (e.g., negative-positive) as predicted by Maxwell and Stephens (2003). Additionally, our analysis suggests that the information content of an OMR announcement may be more fully discerned by examining the joint reaction of both

groups of stakeholders. While Maxwell and Stephens (2003) proffer implications for signaling versus wealth expropriation based on the joint response of bondholders and shareholders to an OMR announcement, they do not empirically test their predictions, instead arguing that the two hypotheses are not mutually exclusive. Lastly, we extend the research of Jun, Jung, and Walkling (2009) on the implications of agency conflicts (managerial entrenchment) on the reaction of bondholders to an OMR announcement. In contrast to Jun et al.'s *realignment* hypothesis, we find evidence that, when managers have greater control over the firm (i.e., are more entrenched), short-term abnormal bondholder responses to an OMR are positively correlated with those of shareholders. However, we find that this positive relationship is diminished by the presence of "*good governance*."

The remainder of the paper proceeds as follows. Section 2 provides background and hypothesis development. Section 3 provides details about our OMR and bond sample selection as well as the methodology used to calculate abnormal bondholder (shareholder) returns. Section 4 provides results from univariate as well as multivariate analysis. Section 5 discusses the interaction of agency (governance) and bondholder returns. Section 6 offers concluding remarks.

2. Literature Review and Hypothesis Development

2.1 Background and Literature Review

Maxwell and Stephens (2003) was the first paper to focus entirely on the effects of OMR announcements on bondholder wealth.[16] During the period from 1980 to 1997, they examine 945 OMR announcements covering 2,817 outstanding public bonds in an effort to determine if the bondholders' reaction to an OMR announcement can be attributed to a positive signaling effect or

[16] Earlier papers by Dann (1981) and Vermaelen (1981) also consider the impact of open market repurchase announcements on bondholder wealth; however, their focus is on share repurchase announcements in general, primarily those of tender offers.

if bondholder wealth is expropriated by shareholders as evidenced by negative abnormal returns (i.e. wealth transfer hypothesis). Like most previous OMR studies, Maxwell and Stephens find the well-documented positive abnormal stock price reaction to the announcement of an OMR in support of the signaling hypothesis. However, using monthly dealer quoted bond prices obtained from the Lehman Brothers Bond Database (LBBD) to calculate mean-adjusted abnormal monthly bond returns, they report that bond prices react *negatively* to the announcement of an OMR, a finding which they suggest is indicative of a wealth transfer. They also find that bond prices react more negatively to larger OMR programs and for firms with non-investment grade debt.[17] While Maxwell and Stephens suggest that much of this evidence is consistent with the wealth transfer hypothesis, they report that overall firm value (both debt and equity) *increases* following the announcement of an OMR, a finding which they claim is supportive of the signaling hypothesis. Maxwell and Stephens argue that for a wealth transfer to occur, price changes among debt and equity must be *negatively correlated* for shareholders to gain at the expense of bondholders. However, in their study, the authors do not perform correlation analysis to test this theory. Instead, they argue that these two hypotheses are not mutually exclusive, and therefore, it is not possible to fully disentangle signaling effects from those of a wealth transfer. As such, Maxwell and Stephens suggest that the observed price changes of debt and equity following an OMR announcement are the markets' "*net reaction*" to the event.

Jun et al. (2009) extend the original study of Maxwell and Stephens (2003) by attempting to disentangle positive signaling effects from a potential wealth transfer by controlling for the use of share repurchases to offset shareholder dilution from the exercise of stock options (see e.g., Kahle, 2002). They argue that this subset of firms (those with either outstanding executive or employee options) should be those where an offsetting effect of signaling should be less likely to

[17] Maxwell and Stephens (2003) additionally report that bond credit ratings are more frequently downgraded than upgraded following an OMR announcement.

occur, thereby allowing for an examination of wealth transfer effects apart from the entanglement of signaling. In their study, Jun et al. examine a sample of 366 OMRs over the period from 1991 to 2002. While the authors use the same monthly bond data from Lehman Brothers as Maxwell and Stephens for the years 1991 to 1997, they hand collect monthly bond prices from the Moody Bond Guides for the years 1998 thru 2002.[18] Jun et al. use two measures of changes in bondholder wealth to examine the bond market response to an OMR announcement: (1) changes in monthly yield spreads and (2) monthly bondholder returns approximated by multiplying a bond's modified duration by the total change in yield spread.[19] In general, they find positive abnormal returns to shareholders and negative returns to bondholders (increases in yield spreads) around OMR announcements. However, the negative returns to bondholders are only significant in the subsample of firms that have executive and employee options which they propose supports the wealth transfer hypothesis. However, in multivariate analysis, Jun et al. find that wealth changes to equity holders are significantly positively related to bondholder wealth changes, which they suggest provides support for the signaling hypothesis. Although in the subset less likely to have signaling effects (i.e. those firms with employee options), the effect is completely eliminated. Overall, Jun et al. suggest that their results are consistent with signaling, but that they also provide some support for the wealth transfer hypothesis.

In contrast, using changes in yield spreads calculated from daily bond transactions obtained from Mergent's Fixed Income Securities Database (FISD) of the National Association of Insurance Companies' (NAIC) bond trades over the period from 1994 to 2002, Nishikawa et al. (2011) find that yield spreads slightly decrease around the announcement of an OMR, which they contend

[18] Monthly dealer quotes (prices) for bonds provided by the Lehman Brothers Bond Database (LBBD) is only available through 1997.

[19] Jun et al. (2009) use a common formula for the *approximate change* in returns based on a 1% change in yield by multiplying modified duration by the total yield change (p.218). However, this is only an approximation and represents the *total* estimated change in returns, whereas the *abnormal* return surrounding the OMR announcement is of primary interest.

contradicts support for the wealth transfer hypothesis. Due to the infrequency of daily NAIC bond trades, Nishikawa et al. are obliged to use a "*representative bond approach*" to calculate changes in yield spreads and attempt to match trades occurring as close as possible within a 30-day window before and after the OMR announcement date.[20] The authors also find no significant correlation between announcement period abnormal stock returns and changes in excess yield spreads, a finding which they suggest further casts doubt on the wealth transfer hypothesis. Nishikawa et al. also report a greater proportion of bond rating upgrades versus downgrades in the three months following a repurchase announcement, a finding also contradictory to that of Maxwell and Stephens (2003). Based on these three studies, there appears to be no clear consensus regarding whether a wealth transfer takes place or what is primarily driving returns to bondholders. [21]

In a recent work, Bessembinder et al. (2009) directly address the problems associated with calculating abnormal bond returns found in the literature. The authors compare various methodologies based on the size and empirical power of test statistics to detect abnormal bond returns using both monthly and daily bond returns found in the LBBD and TRACE databases, respectively. They find that bond studies conducted using monthly returns data found in the LBBD are not well specified, i.e., negative skewness in bond returns leads to excessive Type I errors associated with parametric t-stats (rejecting the null of no abnormal bonds returns when in fact it is true). They further suggest that monthly bond studies using the mean-adjusted model (as in Maxwell and Stephens, 2003) have the *lowest power* to detect abnormal bond returns of any method, i.e. they have the highest likelihood of Type II errors (failing to reject the null of no abnormal bonds returns when it is false). Additionally, they find that risk-adjusted models using

[20] Bessembinder at al. (2009) point out that the representative bond approach, wherein researchers select "… *a representative bond for each firm in the sample* …[is] …*unlikely to accurately capture the value change for a firm's publically traded debt, and depending on how the representative bond is selected, could bias the results*." (p. 4229)

[21] In a related working paper, Eberhart and Siddique (2004), using abnormal returns estimated from the Elton, Gruber, and Blake (1995) factor model of expected bond returns, fail to find any significant abnormal returns to bondholders around the announcement of an OMR; although, they do find significant long-run abnormal returns for a portfolio of equally weighted bonds.

the Lehman Brothers Indices as benchmarks result in significant positive bias in abnormal bond returns and thus, should also be avoided.[22] However, Bessembinder et al. find that many of these problems can be overcome by using daily transactional-level bond data reported in TRACE. They find that risk-adjusted daily abnormal bond returns, calculated using value-weighted portfolios constructed from the universe of all daily TRACE bond transactions as benchmarks, provides the lowest level of false positives (associated Type I errors), while simultaneously providing the highest power of any methodology to detect abnormal bond returns (lowest occurrence of Type II errors). In light of these results, Bessembinder et al. suggest that many of the potentially biased inferences drawn from early bond studies need to be reexamined using risk-adjusted abnormal bond returns calculated from the daily transaction data contained in TRACE.

2.2.a Hypothesis Development – Wealth Transfer

The extant literature examining the effects of OMRs on bondholder wealth (Maxwell and Stephens, 2003; Jun et al., 2009; and Nishikawa et al. 2011) seeks to ascribe the average bondholder response to the announcement of an OMR either in terms of signaling (e.g., Bhattacharya, 1979; Miller and Rock, 1985; Vermaelen, 1981; Ikenberry, Lakonishok, and Vermaelen, 1995; and Dittmar, 2000), or a wealth transfer (see e.g., Galai and Masulis, 1976; Jensen and Meckling, 1976; Myers, 1977; Smith and Warner, 1979; and Handjinicolaou and Kalay, 1984). However, recent empirical work casts doubt on the use of an OMR as a costly signaling mechanism to convey private information about future increases in profitability (e.g. Grullon and Michaely, 2004; Lie, 2005; and Skinner, 2008). Instead, in a recent survey of payout literature, Farre-Mensa et al. (2014) suggest that the agency theory of free cash flows (e.g. Jensen, 1986), wherein the firm pays out excess free cash to avoid the agency cost of overinvestment, is a more plausible explanation for corporate

[22] Bessembinder et al. (2009) suggest that the problems associated with "*false inferences*" due to the issues surrounding the use of monthly returns data found in the LBBD could possibly be overcome by "*bootstrapping the statistics*." (pg. 4256)

payouts.[23] Grullon and Michaely (2004) argue that, instead of signaling expected increases in operating performance, management, faced with a declining investment opportunity set, is conveying its "*commitment*" to return excess free cash to shareholders in an effort to avoid overinvestment. So, if we discount the notion that an OMR signals an increase in future cash flows (increased profitability), and instead focus on management's use of an OMR to return excess free cash to shareholders, then the implications for the firm's existing bondholders must come from the information conveyed in an OMR announcement relating to how changes in firm risk will affect investor's required rates of return.

As Handjinicolaou and Kalay (1984) point out, the firm's bondholders form expectations about the value of the firm's debt based on the payout policies of the firm as well as its ability to service its debt. The expectations are that, beyond the retention of earnings to fund operating capital and investment in positive net present value (NPV) projects, management will payout the firm's excess after-tax free cash flow to shareholders. Handjinicolaou and Kalay argue that not doing so would represent a transfer of wealth from shareholders to bondholders. So, as the agency theory of free cash flow suggests, maturing firms, faced with reduced investment opportunity sets, may simply announce an OMR to payout excess free cash flows in order to avoid the agency cost of overinvestment. In and of itself, such an OMR announcement does not necessarily imply anything negative for the firm's bondholders and may even be seen as positive, as it has been shown that firms announcing unexpected increases in payouts (both dividend and repurchases) experience post-announcement reductions in systematic risk (e.g. Benartzi, Michaely, and Thaler, 1997; Grullon, Michaely, and Swaminathan, 2002; Grullon and Michaely, 2004; and Benartzi, Grullon, Michaely, and Thaler, 2005).[24] Alternatively, Jensen and Meckling (1976) propose that

[23] Maxwell and Stephens (2003) suggest that the free cash flow (agency) theory of repurchases does not have *simultaneous* implications for both shareholder and bondholder wealth.

[24] Grullon, Michaely, and Swaminathan (2002) argue that as firms shift from the growth stage of their business "*life-cycle*" to a maturing stage, their investment opportunity set naturally declines. As the value of the firm has been shown

management, acting in the interest of shareholders, may enact financial policies such as excessive payouts, either through dividends and/or share repurchases, and/or increases in leverage that are detrimental to the value of the firm's outstanding debt, thus potentially resulting in a transfer of wealth from creditors to shareholders.[25] However, as Billet et al. (2016) argue, negative (positive) abnormal returns to bondholders accompanied by positive (negative) abnormal returns to shareholders around the announcement of a corporate event does not, by itself, constitute a transfer of wealth. For a wealth transfer to occur, the abnormal returns to bondholders and shareholders surrounding the announcement of an OMR must be significantly inversely related. This leads us to our first testable hypothesis:

H1*: A wealth transfer occurs between shareholders and bondholders if there exists evidence of a significant negative relationship among abnormal returns to shareholders and bondholders around the announcement of an OMR.*

2.2.b Hypothesis Development – Managerial Entrenchment/Corporate Governance

In their seminal essay outlining the agency costs of contracting, Jensen and Meckling (1976) argue that, due to the misalignment of interests between principals (shareholders) and their agents (managers), self-interested managers will often take actions to entrench their position within the firm through excessive mergers and acquisitions in personally expedient (protect their undiversified human capital), but negative NPV projects, i.e., empire building. Jensen (1986) argues that the agency costs of empire building (overinvestment) can be mitigated by inducing entrenched managers to disgorge excess free cash, either through increased payouts or by exchanging the firm's equity for debt, thus binding managers use of future free cash flows.

to be a combination of the firm's assets in place as well as its growth opportunities (Myers, 1977), Grullon et al. argue that for maturing firms a greater proportion of firm value is now shifted to less risky assets in place and away from riskier growth opportunities, thus reducing the overall systematic risk of the firm.

[25] Handjinicolaou and Kalay (1984) also suggest that if a firm forgoes positive net present value projects to payout funds to shareholders, this could also potentially result in a transfer of wealth.

However, in a recent survey of payout literature, Farre-Mensa et al. (2014) question what could possibly drive entrenched managers "*to commit to an action (e.g., increased payout) that will prevent them from investing in negative NPV projects*"? (p.105) They suggest that this "*driving mechanism*" may be found in the external market for corporate control. For example, Fluck (1999) demonstrates that entrenched managers increase payouts when faced with an effective external market for control. Hu and Kumar (2004) find that entrenched managers are more likely to voluntarily commit to payouts in order to avoid disciplinary actions by outside shareholders. Billet and Xue (2007) find that management often use open market repurchases as an effective takeover deterrent. Additionally, in an agency theory of corporate payouts, Lambrecht and Myers (2012) presuppose that managers are "*entirely self-interested*" and have "*no loyalty to outside shareholders,*" and, that faced with the external market for corporate control, choose a level of total payouts to maximize their "*flow of rents*", which they define as the appropriation of firm resources such as "*above-market salaries, job security, generous pensions, and perks.*" (p.1762-1763) While these payouts may be perceived positively in the short-run by equity markets, ultimately, if they facilitate current managements' efforts to remain entrenched, these payouts should have negative long-term implications for shareholder wealth. However, these same payouts, when conducted by entrenched managers, may have different implications for the firm's creditors.

Recent empirical evidence suggests that creditors' interests may be more closely aligned with those of entrenched managers. Under their "*creditor-alignment hypothesis,*" Ji et al. (2017) suggest that, by being insulated from the market for control, entrenched managers can invest in lower risk, negative NPV projects in order to build "*diversified empires.*" They argue that the firm's bondholders benefit from a reduction in portfolio risk due to the uncorrelated nature of these non-synergistic acquisitions, i.e., a diversification effect, as well as the added benefit of increased collateral in the event of default, and therefore, demand lower returns (credit spreads) on the firm's

debt. Additionally, the threat of takeovers,[26] which can have severe negative implications for the firm's creditors, is further mitigated in the presence of entrenched management. For example, Klock, Mansi, and Maxwell (2005) find that the cost of debt is reduced as the level of managerial entrenchment increases through the use of charter level anti-takeover provisions (ATP) that shield management from the market for corporate control.[27] Additionally, Cremers, Nair, and Wei (2007) report that yield spreads are lower in the presence of an active external shareholder (blockholder controlling at least 5% of the firm's equity) only if the firm's management is protected from takeovers through ATPs. In accordance with the evidence that bondholder's interests may be more aligned with those of entrenched managers, Jun et al. (2009) propose that bondholders should respond more negatively to an OMR announcement by entrenched managers as they would view this as a *realignment* of entrenched managers' interests with those of external shareholders. Jun et al. find some univariate evidence that yield spreads are increasing in the month around the announcement of an OMR for firms with weaker shareholder rights/entrenched management.[28] However, in multivariate analysis, Jun et al. find no significant relationship between managerial entrenchment and changes in yield spreads surrounding an OMR.

In this paper, we follow Fluck (1999), Hu and Kumar (2004), Billet and Xue (2007), and Farre-Mensa et al. (2014), and assume that entrenched managers initiate payouts to protect their level of managerial control, and, as suggested by Ji et al.'s *creditor-alignment hypothesis*, that bondholder's interest are more aligned with those of entrenched managers. Therefore, in sharp contrast to Jun et al. (2009), we propose that the negative effects of an OMR announcement on

[26] Billet, King, and Mauer (2004) find that a target firm's investment grade debt experiences significant negative returns in the event of a successful takeover.

[27] See Gompers, Ishii, and Metrick (2003) and Bebchuk, Cohen, and Farrell (2009) for a complete discussion of anti-takeover provisions (ATP) and the indices that are constructed in each work, the GIM index and the E-index, respectively, to measure the level of shareholder control (managerial entrenchment) in the firm.

[28] Jun et al. (2009) also report that bond returns are significantly negative for firms in the highest quartile of the GIM and BCF indices as well as those with staggered (classified) boards; however, these returns are estimated using the formula for modified duration based on changes in total yield over the event month (not the changes in credit spreads) and are thus subject to interpretation.

bondholders may be *mitigated* in the presence of entrenched management if the repurchase enables the current management to maintain control of the firm. This leads to our second testable hypothesis:

H2: *Negative effects of an OMR announcement (i.e. loss of collateral, increased leverage, etc.) on bondholder wealth may be mitigated in the presence of entrenched management*.

3. Data & Methodology

3.1 Data

We collect data on all OMR announcements from the Thompson Reuters' SDC Platinum Mergers and Acquisitions database over the period from June 30, 2002 thru December 31, 2015.[29] We limit our initial search to include only those records flagged as "*open-market"* resulting in an initial sample of 8,852 OMR announcements. From here, we eliminate any duplicate announcements occurring in the same month, as well as those flagged as either *withdrawn*, *incomplete-withdrawn*, or *complete*, as most of these represent duplicate announcements. Banyi, Dyl, and Kahle (2008) find that, due to its use of multiple data sources for repurchase announcements, the SDC often reports duplicate announcements several months after the actual announcement occurred, albeit with differing announcement dates. We spot check various announcements over the entire sample period and find that most duplications occur relatively close to the original announcement date. Therefore, to further control for possible duplicates, we eliminate all subsequent announcements occurring within three months of the original announcement date. Additionally, we require that the SDC announcement contain information either about the percent of equity sought or the estimated transaction value. We further require that each announcement record have matching financial data available through Compustat as well as

[29] We choose our beginning date to coincide with the introduction of the TRACE daily bond database.

equity returns data available in CRSP. Lastly, following Hribar, Jenkins and Johnson (2006), we eliminate any OMR announcement that seeks to repurchase 20% or more of its outstanding equity as these announcements are more likely to represent tender offers and would, thus, have different implications for bondholder wealth than OMRs. We are left with a final sample of 5,606 OMR announcements that target an average (median) percent of outstanding equity of 7.16% (6.09%) comparable with other samples of OMRs reported in the in the literature (see e.g. Grullon and Michaely, 2004; and Maxwell and Stephens, 2003).[30]

Next, we collect daily transaction-level bond data from the Financial Industry Regulatory Authority's (FINRA) Trade Reporting and Compliance Engine (TRACE).[31] TRACE began reporting over-the-counter (OTC) transactional-level trade data on a select group of 498 bonds on July 1, 2002. By January 2006, TRACE was providing the immediate dissemination of transaction-level data on 100% of OTC trades in over 30,000 U.S. corporate bonds representing approximately 99% of the U.S. Corporate Bond Market (Financial Industry Regulatory Authority, 2016).[32] TRACE provides intraday transaction-level bond data including price, volume, yield, transaction date and time, and other transaction specific information. We collect all transaction-level data that that match our sample of 5,606 OMR announcements over the period beginning five (5) days before to five (5) days after the actual announcement date. Next, we match each TRACE transaction-level record to a unique bond issue in the Mergent FISD database, allowing us to obtain bond characteristics such as offering amount, offering date, maturity, amount outstanding, coupon, credit

[30] Following Maxwell and Stephens (2003), Grullon and Michaely (2004) and Babenko, Tserlukevich, and Vedrashko (2012), we do not exclude financial and other regulated industries because they represent over 28.75% of the sample. As a robustness check, we further eliminate announcements from firms coded (4-digit SIC) as financials and/or utilities and find that our primary results are qualitatively similar.

[31] The TRACE data used in this study is collected directly from WRDS's (Wharton Research Data Services) Mergent 'small' TRACE dataset. This subset of TRACE contains all historical disseminated trades that have been matched to issue-level records in the Mergent FISD issues database.

[32] As of July 1, 2005, all TRACE member firms were required to report secondary bond market transactions in all TRACE-eligible securities within 15 minutes of the transaction. Since January 9, 2006, all TRACE eligible security transactions have been disseminated immediately upon receipt.

ratings, and all other issue specific details. We focus our study on straight bond issues and eliminate any issues that have equity like characteristics (e.g., exchangeable and convertible bonds) that could be impounded into the bond's price. We also eliminate any zero-coupon bonds as Bessembinder at al. (2009) argue that they respond to corporate events much in the same manner as the firm's equity. We further eliminate any issues labeled as *perpetual*, *preferred*, *Yankee bonds*, *Canadian*, *unit deals*, and *Rule 144A private issues* (private placements), as well as *putable* bonds.

As discussed in Asquith, Covert, and Pathak (2013), TRACE transactional data is comprised of self-reported trades by FINRA member firms, both buyers and sellers. As a result, TRACE data often contains duplicate trades, trades that never actually occur and have to later be reversed, and/or trades that have to be later modified or canceled. Additionally, the reported information in many trades contains incorrect pricing and volume data, as well as misspecified trade dates. Asquith et al. outline an extensive cleaning process to address these problems in the TRACE data.33 We closely follow their prescribed methodology to clean the TRACE data and thereby eliminate any trades that are (1) later reversed, modified, or cancelled, (2) are duplicates, (3) have incorrectly reported price or volume data, or (4) that could not have occurred based on the reported transaction date.

We further update our sample of transactional-level bond data by eliminating trades with reported transaction prices in the upper and lower 1% of all self-reported trades (i.e. trades with reported prices below \$60 or above \$150) in an effort to eliminate spurious returns.[34] As TRACE reports only *clean* transaction prices (i.e. without accrued interest), we further calculate accrued interest for each transaction and then add it to the reported price in order to establish the actual (*dirty*) price paid which we later use to calculate returns data. Next, we use the historical credit

[33] We refer the reader to the "Appendix A" in Asquith, Covert, and Pathak (2013) for a complete description of the process used to clean the TRACE data.

[34] Bessembinder at al. (2009) attempt to control for spurious trades in TRACE data by eliminating trades that result in absolute returns greater than 20%.

ratings tables found in the FISD database to assign credit ratings at the time of the transaction from the three primary credit ratings agencies (CRA): Moody's, Standard and Poor's, and Fitch. Following Klock et al. (2005), we assign numerical values to represent the various character-based credit ratings reported by the CRAs. As we eliminate any transactions with bonds that are in default, the remaining values for the credit ratings range from 1 for Moody's "Aaa" (S&P "AAA") to 20 for Moody's "Ca" (S&P "CC").[35] We then average the individual reported ratings to arrive an overall average credit rating for each transaction. As a final step to prepare the TRACE bond data, we follow Bessembinder et al. (2009) and construct a "*daily price*" using the volume of each trade as a weight (see section 3.2 Methodology for a full description of the Bessembinder et al. methodology used to calculate daily abnormal bond returns).[36] Bessembinder et al. refer to this calculated daily price as the "*trade-weighted price, all trades*" and argue that "*this approach puts more weight on the institutional trades that incur lower execution costs and should more accurately reflect the underlying price of the bond.*" (p.4225)

We then match our sample of 5,606 OMR announcements with our sample of TRACE calculated daily bond prices. In order to calculate 3-day (5-day) abnormal bond returns, we require consecutive daily bond prices for the four (six) days surrounding the OMR announcement date.37 As Bessembinder et al. (2009) note, due to the institutional nature of the bond market, the average bond in the TRACE database only trades 52 days a year. As a result of this infrequency of trading, we are only able to match 553 (483) OMR announcements, or 9.86% (8.62%) of the 5,606 OMRs,

[35] Klock et al. (2005) reverse the numerical order of the credit ratings starting with 22 for S&P "AAA" (Moody's "Aaa") rated debt and ending with 1 for S&P "D" (Moody's "C") rated debt (i.e. debt that is considered "in default").

[36] Bessembinder et al. also recommend that the researcher eliminate all trades under $100,000 in an effort to eliminate noninstitutional (retail) trades, while still weighting each intraday trade by its transaction volume. They refer to this daily constructed price as the "*trade-weighted price, trade ≥ 100k.*" (p.4226) For robustness, we also construct a daily "trade-weighted price, trade ≥ 100k", and while the calculated abnormal returns are very similar, this effectively reduces our sample size by over 75%.

[37] Since we use volume (or trade) weighted average daily prices to calculate 3-day (5-day) cumulative abnormal bond returns (CARs) instead of the end of day closing price used in the calculation of equity CARs, we use windows of [-1, 0, +1, +2] for 3-day and [-2, -1, 0, +1, +2, +3] for 5-day to calculate bond CARs.

with 2,025 (1,711) bonds that traded consecutively over the required 3-day (5-day) event window. The 2,025 (1,711) bonds in our final 3-day (5-day) sample represent 1,287 (1,098) distinct bonds issued by 264 (237) distinct issuers.

Table 1 (Panel A) reports the number of matched OMR announcements, as well as the number of matched bond issues, by year, over the period from 2002 through 2015.[38] We can see that the number of matched OMR to bond issues steadily increases from 2002 through 2007 as the dissemination of transactional level bond data through TRACE increased over this period before falling off during the financial crisis from 2007 through 2009. After 2010, the number of matched OMRs to bond issues increases beyond pre-crisis levels. Panel B of Table 1 displays a distribution of OMRs by Fama/French-12 industry classifications. Financials (26.04%) comprise the largest category of firms announcing OMRs, followed by the Wholesale and Retail industry (15.73%). The smallest group of repurchasers is made up of those firm in the Consumer Durables industry (1.63%). However, all 12 industries are represented.

Table 2 presents the summary statistics of the sample of 553 matched OMRs, as well as the 2,025 matched bond issues. Appendix A describes the construction and source of data for each variable in detail. All dollar amounts have been adjusted to 2015 dollars to account for the effects of inflation using the U- CPI. Additionally, all continuous variables have been winsorized at the 1% level to mitigate the effect of outliers. In Panel A, we see that the mean (median) announced OMR dollar amount is $2.87 ($1.0) billion representing a mean (median) percentage of outstanding equity sought of 7.47% (6.35%). Additionally, at the time of an OMR announcement, the average (median) number of outstanding bond issues per firm is 3.66 (2.0). Panel B presents firm level statistics associated with the matched OMR sample. All relative financial data is as of the prior

[38] The reader may notice that the total number of bonds (1,956) in Table 1 (Panel A) does not match the reported total number of matched event level bonds in the text (2,025). This is due to the fact that some firms announce more than one OMR during a calendar year, and while Table A reports the correct number of unique OMRs in a given year, unique bonds (CUSIP) issued by the same firm are only counted once in each calendar year.

fiscal year end before the OMR announcement. As we can see, the average (median) OMR firm is relatively large with total assets of $122.92 ($25.21) billion and a market cap of $44.58 (19.83) billion. The firm characteristics are similar to those of other repurchase studies in that the firms appear to be, on average, more mature with slowing rates of sales and profitability growth over the prior three years before the OMR announcement, both in the single digits, 9.0% and 2.9%, respectively. The firms also have similar mean (median) levels of cash and free cash flow, 10.1% (7.0%) and 4.5% (3.9%), as well as levels of market leverage, 25.2% (21.0%). The firm's growth opportunities, as evidenced by their market-to-book ratios, 1.689 (1.396), and their unlevered (asset) betas of 0.771 (0.753), also appear to be indicative of older maturing firms. Also, as commonly found in the repurchase literature, prior mean (median) cumulative abnormal returns (Run-up) over the period just prior to the actual announcement date is slightly negative, -1.7% (-1.4%). Also, 84.8% of these firms paid dividends, either common or preferred (or both), during the prior fiscal year.

Panel C presents summary statistics about the sample of 2,025 bonds matched to OMR announcements. The average (median) market value of the outstanding bond issue at the time of announcement is $1.09 (0.86) billion with a mean (median) remaining time to maturity of 8.38 (5.55) years. The mean (median) "*average"* credit rating is 6.95 (6.50) which is approximately equal to a Moody's rating of "A3" (A2 to A3) or an S&P rating of "A-" (A to A-). Of the bonds in our final sample, 89.5% are rated as investment grade, i.e. Moody's 'Baa3' or higher (S&P 'BBB' or higher). While we also control for the effects of bond covenants related to payouts and/or financing, we find that only 7.36% and 12.3% of our sample of bonds, respectively, have such covenants. This is to be expected as issuers of non-investment grade debt (10.5%) would need to rely on the use of covenants to help mitigate the cost of debt.

Panel D presents descriptive statistics for firm-level corporate governance. We collect anti-takeover provisions (entrenchment) as well as other corporate governance data from Institutional

Shareholder Services (ISS) (formerly RiskMetrics), CDS/Spectrum, and ExecuComp. We construct the "E-index" as outlined in Bebchuk et al. (2009) as our primary measure of managerial entrenchment.[39] The E-index is a cardinal number ranging from 0 to 6 representing the number of firm-level anti-takeover provisions (ATP) present at the time of OMR announcement with larger values representing greater takeover protection (managerial entrenchment). These ATPs include classified (staggered) boards, poison pills (puts), golden parachutes, supermajority voting rules in mergers and acquisitions, and limits to shareholder amendments of both the corporate charter and bylaws. The mean (median) E-index value for the firms in our sample is 2.74 (3.0). We segment our sample of OMR-firms by creating a dummy variable, Entrenched, that takes a value of 1 if the E-index is greater than or equal to the median value of 3.0, and zero otherwise. As many of the sample firms with E-index scores are clustered at the median, entrenched firms make up 63% of our sample. Panel D also includes several additional variables that have been found to be related to managerial entrenchment (e.g., CEO ownership, Powerful CEO, Staggered board, and Poison put) as well as shareholder control (e.g., Institutional ownership, Independent board, and Top 5 institutional ownership) in the literature. All variables are defined in Appendix A.

3.2 Methodology

We analyze the equity markets' response to the announcement of an open market share repurchase using standard event-methodology (Brown and Warner, 1985) to calculate 3-day (and 5-day) cumulative abnormal returns (CARs) with a parameter estimation period beginning 255 days prior to and ending 46 days prior to the OMR announcement date, with a required minimum of 100 days of returns during the estimation period. All abnormal returns are calculated using the market-model. As a proxy for the market return, we use the value-weighted return on all CRSP firms listed

[39] Bebchuk et al. (2009) construct their entrenchment index using six (6) of the original twenty-four (24) variables found in the Gompers et al. (2003)'s GIM-Index of shareholder control that are significantly correlated with losses in firm value. We are unable to use the GIM-index in our current study as ISS discontinues data coverage after 2006 for several of the variables needed to construct the index.

on the NYSE, AMEX, and NASDAQ. To proxy for the risk-free rate, we use the rate on the one-month U.S. Treasury bill. [40]

In order to calculate 3-day and 5-day cumulative abnormal bond returns, we follow the methodology outlined in Bessembinder et al. (2009). As previously discussed, after thoroughly cleaning the TRACE transactional level bond data, we use all available daily transactional data (issue level) to calculate a *daily trade-weighted price* using the par volume of each trade as the weight.[41] Bessembinder et al. suggest that by more heavily weighting the larger institutional trades which incur the lowest transactional costs this approach more readily captures the actual underlying bond price during the day. Next, we match all daily trade-weighted prices to the event periods (3-day and 5-day) surrounding each OMR announcement date. In order to calculate 3-day (5-day) cumulative abnormal bond returns, we require four (six) consecutive days of trading activity surrounding the announcement date. For each bond that meets this criterion, we first calculate a daily holding period bond return (BR_{ijt}) as such:

$$BR_{ijt} = \frac{P_{ijt} - P_{ij(t-1)} + \Delta AI_{ijt-ij(t-1)}}{P_{ij(t-1)} + AI_{ij(t-1)}} \quad (1)$$

where i represents the bond issue, j represents the announced (firm) OMR, and t represents the day in the event window, P represents the daily trade weighted price, AI represents the accrued interest to date, and ΔAI represents the difference in accrued interest between days t and $t-1$.

After calculating a daily bond return for each bond, our next step is to calculate the daily *abnormal* bond return. However, first, we have to calculate daily benchmark portfolio returns (PBR_t). Here

[40] As a robustness check, we also calculate cumulative abnormal equity returns using the Fama and French (1993) 3-factor model, as well as the Carhart (1997) 4-factor model incorporating momentum. The results are quantitatively similar.

[41] The "small" TRACE database provided through WRDS details actual trade volume amounts by par value with exceptions for large trades. For investment-grade debt, any transactions over $5,000,000 in par value are listed as "5MM+", while for non-investment grade debt, any transaction with volume over $1,000,000 is indicated as "1MM+". We convert these to the lower limits of $5,000,000 and $1,000,000, respectively, for the calculation of a daily trade-weighted price.

again, following Bessembinder et al. (2009), we construct both value-weighted (VW) and equal-weighted (EW) daily benchmark portfolios, using all available daily bond trades to construct each portfolio. We perform the exact same cleaning process on the data as before, but we now include every possible bond transaction in the TRACE universe. Next, we calculate daily bond returns using the same formula in equation (1). Here we require at least two consecutive days of trading activity in order to calculate bond returns. Finally, we aggregate daily bond returns by credit rating, using seven (7) major S&P ratings categories (AAA, AA, A, BBB, BB, B, and CCC). We use the daily market-values of the outstanding issues as weights to calculate the value-weighted (VW) daily portfolios and take a simple arithmetic average to construct the equal-weighted (EW) portfolios. Due to the infrequency of trading data, as in Bessembinder et al., we are unable to further segregate by time to maturity (TTM).

Our next step is to calculate daily abnormal bond returns (ABR_{ijt}) for the bonds matched in our OMR event windows:

$$ABR_{ijt} = BR_{ijt} - PBR_t \tag{2}$$

where PBR_t represents the daily portfolio bond return on event day t matched by credit rating. We calculate daily abnormal bond returns using both value-weighted (VW) and equal-weighted (EW) portfolios. Lastly, we sum the daily abnormal bond returns at the issue level to calculate 3-day and 5-day cumulative abnormal bond returns (CAR): [42]

$$CAR_{ij(n)} = \sum_{t=1}^{n} ABR_{ijt} \tag{3}$$

where n equals either 3-day or 5-day. As Bessembinder et al. (2009) point out, using individual bond level CARs may lead to upwardly biased t-statistics (lower standard errors) due to the cross correlation of errors among bonds issued by the same firm. So, again following Bessembinder et

[42] Here again, we calculate 3-day and 5-day CARs using abnormal returns calculated from both value-weighted and equal-weighted benchmark portfolios.

al., we also calculate 3-day and 5-day firm level cumulative abnormal returns, $CAR_{j(n)}$, using the market value of each outstanding bond issue as weights:

$$CAR_{j(n)} = \sum_{i=1}^{N} CAR_{ij(n)} \left(\frac{w_i}{\sum_{i=1}^{N} w_i} \right) \quad (4)$$

where N equals the total number of outstanding bond issues per firm and w_i represents the market value of the remaining amount of each outstanding issue as of the transaction date. We present the results of this analysis in the next section.

4. Empirical Results

4.1 Univariate

Table 3 displays the results from our calculations of cumulative abnormal returns for both equity and bond holders surrounding the announcement of an OMR. Consistent with prior OMR literature, we find that 3-day and 5-day cumulative abnormal returns (CAR) to equity holders are positive and statistically significant surrounding the announcement of an OMR. The average (median) 3-day and 5-day equity CAR is 0.96% (0.89%) and 0.85% (0.78%), respectively. The results show that the equity market responds more favorably to OMR announcements from firms with non-investment grade debt. The 3-day median CAR for non-investment grade firms is 1.68% while the median 3-day CAR for investment grade firms is only 0.76%, a difference of approximately 92 basis points (5-day results are similar).

We find cumulative abnormal bond returns are slightly negative and highly significant at both the bond and firm levels.[43] At the individual bond-level (Table 3, Panel B), we find mean (median) 3-day and 5-day value-weighted bond CARs of -6.78 bps (-5.65 bps) and -12.25 bps (-

[43] While we present both value-weighted and equal-weighted CARs in Table 3, we focus only on value-weighted CARs throughout the rest of the paper as Bessembinder et al. (2009) find that value-weighted CARs have the smallest amount of Type I (size) and Type II (power) statistical errors.

7.66 bps) respectively. As expected, the holders of non-investment grade debt respond more negatively, on average, to the announcement of an OMR with mean (median) 3-day and 5-day value-weighted bond CARs of -8.44 (-12.03) bps and -21.62 (-19.94) bps, respectively.[44] The results from aggregated firm-level CARs are similar (Table3, Panel C), as we find mean (median) 3-day and 5-day value-weighted bond CARs of -7.94 bps (-7.18 bps) and -11.83 bps (-6.66 bps) respectively. However, as previously discussed, the finding of *positive* mean abnormal returns to shareholders accompanied by *negative* mean abnormal returns to bondholders, by itself, does not provide evidence of a wealth transfer between the two groups of stakeholders. Statistically significant evidence of a *negative correlation* between the cumulative abnormal returns to shareholders and bondholders must be found in order to verify a wealth transfer (Billet et al., 2016). As such, we turn our attention to an analysis of correlation between the two groups.

While Bessembinder et al. (2009) argue that individual bond-level transactions should be aggregated at the firm level to avoid biasing *t*-statistics upward, an examination of the correlation between individual bonds and equity returns may allow us to identify subsets of creditors that are affected differently by the announcement of an OMR. As such, we examine correlations at both the individual bond-level as well as the firm level. Additionally, bondholders of investment grade debt are typically not affect by financial policies in the same manner as holders of non-investment (high-yield) grade debt. Obviously, if a firm is considered riskier by nature of the credit rating on its debt, then the announcement of a substantial payout to shareholders may signal a reduction in collateral underlying bondholder claims as assets are transferred to shareholders, thus reducing the value of the firm's existing debt and potentially resulting in a transfer of wealth. Another factor

[44] From Table 3, Panel B, we find that 3-day and 5-day bond CARs (both value-weighted and equal-weighted) are highly significant except for the 3-day mean value-weighted CAR for non-investment grade debt (sample of 213 bonds). Bessembinder et al. (2009) report that the power of parametric t-tests to reject the null of no abnormal bond returns for daily data is significantly reduced for sample sizes of less than 500 observations. The power of parametric t-tests to reject is further reduced by approximately 50% for non-investment grade debt versus investment grade. Bessembinder et al. reports that for sample sizes of 100 non-investment grade bonds, the power of a 2-tailed t-test with a significance level of 5% only has a rejection rate of 14.6% (15.1%) for a negative (positive) 10 bps shock.

that may influence the bondholders' response to an unexpected payout is the remaining time to maturity (TTM) on the debt. As the intrinsic value of a bond is simply a sum of the discounted future payments of interest and principal, any change in the required risk premium (i.e., discount factor) should have a greater impact on bonds with longer terms to maturity. However, holders of shorter term debt may also have concerns about the firm's liquidity position in light of a substantial reduction in cash or firm collateral. As such, we segment our sample of bonds (firms) by both investment grade and remaining time to maturity.

We begin by segmenting our sample by credit ratings along the traditional measures with Moody's (S&P) ratings of Baa3 (BBB) or higher considered investment grade. Of the bonds in our sample for which we are able to calculate 3-day (5-day) CARs, we find that 89.50% (89.69%) are considered investment grade. As we excluded any defaulted bonds in our bond data selection, the lowest rated bonds in our sample have a Moody's (S&P) rating of Caa3 (CCC-). So, our ratings for non-investment grade or high-yield (HY) debt range from Moody's (S&P) rating Ba1 to Caa3 (BB+ to CCC-). Next, we segment our sample by time to maturity. Here we define short-term, ST, (long-term, LT) as remaining time to maturity less than or equal to (greater than) the median TTM on our entire sample of bonds. The median TTM for our 3-day (5-day) bond sample is 5.50 (5.41) years. This creates (4) four distinct classes of bonds for analysis: (1) short-term/investment grade (ST/IG); (2) long-term/investment grade (LT/IG); (3) short-term/high-yield (ST/HY); and (4) long-term/high-yield (LT/HY). Table 4 displays both Pearson and Spearman correlation coefficients as abnormal bond returns have been shown to be negatively skewed (Bessembinder at al., 2009). At the bond-level (Panels A.1 thru A.3), we find the correlation among 3-day (5-day) equity and bond CARs is positive and highly statistically significant in most categories except one: short-term/high-yield bonds (ST/HY).[45] This subset only contains 78 (63) bonds with 3-day (5-day) available bond

[45] Both Pearson and Spearman bond-level correlations for 3-day non-investment grade debt (all issues), while positive, is not statistically significant.

CARs. Here we find slight evidence of negative correlation between abnormal equity and bond returns, although it is not statistically significant.

We next examine the correlation of abnormal equity and bond returns aggregated at the firm level. Here, our results are somewhat mixed. When considering all firms (Table 4, Panels B.1 thru B.3), both 3-day and 5-day equity and bond CARs are significantly positively correlated. Upon further segmenting the firms based on the average remaining time to maturity on all firm bonds, as well as the average credit rating, we find that, while still positive, several of the correlations are no longer statistically significant (e.g. none of the short-term 3-day bond CARs are statistically correlated with 3-day equity returns). Nonetheless, we find no significant statistical univariate evidence of negative correlations at either the bond or firm level between the abnormal returns to bondholders and equity holders around the announcement of an OMR. We next turn our attention to multivariate analysis of our 3-day and 5-day bond and equity CARs in an attempt to detect any signs of negative correlation.

4.2 Multivariate Results

Table 5 displays the results of bond-level pooled OLS regressions of 3-day (5-day) equity CARs on 3-day (5-day) bond CARs, as well as a set of control variables that have been shown to affect equity returns around OMR announcements in the literature. To continue our analysis along differences in the four subsets of bonds segmented by time to maturity and credit ratings, we interact 3-day and 5-day bond CARs with indicator variables for both non-investment grade (HY) and short-term (ST). The primary coefficient(s) of interest is the estimate for short-term, high-yield (ST/HY) debt as this is the only subset of bond CARs that revealed any negative correlation (although insignificant) with equity CARs in univariate correlation analysis. As such, the results of our primary specification of interest is presented in Models 4 and 8 from the following regression:

$$CAR_{equity,jn} = \beta_1 CAR_{bond,ijn} + \beta_2 HY_{ij} + \beta_3\left(HY_{ij} \times CAR_{bond,ijn}\right) + \beta_4 ST_{ij} + \beta_5\left(ST_{ij} \times CAR_{bond,ijn}\right) + \beta_6\left(HY_{ij} \times ST_{ij}\right) + \beta_7\left(HY_{ij} \times ST_{ij} \times CAR_{bond,ijn}\right) + \gamma X_{jn} + \alpha_Y + \alpha_I + \varepsilon_{ij} \quad (5)$$

In this specification, we can see from conditional expectations that the slope coefficient (disregarding the intercept) for short-term, high-yield (ST/HY) debt is:

$$E\left[CAR_{equity,jn} | HY_{ij} = 1, ST_{ij} = 1, CAR_{bond,ijn} = x_{ijn}\right] = (\beta_1 + \beta_3 + \beta_5 + \beta_7) \times CAR_{bond,ijn} \quad (6)$$

where the slope of the relationship between the 3-day equity CAR and the 3-day bond CAR is defined as $\beta_1 + \beta_3 + \beta_5 + \beta_7$. Our multivariate results reveal that, out of both groups (3-day and 5-day) of the four subsets of bondholders, only the short-term/high-yield (ST/HY) 3-day bond CARs are slightly negatively associated (-0.0232) with 3-day equity CARs, although they are not statistically significant. Model 8 in Table 5 reveals that the 5-day (ST/HY) bond CARs are, in fact, positively related to 5-day equity CARs. The abnormal returns for the remaining three subsets of bonds are all positively correlated, and statistically significant at the 1% and 5% levels, with abnormal returns to equity holders around the announcement of an OMR.

Next, in Table 6, we conduct multivariate regressions at the firm level by directly regressing 3-day (5-day) equity CARs on the 3-day (5-day) firm-level aggregated bond CARs for the (4) four subsets of bondholders. We estimate the following specification, with and without control variables:

$$CAR_{equity,jn} = \beta_1 HY_j \times ST_j \times CAR_{bond,jn} + \beta_2\left(1 - HY_j\right) \times ST_j \times CAR_{bond,jn} + \beta_3 HY_j \times \left(1 - ST_j\right) \times CAR_{bond,jn} + \beta_4\left(1 - ST_j\right)\left(1 - HY_j\right) \times CAR_{bond,jn} + \beta_5 HY_j + \beta_6 ST_j + \beta_7 HY_j ST_j + \gamma X_j + \alpha_Y + \alpha_I + \varepsilon_j \quad (7)$$

When we control for factors related to equity returns, we find in Model 2 (4) that only long-term/high yield, LT/HY, (short-term/high yield, ST/HY) 3-day (5-day) firm-level bond CARs are

significantly positively related to 3-day (5-day) equity CARs. However, all other coefficients on the 3-day and 5-day firm-level bond CARs, while statistically insignificant, are still positive. As such, when considering the relationship between equity and bond CARs around the announcement of an OMR, we do not find any statistically significant evidence of a wealth transfer based on the traditional classifications of debt involving investment grade or time to maturity (TTM).

4.3 Robustness

Even though we differentiate our study from earlier works by using daily transactional bond data from TRACE as well as examining a more recent time period (2002-2015), our initial findings of relatively small negative 3-day (5-day) bond CARs which are significantly positively correlated (for the most part) with 3-day (5-day) equity CARs are similar in nature to those found in Maxwell and Stephens (2003) and Jun et al. (2009). However, Maxwell and Stephens suggest that an examination of the different *joint* responses (abnormal returns) from the two groups of stakeholders to the announcement of an OMR may help elucidate whether the combined responses are indicative of a "*pure wealth transfer*" or a "*signaling*" effect, or some combination thereof (see Maxwell and Stephens (2003): Table I, p.898).[46] In order to empirically examine this line of reasoning, we further segment our original sample into four (4) distinct subgroups based on the combined responses of both the bondholders and shareholders (i.e., bondholder-shareholder response) to the announcement of an OMR: (1) positive-positive; (2) negative-negative; (3) negative-positive; and (4) positive-negative. We next calculate mean 3-day (and 5-day) equity and bond CARs for each subsample, as well as Pearson and Spearman correlation coefficients.

When we consider the reaction of these distinct subgroups to the information content of an OMR announcement in Table 7, we find that the largest subgroup is that of (3) negative-positive

[46] While Maxwell and Stephens (2003) postulate the implications for the signaling and wealth transfer hypotheses based on combinations of bondholder-shareholder abnormal responses to an OMR announcement (Table 1, p. 898), they do not empirically test these relationships in their paper.

responses (i.e., negative bondholder responses accompanied by positive equity market responses) representing approximately 37% of both 3-day and 5-day bond/equity CARs. Maxwell and Stephens (2003) point out that this subgroup has the highest likelihood of exhibiting a "*pure wealth transfer.*" The next two largest subgroups are those of (1) positive-positive and (2) negative-negative responses representing approximately 32.4% (29.9%) and 17.9% (20.1%), respectively, for our 3-day (5-day) bond-level samples (see Panels A & B). Lastly, we find a subsample of bondholder-shareholder responses to the announcement of an OMR that Maxwell and Stephens considered implausible in their research, that is (4) positive-negative (*positive* bond CARs accompanied by *negative* equity CARs). This subgroup, representing approximately 12.2% (12.9%) of the 3-day (5-day) sample of bond-level CARs, raises the interesting question of how the bond market can view the announcement of an OMR positively while, at the same time, the equity market perceives the announcement negatively. We return to this question in our next section dealing with the effects of governance and managerial entrenchment on bondholder wealth surrounding the announcement of an OMR. For now, we want to maintain our focus on the question of whether a transfer of wealth occurs in any of these subgroups.

When we consider our subsets of bondholder-shareholder responses to an OMR announcement (Table 7), we see that abnormal returns are much larger in absolute magnitude than those found for the overall sample, with mean positive (negative) 3-day and 5-day bond CARs now in the range of 50 to 55 bps (-50 to -68 bps) and equity CARs ranging from 2.51% to 3.20% (-2.02% to -3.28%).[47] These results demonstrate the necessity of jointly considering bondholder-shareholder responses to an OMR and also help to elucidate how the initial reactions of our two groups of stakeholders differ in relation to the information content found in an OMR announcement. Returning to the question of wealth expropriation, (again in Table 7) we find that

[47] Results of our analysis of 3-day and 5-day bond/equity market responses aggregated at the firm level (Table 7, Panels C & D) are very similar to bond-level results reported in Panels A & B.

among the 3-day bondholder-shareholder responses, only those subgroups with differing signs (i.e., negative-positive and positive-negative) display any evidence of *significant negative correlations* at both the bond and firm levels.[48] Next, we turn to OLS regressions to confirm our univariate evidence of negative correlations between equity and bond market responses.

Table 8 displays the results of regressing 3-day (5-day) equity CARs against 3-day (5-day) bond CARs, along with our previous set of control variables, for each of the four subgroups distinguished by the joint bondholder-shareholder responses. Consistent with our univariate evidence of negative correlation among the 3-day subgroups, (3) negative-positive and (4) positive-negative, we find that the coefficient on the 3-day bond CAR is negative for both subgroups in Models 3 and 4, although not statistically significant. The sign of the coefficient on the bond CAR is positive in all other specifications; however, the coefficient is only significant for 5-day bond CARs in Models 6 and 7. So, while we find some significant univariate evidence of a wealth transfer among 3-day bond and equity holders in the subgroups where the two classes of stakeholders react in opposite directions, we are still unable to statistically detect significant evidence of a wealth transfer in a multivariate setting. In the next section, we examine the question of how managerial entrenchment and corporate governance influence stakeholder responses to an OMR.

5. Agency Conflicts and Governance

5.1 Discussion

As previously discussed, agency conflicts between shareholders and managers (i.e., managerial entrenchment) as well as measures of corporate governance that address these conflicts

[48] Correlations among the subsets of 5-day bondholder-shareholder responses are positive at both the bond and firm levels, except for the negative, but insignificant, Pearson correlation among the 5-day firm-level subgroup (4) Positive-Negative.

may have differing implications for the reaction of both creditors and shareholders to the announcement of an OMR. In section 2.2.b, we developed the hypothesis that creditors' interests may be more aligned with those of entrenched managers. As such, creditors may view an OMR positively (or at least less negatively) if announced by entrenched management if the OMR serves to appease the external market for corporate control, thereby simultaneously protecting the interests of creditors and entrenched managers. In order to test the effects of managerial entrenchment and, more generally, corporate governance on the response of creditors and shareholders to an OMR announcement, we follow Ji et al. (2017) by constructing four (4) measures of "*good governance"* as well as an overall governance index calculated from these four variables. The first measure of good governance is GOV1, a dummy variable that takes a value of one (1) if the level of managerial entrenchment, as measured by the E-index (Bebchuk et al., 2009), is less than the median level for all sample firms (i.e., non-entrenched management/greater shareholder control), and zero otherwise. GOV2 is a dummy variable that takes a value of one if the firm does not have a "*powerful CEO"*, and zero otherwise. A powerful CEO is defined as a CEO who also simultaneously holds the positions of Chairman of the Board (COB) and President, as well as serving as the only insider on the Board of Directors. GOV3 is a dummy variable that takes a value of one if the firm's total level of institutional ownership (%) is greater than or equal to the median level of institutional ownership (%) of all firms in the sample, and zero otherwise. GOV 4 is a dummy variable that takes a value of one if the CEO's equity ownership stake (%) is greater than or equal to the median CEO ownership (%) in the sample, and zero otherwise. GOV5 is a dummy variable that takes a value of one (1) if the cardinal value of the constructed governance index, based on the first (4) measures of governance, is greater than the median, and zero otherwise.[49] We also include two

[49] Following Ji et al., (2017), we construct a firm-level (good) Governance Index by summing up the values of the four (4) dummy variables, GOV1-GOV4. Thus, the index has a range from 0 to 4, with higher numbers representing higher levels of shareholder control (good corporate governance) and thus, lower managerial entrenchment.

additional dummy variables, Top5InstOwn,[50] a dummy variable that takes a value of one if the combined institutional ownership (%) of the top five (5) institutional owners is greater than or equal to the median level of the combined top five institutional ownership (%) among the entire sample, or zero otherwise, and Staggered Board, which takes a value of one if the firm has a classified board structure, and zero otherwise.[51]

5.2 Empirical Results

Table 9 displays univariate results of segmenting equity and bond market responses (CARs) to an OMR announcement by our variables for good governance (GOV1 – GOV5) as well as Top5InstOwn and Staggered Board. In all panels, responses for firms where our variables take a value of one (i.e., representing good governance) are indicated under the heading "*Stronger Shareholder Rights*" (except Staggered Board which is the polar opposite) as these firms are expected to have management whose interests are more aligned with those of external shareholders, i.e., non-entrenched. As we can see from the results in Panel A, the equity market responds more favorably to the announcement of an OMR when management is not (or is at least less) entrenched (GOV1=1) as 3-day CARs are 67.91 bps significantly (5% level) higher for those firms. Additionally, the absence of a Powerful CEO (GOV2=1) leads to 3-day equity market CARs that are 109.52 bps significantly higher. However, among the remaining variables in Panel A, we find that only the equity CARs for Top5InstOwn (our proxy for the *concentration* of external governance) are significantly different, with median 3-day CARs that are 32.53 bps higher (10% significance level) when institutional ownership concentration is at or above median levels.

Panels B and C (Table 9) display univariate results for 3-day bondholder CARs at the bond

[50] Grinstein and Michaely (2005) argue that the sum of the top five (5) largest institutional holdings better "*captures*" the concentration of ownership among institutions rather than total institutional holdings. They suggest that the "*institutions' ability to monitor and affect board decisions is more closely related to concentration than it is to total holding*." (p. 1398)

[51] Bebchuk, Coates, and Subramanian, (2002) find that the presence of a classified board (or staggered board) effectively insulates management from the market for corporate control as it reduces the odds of a successful takeover by over 50%.

and firm levels, respectively.[52] For our first two measures of good governance, GOV1 and GOV2, which proxy for non-entrenched management, we see that bondholders respond negatively, both at the mean and median levels, to the announcement of an OMR regardless of whether management is considered entrenched or not. However, there is no evidence that bondholders respond differently based on the level of managerial entrenchment as differences between the two groups are not significant. However, providing some support for our hypothesis H2, we find that 3-day median bondholder CARs (both bond and firm levels) are significantly more negative in the presence of higher median institutional ownership (GOV3), 5.52 bps and 15.44 bps, respectively. Additionally, at the firm level, we find that bondholders' respond more negatively overall to good governance as median 3-day bond CARs are 13.68 bps significantly lower for firms whose Governance Index (GOV5) is at or above the median level for all firms in the sample. These findings provide univariate evidence that bondholders react less negatively to an OMR announcement when management has stronger control of the firm, i.e., when management is entrenched.

In Table 10, we regress 3-day (5-day) equity CARs on 3-day (5-day) bond CARs interacted with each of our measures of good governance (GOV1-GOV5) in an effort to determine how the responses (CARs) among shareholders and bondholders to an OMR are related to levels of managerial entrenchment as well as internal/external governance in a multivariate setting. We estimate the following specification(s):

$$CAR_{equity,jn} = \beta_0 + \beta_1 CAR_{bond,ijn} + \beta_2 GOV(k)_j + \beta_3\left(GOV(k)_j \times CAR_{bond,ijn}\right) + \gamma X_{ij} + \alpha_Y + \alpha_I + \varepsilon_{ij} \quad (8)$$

where k represents the number of the governance variable ($k = 1, 2, \dots, 5$). Across 8 out of 10 models (excluding Models 4 and 9), we find that in the absence of good governance, i.e., $GOV(k) =$

[52] The results for 5-day bond CARs at both the bond (issue) and firm levels are quantitatively similar. For brevity, we only include the 3-day results in our analysis.

0, wherein managers (shareholders) have stronger (weaker) control rights, 3-day (5-day) bond CARs are positively related to those of 3-day (5-day) equity CARs at the 1% significance level, casting doubt on the realignment hypothesis of Jun et al. (2009) wherein bondholders, in the presence of entrenched management, would be expected to react more negatively to an OMR announcement than under non-entrenched management. However, in these same models, when our dummy variables for good governance, $GOV(k)$, are interacted with bond CARs, we find that, while still positively related, the magnitude of the relationship between equity CARs and bond CARs is greatly *reduced* in the presence of stronger shareholder rights and weaker managerial control.[53] While not providing direct evidence of a wealth transfer, the negative signs on the interaction terms do imply that good governance weakens the overall positive relationship (creditor interest alignment) between equity and bond market responses to an OMR instead of strengthening it, providing indirect support for our H2 hypothesis.[54]

6. Conclusion

In this paper, we address the unresolved issue of whether bondholder wealth is expropriated by shareholders (wealth transfer hypothesis) around the announcement of an OMR. Extant studies yield conflicting results dealing with both the direction and possible drivers of abnormal bondholder responses primarily due to confounding issues involving both the availability and frequency of transactional bond data as well as the researchers' choice of method to compute abnormal bond returns. Using a methodology prescribed by Bessembinder et al. (2009) that results in the lowest Type I (false positive) and Type II (false negative) errors in reported test statistics, we

[53] While all of the coefficients in these models are negative, only the coefficients for the interaction terms in Models 5, 6, 7, and 10 are statistically significant.

[54] Interestingly, in Model 4 we find that the equity market responds significantly negatively to the presence of higher CEO equity ownership (GOV4); however, the coefficient on the interaction term with the 3-day bond CAR is highly significantly positive, raising the question of whether CEO ownership is an effective proxy for "good" governance in this instance. We also find the same significantly positive interaction term (GOV4 x Bond_CAR) in Model 9 for the 5-day CARs although the coefficient on GOV4, alone in Model 9, is positive and insignificant.

calculate 3-day (and 5-day) risk-adjusted cumulative abnormal bond returns (CARs) using daily benchmark portfolios constructed from the universe of all bond transactions in TRACE surrounding the announcement of 553 OMRs over the period from July 2002 thru December 2015. By calculating 3-day (and 5-day) bond CARs around the *actual* announcement date of an OMR, we are able to examine the direct interaction of wealth effects between the firm's shareholders and bondholders without the potential *noise* impounded in abnormal bond returns found in earlier studies.

Consistent with prior literature, we find 3-day and 5-day equity CARs are significantly positive surrounding the announcement of an OMR; however, we find that 3-day and 5-day bond CARs are slightly negative at both the issue and aggregate firm levels. Prior studies claim that this finding supports the wealth transfer hypothesis. However, in order to verify a wealth transfer, significant evidence of negative correlations between equity and bond CARs must exist. To date, no evidence of this inverse relationship has been uncovered in the extant bondholder-OMR literature. Therefore, we focus on identifying this negative relationship in our research. In an effort to identify subclasses of bondholders that may be affected differently by OMRs, we subdivide the sample into four sub groups based on both investment grade and time to maturity. Here, we find some univariate evidence that a distinct subclass of bonds, i.e., short-term/high yield (ST/HY), may suffer from wealth expropriation as equity and ST/HY bond CARs are negatively, although not significantly, correlated. We further explore this finding in a multivariate setting and find evidence that 3-day CARs for ST/HY bonds are negatively related to 3-day equity CARs, although again, the relationship is not significant, while the three other subclasses of bond CARs are all positively related to equity CARs. As such, using traditional debt classification schemes, we are unable to find any significant evidence of a negative correlation between abnormal returns to bondholders and shareholders, initially casting doubt on a wealth transfer hypothesis.

As a robustness check, we follow the advice of Maxwell and Stephens (2003) and examine

the combined responses of bondholders and shareholders as distinct subgroups (bondholder-shareholder response) in an effort to discern how stakeholders jointly interpret the information content of an OMR announcement. We find mean bond and equity CARs are much larger in absolute magnitude when considering subgroups based on their joint reactions (e.g., positive-positive). More importantly, we now find significant negative correlations among subgroups where the abnormal responses are diametrically opposed, i.e., positive-negative and negative-positive, providing some univariate evidence of potential wealth transfers among stakeholders in these two subgroups. However, while the negative relationship still exists between abnormal returns (CARs) for these two subgroups in a multivariate setting, we again find that the coefficients of interest are not statistically significant.

Lastly, we extend the examination of Jun et al. (2009) into the effects of agency conflicts on stakeholder responses to an OMR. Recent empirical evidence suggests that creditors' (e.g., bondholders) interests may be more closely aligned with those of entrenched managers. As such, Jun et al. argue that bondholders should respond very negatively to an OMR announcement conducted by entrenched managers as creditors would see this as a *realignment* of managers interests with those of external shareholders. In contrast, we find that in the presence of entrenched management, bondholder and shareholder CARs are significantly positively related. Additionally, we find that the presence of stronger external control significantly weakens this positive relationship between shareholder and bondholder CARs.

Overall, while we find some univariate evidence of potential wealth transfers, our results cast doubt on the wealth transfer hypothesis as an explanation for the abnormal responses of bondholders and shareholders to the announcement of an OMR. However, the results from our examination of joint stakeholder responses as well as the implications of creditor-manager incentive alignment offer the most promise for future research examining the wealth effects of OMRs.

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Appendix A: Variable construction

Variable name	Description
Repurchase variables	
BOND_CAR (VW)	3-day and 5-day cumulative abnormal bond returns (value-weighted) calculated following the methodology outlined in Bessembinder et al. (2009). See Section 3.2 for a complete description of the methodology.
CAR-MM	3-day and 5-day cumulative abnormal equity returns based on the market model (MM) of expected returns -calculated using standard event methodology described in Brown and Warner (1985)
Repurchase Authorization Amt	Authorized (announced) dollar amount, in billions, of open market share repurchase (OMR) program obtained from SDC Mergers and Acquisitions database - adjusted to 2015 dollars (CPI)
PER_SGHT	Percent Equity Sought (%) - percent of equity targeted in OMR announcement – obtained from SDC Mergers and Acquisitions database
Bond Issues Outstanding	Number of outstanding bond issues per firm as of the actual OMR announcement date
Firm-level variables	
Total assets	Book value of total assets (AT) adjusted to 2015 dollars (CPI)
LN (Tot Assets)	Natural logarithm of the book value of total assets
Market value of equity	Calculated as common shares outstanding (CSHO) multiplied by fiscal year-end closing share price (PRCC) adjusted to 2015 dollars (CPI)
Sales	Book value of total sales (SALE) adjusted to 2015 dollars (CPI)
Sales Growth (3-yr)	Calculated as the compound rate of sales (SALE) growth over the prior three years
Market/Book	Calculated as the market value of assets (common shares outstanding quarter (CSHO) multiplied by fiscal year-end closing price (PRCC_F) plus total assets (AT) minus common equity (CEQ) minus book value of deferred taxes (TXDB)). This amount is scaled by the book value of total assets (AT).
Mkt leverage	Calculated as long-term debt (DLTT) divided by the sum of long-term debt (DLTT) and the market value of equity (CSHO x PRCC_F)
Cash/Assets	Calculated as cash and cash equivalents (CHE) divided by the book value of total assets (AT).
FCF/Assets	Calculated as operating income before depreciation (OIBDP) less the sum of depreciation and amortization (DP), total income taxes (TXT), interest expense (XINT), preferred (preference) dividends (DVP), and common dividends (DVC). This amount is scaled by the book value of total assets (AT).
Beta_unlev	Calculated using Hamada's equation as market levered Beta divided by one plus (one minus the marginal corporate tax rate multiplied by the debt-to-equity ratio). Also referred to as “asset” beta.

Beta levered	Measure of systematic market risk estimated from the market model over the 255 trading days before the event window
Runup	Using the market model, we calculate prior cumulative abnormal returns over the period beginning 44 days prior to and ending 4 days prior to the actual announcement date.
OROA growth	Calculated as the compound rate of growth in operating income before depreciation and amortization (OIBDP) scaled by total assets (AT) over the prior three years (3-years).
Dividend payer	Dummy variable equal to one if the firm paid common dividends during the four quarters prior to the event window, and zero otherwise
Bond variables	
Market value outstanding	Calculated as amount outstanding (issue id) multiplied by the daily trade-weighted price on the last business day in the fiscal quarter [-2] adjusted to 2015 dollars (CPI)
Time to maturity	Remaining time to maturity (TTM), in years, of the outstanding issue as of the announcement date
ST	Short term - dummy variable equal to one if time to maturity is less than or equal to the median TTM for all bond issues, and zero otherwise
Average rating	The simple average of the credit ratings of the three CRA(s): Moody's, Standard and Poor's, and Fitch as of the announcement date. Character based ratings are converted to numeric values starting at 1 for AAA rated debt and ending at 22 for CC.
Investment grade	Dummy variable equal to one if the average credit rating is equal to BBB- or higher, and zero otherwise
HY	High Yield - dummy variable equal to one if the average credit rating is BB+ or lower, and zero otherwise
Payout restrictive covenants	Dummy variable equal to one if bond indenture includes covenants restricting (limiting) dividends or issuer's freedom to make payments other than dividends to shareholders (other entities), and zero otherwise
Finance restrictive covenants	Dummy variable equal to one if bond indenture includes covenants restricting issuer's ability to issue certain types of debt or places limits on total indebtedness, and zero otherwise
Governance variables	
E-Index	Bebchuk, Cohen, and Ferrell (2009) "*entrenchment index*" - constructed by adding one (initial value of zero) for each of the following (6) anti-takeover provisions present: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments.
Entrenched	Dummy variable equal to one if the E-index value is greater than or equal to the median E-index value for all firms, and zero otherwise
Institutional Ownership	Total percentage of equity held (owned) by external institutions

Top5InstOwn	Percentage of equity held (owned) by the top 5 largest institutional owners
CEO Ownership	Total percentage of equity held (owned) by the firm's CEO
Powerful CEO	Defined as a CEO who simultaneously holds the positions of CEO, Chairman of the Board (COB), and President, as well as serving as the only insider on the Board of Directors
Staggered board	Anti-takeover provision that divided the directors into separate classes (typically three) and limits the election of directors in any one year to one class with overlapping terms (also referred to as a classified board)
Poison pill	Anti-takeover provision that is triggered in the event of an unauthorized takeover that gives creditors the right to demand redemption of all outstanding debt or that dilutes the acquirers' effective voting power
Governance Index	Calculated per the methodology in Ji et al. (2017) as the sum of the values of the "good governance" dummy variables GOV1-GOV4, with possible values ranging from 0 to 4. Higher values represent greater external shareholder control/weak managerial control.
GOV1	Dummy variable that takes a value of one (1) if the level of managerial entrenchment, as measured by the E-index (Bebchuk et al., 2009), is less than the median level for all sample firms (i.e., non-entrenched), and zero otherwise
GOV2	Dummy variable that takes a value of one if the firm does not have a "Powerful CEO", and zero otherwise.
GOV3	Dummy variable that takes a value of one if the firm's institutional ownership (%) is greater than or equal to the median institutional ownership (%) of all sample firms, and zero otherwise.
GOV4	Dummy variable that takes a value of one if the CEO's equity ownership (%) is greater than or equal to the median CEO ownership (%) for all sample firms, and zero otherwise.
GOV5	Dummy variable that takes a value of one (1) if the cardinal value of the constructed Governance Index, based on the first (4) measures of governance, is greater than the median, and zero otherwise.

Table 1: OMR distribution by year announced and Fama-French industry classification.

The sample contains 553 distinct open market repurchase (OMR) announcements over the period from July 01, 2002 thru December 31, 2015 that have matching public bond data available through the NASD Trade Reporting and Compliance Engine (TRACE) database to calculate 3-day (5-day) cumulative abnormal bond returns CARs. Panel A reports OMR announcements by year announced at both the firm and bond issue level. Panel B reports the distribution of OMRs by Fama-French 12-Industry classifications.

Panel A: OMR announcements by year

Year	Firm No.	%	Bond-level No.	%
2002	5	0.90	9	0.46
2003	8	1.45	16	0.82
2004	20	3.62	72	3.68
2005	36	6.51	129	6.60
2006	37	6.69	144	7.36
2007	52	9.40	178	9.10
2008	38	6.87	69	3.53
2009	22	3.98	65	3.32
2010	45	8.14	149	7.62
2011	62	11.21	177	9.05
2012	60	10.85	226	11.55
2013	54	9.76	189	9.66
2014	54	9.76	230	11.76
2015	60	10.85	303	15.49
Total	553	100.00	1,956	100.00

Panel B: OMR announcements by Fama-French 12-Industries

Ind_Code	Fama-French Industry	OMR No.	%
1	Consumer non-durables	38	6.87
2	Consumer durables	9	1.63
3	Manufacturing	50	9.04
4	Energy	23	4.16
5	Chemicals	18	3.25
6	Business Equipment	52	9.40
7	Television and telecom	19	3.44
8	Utilities	15	2.71
9	Wholesale and retail	87	15.73
10	Healthcare	51	9.22
11	Finance	144	26.04
12	Other	47	8.50
	Total	553	100.00

Table 2: Sample descriptive statistics

This table reports descriptive statistics for a sample of 553 OMR announcements over the period from 2002 to 2015 (Panel A) including associated firm-level (Panel B), bond issue-level (Panel C), and Governance (Panel D) characteristics. Appendix A describes the construction of all variables. All continuous variables have been winsorized at the 1% level to mitigate the effect of outliers. All dollar amounts have been adjusted to 2015 dollars (U-CPI) to account for inflation.

Panel A: OMR program characteristics (N=553)

	Mean	Std. Dev.	Q1	Median	Q3
Repurchase Authorization Amt ($bil)	2.87	4.90	0.50	1.00	3.00
Percent Equity Sought (%)	7.47	4.37	4.05	6.35	10.14
Bond Issues Outstanding	3.66	4.80	1.0	2.0	4.0

Panel B: Firm characteristics (N=552)

	Mean	Std. Dev.	Q1	Median	Q3
Total assets ($bil)	122.92	302.60	10.67	25.21	70.30
Market value of equity ($bil)	44.58	61.66	10.16	19.83	47.45
Sales ($bil)	32.87	40.22	6.99	15.23	41.46
Market/Book	1.689	0.797	1.082	1.396	2.094
Cash/Assets	0.101	0.095	0.031	0.070	0.145
FCF/Assets	0.045	0.036	0.017	0.039	0.066
Market leverage	0.252	0.172	0.125	0.210	0.345
Sales growth (3-yr)	0.090	0.195	0.011	0.058	0.119
OROA growth (3-yr)	0.029	0.146	-0.047	0.010	0.081
Beta_unlevered	0.771	0.265	0.581	0.753	0.946
Runup	-0.017	0.099	-0.066	-0.014	0.037
Dividend Payer	0.848				

Panel C: Bond issue characteristics (N=2025)

	Mean	Std. Dev.	Q1	Median	Q3
Market Value Outstanding ($mil)	1,089.25	836.01	520.07	858.77	1,332.75
Time to maturity (yrs.)	8.38	9.08	2.96	5.55	9.11
Average Rating	6.95	2.77	5.00	6.50	8.67
Investment grade	0.895				
Payout restrictive covenants	0.076				
Finance restrictive covenants	0.123				

Table 2: Sample descriptive statistics (cont'd)

Panel D: Governance characteristics (firm-level)

	N	Mean	Std. Dev.	Q1	Median	Q3
E-Index (BCF, 2009)	537	2.74	1.33	2.00	3.00	4.00
Institutional ownership (%)	492	76.68	14.77	68.46	79.01	86.86
Top5InstOwn (%)	492	25.67	8.12	19.72	24.63	30.18
CEO ownership (%)	444	0.56	1.15	0.07	0.21	0.52
Powerful CEO	500	0.16				
Entrenched	537	0.63				
Governance Index	553	2.12	0.93	2.0	2.0	3.0
GOV5	553	0.34				
Independent board	500	0.98				
Staggered board	537	0.31				
Poison pill	537	0.14				

Table 3: Cumulative abnormal equity and bond returns

This table reports 3-day and 5-day cumulative abnormal equity and bond returns (CARs) around the announcement of 553 open market repurchase announcements (OMR) over the period from 2002 thru 2015. All OMR announcements are taken from the SDC Mergers and Acquisition database. Daily bond return data is taken from the NASD Trade Reporting and Compliance Engine (TRACE) database. Panel A reports cumulative abnormal equity returns using standard event-methodology (market-model). We use the value-weight return on all CRSP firms listed on the NYSE, AMEX, or NASDAQ as a proxy for the market. Panel B (C) reports cumulative abnormal bond returns at the bond issue (firm) level. Bond-level CARs are aggregated at the firm level using the market value of the outstanding issues as weights. Daily abnormal bond returns are calculated by subtracting value (equal) weighted benchmark returns. Value (equal) weighted benchmark portfolios are formed daily from all TRACE transactions and are grouped by credit ratings. Reported CARs are further segmented by credit rating into investment grade (IG) and non-investment grade (Non-IG). All returns have been winsorized at the 1% level to mitigate the effect of outliers. Significance of means (medians) are determined using standard t-tests (Wilcoxon signed rank test). We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Panel A: Cumulative abnormal equity returns (%)

	Est.	All Sample Firms			Investment Grade (IG)			Non-Investment Grade (HY)		
Event Window	Model	N	Mean	Median	N	Mean	Median	N	Mean	Median
3-day CAR	Market	549	0.9551***	0.8875***	450	0.8512***	0.7643***	99	1.4274**	1.6838***
5-day CAR	Market	480	0.8462***	0.7776***	393	0.7708***	0.7331***	87	1.1872*	1.5493***

Panel B: Cumulative abnormal bond returns - event bond level (%)

	Matched	All Bonds			Investment Grade (IG)			Non-Investment Grade (HY)		
Event Window	Portfolio	N	Mean	Median	N	Mean	Median	N	Mean	Median
3-day CAR	Value	2,025	-0.0678***	-0.0565***	1,812	-0.0659***	-0.0486***	213	-0.0844	-0.1203**
3-day CAR	Equal	2,025	-0.2085***	-0.1918***	1,812	-0.2100***	-0.1910***	213	-0.1959***	-0.2028***
5-day CAR	Value	1,711	-0.1225***	-0.0766***	1,534	-0.1117***	-0.0721***	177	-0.2162**	-0.1994***
5-day CAR	Equal	1,711	-0.3627***	-0.3178***	1,534	-0.3658***	-0.3239***	177	-0.3354***	-0.2839***

Panel C: Cumulative abnormal bond returns - event firm level (%)

	Matched	All Sample Firms			Investment Grade (IG)			Non-Investment Grade (HY)		
Event Window	Portfolio	N	Mean	Median	N	Mean	Median	N	Mean	Median
3-day CAR	Value	553	-0.0794**	-0.0718***	455	-0.0949***	-0.0708***	98	-0.0073	-0.1479
3-day CAR	Equal	553	-0.2107***	-0.2207***	455	-0.2294***	-0.2184***	98	-0.1237	-0.2297*
5-day CAR	Value	483	-0.1183***	-0.0666***	396	-0.1136***	-0.0615***	87	-0.1395	-0.1069
5-day CAR	Equal	483	-0.3390***	-0.2970***	396	-0.3437***	-0.2990***	87	-0.3177**	-0.2547**

Table 4: Correlation coefficients: Equity and bond 3-day and 5-day CARs

This table reports Pearson and Spearman correlation coefficients among 3-day (5-day) cumulative abnormal equity and bond returns (CARs) around the announcement of 553 open market repurchase announcements (OMR) over the period from 2002 thru 2015. See Table 3 for a description of the source and calculation of equity and bond CAR(s). All cumulative abnormal bond returns (CARs) used in this table are calculated based on daily value weighted (VW) benchmark returns from the TRACE universe of bonds. Panels A.1 thru A.3 (B.1 thru B.3) report correlation coefficients at the event-bond (event-firm) level. Panels A.1 and B.1 are segmented by investment grade. Panels A.2 and B.2 (A.3 and B.3) report correlation coefficients for short-term (long-term) bond issues and are further segmented by investment grade. Short-term (long-term) issues are those defined as less than (greater than or equal to) the median time-to-maturity (TTM) of the outstanding issue. All returns have been winsorized at the 1% level to mitigate the effect of outliers. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Panel A.1: Correlation coefficients: Event-bond level: all bonds by investment grade

	3-Day (5-Day) Equity CAR (Mkt Model)								
	All Bonds			Investment Grade (IG)			Non-Investment Grade (Non-IG)		
Variable	N	Pearson	Spearman	N	Pearson	Spearman	N	Pearson	Spearman
3-Day Bond CAR (VW)	2019	0.11124***	0.08537***	1807	0.11336***	0.09553***	212	0.10533	0.07372
5-Day Bond CAR (VW)	1707	0.17504***	0.12359***	1531	0.16683***	0.12276***	176	0.21470***	0.15975**

Panel A.2: Correlation coefficients: Event-bond level - short-term bonds by investment grade

	3-Day (5-Day) Equity CAR (Mkt Model)								
	Short-term (All)			Short-term*Investment Grade			Short-term*Non-Investment Grade		
Variable	N	Pearson	Spearman	N	Pearson	Spearman	N	Pearson	Spearman
3-Day Bond CAR (VW)	1002	0.08306***	0.11704***	924	0.12359***	0.14121***	78	**-0.08344**	**-0.06236**
5-Day Bond CAR (VW)	855	0.14266***	0.10683***	792	0.16224***	0.13234***	63	0.06535	**-0.12560**

Panel A.3: Correlation coefficients: Event-bond level - long-term bonds by investment grade

	3-Day (5-Day) Equity CAR (Mkt Model)								
	Long-term (All)			Long-term*Investment Grade			Long-term*Non-Investment Grade		
Variable	N	Pearson	Spearman	N	Pearson	Spearman	N	Pearson	Spearman
3-Day Bond CAR (VW)	1017	0.12759***	0.06517**	883	0.10991***	0.05769*	134	0.21488**	0.14739*
5-Day Bond CAR (VW)	852	0.19487***	0.14408***	739	0.17383***	0.12192***	113	0.29327***	0.30048***

Table 4: Correlation coefficients: Equity and bond 3-day and 5-day CARs (cont'd)

Panel B.1: Correlation coefficients: Event-firm level: all bonds by investment grade

	3-Day (5-Day) Equity CAR (Mkt Model)								
	All Firms			Investment Grade (IG)			Non-Investment Grade (Non_IG)		
Variable	N	Pearson	Spearman	N	Pearson	Spearman	N	Pearson	Spearman
3-Day Bond CAR (VW)	549	0.10293**	0.08507**	452	0.05847	0.08392*	97	0.18789*	0.17017*
5-Day Bond CAR (VW)	480	0.17707***	0.09386**	394	0.12001**	0.06177	86	0.29253***	0.20834*

Panel B.2: Correlation coefficients: Event-firm level: short-term bonds by investment grade

	3-Day (5-Day) Equity CAR (Mkt Model)								
	Short-term (All)			Short-term*Investment Grade			Short-term*Non-Investment Grade		
Variable	N	Pearson	Spearman	N	Pearson	Spearman	N	Pearson	Spearman
3-Day Bond CAR (VW)	274	0.09180	0.06627	223	0.08471	0.08975	51	0.10383	0.08412
5-Day Bond CAR (VW)	240	0.22187***	0.07172	195	0.14566*	0.04887	45	0.31693**	0.13400

Panel B.3: Correlation coefficients: Event-firm level: long-term bonds by investment grade

	3-Day (5-Day) Equity CAR (Mkt Model)								
	Long-term (All)			Long-term*Investment Grade			Long-term*Non-Investment Grade		
Variable	N	Pearson	Spearman	N	Pearson	Spearman	N	Pearson	Spearman
3-Day Bond CAR (VW)	275	0.11119*	0.09919	229	0.03575	0.07152	46	0.28637*	0.28086*
5-Day Bond CAR (VW)	240	0.14845**	0.11309*	199	0.10628	0.06956	41	0.25671	0.25192

Table 5: Pooled OLS regressions of cumulative abnormal returns (bond-level)

This table reports results from pooled OLS regressions of 3-day (5-day) equity CARs on 3-day (5-day) bond CARs measured around the announcement of 553 open market repurchase programs over the period from 2002 thru 2015. The dependent variable in models (1) thru (4) is the 3-day equity CAR (market-model). The dependent variable in models (5) thru (8) is the 5-day equity CAR (market-model). Our main variable of interest used in models (1) thru (4) is the 3-day bond CAR (CAR102_VW), while it is the 5-day bond CAR (CAR203_VW) in models (5) thru (8). We use the generic label BOND_CAR (VW) to denote both. All bond CARs are calculated using daily value-weighted benchmark portfolio returns from the TRACE universe of bonds. Our focus in these regressions is on the interaction between the 3-day (5-day) equity CAR and the 3-day (5-day) bond CAR, as well as the interaction of dummy variables to control for non-investment grade (HY), short-term (ST) (defined as having remaining time-to-maturity (TTM) below the sample median TTM), and the interaction of these dummy variables to control for short-term, non-investment grade (HY x ST). Firm level control variables are described in detail in Appendix A. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics are based on robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

	3-day	3-day	3-day	3-day	5-day	5-day	5-day	5-day
	CAR_MM	CAR_MM	CAR_MM	CAR_MM	CAR_MM	CAR_MM	CAR_MM	CAR_MM
Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BOND_CAR (VW)	0.48916***	0.47203***	0.52063***	0.43451***	0.76016***	0.71943***	0.78034***	0.67198***
	(3.97)	(3.49)	(3.55)	(2.71)	(5.45)	(4.84)	(4.79)	(3.69)
HY		-0.00500		-0.00378		-0.00481		-0.00251
		(-1.31)		(-0.82)		(-1.07)		(-0.45)
HY x BOND_CAR (VW)		0.09491		0.53090		0.17608		0.52854
		(0.29)		(1.29)		(0.45)		(1.23)
ST			0.00212	0.00218			0.00148	0.00192
			(1.42)	(1.51)			(0.86)	(1.12)
ST x BOND_CAR (VW)			-0.11638	0.14138			-0.08320	0.19589
			(-0.42)	(0.46)			(-0.25)	(0.60)
HY x ST				-0.00089				-0.00478
				(-0.13)				(-0.62)
HY x ST x BOND_CAR (VW)				-1.12995*				-1.10570
				(-1.73)				(-1.25)
PER_SGHT	0.08710***	0.08709***	0.08726***	0.08798***	0.08179***	0.08208***	0.08201***	0.08309***
	(4.59)	(4.60)	(4.59)	(4.67)	(3.65)	(3.64)	(3.65)	(3.69)
BETA_UNLEV	0.02543***	0.02601***	0.02546***	0.02595***	0.02646***	0.02702***	0.02644***	0.02663***
	(6.03)	(6.18)	(6.05)	(6.15)	(4.95)	(5.04)	(4.94)	(4.95)
RUNUP	-0.01211	-0.01333	-0.01196	-0.01242	-0.02398**	-0.02470**	-0.02392**	-0.02358*
	(-1.20)	(-1.34)	(-1.19)	(-1.25)	(-1.96)	(-2.04)	(-1.96)	(-1.92)

Table 5: Pooled OLS regressions of cumulative abnormal returns (bond-level) (cont'd)

	3-day CAR_MM	3-day CAR_MM	3-day CAR_MM	3-day CAR_MM	5-day CAR_MM	5-day CAR_MM	5-day CAR_MM	5-day CAR_MM
Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LN (TOT ASSETS)	0.00315***	0.00276***	0.00310***	0.00276***	0.00447***	0.00407***	0.00445***	0.00408***
	(4.16)	(3.81)	(4.06)	(3.77)	(4.80)	(4.50)	(4.78)	(4.49)
FCF/ASSETS	0.06309***	0.05793**	0.06156**	0.05845**	0.01855	0.01118	0.01708	0.01315
	(2.36)	(2.17)	(2.29)	(2.16)	(0.52)	(0.30)	(0.48)	(0.35)
MKT LEVERAGE	0.03654***	0.03982***	0.03618***	0.03928***	0.02490***	0.02779***	0.02458***	0.02768***
	(5.73)	(6.63)	(5.67)	(6.45)	(3.21)	(3.69)	(3.17)	(3.66)
SALES_GROWTH	-0.00387***	-0.00401***	-0.00388***	-0.00395***	-0.00498***	-0.00522***	-0.00498***	-0.00500***
	(-3.42)	(-3.65)	(-3.42)	(-3.61)	(-3.65)	(-3.78)	(-3.62)	(-3.49)
OROA_GROWTH	0.01795***	0.018256***	0.01788***	0.01814***	0.01844***	0.01869***	0.01849***	0.01896***
	(3.81)	(3.86)	(3.75)	(3.78)	(3.20)	(3.13)	(3.18)	(3.12)
DIVIDEND PAYER	-0.01305***	-0.01394***	-0.01301***	-0.01335***	-0.01876***	-0.01990***	-0.01879***	-0.01973***
	(-3.73)	(-3.87)	(-3.73)	(-3.74)	(-4.79)	(-4.92)	(-4.81)	(-4.82)
Industry & year controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. *R*-square	0.1390	0.1393	0.1391	0.1405	0.1361	0.1362	0.1355	0.1364
Observations	1,961	1,961	1,961	1,961	1,661	1,661	1,661	1,661

Table 6: Pooled OLS regressions of cumulative abnormal returns (firm-level)

This table reports event-firm level results from pooled OLS regressions of 3-day (5-day) equity CARs on 3-day (5-day) bond CARs measured around the announcement of 553 open market repurchase programs over the period from 2002 thru 2015. The dependent variable in models (1) and (2) is the 3-day equity CAR (market-model). The dependent variable in models (3) and (4) is the 5-day equity CAR (market-model). Our main variable(s) of interest in models (1) and (2) is the 3-day bond CAR (CAR102_VW), while it is the 5-day bond CAR (CAR203_VW) in models (3) and (4). We use the generic label BOND_CAR (VW) to denote both. All bond CARs are calculated using daily value-weighted benchmark portfolio returns from the TRACE universe of bonds. Our focus in these regressions is on the interaction between the 3-day (5-day) equity CAR and the 3-day (5-day) bond CAR, as well as the interaction of dummy variables to control for non-investment grade (HY), short-term (ST) (defined as having remaining time-to-maturity (TTM) below the sample median TTM). Firm level control variables are described in detail in Appendix A. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics (in parentheses) are based on robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

	3-day CAR_MM	3-day CAR_MM	5-day CAR_MM	5-day CAR_MM
Specification	(1)	(2)	(3)	(4)
HY x ST x BOND_CAR(VW)	0.58854	0.65922	1.6801**	1.75138*
	(0.87)	(0.96)	(1.98)	(1.95)
ST x (1-HY) x BOND_CAR(VW)	0.65789	0.49010	0.95067*	0.45164
	(1.59)	(1.28)	(1.92)	(1.01)
(1-ST) x HY x BOND_CAR(VW)	1.18556**	1.15763**	1.07489	1.02492
	(2.32)	(2.38)	(1.39)	(1.31)
(1-ST) x (1-HY) x BOND_CAR(VW)	0.27680	0.29512	0.43180	0.46866
	(0.83)	(0.86)	(1.07)	(1.13)
ST	0.00339	0.00240	0.00012	-0.00074
	(1.12)	(0.79)	(0.03)	(-0.19)
HY	0.00751	-0.00317	0.01025	0.0000
	(0.83)	(-0.33)	(1.05)	(0.01)
HY*ST	-0.01188	-0.00930	-0.01377	-0.01123
	(-1.09)	(-0.82)	(-1.13)	(-0.88)
PER_SGHT		0.10596***		0.09576**
		(2.73)		(2.15)
BETA_UNLEV		0.02222***		0.016205**
		(3.21)		(1.96)
RUNUP		-0.00146		-0.00238
		(-0.09)		(-0.12)
LN (TOT ASSETS)		0.00100		0.00036
		(0.67)		(0.21)
FCF/ASSETS		0.08514*		-0.00252
		(1.66)		(-0.04)
MKT LEVERAGE		0.04804***		0.02785*
		(3.42)		(1.71)
SALES_GROWTH		-0.00321		-0.00493
		(-1.27)		(-1.56)

Table 6: Pooled OLS regressions of cumulative abnormal returns (firm-level) (cont'd)

	3-day CAR_MM	3-day CAR_MM	5-day CAR_MM	5-day CAR_MM
Specification	(1)	(2)	(3)	(4)
OROA_GROWTH		0.00581		0.00481
		(0.60)		(0.43)
DIVIDEND PAYER		-0.00651		-0.01457**
		(-1.05)		(-2.32)
Constant Included	No	No	No	No
Industry & year controls	Yes	Yes	Yes	Yes
Adj. R-square	0.0917	0.1058	0.0730	0.0752
Observations	549	526	480	460

Table 7: Cumulative abnormal returns and correlations segmented by market response to an OMR announcement

This table reports 3-day (5-day) cumulative abnormal equity and bond returns (CARs), as well as Pearson and Spearman correlation coefficients, segmented by the market's response to the announcement of an OMR. Panels A & B (C & D) present descriptive statistics for 3-day and 5-day CARs and correlations, respectively, at the bond-level (firm level). All variables have been winsorized at the 1% level to mitigate the effect of outliers. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

		Market Response		Mean 3-day (5-day) CAR		Correlation Coefficients	
N	(%)	Debt	Equity	Debt	Equity	Pearson	Spearman
Panel A: 3-day cumulative abnormal returns/correlations (bond-level)							
655	32.4%	Positive (+)	Positive (+)	0.4993***	2.7573***	0.14281***	0.07015*
361	17.9%	Negative (-)	Negative (-)	-0.6040***	-2.8547***	0.20190***	0.06442
756	37.4%	Negative (-)	Positive (+)	-0.5032***	2.5136***	-0.09213**	-0.06801*
247	12.2%	Positive (+)	Negative (-)	0.5534***	-2.0191***	-0.04124	0.03677
2019	100.0%						
Panel B: 5-day cumulative abnormal returns/correlations (bond-level)							
510	29.9%	Positive (+)	Positive (+)	0.5005***	3.2002***	0.0369**	0.0003
343	20.1%	Negative (-)	Negative (-)	-0.6805**	-3.2779***	0.29644***	0.11573**
634	37.1%	Negative (-)	Positive (+)	-0.5468***	2.7237***	0.01460	0.02637
220	12.9%	Positive (+)	Negative (-)	0.5291***	-2.0937***	0.00588	0.03301
1707	100.0%						
Panel C: 3-day cumulative abnormal returns (firm-level)							
158	28.8%	Positive (+)	Positive (+)	0.5564***	3.0115***	0.21949***	0.15968**
117	21.3%	Negative (-)	Negative (-)	-0.5706**	-2.5471***	0.13170	0.11446
198	36.1%	Negative (-)	Positive (+)	-0.5099***	2.6251***	-0.06922	-0.07068
76	13.8%	Positive (+)	Negative (-)	0.5068***	-2.2787***	-0.22660**	-0.03962
549	100.0%						
Panel D: 5-day cumulative abnormal returns (firm-level)							
128	26.7%	Positive (+)	Positive (+)	0.4882***	3.2149***	0.37520***	0.20948**
107	22.3%	Negative (-)	Negative (-)	-0.6193**	-3.3904***	0.29986***	0.15723
168	35.0%	Negative (-)	Positive (+)	-0.5555***	3.0122***	0.07287	0.04136
77	16.0%	Positive (+)	Negative (-)	0.5201***	-1.9306***	-0.06590	0.13936
480	100.0%						

Table 8: Pooled OLS regressions of CARs segmented by market response (bond-level)

This table reports results from pooled OLS regressions of 3-day (5-day) equity CARs on 3-day (5-day) bond CARs segmented by the equity and bond markets' response (i.e. Equity CAR response/Bond CAR response) to the announcement of 553 open market repurchase programs over the period from 2002 thru 2015. The market responses are segmented into 4 groups: Pos/Pos, Neg/Neg, Pos/Neg, Neg/Pos. The dependent variable in models (1) thru (4) is the 3-day equity CAR (market-model). The dependent variable in models (5) thru (8) is the 5-day equity CAR (market-model). Our main variable(s) of interest used in models (1) thru (4) is the 3-day bond CAR (CAR102_VW), while it is the 5-day bond CAR (CAR203_VW) in models (5) thru (8). We use the generic label BOND_CAR (VW) to denote both. All bond CARs are calculated using daily value-weighted benchmark portfolio returns from the TRACE universe of bonds. Firm level control variables are described in detail in Appendix A. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics in parentheses are based on robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

	Pos/Pos	Neg/Neg	Pos/Neg	Neg/Pos	Pos/Pos	Neg/Neg	Pos/Neg	Neg/Pos
	3-day CAR	3-day CAR	3-day CAR	3-day CAR	5-day CAR	5-day CAR	5-day CAR	5-day CAR
Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BOND_CAR (VW)	0.12729	0.58560	-0.11134	-0.15046	0.34273	0.97028***	0.22269*	0.26694
	(0.67)	(1.41)	(-0.81)	(-0.48)	(1.35)	(3.02)	(1.73)	(0.95)
HIGH YIELD (HY)	0.00954*	-0.00719	-0.00216	-0.00988	0.00404	-0.02585**	0.00003	0.00070
	(1.92)	(-0.56)	(0.61)	(-0.87)	(0.60)	(-2.19)	(0.01)	(0.08)
ST	0.00299*	0.00630	-0.00026	-0.00587	0.00607***	0.00235	-0.00089	-0.00026
	(1.72)	(1.57)	(-0.18)	(-1.38)	(2.83)	(0.63)	(-0.54)	(-0.07)
PER_SGHT	0.08327***	-0.02057	0.14817***	0.04800	0.08442***	-0.07296	0.09681***	-0.06927
	(3.43)	(-0.41)	(6.56)	(0.94)	(3.02)	(-1.36)	(4.25)	(-1.41)
BETA_UNLEV	0.01154**	-0.00106	0.00976**	0.00568	0.02173***	0.0359***	0.01490***	-0.00336
	(2.23)	(-0.13)	(2.09)	(0.53)	(3.98)	(3.60)	(2.61)	(-0.36)
RUNUP	-0.02355**	-0.03892	-0.01792	0.03053	-0.01795	-0.00888	-0.02780***	0.03347
	(-2.13)	(-1.04)	(-1.55)	(1.04)	(-1.21)	(-0.42)	(-2.86)	(0.84)
LN (TOT ASSETS)	0.00119	0.00100	0.00187**	0.00362*	0.00207**	-0.00147	0.00135	-0.00103
	(1.57)	(0.63)	(2.22)	(1.90)	(2.06)	(-0.64)	(1.37)	(-0.45)
FCF/ASSETS	0.00803	0.04662	-0.10956***	0.22893*	-0.09947	0.28186***	-0.07784*	-0.03891
	(0.21)	(0.60)	(-2.89)	(1.87)	(-1.59)	(3.51)	(-1.80)	(-0.38)
MKT LEVERAGE	0.01060	0.01104	-0.00238	0.03083	-0.00332	0.04983***	0.00909	0.01700
	(1.36)	(0.66)	(-0.40)	(1.22)	(-0.32)	(2.69)	(1.10)	(0.97)
SALES_GROWTH	-0.01470***	-0.00862	-0.00850*	0.01313	-0.01379***	-0.05516***	-0.01469**	0.00369
	(-4.25)	(-0.60)	(-1.69)	(1.50)	(-3.85)	(-3.04)	(-2.42)	(0.54)

Table 8: Pooled OLS regressions of CARs segmented by market response (bond-level) (cont'd)

	Pos/Pos 3-day CAR	Neg/Neg 3-day CAR	Pos/Neg 3-day CAR	Neg/Pos 3-day CAR	Pos/Pos 5-day CAR	Neg/Neg 5-day CAR	Pos/Neg 5-day CAR	Neg/Pos 5-day CAR
Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OROA_GROWTH	0.01455**	0.01911	0.01146*	0.00173	0.0242***	0.03614**	0.01679**	0.01124
	(2.56)	(1.20)	(1.75)	(0.09)	(3.12)	(1.99)	(2.29)	(0.65)
DIVIDEND PAYER	-0.00861**	-0.02874***	-0.00680	-0.00435	-0.01363**	-0.00876	-0.01067**	-0.01968**
	(-2.16)	(-3.26)	(-1.62)	(-0.47)	(-1.96)	(-0.85)	(-2.55)	(-2.04)
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry & year controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. *R*-square	0.2895	0.3307	0.3098	0.1364	0.4140	0.5493	0.2610	0.1283
Observations	634	353	734	240	494	339	616	212

Table 9: Cumulative abnormal returns segmented by governance measures

This table reports 3-day cumulative abnormal equity and bond returns (CARs) around the announcement of 553 OMRs over the period from 2002 thru 2015, segmented by measures of corporate governance. Following Ji, Mauer, and Zhang (2017), we use (4) measures of 'good' governance as well as form an overall governance index calculated from these variables. GOV1 is a dummy variable that takes a value of 1 if the level of managerial entrenchment as measured by the E-index (Bebchuk et al., 2009) is less than or equal to the median, and zero otherwise. GOV2 is a dummy variable that takes a value of 1 if the firm does not have a 'powerful CEO', and zero otherwise. GOV3 is a dummy variable that takes a value of 1 if the firm's level of institutional ownership (%) is greater than or equal to the median level of institutional ownership (%), and zero otherwise. GOV 4 is a dummy variable that takes a value of 1 if the CEO's equity ownership (%) is greater than or equal to the median CEO ownership (%), and zero otherwise. GOV5 is a dummy variable that takes a value of 1 if the value of the *constructed* governance index, based on the first (4) measures of governance, is greater than the median, and zero otherwise. Two additional measures of governance and entrenchment, Top5InstOwn and Staggered Board, respectively, are also included. See Appendix A for a full description of all variables. Panel A presents descriptive statistics for 3-day equity CARs. Panel B (C) presents 3-day bond CARs at the bond-level (firm level). All variables have been winsorized at the 1% level to mitigate the effect of outliers. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Panel A: 3-day cumulative abnormal equity returns (CAR) (%)

Governance	Weaker Shareholder Rights			Stronger Shareholder Rights			Difference(s)	
Measure	N	Mean	Median	N	Mean	Median	Mean	Median
GOV1	336	0.7085***	0.7779***	197	1.3876***	1.0893***	-0.6791**	-0.3114
		(0.0008)	(0.0000)		(0.0000)	(0.0000)	(0.0467)	(0.1609)
GOV2	82	-0.0546	0.2871	416	1.0406***	0.9421***	-1.0952**	-0.6550***
		(0.8891)	(0.7088)		(0.0000)	(0.0000)	(0.0151)	(0.0087)
GOV3	246	0.9162***	0.8807***	242	0.8747***	0.9160***	0.0415	-0.0353
		(0.0000)	(0.0000)		(0.0018)	(0.0000)	(0.9040)	(0.8720)
GOV4	199	0.7922***	0.6585***	306	1.0048***	0.9784***	-0.2126	-0.3199
		(0.0007)	(0.0000)		(0.0000)	(0.0000)	(0.5132)	(0.1734)
GOV5	365	0.8313***	0.7623***	184	1.2008***	1.1117***	-0.3695	-0.3494
		(0.0000)	(0.0000)		(0.0001)	(0.0000)	(0.3062)	(0.2352)
Top5InstOwn	245	0.6767***	0.7442***	243	1.1163***	1.0695***	-0.4396	-0.3253*
		(0.0013)	(0.0000)		(0.0000)	(0.0000)	(0.2013)	(0.0744)
Staggered Board	163	1.0055***	1.1578***	370	0.9393***	0.7650***	0.0662	0.3928
		(0.0010)	(0.0000)		(0.0000)	(0.0000)	(0.8533)	(0.5347)

Table 9: Cumulative abnormal returns segmented by governance measures (cont'd)

Panel B: 3-day cumulative abnormal bond returns (CAR) bond-level (%)

Governance	Weaker Shareholder Rights			Stronger Shareholder Rights			Difference(s)	
Measure	N	Mean	Median	N	Mean	Median	Mean	Median
GOV1	951	-0.0754***	-0.0579***	1,053	-0.0612***	-0.0548***	-0.0142	-0.0031
		(0.0050)	(0.0024)		(0.0061)	(0.0008)	(0.6837)	(0.7624)
GOV2	319	-0.0487	-0.0440	1609	-0.0736***	-0.0589***	0.0249	0.0149
		(0.2273)	(0.1209)		(0.0001)	(0.0000)	(0.5937)	(0.6176)
GOV3	844	-0.0516**	-0.0365	845	-0.0959***	-0.0917***	0.0443	0.0552**
		(0.0393)	(0.1206)		(0.0012)	(0.0001)	(0.2534)	(0.0369)
GOV4	805	-0.0634**	-0.0379**	1142	-0.0747***	-0.0728***	0.0113	0.0349
		(0.0117)	(0.0128)		(0.0018)	(0.0003)	(0.7437)	(0.4879)
GOV5	779	-0.0861***	-0.0327**	769	-0.0671**	-0.0807***	-0.0190	0.0480
		(0.0022)	(0.0285)		(0.0126)	(0.0012)	(0.6246)	(0.4314)
Top5InstOwn	845	-0.0528**	-0.0349*	844	-0.0947***	-0.0922***	0.0419	0.0573*
		(0.0267)	(0.0904)		(0.0020)	(0.0002)	(0.2795)	(0.0504)
Staggered Board	350	-0.0595	-0.0692**	1654	-0.0697***	-0.0532***	0.0120	-0.0160
		(0.1926)	(0.0365)		(0.0002)	(0.0000)	(0.8351)	(0.5553)

Table 9: Cumulative abnormal returns segmented by governance measures (cont'd)

Panel C: 3-day cumulative abnormal bond returns (CAR) firm-level (%)

Governance	Weaker Shareholder Rights			Stronger Shareholder Rights			Difference(s)	
Measure	N	Mean	Median	N	Mean	Median	Mean	Median
GOV1	338	-0.0997**	-0.0800***	199	-0.0418	-0.0627	-0.0579	-0.0173
		(0.0148)	(0.0034)		(0.4829)	(0.1024)	(0.4221)	(0.5527)
GOV2	82	-0.0664	-0.0642	418	-0.0835**	-0.0763***	0.0171	0.0121
		(0.3930)	(0.3644)		(0.0303)	(0.0010)	(0.8546)	(0.5387)
GOV3	246	-0.0312	-0.0429	246	-0.1438**	-0.1973***	0.1126	0.1544**
		(0.4721)	(0.1905)		(0.0162)	(0.0020)	(0.1262)	(0.0263)
GOV4	199	-0.0672	-0.0622*	310	-0.1122**	-0.1058***	0.0450	0.0436
		(0.1279)	(0.0568)		(0.0195)	(0.0029)	(0.4888)	(0.2828)
GOV5	365	-0.0447	-0.0568*	188	-0.1466**	-0.1936***	0.1019	0.1368**
		(0.2228)	(0.0836)		(0.0364)	(0.0022)	(0.1960)	(0.0188)
Top5InstOwn	246	-0.0666	-0.0410	246	-0.1085*	-0.1569***	0.0419	0.1159
		(0.1316)	(0.1319)		(0.0677)	(0.0030)	(0.5701)	(0.1183)
Staggered Board	164	-0.0614	-0.0729	373	-0.0856**	-0.0716***	0.0242	-0.0013
		(0.3572)	(0.1542)		(0.0283)	(0.0025)	(0.7541)	(0.9904)

Table 10: Pooled OLS regressions of the interactions between governance and CARs (bond-level)

This table reports results from pooled OLS regressions of 3-day (5-day) equity CARs on 3-day (5-day) bond CARs interacted with measures of *good* corporate governance around the announcement of 553 open market repurchase programs. The dependent variable in models 1 to 5 (6 to 10) is the 3-day equity (5-day) CAR (Market Model). Our main variable(s) of interest used in models 1 to 5 (6 to 10) is the 3-day (5-day) bond CAR. Following Ji, Mauer, and Zhang (2017), we use (4) measures of 'good' governance as well as form an overall governance index calculated from these variables. GOV1 is a dummy variable that takes a value of 1 if the level of managerial entrenchment as measured by the E-index (Bebchuk et al., 2009) is less than or equal to the median, and 0 otherwise. GOV2 is a dummy variable that takes a value of 1 if the firm does not have a 'powerful CEO', and 0 otherwise. GOV3 is a dummy variable that takes a value of 1 if the firm's level of institutional ownership (%) is greater than or equal to the median level of institutional ownership (%), and 0 otherwise. GOV 4 is a dummy variable that takes a value of 1 if the CEO's equity ownership (%) is greater than or equal to the median CEO ownership (%), and 0 otherwise. GOV5 is a dummy variable that takes a value of 1 if the value of the *constructed* governance index, based on the first (4) measures of governance, is greater than the median, and 0 otherwise. See Appendix A for a full description of all variables. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Reported T-statistics are based on robust standard errors clustered at the firm level. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

	3-day CAR	3-day CAR	3-day CAR	3-day CAR	3-day CAR	5-day CAR	5-day CAR	5-day CAR	5-day CAR	5-day CAR
Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BOND_CAR (VW)	0.6304***	0.9652***	0.6349***	0.0437	0.6763***	0.9800***	1.4509***	0.9551***	0.2387	1.0185***
	(3.37)	(2.86)	(3.14)	(0.27)	(4.27)	(4.51)	(3.39)	(3.77)	(1.34)	(5.44)
GOV1	-0.0002					-0.0025				
	(-0.12)					(-1.10)				
GOV1xBOND_CAR	-0.3596					-0.6028**				
	(-1.49)					(-2.30)				
GOV2		0.0075***					0.0008			
		(3.64)					(0.31)			
GOV2xBOND_CAR		-0.5884					-0.9126**			
		(-1.62)					(-1.97)			
GOV3			-0.0066***					-0.0068**		
			(-2.87)					(-2.52)		
GOV3xBOND_CAR			-0.3042					-0.3457		
			(-1.16)					(-1.08)		
GOV4				-0.0039**					0.0008	
				(-2.28)					(0.40)	
GOV4xBOND_CAR				0.6090***					0.6693**	
				(2.58)					(2.56)	
GOV5					0.0011					0.0036*
					(0.60)					(1.70)
GOV5xBOND_CAR					-0.5109**					-0.6759**
					(-2.15)					(-2.33)

Table 10: Pooled OLS regressions of the interactions between governance and CARs (bond-level) (cont'd)

Specification	3-day CAR (1)	3-day CAR (2)	3-day CAR (3)	3-day CAR (4)	3-day CAR (5)	5-day CAR (6)	5-day CAR (7)	5-day CAR (8)	5-day CAR (9)	5-day CAR (10)
HY	-0.0046	-0.0043	-0.0040	-0.0013	-0.0039	-0.0086*	-0.0049	-0.0128**	-0.0040	-0.0055
	(-1.04)	(-0.85)	(-0.75)	(-0.27)	(-0.87)	(-1.66)	(-0.81)	(-2.09)	(-0.82)	(-1.07)
ST	0.0018	0.0018	0.0015	0.0019	0.0020	0.0018	0.0016	0.0007	0.0017	0.0017
	(1.20)	(1.17)	(0.96)	(1.25)	(1.32)	(1.00)	(0.87)	(0.38)	(0.94)	(0.97)
PER_SGHT	0.0867***	0.0838***	0.0890***	0.1001***	0.0865***	0.0847***	0.0804***	0.0812***	0.0935***	0.0854***
	(4.44)	(4.27)	(4.66)	(4.79)	(4.45)	(3.62)	(3.35)	(3.59)	(3.75)	(3.73)
BETA_UNLEV	0.0267***	0.0272***	0.0279***	0.0261***	0.0262***	0.0274***	0.0282***	0.0294***	0.0257***	0.0265***
	(6.05)	(5.87)	(6.26)	(5.57)	(6.04)	(4.97)	(4.75)	(5.17)	(4.40)	(4.90)
RUNUP	-0.0163	-0.0181	0.0091	-0.0177*	-0.0144	-0.0267**	-0.0399***	-0.0015	-0.0299**	-0.0237*
	(-1.60)	(-1.63)	(0.84)	(-1.69)	(-1.42)	(-2.10)	(-2.88)	(-0.11)	(-2.29)	(-1.89)
LN (TOT ASSETS)	0.0031***	0.0037***	0.0026***	0.0027***	0.0032***	0.0049***	0.0047***	0.0042***	0.0046***	0.0049***
	(3.71)	(4.63)	(2.79)	(3.44)	(4.23)	(4.58)	(4.72)	(3.62)	(4.64)	(5.13)
FCF/ASSETS	0.1190***	0.1056***	0.0764*	0.1545***	0.1125***	0.0978**	0.0685	0.0353	0.1127**	0.0746
	(3.07)	(2.82)	(1.91)	(4.12)	(3.56)	(1.97)	(1.40)	(0.69)	(2.25)	(1.59)
MKT LEVERAGE	0.0433***	0.0364***	0.0314***	0.0458***	0.0407***	0.0335***	0.0283***	0.0228***	0.0311***	0.0284***
	(6.66)	(5.52)	(4.68)	(6.90)	(6.19)	(4.25)	(3.54)	(2.78)	(3.92)	(3.62)
SALES GROWTH	-0.0153***	-0.0154***	-0.0115***	-0.0141***	-0.0146***	-0.0171***	-0.0180***	-0.0135***	-0.0195***	-0.0180***
	(-4.71)	(-4.66)	(-3.13)	(-4.21)	(-4.49)	(-4.07)	(-4.04)	(-2.71)	(-4.15)	(-4.23)
OROA GROWTH	0.0236***	0.0234***	0.0263***	0.0168***	0.0219***	0.0282***	0.0247***	0.0328***	0.0264***	0.0272***
	(4.44)	(4.48)	(4.67)	(2.95)	(4.08)	(4.42)	(3.86)	(5.01)	(3.78)	(4.27)
DIVIDEND PAYER	-0.0150***	-0.0168***	-0.0112***	-0.0117***	-0.0137***	-0.0199***	-0.0219***	-0.0143***	-0.0171***	-0.0193***
	(-4.00)	(-4.05)	(-2.74)	(-3.06)	(-3.74)	(-4.83)	(-4.93)	(-3.26)	(-4.09)	(-4.78)
Restricted Payments	0.0053	0.00535	0.0022	0.0007	0.0026	0.0192**	0.0112	0.0162*	0.0117	0.0107
	(0.63)	(0.55)	(0.25)	(0.08)	(0.33)	(2.27)	(1.11)	(1.81)	(1.36)	(1.34)
Industry & year controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-square	0.1498	0.1519	0.1450	0.1531	0.1486	0.1500	0.1465	0.1705	0.1444	0.1518
Observations	1,944	1,881	1,640	1,886	1,961	1,647	1,592	1,385	1,602	1,661

CHAPTER 3: ACCELERATED SHARE REPURCHASES: VALUE CREATION OR EXTRACTION

I. Introduction

> "It is critical … to understand that corporate leaders' duty of care and loyalty is not to every investor or trader who owns their companies' shares at any moment in time, but to the company and its long-term owners. Successfully fulfilling that duty requires that corporate leaders … resist the pressure of short-term shareholders to extract value from the company if it would compromise value creation for long-term owners…" [Larry Fink, Chairman and CEO of BlackRock, Mar. 31, 2015]

This paper examines the question of what motivates management to use privately negotiated Accelerated Share Repurchase (ASR) contracts as part of the firm's share repurchase authorization. ASR contracts are a relatively new financial innovation that enable a firm to quickly repurchase large amounts of its outstanding equity through a financial intermediary using derivative contracts. While having been around since the late 1990s, ASRs have received little attention in the literature[1] due to both their limited initial adoption and the lack of disclosure requirements prior to 2003.[2] As such, the first noticeable use of ASR contracts is observed beginning in 2004 (see e.g., Bargeron, Kulchania, and Thomas, 2011; Michel, Oded, and Shaked, 2010; and Dickinson, Kimmel, and Warfield, 2012). Using a hand-collected sample of 716 ASR contracts covering the period from 2004 to 2015, we find that at least 346 distinct firms have employed ASR contracts to buy back their shares. By absolute dollar amounts, ASRs have now become the second largest

[1] Accelerated Share Repurchase (ASR) contracts were first introduced in the literature in a working paper by Cook and Kim (2006) dealing with the use of derivative contracts to repurchase firm shares.

[2] In December of 2003, the SEC implemented new disclosure rules surrounding the repurchase of a firm's own shares through Item 703 of Regulation S-K under Section 12 of the Securities Exchange Act of 1934. As of March 15, 2004, firms are now required to disclose all share repurchase activity in their quarterly and annual financial statements (10-Qs/10-Ks) including the number of shares repurchased as well as the average price paid per share, the amount purchased under publicly announced repurchase authorizations, and the remaining amount available to be repurchased under such programs. Details of share purchases made under privately negotiated programs (including accelerated share repurchases) are to be indicated by footnote.

method of share repurchase in the U.S.[3] In recent years, 2013 and 2014, we find that, of all common share repurchases, ASRs comprise 9.5% ($58.95 billion) in 2013 and 10.53% ($71.21 billion) in 2014, respectively (see Figures 1 and 2). In 2015, firms reported a total ASR repurchase amount of $78.82 billion, representing 10.71% of all repurchases.[4]

An ASR contract is considered a privately negotiated repurchase by the Securities and Exchange Commission (SEC), and as such, does not qualify for "safe harbor" protection for the firm's management against charges of share price manipulation afforded to most open market repurchases (OMR) under SEC Rule 10b-18.[5] However, ASRs are very different from what has traditionally been considered a privately negotiated repurchase. An ASR is a legal contract between a firm and a financial intermediary that obligates the firm to immediately repurchase a significant amount of its outstanding equity. Typically, upon contract initiation, the financial intermediary borrows the repurchasing firm's shares from institutional investors and immediately short sells them to the firm. The intermediary then covers its short position in the open market over a predetermined contractual period. The distinguishing feature of an ASR that differentiates it from other repurchase methods is the incorporation of a forward contract with the intermediary that enables the firm to ultimately pay a volume-weighted average price (VWAP) for its shares similar to the average repurchase price paid in an open market repurchase (OMR) program.[6] We find that,

[3] Share repurchases first supplanted dividends as the primary form of corporate payout in 1997 (see e.g., Farre-Mensa, Michaely, and Schmalz, 2014; and Grullon and Michaely, 2002) and have since become the primary vehicle to distribute firm cash (Skinner, 2008). Open market repurchases (OMR) currently represent approximately 90% of all share repurchases (see e.g., Banyi, Dyl, and Kahle, 2008; Grullon and Michaely, 2004), with the remaining 10% made through either tender offers and/or privately negotiated contracts (Peyer and Vermaelen, 2005; Banyi et al., 2008).

[4] ASR dollar amounts are expressed in 2015 dollars adjusted for inflation using the U-CPI. Total shares repurchased are based on amounts reported in the merged Compustat/CRSP database.

[5] In 1982, the Securities and Exchange Commission (SEC) amended Rule 10b-18 of the Securities Exchange Act of 1934 to allow firms a "safe harbor" exemption against charges of stock price manipulation when repurchasing their own shares in the open market if the repurchase confirms to four (4) conditions relating to the manner, timing, price, and volume of the repurchase.

[6] Bargeron et al. (2011) suggest that the objectives of an ASR could almost be duplicated simply through the execution of a "large, easily verifiable, expedited OMR" (p.79), especially if a firm was willing to forego the "safe harbor" protection afforded by SEC Rule 10b-18.

on average (median), ASRs target 4.18% (3.01%) of the firm's outstanding equity, representing a mean (median) dollar amount of $598.2 ($254.4) million. Of the targeted shares in an ASR, approximately 90.64% of the shares are delivered to the firm during the quarter of contract initiation and are either retired or converted to Treasury stock. As such, an ASR can best be described as a hybrid form of repurchase that combines the immediacy of share delivery, like that of a tender offer but without the associated premium, with a repurchase price similar to that of an OMR (Michel et al., 2010). Therefore, the question that arises is: What would motivate a firm's management to forego the "safe harbor" protection of Rule 10b-18 to aggressively repurchase such a large percentage of its outstanding equity?[7]

Although several researchers have attempted to address this question in the nascent ASR literature (see e.g., Akyol, Kim, and Shekhar, 2014; Bargeron et al., 2011; Chemmanur, Cheng, and Zhang 2010; Chiu and Liang, 2015; Dickinson et al., 2012; Kurt 2015; Marquardt, Tan, and Young, 2011; and Michel et al., 2010), several discrepancies exists among the findings in this research, as well as in the interpretation of the results dealing with the firm's motivation for initiating an ASR. In an attempt to uncover the motivations for the use of an ASR, researchers have focused their attention on the two primary benefits associated with its use: (1) the immediacy of share delivery and (2) the legal commitment to repurchase.[8]

First, the ability to immediately repurchase a significant amount of outstanding equity, as well as the acceleration in the reduction of shares outstanding, have been suggested as motivations

[7] Grullon and Michaely (2002) argue that one of the primary drivers for the increased use of share repurchases to distribute firm cash over the last several decades, starting in the early 1980s, was the modification of SEC Rule 10b-18 (safe harbor) in 1982 that prevented the firm's management from being sued for share price manipulation when repurchasing firm shares (see Footnote 4 for a discussion of the requirements). Additionally, Lazonick (2014) proposes that misaligned compensation incentives, accompanied by the ability to evade charges of share price manipulation under SEC Rule 10b-18's 'safe harbor' provisions, has led management to disgorge the majority of the firm profits through massive open market repurchases.

[8] See e.g., Allen and Michaely (2003), Dittmar (2000), and Grullon and Ikenberry (2000) for a review of the early motivations put forth in the corporate finance literature dealing with share repurchases. Farre-Mensa, Michaely, and Schmaltz (2014) provide a more recent, comprehensive review of payout literature with attention focused on the growth of share repurchases relative to dividends over the last several decades.

for firms seeking either to deter takeover attempts or to manage reported quarterly EPS. Akyol et al. (2014) find that firms conducting ASRs were more likely to have been the target of takeover rumors in the 12 months prior to initiating an ASR than firms only conducting OMRs; however, they find that these firms are still more likely to receive takeover bids after the ASR announcement, casting doubt on the deterrent effect of an ASR. Similarly, Bargeron et al. (2011) find that firms that are more likely to conduct an ASR have been the target of a takeover attempt in the 6 months prior to an ASR. However, in stark contrast, Chemmanur et al. (2010) find no significant difference in the likelihood of being a takeover target between OMR and ASR firms in the 12 months prior to the repurchase announcement.

In relation to the use of an ASR as an earnings management tool, Dickinson et al. (2012) suggest that firms enjoy immediate, accretive effects of repurchases on reported EPS through the use an ASR while avoiding any unrealized losses (or gains) on the forward contract under current GAAP.[9] They further report that the market discounts the reported earnings of ASR firms relative to non-ASR firms, indicating that the earnings of ASR firms are misrepresented. Marquardt et al. (2011) find that firms are more likely to employ ASRs when annual CEO bonus compensation is linked to EPS, as well as when the repurchase is accretive. Bargeron et al. (2011) find some univariate support for the use of ASRs to manage earnings; however, in multivariate logit regressions, none of the coefficients on their proxy variables for earnings management are significant. Akyol et al. (2014) find no evidence linking the choice of an ASR to the number of outstanding and exercisable executive options or the relationship between the CEO's annual bonus and reported EPS.[10] Additionally, Chemmanur et al. (2010) report that executives in ASR firms have significantly less equity-based compensation in the form of options than executives in OMR

[9] Bens, Nagar, Skinner and Wong (2003) and Hribar, Jenkins, and Johnson (2006) both define an 'accretive' share repurchase as one in which reported EPS are increased by at least $0.01.

[10] See e.g. Bens, Nagar, Skinner and Wong (2003), Fenn and Liang (2001), and Kahle (2002) for a discussion of the link between share repurchases and executive and/or employee stock options.

firms, which they suggest contradicts the earnings management motive for an ASR.

Second, as ASRs are legally binding contracts, the firm's legal commitment to repurchase is often seen as sending a stronger (or more credible) signal to the market than the announcement of an OMR. Chemmanur et al. (2010) find that ASR firms have lower valuation ratios than OMR firms, consistent with management's desire to signal undervaluation. They also report that the market reacts more positively and significantly to the announcement of an ASR relative to an OMR. Additionally, Chemmanur et al. find that ASR firms earn higher profit margins in the four quarters post-announcement than OMR firms, suggesting that management has positive inside information prior to the ASR announcement. Bargeron et al. (2011) report somewhat contradictory findings in relation to the signaling effect of an ASR. They find that pre-announcement cumulative abnormal returns (run-up) for ASR firms are indistinguishable from zero while non-ASR firms have significantly negative pre-announcement abnormal returns, findings which contradicts signaling undervaluation as a motive for an ASR. They confirm this finding in logit regressions in which the coefficient on prior stock performance is positive and highly significant. However, upon decomposing the market-to-book ratio into firm, sector and long-run components per the method found in Rhodes-Kropf, Robinson, and Viswanathan (2005), they find that the likelihood of conducting an ASR is significantly and negatively related to the "*firm-specific deviation in value*" (p.80), providing support for the undervaluation motive for an ASR. Additionally, Bargeron et al. report that 3-day CARs surrounding ASR announcements are positive and significant at 1.42%, but slightly less than those from non-ASR repurchases (1.46%), further casting doubt on the use of an ASR to signal undervaluation. Michel et al. (2010) report 3-day CARs associated with ASR announcements (1.3%) are significantly lower than those of OMR announcements reported in the literature. They also report a negative post-announcement drift of 8.5% in the nine months following an ASR announcement, contrary to the positive long-run abnormal returns found in the OMR literature. They suggest this finding clearly contradicts the use of ASRs to signal

undervaluation.[11]

The results from the ASR literature are also mixed in terms of whether ASR helps alleviate the agency cost of overinvestment by returning excess cash to shareholders. Chemmanur et al. (2010) find that ASR firms have significantly less cash and higher payout ratios than OMR firms, contradicting with the use of ASRs to return excess cash. Bargeron et al. (2010) confirm that ASR firms have less cash than non-ASR firms; however, they find no significant differences in free cash flow between the two groups. They also find that, in multivariate regressions, the coefficients on cash and free cash flow never enter significantly, casting doubt on the agency theory of free cash flows. However, the coefficient on the log of the firm's market-to-book ratio is negative and highly significant, suggesting that firms faced with declining investment opportunities commit to return excess cash to avoid overinvestment. Lastly, they find robust support that a firm may initiate an ASR to return cash from recent asset sales. Michel et al. (2010) argue that firms with weak growth prospects, as evidenced by the negative post-announcement drift associated with an ASR, have less need for the financial flexibility associated with excess cash, and therefore may use ASR to signal the desire to distribute cash to shareholders. They suggest, however, that if an ASR was employed to signal the intent to distribute excess cash, the abnormal announcement return for ASR should be larger than that for OMR, contradictory to what they found.

Thus, the only consensus that appears to exist in the nascent ASR literature is that the underlying motivation for an ASR must be tied to the ability to quickly repurchase a large amount of the firm's outstanding equity.[12] While the possibility exists that a firm initiates an ASR to send

[11] Ikenberry, Lakonishok, and Vermaelen (1995) and Peyer and Vermaelen (2005, 2009) report significant long run abnormal returns following OMR announcements.

[12] Bargeron et al. (2011) find support for the use of ASRs in relation to their "credibility and immediacy hypothesis." (p.72) Michel et al. (2010) suggest that "from the company's perspective … the main advantage of ASRs over OMRs ... [is] obtaining the shares quickly." (p.14)

a stronger signal to the market,[13] the information content of the *signal* remains unclear. In a recent survey of payout literature, Farre-Mensa, Michaely, and Schmalz (2014) state that "*the literature has not settled on the importance of the signaling value, or more generally, the information content, of ARSs relative to conventional OMRs* … [nor has] *the matter regarding the market impact of ASRs … been settled.*" (p.125) These confounding implications can be attributed to the fact that no centralized database exists for ASR contracts which forces researchers to hand-collect data on ASR contracts. As such, substantial variation is often found among the differing data sets used in the nascent ASR literature, primarily due to identification issues. Farre-Mensa et al. argue that "… *the difference in* [ASR] *results seems to be driven by subtle variations in the way the papers search for announcements and eliminate duplicate observations, which, in turn, results in substantial variations in sample size and composition.*" (p.125) This identification problem is a result of both the incipient nature of ASRs and the ambiguous verbiage in repurchase announcements.[14] Additionally, the approach to identify and classify ASRs varies across studies.[15] For example, in working papers, Cook and Kim (2006), Chemmanur et al. (2010), and Marquardt et al. (2011) treat ASRs as an entirely new form of share repurchase that exists outside of the firm's OMR program.

[13] Michel at al. (2010), Bargeron et al. (2011) and Chemmanur et al. (2010) all argue that the relative large size of an ASR compared to an OMR, accompanied by the firm commitment (legal requirement) to repurchase, should send a stronger signal to the market.

[14] Bargeron et al. (2011) stress the necessity of verifying the announcements of 'accelerated' repurchase transactions with the SEC due to firms often announcing the 'acceleration' of their open market repurchase (OMR) programs through public announcements. Some of these accelerated repurchase announcements are misidentified in the early literature as ASR contracts, when in fact they were simply an announcement of the firm's proposed *acceleration* of its existing open market repurchases. To distinguish their results, Bargeron et al. present the example of Microsoft's $19 billion dollar 'accelerated' repurchase in 2005, which is not an actual ASR contract, but was apparently misidentified in the Chemmanur et al. (2010) data as an ASR.

[15] Bargeron et al. (2011) illustrate this issue by contrasting their data sample to that of Chemmanur et al. (2010): "… First, Chemmanur et al. drop program authorization announcements where a firm includes the option to execute the program via non-OMR transactions, e.g., privately negotiated repurchases, etc. Second, Chemmanur et al. conclude that, when an ASR from their hand-collected sample is also reported in SDC, SDC has erroneously classified an ASR as an OMR, so they drop these ''OMRs'' from their sample. …our treatment of ASRs as part of repurchase programs is also distinct from that of Chemmanur, Cheng, and Zhang who classify firms as strictly conducting OMRs versus ASRs which is not consistent with certain features of the data that reveal how ASRs are used by firms. Thus, the differences in results and conclusions across the two papers are largely attributable to … fundamental differences in sample construction." (p. 76)

Conversely, Bargeron et al. (2011) and Michel et al. (2010) argue that ASRs cannot be separated from the firm's repurchase program, which often includes both OMR and ASR components that may or may not be announced simultaneously.[16] This has led to substantial differences in the size of ASR samples and the inclusion of misidentified *accelerated* open market repurchase (OMR) programs in current research. As a remedy to this situation, Farre-Mensa et al. suggest that "*the literature will settle on more definitive answers regarding the signal value and market impact of ASRs only once larger and more standardized datasets can be assembled*." (p.125)

In this paper, we hand-collect the largest sample of ASR contracts in the literature to date, 716 distinct ASR contracts over the period from 2004 to 2015, to examine the firm's motives for conducting an ASR. Being cognizant of the identification issue associated with the ASR data used in previous studies, we first hand-collect information relating to the mention of an ASR from multiple news sources and then confirm each individual mention through regulatory filings found in the SEC's online Edgar database.[17] Consistent with the suppositions of Bargeron et al. (2011) and Michel et al. (2010), we find that 664 of the 716 ASR contracts (92.74%) are part of a firm's new or existing repurchase authorization, while only 52 ASRs (7.26%) are 'stand-alone' programs, solely authorized or authorized in addition to, but independent of, the firm's existing repurchase authorization.[18] By focusing our study on the firm's choice to conduct an ASR as part of its larger, overall repurchase authorization, or initiating it independently, as opposed to simply conducting an

[16] Michel et al. (2010) find that 85% of the ASRs in their study came from companies with ongoing open market repurchase programs (OMRs) and that by size, the ASRs often represented over 50% of the total repurchase programs. Bargeron et al. (2011) report that the average number of shares repurchased via each ASR in their study was approximately 58% of the total authorized shares in each firms' repurchase program. These findings suggest that most ASR programs are not totally independent of the firms' open market repurchase programs. Akyol et al. (2014) report finding 79 ASR announcements that occurred simultaneously with other repurchase announcements, which they argue supports the idea that an ASR may be part of a larger repurchase program.

[17] See Section 3 for a complete description of our data collection process.

[18] Of the 530 publically announced ASRs, 149 (28.11%) are announced 'simultaneously' as part of a new (or updated) repurchase authorization, while 329 (62.08%) are announced as part of a pre-existing authorization, 'subsequent' to the original repurchase authorization announcement.

OMR, we attempt to resolve the issue regarding the information content of an ASR *relative* to that of an OMR. And for those 74% of firms that choose to publically announce an ASR, we seek to uncover the information the firm is conveying (*signaling*) to the market.

Given the characteristics of an ASR contract, we follow previous literature in focusing on motivations to conduct an ASR bound up in either the immediacy of share repurchases or the ability to send a more 'credible' signal to the market, or both, as these motivations are not mutually exclusive. Both Bargeron et al. (2011) and Michel et al. (2010) conclude that a firm's motive for the use of an ASR should be closely associated with the benefits of the immediacy of repurchase. Thus, we focus our initial examination on earnings management as a possible motivation for the use of ASR.[19] An ASR allows the firm to quickly reduce the number of shares outstanding used to compute its quarterly reported EPS. As such, we empirically examine whether firms use ASR contracts to meet or beat analyst quarterly consensus EPS forecasts.

Bargeron et al. (2011) and Michel et al. (2010) also suggest that due to an ASR contract's binding legal requirement to repurchase, as well as the relative size of the repurchase, an ASR should send a more *credible* signal to the market. While traditional signaling (asymmetric information) theory suggests than firms announce OMRs to send a costly signal to the market of managements' view that firm shares are currently undervalued in relation to private information about the firm's positive future prospects (see e.g. Bhattacharya, 1979; Miller and Rock, 1985; Vermaelen, 1981; Ikenberry, Lakonishok, and Vermaelen, 1995), Farre-Mensa, Michaely, and Schmalz (2014), in a recent survey of payout literature, conclude that empirical evidence casts

[19] We limit our focus to earnings management as a primary motive for an ASR based on the immediacy of repurchase. While we certainly agree that an ASR could serve to function as a deterrent to takeover bids (and attempt to control for this in a multivariate setting), we are unable to find a significant amount of takeover rumors (or bids) in the SDC Mergers and Acquisitions database. Banyi et al. (2009) discuss issues with the SDC that result in capture rates of approximately 50% for OMR announcements. We assume this may also be the case for takeover rumors (bids). Due to time constraints, we do not attempt to hand-collect data on possible takeover rumors and/or bids for both ASR and non-ASR (OMR-only) firms over a 12-year period.

doubt on the validity of the signaling theory as a primary motivation for repurchasing firm shares. Instead, Farre-Mensa et al. suggest that the agency theory of free cash flow (Jensen, 1986; Grullon and Michaely, 2004) is a more empirically, plausible answer to the question of why firms *generally* repurchase shares. In support, they cite several recent empirical works including Grullon and Michaely (2004), who find that firms that announce OMR programs do not experience gains in operating performance in the three years' post-announcement, a finding which contradicts the implied gains in profitability under traditional signaling theory. Grullon and Michaely suggest that the positive abnormal market returns surrounding the announcement of an OMR are in response to management's commitment to avoid the agency cost of overinvestment by returning excess 'free' cash. Therefore, we focus on the free cash flow theory as a possible motive for an ASR. This motive may be bound up in the immediacy of repurchase, as well as the desire to signal the market of the commitment to avoid overinvestment. Thus, we empirically examine the free cash flow theory in conjunction with our analysis of earnings management by considering the differences in firm characteristics between firms that conduct ASRs and those that only conduct OMRs (non-ASR firms).[20] Additionally, logit regressions to test for earnings management also reveal key determinants of the likelihood of conducting an ASR. To compare our results to the previous ASR literature, we also consider signaling undervaluation as a possible motive for an ASR and test accordingly.

To test for earnings management, we extend the analysis of Hribar et al. (2006), who find that firms that would have missed analyst EPS forecasts by one or two cents exhibit a disproportionate likelihood of an accretive (OMR) share repurchase. To compare ASR firms with non-ASR firms, we condition only on firms that have positive quarterly repurchases to eliminate

[20] Non-ASR firms are firms that have positive share repurchases of at least $10K in the quarter, but that do not initiate an ASR during the same quarter. As Skinner (2008) reports that approximately 90% of share repurchases are conducted as OMRs, as well as the fact that tender offers are virtually non-existent, we assume that non-ASR firms utilize OMR as their primary method of share repurchase.

the endogeneity issue associated with the decision to repurchase. Univariate results reveal that 56.03% of the quarterly repurchases made by ASR-firms are accretive compared to only 40.27% of those made by non-ASR firms. Additionally, we find that 29.8% (25.2%) of repurchases made by ASR (non-ASR) firms enable them to meet or exceed analyst quarterly EPS forecasts in the current quarter. In multivariate logit regressions, we find that the likelihood of initiating an ASR increases in both the accretive nature of the repurchase and the *positive* pre-repurchase earning surprise (i.e., the earnings surprise calculated without the accretive effects of the repurchase). This finding first confirms the univariate result that firms tend to initiate ASRs when the repurchases are accretive to earnings. Second, and more interestingly, this finding shows that a firm is more likely to initiate an ASR if it would have met or exceeded its EPS forecast *without* the accretive effects of the ASR. Thus, our results provide evidence that ASRs are used for short-term earnings management for some firms, while they are also employed for other motives, especially for those firms with strong earnings performance prior to the repurchase.

As part of our earnings management analysis, we compare firm characteristics between ASR firms and non-ASR firms. Our univariate results are most consistent with the agency theory of free cash flow. While both ASR firms and non-ASR firms have similar levels of cash and leverage, ASR firms are significantly larger, less financially constrained, have higher free cash flow, better pre-repurchase operating performance, and are more profitable than non-ASR firms. Additionally, ASR firms appear to be maturing in their life-cycle as their market-to-book and rate of sales growth (while still positive) are less than non-ASR firms suggesting that larger, more mature firms are likely to commit to return excess cash to shareholders through an ASR (Grullon and Michaely, 2004; Grullon, Michaely, and Swaminathan, 2002). Interestingly, we find that median pre-repurchase abnormal returns to ASR firms are indistinguishable from zero and, in contrast to prior studies, find no significant difference between pre-repurchase abnormal returns of ASR and non-ASR firms. This finding clearly casts doubt on the use of an ASR to signal

undervaluation.

Our results from multivariate logit regressions also provide support for the agency theory of free cash flow. We find the likelihood of conducting an ASR is increasing in both the levels of cash and free cash flow. Additionally, firms are more likely to initiate an ASR when their operating return on assets (OROA) is higher, suggesting that firms generating higher operating income are more likely to disgorge cash through an ASR. As predicted by the free cash flow theory, larger and more mature firms with a declining investment opportunity set (as reflected in lower market-to-book ratios) are also more likely to return excess cash through an ASR. We next conduct matched-pair conditional logit regressions. Here, our results further strengthen support for the free cash flow hypothesis. The firm's level of cash is positively and significantly (1% and 5%) related to the likelihood of including an ASR. In addition, free cash flow continues to have a significant and positive impact on the use of an ASR. Both findings indicate that disgorging excess cash may be a motive for firms to choose an ASR. We also continue to find that the coefficient on operating return on assets is positive and significant suggesting that highly profitable firms are likely to return cash through an ASR. We find that the coefficient on 3-year sales growth is now negative and significant in several models as well as the firms market-to-book ratio, supporting the notion that as growth slows down in these large firms, the propensity to payout cash through an ASR increases. Interestingly, we find some limited support for the signaling theory in our matched logit regressions as the coefficient on prior stock performance (run-up) is negative and significant in several regression specifications, suggesting that, among repurchasing firms with similarly matched characteristics, a firm is more likely to initiate an ASR if it experienced negative abnormal returns prior to the repurchase.

We attempt to further disentangle the signaling information found in the announcement of an ASR versus that of an OMR by focusing on the market response surrounding the repurchase announcement. Using standard event methodology, we calculate 3-day (and 5-day) CARs

surrounding ASR and OMR announcements. Contrary to Bargeron et al. (2011) and Michel et al. (2010), we find that CARs surrounding ASR announcements are higher than those associated with only OMRs. Specifically, we find mean (median) 5-day CARs surrounding ASR announcements of 1.95% (1.53%) are significantly higher than those associated with non-ASR firms of 1.37% (1.16%). We further attempt to verify the determinants of the markets' positive response by regressing the 3-day (5-day) announcement CARs against variables for the announcement type and percent of equity sought (as well as the earnings management and control variables from our logit regressions). We find that the coefficient on the inclusion of an ASR is positively and significantly related to the 3-day (5-day) CARs. Thus, based on the short-term announcement effects of an ASR, we conclude that the market views ASRs as value-increasing events.

To further examine the signaling effects of an ASR, we follow the methodology of Lie (2005) by examining the post-repurchase operating return on assets (OROA) over the subsequent 8-quarters. We find that both ASR firms and non-ASR firms exhibit significant declines in operating performance following announcement. While, on average, OROA declines by 3.96% for ASR and 5.15% for OMR firms, the difference between the two groups is not significant. Thus, the results suggest that ASR firms experience a similar level of decline in operating performance as OMR firms following the repurchase.[21] To sum up, although ASR firms are associated with larger announcement returns than OMR firms, the pre-announcement CAR is not significantly different between the two groups and the long-term post-announcement effects as measured by the operating returns are negative for both ASR and OMR firms. The above results suggest that signaling undervaluation is unlikely to be a primary motivation for management's use of an ASR.

Taken together, these findings suggest that ASR announcements lead to a more positive

[21] Here we follow Lie (2005) and focus only on post repurchase operating performance for firms that repurchase at least 1% of their outstanding equity during the quarter. Lie reports that firms that repurchase less than 1% experience no significant 'relative' (performance adjusted) increase in operating performance.

short-term market reaction than OMR announcements. In addition, the market responds more favorably to a purchase conducted by firms with strong operating performance at or prior to the announcement and/or more cash on hand. The ASR firms tend to be those with solid profitability but reduced investment opportunity sets, and the market responds favorably to these firms due to their commitment to distribute excess cash and avoid the agency cost of overinvestment. However, both ASR and OMR firms experience a decline in long-term operating performance after the announcement. Overall, our results provide support for the free cash flow explanation, but not the signaling undervaluation hypothesis.

Our study makes important contributions to the ASR literature by significantly extending previous work (such as Bargeron et al., 2011) on a firm's motives for the inclusion of an ASR. First, we use a hand-collected sample of 716 ASRs from 2004 to 2015, which is over two times larger than the largest sample used in the ASR literature up to date. This allows for an extensive examination of the unresolved issues associated with the signaling and information content of an ASR (Farre-Mensa et al., 2014). Contrary to the ASR literature, we find that 25.98% (186 out of 716) of ASRs are conducted without a public announcement. As most of the existing studies on ASR include only publically announced ASRs, our sample allows us to implications of the use of ASR based on a comprehensive sample of ASRs.[22] Second, we extend beyond the current ASR literature by investigating whether firms use ASRs in lieu of (or in addition to) open market repurchases to meet or beat the analyst earnings forecasts. Here, our study is related to those of Kurt (2015) and Marquardt et al. (2011), although there are several distinctions. While Kurt (2015) also examines the use of ASRs to manage quarterly EPS, like much of the early literature, his focus is solely on the use of ASRs to manage earnings. In contrast, as we find that over 92% of ASRs are conducted as part of the firms "open" market share repurchase authorization, we concentrate

[22] Only 530 distinct ASR contracts (74.02%) out of our sample of 716 ASRs were publically announced either a press release or an 8-K filing with the SEC.

on the firm's decision to include an ASR as part of the firm's larger repurchase authorization and therefore condition on (all) firms that repurchase in the quarter in order to deal with the endogenous decision to repurchase. Also like much of the extant ASR literature, Kurt only focuses on 'announced' ASRs. Here we also differ by including all ASRs (announced and unannounced) to seek to determine if firms are quietly attempting to manage earnings through repurchases. Kurt chooses to drop ASRs from his search if they don't have a specific announcement (or effective date) and, like Bargeron et al. (2011), uses the subsequent date of a 10-Q or 10-K as an announcement date if he is unable to determine the actual announcement (representing over 8% of his sample). While Marquardt et al. (2011) also link ASRs to EPS, they focus on managements' use of ASRs to reach the level of EPS necessary to trigger CEO cash bonus. Additionally, their approach to treat ASR as a new form of repurchase that is completely apart from the firm's OMR authorization is inconsistent with the method used in other studies in the literature and the fact that many ASRs are simultaneously initiated along with an OMR. Third, our study contributes to the earnings management literature associated with the use of share repurchases to manage reported EPS. In this regard, our work is related to Hribar et al. (2006) as well as Bens et al. (2003), who find that firms repurchase shares to meet an earnings benchmark, either an endogenous benchmark such as the firm's historical growth rate or an exogenous benchmark such as the analyst earnings forecasts. However, these studies focus on the use of open market repurchases (OMRs) to manage EPS. We add to this line of research by examining the firm's decision to initiate an ASR, *relative* to an OMR, to conduct short-term earnings management. Fourth, we explore whether ASRs send a more credible signal to the market regarding undervaluation than OMRs. Finally, we present evidence that maturing and low-growth firms are more likely to employ ASRs than OMRs to convey their commitment to return excess cash to investors, thus alleviating the agency cost of overinvestment.

The remainder of the paper proceeds as follows. Section 2 provides background and

hypothesis development. Section 3 provides details about our ASR sample selection and summary statistics. Section 4 provides the empirical analysis of the earnings management and free cash flow explanations. In Section 5 we examine the signaling and free cash flow hypotheses by examining the post-announcement operating performance, short-term market reaction and long term abnormal returns of the repurchasing firms. Section 6 offers concluding remarks.

2. Literature Review and Hypothesis Development

2.1 Accelerated Share Repurchases

An accelerated share repurchase is a privately negotiated repurchase wherein the issuer contracts with a financial intermediary, most often an investment bank, for the immediate or accelerated purchase and delivery of the targeted shares. The intermediary typically borrows 80% or more of the targeted shares from institutional investors and immediately shorts them to the issuer at the closing price on the day of contract initiation.[23] The intermediary then covers its short position by purchasing shares in the open market over a contractual period that ranges from a few months to a year, thus establishing a volume-weighted average price (VWAP) for the repurchased shares. Upon initiation of the ASR, the issuer enters a long forward contract with the intermediary to eliminate the price risk faced by the intermediary while it covers its short position in the open market. At maturity of the forward contract, if the VWAP is higher than the initial price paid by the issuer, the issuer will settle the forward by either delivering cash or additional shares to the intermediary. If the VWAP is lower, the intermediary has the option to deliver additional shares (which is almost always the case) or to refund cash to the issuer (see Figure 3). Either way, the

[23] During the early adoption of the use of ASRs, firms typically paid the full amount of the stated contract up front and received 100% of the targeted shares, typically priced at the close on the day of contract initiation. However, this resulted in the firm assuming an unlimited amount of exposure on the forward contract. More recently, issuers and intermediaries have established minimum and maximum repurchase amounts as well as price floors, ceilings, and collars during an initial pricing estimation period. As such, firms now generally receive an initial minimum stated amount of shares in the ASR contract, typically 80% to 90%, and then receive the balance of the shares at settlement.

issuer ultimately pays the VWAP for its shares (Pagach and Branson, 2007). In the earlier part of our sample period the intermediary charged the issuer a fee, often as high as 6% of the total ASR amount, for acting in this capacity (Dickinson et al., 2012); however, in the later half, intermediaries frequently incentivized issuers to enter ASR contracts by offering a discount to the VWAP.

Two characteristics that distinguish an ASR from an OMR specifically deal with (1) the timing and (2) the firm's commitment to repurchase. First, a substantial percentage of the shares purchased via an ASR are delivered to the firm within a few days of the contract date and are either immediately retired or become designated as treasury stock depending on the firm's state of incorporation. Either way, the delivered shares are immediately deducted from the firm's outstanding share count and are no longer used in calculating earnings per share.[24] In contrast, shares acquired through an OMR are often purchased over a period of one to three years after the firm publically announces its repurchase authorization (Stephens and Weisbach, 1998) and are quietly retired or converted to treasury stock.[25] As such, the market is often unaware of the actual timing of the open market repurchases since firms are only required to report their repurchase activity quarterly with the SEC (Lie, 2005). While either method results in the firm ultimately paying a volume weighted average price (VWAP) for its shares, the effects of an ASR are more immediate in reducing the firm's outstanding share count. Therefore, shares repurchased via an ASR will have a much earlier accretive effect on the firm's reported EPS than those repurchased through an OMR (Dickinson et al., 2012). We conjecture that a firm is motivated to choose an ASR due to the immediacy of repurchase and/or the commitment to repurchase its shares.

2.2 Earnings Management Hypothesis

[24] EPS is calculated as net income divided by the 'weighted average common shares outstanding' during the quarter. The accretive (denominator) effect of a share repurchase on calculated EPS thus depends on the actual 'timing' of the repurchase during the quarter. As such, shares repurchased earlier in the quarter have a greater accretive effect than those received near the end.

[25] Stephens and Weisbach (1998) find that, on average, firms only repurchase approximately 74% to 82% of the stated target shares in their OMR announcement. Additionally, they report that as many as 10% of the firms repurchase less than 5% of their targeted shares, with a substantial number of firms failing to repurchase any shares at all.

Prior research suggests that the need for immediacy may stem from the desire to deter a rumored takeover attempt or to manage reported EPS.[26] There exists an extensive literature on earnings management (see e.g. Brown and Caylor, 2005; Burgstahler and Dichev, 1997; Degeorge, Patel, and Zeckhauser, 1999; Graham, Harvey, and Rajgopal, 2005; Skinner and Sloan, 2002); however, much of this literature focuses on the use of accruals to manage reported net income. In contrast, several studies have recently begun to examine the use of share repurchases to manage quarterly reported EPS with the focus on incentive compensation. Dittmar (2000), Fenn and Liang (2001), and Kahle (2002) report a strong and positive relation between executive stock options and repurchases used to offset the potential dilutive effect of exercise on EPS. Bens et al. (2003) report that executives base repurchase decisions on a desire to manage the dilutive effect of the total exercisable employee stock options (ESOs). Cheng, Harford, and Zhang (2015) find that a firm is more likely to conduct an accretive share repurchase when the CEO's bonus is explicitly tied to the reported EPS and the pre-repurchase EPS is just below the threshold needed to trigger the bonus. A related strand of earnings management literature focuses on the use of repurchases to meet or exceed an earnings benchmark. Bens et al. (2003) find that managers tend to increase share repurchases when earnings fall below a level required to maintain a historical or targeted rate of EPS growth. Hribar et al. (2006) find that managers frequently use open market repurchases to meet analyst quarterly consensus EPS forecast. They find a disproportionate amount of accretive share repurchases for firms that would have missed analysts' forecast by only one or two cents a share. In a related working paper, Kurt (2015) finds some univariate support for the use of *announced* ASRs to meet analyst EPS forecasts. Myers, Myers, and Skinner (2007) report that "…

[26] Akyol, Kim, and Shekhar (2014) examine the use of ASRs to deter takeover attempts and find that firms that use ASRs are more likely to have been the subject of a takeover attempt (or a rumored takeover) in the twelve months prior to the initiation of an ASR. However, they find that even after completing an ASR, these firms are still as likely to receive takeover bids as firms that did not conduct an ASR. Based on these findings, Akyol et al. conclude that ASRs may not be effective as takeover deterrents. Bargeron et al. (2011) control for the effects of takeover attempts during the six months prior to announcement and find similar results to Akyol, Kim, and Shekhar (2014).

managers appear to strategically time stock repurchases to boost reported EPS when they would otherwise decrease …" (p. 251) to maintain a string of 20 consecutive quarters of EPS growth.

In a survey of 384 financial executives, Brav, Graham, Harvey, and Michaely (2005) report that three-fourths of the respondents indicated that boosting reported EPS factors into repurchase decisions. Michel et al. (2010) suggest that the motivation to initiate an ASR may stem from the firm's desire to increase EPS. While not empirically testing their supposition, they report that most ASR announcements are clustered in the second and third months of each fiscal quarter, which they suggest is indicative of management's attempts to control for anticipated earnings shortfalls. Graham, Harvey, and Rajgopal (2005) report that management feels that it must beat analyst quarterly earnings forecast to build credibility and preserve its reputation in the capital markets, to maintain or increase their firm value, and to avoid the uncertainty created by missing the forecast. Brown and Caylor (2005) propose that since negative earnings surprises are now less frequent the market tends to negatively overreact when firms miss quarterly analyst estimates. Additionally, Skinner and Sloan (2002) suggest that management is fully aware that if they miss the analysts' earnings forecast by as much as a penny, the punitive effects of a myopic market focused on quarterly EPS growth can have a devastating effect on the firm's stock price.

In a study of the accounting consequences associated with ASRs, Dickinson et al. (2012) suggest that the current FASB accounting treatment of ASRs makes them especially suitable as instruments to manage EPS.[27] They report that under current generally accepted accounting principles (GAAP), the forward contract associated with an ASR is treated as an equity instrument tied to the company's stock. Since the company has the option to settle the forward contract by issuing additional shares, it is not required to adjust the forward contract to its fair market value

[27] Financial Accounting Standards Board's (FASB) Emerging Issues Task Force (EITF) Issue 99-7 "*Accounting for an Accelerated Share Repurchase*" states that an ASR must be accounted for as two separate transactions: (1) a treasury stock acquisition and (2) a forward contract that allows settlement in either cash or firm shares.

(mark-to-market) over the contract period. Thus, while the unrecorded gains and losses resulting from changes in the value of the firm's shares represent potential off-balance sheet assets or liabilities, they will be recorded as adjustments to shareholder's equity upon realization at settlement, entirely bypassing the income statement. As an ASR enables the firm to immediately reduce a significant amount of its outstanding equity, and thus reduce the average number of shares outstanding used to calculate the reported EPS, we suggest that firms may initiate an ASR as part of their current repurchase authorizations to meet or exceed analyst EPS forecast when, otherwise, they would have missed the forecasted EPS without the ASR. We form the following testable hypotheses:

H1 (a): *The likelihood that a firm initiates an accelerated share repurchase is increasing in the negative pre-repurchase earnings surprise or when the repurchase is accretive.*

H1 (b): *The likelihood that a firm initiates an accelerated share repurchase should be positively related to the ASR's ability to enable the firm to meet its analyst quarterly EPS forecast.*

2.3 Free Cash Flow Hypothesis

Jensen (1986) proposes that a firm faced with fewer growth opportunities should pay out excess cash in the form of dividends or share repurchases to avoid the agency cost of overinvestment. Grullon, Michaely and Swaminathan (2002) find that maturing firms experience a significant decline in risk as their investment opportunity set declines, thus, shifting their valuation from risky growth options to fixed assets. As such, they suggest that these firms should pay out excess cash when faced with reduced investment sets. Grullon and Michaely (2004) find that, during the three-year period following an OMR announcement, firms exhibit deteriorating operating performance as well as a reduction in capital expenditure, research and development, and the firm's cost of capital. They argue that the market's positive abnormal response to an OMR

announcement is not due to signaling undervaluation or positive outlook, but to management's commitment to return excess cash to shareholders to minimize the agency cost of overinvestment. Lie (2005) also finds that operating performance decreases for firms following the announcement of an OMR; however, he reports that firms that actually repurchase shares during the same fiscal quarter as the OMR announcement exhibit increases in operating performance *relative* to non-repurchasing firms. If the motivation for the use of an ASR stems from management's desire to signal the market of their commitment to return excess cash, we expect to find that ASR firms have fewer growth opportunities and higher free cash flow relative to non-ASR firms. The following hypothesis is developed to test if the free cash flow theory is an underlying motive for an ASR:

H2: *Firms that announce an ASR should have fewer growth opportunities and/or a higher level of free cash flow than those that only announce an open market repurchase authorization.*

2.4 Signaling Undervaluation Hypothesis

The other major difference between ASR and OMR is the firm's commitment to repurchase its shares. OMR announcements are not legally binding and, thus, do not obligate the firm to repurchase any of the targeted shares. Thus, OMRs provide the firm with the flexibility to time its repurchases to take advantage of the changes in stock price, cash flows, or investment opportunities. This inherent flexibility is one of the primary reasons OMRs have gained such popularity among various repurchase methods (see e.g., Stephens and Weisbach, 1998; Fenn and Liang, 2001; Jagannathan, Stephens and Weisbach, 2000; and Lie, 2005). In sharp contrast, entering an ASR legally obligates the firm to immediately repurchase the stated number of shares in the contract. Therefore, a firm that initiates an ASR loses the flexibility to time a repurchase. As such, an ASR represents a more credible commitment to repurchase than an OMR authorization (see e.g., Bargeron et al., 2011; and Farre-Mensa et al., 2014).

One of the primary motivations for share repurchases in the literature is to signal undervaluation, in which management with private information about the firm's prospects sends a costly signal to the market regarding the undervaluation of its shares (e.g., Bhattacharya, 1979; Miller and Rock, 1985; Vermaelen, 1981; Ikenberry, Lakonishok, and Vermaelen, 1995; and Dittmar, 2000). Brav et al. (2005) report that CFOs indicate undervaluation as the primary motivation for a firm to repurchase its shares (see also Boudry et al., 2013; and Dittmar, 2000). In the ASR literature, Bargeron et al. (2011), Chemmanur et al. (2010) and Michel et al. (2010) suggest that the credibility of the firm's commitment to immediately repurchase its shares through an ASR should send a stronger signal to the market than can be accomplished using an OMR announcement. OMRs have long been criticized as lacking credibility as they represent a weak signal due to the firm's ability to postpone or refrain from repurchasing shares (see e.g., Vermaelen, 1981; and Comment and Jarrell, 1991). Chan et al. (2010) further suggest that OMRs are viewed as mere authorizations due to the inherent flexibility to time or to abstain from repurchases. If a firm initiates an ASR to increase the strength of its signal of undervaluation to the market, we would expect to see higher, positive cumulative abnormal returns (CARs) surrounding ASR announcements relative to those of an OMR. Additionally, we should expect to see more favorable post-repurchase operating performance for ASR firms relative to non-ASR (OMR-only) firms due to management's positive inside information about future cash flows. We form the following hypotheses to test if signaling is a motive for initiating an ASR:

H3 (a): *Cumulative abnormal returns (CARs) surrounding an ASR announcement should be significantly positive and higher than those surrounding an OMR authorization.*

H3 (b): *Post-repurchase operating performance of an ASR firm should improve and be better than that of an OMR only firm.*

3. Data description

3.1 ASR Sample

We hand-collect a sample of 716 ASR contracts initiated by 346 distinct firms over the period from 2004 to 2015. This period of study is selected for several reasons. First, as reported in Bargeron et al. (2011), there is negligible evidence of the use of ASRs prior to 2004. Second, the extant literature on accelerated share repurchases examine a subset of the period between 2004 and 2008. Lastly, as Banyi et al. (2008) report, data on share repurchases prior to 2004 is subject to measurement or estimation errors due to the proxy used for repurchases and the lack of regulation regarding the disclosure of repurchases.[28] We begin the data collection process by conducting keyword searches for ASRs using the ABI/Inform database from 2004 to 2011 and the SEC's Edgar database for the period from 2012 to 2015. We follow Akyol et al. (2014) and use keywords including "accelerated share repurchase(s)," "accelerated stock repurchase(s)," "accelerated stock buyback(s)," "accelerated share buyback(s)," "accelerated repurchase(s)," and "accelerated buyback(s)." In addition, we search the Lexis-Nexis database and Google.com for additional mentions of ASRs. The initial search process results in 11,364 matches. We individually examine each match to determine if it is an accelerated share repurchase contract. The key features of an ASR can be identified by the contract initiation, the immediate delivery of shares by the intermediary, and the entry into a long forward position by the firm. Next, we use the Edgar database to search for SEC filings (8-K, 10-Q, 10-K, and others) to confirm the details of each

[28] Banyi et al. (2008) find that, even after the 2003 change in the SEC's repurchase disclosure requirements, the Compustat measure of share repurchases (Compustat annual data item #115 minus changes in the value of preferred stock), either overstates or understates actual repurchases by at least 10% in 34% (48%) of the quarterly (annual) Compustat purchases of common stock observations. They also find that the SDC (Securities Database Corporation) capture rate for repurchase announcements during the year 2004 was only 53.1% (119 of 224) suggesting that the SDC is far from accurate in its reporting of repurchase announcements.

search result. From these filings, we construct the largest database of accelerated share repurchases contracts in the literature to date.[29]

Table 1 presents the summary statistics of the sample of 716 ASR contracts. In Panel A, we see that ASRs experienced rapid growth before the financial crisis reaching a total dollar amount of $85.91 billion (9.12% of total reported Compustat/CRSP repurchases) in 2007 before declining to $606 million in 2009. After the crisis, ASR usage quickly recovered and steadily increased in dollar amount and percentage. Panel B presents the characteristics of ASR announcements by year. Of the 716 ASRs, 530 (74.02%) were publically announced through either a press release or an 8-K filing.[30] There appears to be a trend in the latter half of the sample period where firms choose not to publically announce their ASRs. Of those publicly announced, 149 (20.81%) were simultaneously announced with either a new or existing repurchase authorization. One of the most salient features in the data is the fact that 664 ASRs, representing 92.74% of the sample, are a part of the firm's new or preexisting repurchase authorization. Only 52 ASRs (7.26%) are stand-alone programs, either solely authorized or authorized in addition to, but independent of, the firm's existing repurchase authorization. Our sample is consistent with the proposition of Bargeron et al. (2011) and Michel et al. (2010) that ASRs are primarily initiated under the firm's overall repurchase authorization. This observation is important in how we disentangle the motivations of the firm's inclusion of an ASR apart from OMRs.

Panel A of Table 2 presents the summary statistics of the ASR programs. On average, ASRs are extremely large with a mean (median) dollar amount of $598.20 ($254.36) million. The mean (median) percent of outstanding equity sought in an ASR is 4.18% (3.01%), while ASRs represent

[29]As previously mentioned, there is some confusion in the early literature as to what constitutes an actual accelerated share repurchase contract. Firms often refer to "accelerating" their share repurchases when in fact they are simply increasing the rate of their open market repurchases.

[30] The remaining 186 (25.98%) ASR programs were discovered either in subsequent quarterly 10-Qs or annual 10-K filings with the SEC.

a mean (median) percentage of the most recent repurchase authorization of 42.77% (33.33%). These amounts (percentages) are comparable to those found in prior studies.[31] The mean (median) total number of shares purchased under an ASR contract is 11.58 (5.45) million with the mean (median) number of shares delivered to the firm during the quarter of contract initiation equal to 10.49 (4.80) million shares. Thus, firms on average (median) receive approximately 90.64% (88.06%) of the total number of shares acquired under an ASR in the first quarter of the program. Additionally, for those firms that conduct ASRs while concurrently repurchasing their shares in the open market, the shares repurchased via the ASR represent an average of 76.6% of all shares purchased during the same quarter. As such, an ASR clearly enables a firm to quickly repurchase a significant percentage of its outstanding equity. Panel B of Table 2 presents the distribution of ASRs by the Fama/French 12 industry categories. All twelve Fama/French industries are represented by ASRs with the top three comprised of finance (20.95%), business equipment (16.20%) and wholesale/retail (15.08%). ASRs are utilized the least in the consumer durables (1.82%) and energy (1.54%).

3.2 Share Repurchase Sample and Descriptive Statistics

To put together our sample of share purchases to test for earnings management we collect data from the following sources: quarterly share repurchases and firm financial data from the merged Compustat/CRSP database, analyst's quarterly earnings forecast data from the Thomson Reuters' Institutional Brokers' Estimate System (IBES) database, stock prices (returns) from CRSP, data on executive stock options from Execucomp, and repurchase authorization announcements, and takeover rumors and asset sales from SDC's Mergers and Acquisition database. We start by collecting all quarterly data from the merged Compustat/CRSP database for the years 2004 to 2015

[31] Bargeron et al. (2011) find that among 256 ASRs, the mean (median) equity sought is 5.27% (3.48%) while the mean (median) percentage of the "announced program" is 58.03% (50.70%). In a study of 127 ASRs, Michel and Oded (2010) find a mean (median) percentage of equity sought of 5.3% (3.6%) and report that the mean ASR percentage of an ongoing OMR program is 50.0%.

yielding 265,891 firm-quarter observations.[32] Next, we collect data on analyst quarterly consensus EPS forecasts and reported EPS from IBES. Following Hribar et al. (2006), we select the earliest possible consensus estimate of EPS to give management adequate time to react to a potential earnings miss. Matching the IBES data with the quarterly repurchase sample results in a sample of 163,869 firm-quarters. We further precondition on firms with positive share repurchases in a given quarter by requiring CSHOPQ (*Common Shares Outstanding Purchased-Quarterly* reported in Compustat) to be positive.[33] Following Hribar et al. (2006), we delete those firm-quarter repurchases under $10,000; however, we choose not limit the maximum amount.[34] To mitigate the possible skewness associated with the small market-cap effect, we also eliminate firm-quarter observations with an end-of-quarter closing share price of $3.00 or less. Next, we turn our attention to our hand-collected sample of ASRs. We first consolidate all ASR contracts initiated by the same firm in each quarter, resulting in a sample of 692 firm-quarter ASRs. We then match each firm-quarter ASR to the Compustat/CRSP/IBES record based on the quarter in which a firm receives its initial delivery of shares, resulting in 621 ASR firm-quarter observations. The above steps result in the final sample of 52,443 firm-quarter repurchase observations of which 621 are associated with ASRs.

In addition to many of the explanatory variables used in Bargeron et al. (2011), we include variables to control for operating return on assets (OROA) (see e.g. Grullon and Michaely, 2004; Lie, 2005), sales growth over the most recent three years (Grullon, Michaely, and Swaminathan,

[32] Following Grullon and Michaely (2004), we include financials and utilities as they comprise over 25.4% of our sample of ASRs. We also conduct analysis without financials and utilities and find the results are very similar. While not included to conserve space, results are available from the authors upon request.

[33] We differ from Hribar et al. (2006) who estimate *shares repurchased* in the quarter as: $CSHO_{BegQtr} + shares\ issued - CSHO_{EndQtr}$. They estimate *shares issued* as the ". . . *issuance of stock* (#84) minus any increase in *preferred stock* (item #55) or *redeemable preferred stock* (item #77), divided by average price . . ." . (pg. 9). $CSHO$ represents *common shares outstanding*.

[34] Hribar et al. (2006) deletes all firm-quarter observations in which total repurchases exceed 20% as possible tender offers. As accelerated share repurchase (ASR) contracts are often very large and may be conducted for reasons similar to tender offers, we choose not to limit the size of the repurchase during any quarterly observation (see e.g. Akyol, Kim, and Shekhar, 2014).

2002), dividend yield (Grullon and Michaely, 2002), financial constraints (e.g., Chen and Wang, 2012; Farrell, Unlu, and Yu, 2014), executive options outstanding (Kahle, 2002), and total employee options outstanding (Bens et al., 2003), as these variables have been shown to influence the decision to repurchase shares. Appendix A describes in detail the construction of all variables.

Table 3 presents univariate statistics of our sample of firm-quarters observations. Consistent with previous studies, we find that ASR firms are significantly larger, both economically and statistically, than non-ASR firms. The average (median) ASR firm has total assets of $33.89 ($8.12) billion and a market capitalization of $18.95 ($7.37) billion. The median ASR firm is approximately 3.7 times larger than non-ASR firms based on both size proxies. ASR and non-ASR firms are similarly capitalized with debt representing 20% of assets. To examine the free cash flow explanation, we include measures of excess cash (cash to assets and free cash flow), operating performance (operating ROA), and growth (market to book ratio and sales growth). Similar to Bargeron et al. (2011), ASR firms have significantly less cash than do non-ASR firms on average; however, the median difference is not significant. Unlike Bargeron et al., we find that ASR firms have significantly higher mean (median) free cash flow, lending support for the notion that firms initiate an ASR to distribute excess cash (e.g. Grullon and Michaely, 2004). Grullon and Michaely (2004) suggest that maturing firms, faced with a reduced investment opportunity set, repurchase shares to avoid the agency cost of over-investment (Jensen, 1986). As such, a firm may initiate an ASR to return large amounts of excess cash more quickly than allowable through an OMR to signal the management's commitment not to overinvest in negative net present value projects. Thus, we expect less favorable operating performance in ASR firms relative to OMR firms. We use operating return on assets (OROA) as a measure of operating performance. We find that both the mean and median OROA is significantly higher for ASR firms. Using sales growth to measure firm's growth opportunities, we find that the 3-year sales growth rate for ASR firms is significantly lower than

for non-ASR firms. However, the difference in the market-to-book ratio between ASR and non-ASR firms is insignificant.

We control for the firm's prior stock performance by calculating the cumulative abnormal return (CAR) for each firm over the period from 44 days to 4 days prior to the beginning of the current quarter.[35] If signaling undervaluation is the motive to include an ASR, we would expect to find relatively lower prior CARs for ASR firms versus non-ASR firms. In contrast to Bargeron et al. (2011), we find that neither the mean nor median difference in prior CARs between ASR and non-ASR firms is statistically different.[36] We measure prior stock price volatility as the standard deviation of returns over the period from 255 days to 46 days before the beginning of the current quarter. Mean (median) pre-repurchase volatility is significantly lower for ASR firms, which is consistent with Bargeron et al. Next, we consider liquidity because larger repurchases have been found to be associated with a more liquid market for the repurchasing firm's shares (Barclay and Smith, 1988). We use the natural logarithm of Amihud (2002)'s illiquidity measure and compute the average illiquidity of each firm over the period from 255 days to 46 days prior to the beginning of the current quarter. Since the Amihud measure represents illiquidity, we expect our sample of repurchasing firms to be inversely related. We find that all repurchasing firms are negatively related to the Amihud illiquidity measure. However, the mean (median) liquidity is 28.86% (23.18%) higher for ASR firm than for non-ASR firms, with both the mean and median differences being highly significant.

[35] As our focus for earnings management is on the decision to conduct an ASR in the current quarter, we use the last day of the prior quarter (lagged actual period end date) as our relevant date for the calculation of abnormal stock run-up prior to the current quarter.

[36] We find approximately 26% of the ASRs in our sample (186 out of 716) are not publically announced and are only referenced in subsequent public filings (10-Qs, 10-Ks) for the quarter (or fiscal year). In contrast, Bargeron et al. (2011) use the "filing date" of the 10-Q or 10-K as the "public announcement date" in 36 such cases (out of 256 ASRs) representing 14.06% of their sample. In many of these cases, it is highly probable that they are measuring 'post' cumulative abnormal returns, as well as other stock related metrics, well after the choice to include an ASR has been determined, as well as after the ASR has already been initiated. However, they report that their findings are robust to the exclusion of these 36 observations.

We adopt the measure of leverage deficit as constructed in Uysal (2011) to control for the firm's use of repurchases to move towards its target leverage (Hovakimian, Opler, and Titman, 2001). Leverage deficit is defined as the difference between a firm's actual and target debt ratios. A positive (negative) leverage deficit indicates that the firm is over (under) leveraged. ASR and non-ASR firms are slightly below their target debt ratios, with no significant mean or median difference between the two. Also, recent studies suggest that the likelihood of a share repurchase is negatively related to financial constraints (see e.g., Chen and Wang, 2012; Farrell et al., 2014). Following Farrell et al. (2014), we use the Hadlock and Pierce (2010) index (HP-index) as a measure of financial constraints. The smallest HP-index value (least financially constrained) is negative 4.6369. Neither ASR firms nor non-ASR firms appear to be financially constrained, which is to be expected as these firms have the financial slack to conduct share repurchases. More importantly, we find that ASR firms are significantly less financially constrained than non-ASR firms. Finally, we find significant differences in dividend yield, both exercisable executive and exercisable total employee options outstanding, as well as rumored (attempted) takeovers between the two groups.

From the above discussion, we present a picture of the characteristics of a firm that chooses to employ an ASR as a part of (or independent of) its repurchase authorization compared with those of a firm that use OMR only. While both groups have similar levels of cash and leverage, ASR firms are much larger and less financially constrained than non-ASR firms. In addition, ASR firms have higher OROA and free cash flow but slower sales growth than non-ASR firms. ASR firms do not appear to be more undervalued relative to non-ASR firms as we find no significant difference in market-to-book ratios or prior stock performance between the two groups. Furthermore, shares of ASR firms are more liquid and exhibit lower pre-repurchase volatility than those of non-ASR firms. As we are fully aware of the caveat of interpreting univariate results, we control for these variables in a multivariate logit framework below.

4. Empirical Analysis of the Earnings Management and Free Cash Flow Hypotheses

4.1 Variables for Earnings Management

To test the hypothesis that firms include ASRs to manage reported EPS, we follow the methodology of Hribar et al. (2006) to determine pre-repurchase estimates of EPS. In particular, Hribar et al. use Compustat quarterly data over the period from 1988 to 2001 to investigate the frequency of accretive stock repurchases and whether these repurchases are used to meet or exceed quarterly analyst consensus forecast. They examine the impact of stock repurchases on reported earnings by constructing two estimates of "as-if" pre-repurchase EPS, one which considers the denominator effect of share repurchases (ASIF_EPS1) and the other estimate which incorporates the numerator effect (ASIF_EPS2). The numerator effect, "C_t", represents the forgone after-tax interest income on cash (or interest expense if financed) used to repurchase shares. Both Hribar et al. and Bens et al. (2003) argue that the opportunity cost (k) of funds that are used for share repurchases must be less than the firm's earnings-to-price ratio ($k < EPS/P$) at the time of repurchase for the repurchase to be accretive to reported EPS.[37]

We construct the two ASIF pre-repurchase EPS measures for our sample of 52,443 firm-quarter observations. As the IBES consensus estimates contain both basic and diluted forecasts of EPS, we first calculate a simple Compustat based dilution factor to ensure that our measures of pre-repurchase EPS are comparable to the values reported in IBES. We adjust our estimates of pre-repurchase EPS using the dilution factor if the IBES consensus estimate is reported on a diluted basis as indicated by the variable IB-PDI.[38] We then construct the first pre-repurchase EPS estimate ($ASIF1$) reflecting the denominator effect of the repurchase as

[37] This condition is both necessary and sufficient for the share repurchase to be accretive, i.e. to increase reported EPS by at least $0.01. See e.g., Hribar et al. (2006) for a detailed mathematical derivation (pg. 8).

[27] In our sample, 35.6% (18,667 out of 52,443 matched firm-quarter observations) have IB-PDI indicators equal to "D" (diluted), while 33,773 records (64.4%) have missing values for the IB_PDI indicator variable.

$$ASIF1 = IBQ_t/(CSHOQ_{t-1} + 0.5 * CSHISQ_t) \quad (1)$$

where IBQ_t is Compustat *Income Before Extraordinary Items* available to common in the current quarter, $CSHOQ_{t-1}$ represents the common shares outstanding at the beginning of the quarter and $CSHISQ_t$ represents the shares issued during the quarter.[39] As in Hribar et al., we assume new shares are issued uniformly across the quarter and thus multiply $CSHISQ_t$ by a weighting factor of 0.5. Our calculation of $ASIF1$ EPS deviates slightly from Hribar et al. in our choice of income measure used to calculate pre-repurchase EPS.[40] For the second ASIF pre-repurchase measure of EPS ($ASIF2$), we estimate the numerator effect (C_t) as the total dollar amount of all repurchases during the quarter [41] multiplied by the average 3-month Treasury Bill rate if the repurchases were financed with excess cash.[42] If the total repurchase dollar amount exceeds excess cash, then we use the firm's average cost of debt (k_{debt}) to calculate the after-tax interest expense associated with the repurchase.[43] The second pre-repurchase EPS estimate ($ASIF2$) is calculated as follows:

$$ASIF2 = (IBQ_t + C_t)/(CSHOQ_{t-1} + 0.5 * CSHISQ_t) \quad (2)$$

[39] $CSHISQ_t$ is calculated as $CSHOQ_t - CSHOQ_{t-1} + CSHOPQ_t$ where $CSHOQ$ represents common shares outstanding at the end of the fiscal quarter, $CSHOQ_{t-1}$ represents the common shares outstanding at the beginning of the quarter, and $CSHOPQ_t$ represents common shares repurchased during the quarter.

[40] Hribar et al. use Compustat item NI (Net Income) to calculate their "ASIF" measures of pre-repurchase EPS. In untabulated results, we find that the use of Compustat items IBQ (Income Before Extraordinary Items-Quarterly) more closely reflects the actual Compustat reported EPS in item EPSFXQ (Earnings Per Share (diluted) – Excluding Extraordinary Items).

[41] The total dollar amount of all repurchases in the quarter is calculated as ($CSHOPQ_t * PRCRAQ_t$) where $CSHOPQ_t$ represents all common shares repurchased during the fiscal quarter and $PRCRAQ_t$ represents the average repurchase price paid per share.

[42] Excess cash is calculated as the amount of cash and cash equivalent assets (CHEQ) in excess of 6% of total quarterly assets (ATQ) for all retail firms (i.e. those firms with 2-digit SIC codes in the following group: 52, 53, 54, 55, 56, 57, 58, and 59), and otherwise, in excess of 2% of total quarterly assets (ATQ) for all other firms. All values are as of the beginning of the firm-quarter in which the share repurchase takes place.

[43] Our proxy for the firm's cost of debt (k_{debt}) is calculated as $XINT/(LT - AP - TXP - XACC)$ where $XINT$ represents *Interest and Related Expense-Total*, LT represents *Total Liabilities*, AP represents *Accounts Payable*, TXP represents *Income Taxes-Payable*, and $XACC$ represents *Accrued Expenses*. All values are from Compustat and are as of the prior fiscal year-end. This proxy represents the firm's average (after-tax) cost of debt capital on all borrowed funds in excess of thirty days. Corporate tax rate is assumed to be 35%.

Both measures of ASIF pre-repurchase EPS allow us to estimate the effects of share repurchases on the reported EPS. Using our ASIF EPS estimates, we next construct two sets of variables to test the earnings management hypotheses: H1 (a) and H1 (b). For brevity, we only discuss the construction of the ASIF2 variables as the construction of the ASIF1 variables is identical. Our primary variable of interest is ASIF2_SURPRISE which measures the difference between the ASIF2 pre-repurchase EPS estimate and the IBES consensus EPS forecast ($ASIF2\_SUPRISE = ASIF2 - IB\_MEANEST$), which represents the pre-repurchase earnings surprise. If the firm would have missed the analyst consensus EPS forecast without the repurchase, then this measure is negative and represents the magnitude of the pre-repurchase earnings miss. We expect that for a firm that wishes to manage its reported EPS through a share repurchase, the likelihood for initiating an ASR should be negatively related to ASIF2_SURPRISE and increase in the absolute value of the pre-repurchase earnings miss.

We next construct several variables to measure the actual effect of the share repurchase. Hribar et al. (2006) find that firms that would have missed consensus forecasted EPS by one or two cents have a disproportionate amount of accretive share repurchases during the same quarter. Additionally, Marquardt et al. (2011) find that firms are more likely to conduct an ASR when the repurchase is accretive to EPS. Therefore, we create the variable ASIF2_DIFF which measures the difference between the actual EPS and the estimated ASIF2 pre-repurchase EPS. As the actual EPS already includes the effects of the share repurchase, by subtracting ASIF2 pre-repurchase EPS, we can calculate the per-share dollar effect of the share repurchases. Using ASIF2_DIFF, we determine if the share repurchase is accretive to earnings and/or if it enables the firm to meet or beat the consensus EPS forecast by constructing two indicator variables. The first indicator variable, ACCRETIVE_ASIF2, takes the value of one if the share repurchase is accretive, and zero otherwise. The second indicator variable, MBEPS_ASIF2, takes the value of one if the share repurchase enables the firm to meet or exceed its consensus EPS forecast, and zero otherwise.

Panel A of Table 4 presents univariate statistics characterizing the details of the firm-quarter share repurchase observations. As previously indicated, quarterly ASR repurchases are significantly larger in size than OMRs: The mean (median) quarterly dollar amount of ASRs is $589.99 ($251.49) million, which is 6.94 (33.82) times that of $85.09 ($7.42) million for the non-ASRs. In addition, an ASR firm acquires a mean (median) of 12.81 (5.96) million shares during the quarter, representing approximately 4.18% (3.01%) of all outstanding equity. On the other hand, a non-ASR firm acquires an average (median) of 2.12 (0.30) million shares or 1.07% (0.54%) of outstanding equity. For the earnings estimates, we observe that firms electing to use ASRs are more profitable than non-ASR firms. The mean (median) reported IBES actual EPS for ASR firms is approximately $0.77 ($0.69) per share compared to $0.53 ($0.39) for non-ASR firms, with the difference being significant. The consensus analyst estimates are generally accurate, confirming the findings of Hribar et al. (2006). It is interesting to note that the actual earnings surprise for ASR firms is positive and higher than that for the non-ASR firms, with the difference being highly significant. If we consider the two estimates of ASIF EPS without the repurchase, we find that for ASIF1 and ASIF2, the median earnings surprise would have been slightly negative with a pre-repurchase earnings miss of $0.03 per share for ASR firms and $0.01 per share for the other repurchasing firms, with the difference being highly significant. The mean differences between the two groups, however, are not significant. Further, we find that the median accretive effects (*Actual EPS – ASIF_EPS*) for all share repurchases offset the median pre-repurchase earnings miss. For both estimates of ASIF EPS, we find that the median ASR repurchases increased the reported EPS by $0.03. For non-ASR repurchases, we find a median ASIF2_DIFF of $0.01 per share, but ASIF1_DIFF (the denominator effect) has no incremental effect on the reported EPS. This is not surprising as the proportion of shares being acquired in a typical OMR is minimal with a median

percentage of 0.54% of shares outstanding.[44]

Panels B and C of Table 4 present univariate statistics on accretive share repurchases and repurchases that meet or beat IBES consensus EPS forecasts, respectively. We focus on the results based on the estimates of ASIF2 pre-repurchase EPS.[45] In Panel B, we find that 21,217 (40.46%) are accretive to quarterly EPS. More importantly, 56.03% of ASRs are accretive, which is significantly higher than 40.27% for non-ASRs. For accretive repurchases, we find that the actual earnings surprise and the pre-purchase earnings miss are similar across the ASR and non-ASR groups. However, the median ASIF2_DIFF of ASRs is significantly larger than that of the non-ASRs, with the difference of $0.01 significant at the 5% level. In Panel C, we observe that 25.54% of the quarterly repurchases enable a firm to meet or beat its analyst earnings forecast. Interestingly, 29.79% of ASRs result in the firm's ability to meet or beat its earnings forecast, which is higher than 25.18% for non-ASRs. For the subset consisting of repurchase firms that meet or beat their EPS forecasts, we highlight that the median ASIF2 pre-repurchase earnings miss for ASRs is $0.09, which is significantly larger than $0.05 for non-ASR firms. Also, the median accretive effect per share of $0.14 for ASRs is greater than $0.09 for non-ASRs, with the difference being significant at the 1% level.[46] These results provide some preliminary support that earnings management may be a motive for firms to initiate an ASR relative to an OMR. In the next section, we extend our investigation to a multivariate framework to further explore this hypothesis.

4.2 Multivariate Regression Results

[44] Both Hribar et al. (2006) and Almeida, Fos and Kronlund (2016) find that for repurchases to be accretive to reported EPS, they need to exceed 1.0% of outstanding equity on average.

[45] While not reported, the results obtained from using the ASIF1 estimates are similar and are available upon request from the authors.

[46] While 25.5% of our sample firms meet or beat their consensus analyst EPS forecasts as a direct result of share repurchases, we do not suggest any form of malfeasance on the part of management. However, we do suggest the semblance of earnings management exists based on the results of our univariate analysis.

In this section, we examine the earnings management and free cash flow hypotheses using multivariate logit regressions. To identify potential multicollinearity, we first examine the correlation between the earnings management and control variables. As shown in Table 5, firm size (proxied by the natural log of total assets) is negatively correlated with our measure of Amihud illiquidity (-0.73). This is to be expected as larger firms tend to have more liquid markets for their shares. We also see that firm size is negatively correlated with the HP-Index (-0.58), while Amihud illiquidity is positively correlated with the HP-Index (0.52). When all three variables are included as explanatory variables, the sign on the coefficient of firm size is reversed and the significance of the HP-Index is subsumed by firm size and Amihud illiquidity. This suggests that Amihud illiquidity and the HP-Index may both proxy for firm size. Therefore, in a subset of our regressions, we exclude firm size from the model. We also find that Free Cash Flow and Operating Return on Assets (OROA) are positively correlated (0.75). As such, we include only one of these two (instead of both) variables in each regression. Lastly, the correlation between Total Employee Options and Executive Options (0.49) is moderately high. As Executive Options is a subset of Total Employee Options, we would expect these variables to be correlated. To address this issue, we choose to include only Total Employee Options in our regressions.

Table 6 presents coefficient estimates of the explanatory variables as well as ρ-values based on robust standard errors clustered at the firm level. The dependent variable, ASR, is a dummy variable that takes a value of one if an ASR is initiated in the given quarter, and zero otherwise. We control for firm-level variables in Models 1 through 4, while we include additional factors suggested by prior literature to be related to the motives of share repurchase in Models 5 through 8. Industry and year fixed effects are included in all models. We first use the ASIF2 pre-repurchase variables to test the earnings management explanation.[47] As previously discussed, if management's

[47] Untabulated results for the ASIF1 estimates are similar and available upon request.

motivation to initiate an ASR is to meet or exceed the analyst EPS forecast, we hypothesize that the likelihood of conducting an ASR should be inversely related to the pre-repurchase earnings surprise (ASIF2_Surprise). Interestingly, in Models 1 and 2, we find that the coefficient on ASIF2_Surprise is positive and significant, indicating the likelihood that a firm chooses to include an ASR increases in the pre-repurchase *positive* earnings surprise. In other words, a firm is more likely to initiate an ASR if it would have met or exceeded its forecast EPS *without* a share repurchase. Next, we find the coefficient on Accretive_ASIF2 is positive and highly significant in Models 5 and 6. This result is consistent with our univariate result that almost 60% of ASR are accretive and the finding of Marquardt et al. (2011) that firms are more likely to include an ASR if it is accretive to EPS. When we include both ASIF2_Surprise and Accretive_ASIF2 in Models 4 and 8, the coefficients on ASIF2_Surprise and Accretive_ASIF2 remain positive and highly significant. Our third variable, MBEPS_ASIF2, indicates whether share repurchase results in the firm meeting or exceeding its forecasted EPS. In Models 3 and 7, we find that the coefficient of MBEPS_ASIF2 is positive but insignificant. Our findings suggest that a firm is more likely to use ASR if it has *higher* than expected earnings or if the repurchase is accretive. These implications are consistent with prior findings of repurchase activities. For example, Hribar et al. (2006) report that a discontinuity of repurchase activity exists around a pre-repurchase earnings surprise of zero and a disproportionate amount of share repurchases found for firms that would have missed earnings by only one or two cents per share. To sum up, we find that one of the main motives of ASR is the accretive nature of the repurchase, providing some evidence for the earnings management hypothesis. On the other hand, ASRs seems to be preferred by firms with a positive pre-repurchase earnings surprise. This indicates that there are other motives for firms to consider ASRs besides managing earnings.

For the agency cost hypothesis, we find solid support that firms may be using ASRs to disgorge excess cash. In particular, we find that cash and free cash flow are positively related to

the likelihood of an ASR in six of the eight models. Additionally, firms are more likely to use an ASR when their operating return on assets (OROA) is more favorable, suggesting that firms generating higher operating income are more likely to disgorge income through an ASR. As expected, larger and more matured firms faced with a declining investment opportunity set (reflected in lower market-to-book ratios) may choose to return excess cash to shareholders using an ASR to reduce the agency cost of overinvestment (Grullon and Michaely, 2002, 2004). For control variables, we generally find results consistent with prior literature. The coefficient on firm size is positive and highly significant, supporting the idea that larger firms are more likely to conduct an ASR relative to smaller firms. In addition, we confirm the findings in Bargeron et al. (2011) that the market-to-book is negatively associated with the likelihood of initiating an ASR. Prior stock return volatility is negatively related to the likelihood of an ASR, indicating that firms are more likely to consider an ASR if the market for their shares has been relatively stable. As an alternative proxy for firm size, we find a significant and negative coefficient on the Amihud illiquidity measure, indicating that larger firms and/or firms with more liquid stocks are more likely to initiate an ASR. Furthermore, the coefficient on leverage deficit is negative, indicating that a firm is more likely to conduct an ASR if its market leverage is well below its target leverage (Uysal, 2011). Next, we rerun the logit regressions using a matched set of firms to discern differences in the motives between firms with very similar characteristics.

We follow the matching techniques similar to those adopted in the repurchasing literature (e.g., Babenko, Tserlukevich, and Vedrashko, 2012) by matching on SIC industry, size and market valuation.[48] Specifically, we start by selecting matching firms from our sample of 52,433 firm-

[48] We follow the standard matching methodology found in most of the repurchasing literature by matching on industry and size (as proxied by the book value of assets); however, while most studies also match on a proxy for growth such as Market-to-Book (M/B), our sample of Compustat data is missing the variables necessary to compute M/B for 5,417 (10.33%) firm-quarters in our original sample. We, therefore, use another market-based measure of the firm, the market value of equity, as our sample is only missing this variable for 236 (or 0.45%) observations.

quarters with a positive repurchase based on (1) the same 2-digit SIC industry code, (2) a book value of total assets between 80% and 120% of the ASR sample firm as of the prior fiscal year-end and (3) a market value of equity between 80% and 120% of the ASR sample firm as of prior fiscal year-end. We also require that the matching firm-quarter observations must occur within plus or minus one fiscal year of the ASR sample firm-quarter. The matching firm-quarter cannot have the same unique Compustat firm identifier and cannot have conducted an ASR within plus or minus one fiscal year of the current ASR firm-quarter observation. We select the matched firm with the lowest absolute deviation in total assets and market value of equity as compared to our sample ASR firm. Our matching procedure results in a matched sample of 1,242 firm-quarter observations.

Table 7 presents the results from the conditional logit regressions using our matched sample. In general, the results are consistent with those found in Table 6. In particular, we have similar findings for ASIF2_Surprise pre-repurchase variable, Accretive_ASIF2 and MBEPS_ASIF2. When we include both ASIF2_Surprise and Accretive_ASIF2 in model (4) and (8), the coefficients are highly significant. While the accretive nature of the repurchase is a deciding factor when considering the use of an ASR, the positive coefficient on ASIF2_Surprise confirms that there are motivations beyond earnings management for firms to consider ASR. Our matched pair analysis provides further support for the free cash flow hypothesis for the use of an ASR. In particular, the firm's level of cash is positively and significantly (1% to 5%) related to the likelihood of including an ASR, suggesting that as firms with higher levels of cash are more likely to initiate an ASR to return cash to shareholders. In addition, free cash flow continues to have a significant and positive impact on the use of ASR. Both findings indicate that disgorging excess cash may be a motive for firms to choose ASR. We find that the coefficient on operating return on assets (OROA) is positive and significant, suggesting that firms with more favorable operating performance are more likely to initiate an ASR. For growth measures, we find that the coefficient on 3-year sales growth is negative and now significant in the first four models and that on the

market to book ratio is negative and significant in Models 5 through 8, supporting the notion that as growth slows down in these large firms, the propensity to payout cash increases. The results on the control variables are similar those in Table 6, except for the following notable differences. First, prior stock performance enters five of the eight models as negative and highly significant, suggesting that an ASR firm has lower prior returns than a non-ASR matched firm. Second, leverage deficit is no longer a significant factor for the inclusion of an ASR.

4.3 Robustness Checks

As previously discussed, the accretive nature of share repurchases depends both on the relationship between the firm's earnings-to-price ratio (E/P) and the opportunity cost of the share repurchase (k) (i.e., $E/P > k$ for the repurchase to be accretive at the time of the repurchase), and the timing of the repurchase during the quarter. Repurchases made earlier in the quarter carry more weight, q, in the calculation of the firm's weighted average shares outstanding during the quarter used in reported EPS, and thus will have a more accretive effect on EPS than those shares purchased later in the quarter. Michel et al. (2010) report in their study of 127 ASRs over the period from 2004 to 2007 that the majority of ASRs, based on announcement date, are initiated in the second and third month of the quarter, 45.7% and 36.2%, respectively. Thus, it is possible for firms to initiate an ASR in the current quarter in an effort to manage the reported EPS in the *subsequent* quarter. As previously indicated, the IBES summary database includes mean consensus analyst EPS forecast for up to eight future quarters. So, management, having private information about the next quarter (t+1) pre-repurchase earnings shortfall, could initiate an ASR in the current quarter (t) to obtain the full accretive effect of an ASR at the beginning of the next quarter. Thus, they can boost quarter (t+1) EPS to meet or beat the forward-looking quarter (t+1) EPS forecast. We repeat our analysis of earnings management by calculating the ASIF2 pre-repurchase estimates of EPS for quarter (t+1). From these, we compute the three earnings management variables of interest: ASIF2_Surprise (t+1), Accretive_ASIF2 (t+1), and MBEPS_ASIF2 (t+1) and run the same set of

logit regressions represented in Table 6 using the quarter (t+1) variables. Untabulated results confirm that it is unlikely for firms to initiating ASRs in the current quarter (t) to meet or beat the quarter (t+1) EPS forecast. The coefficients on the quarter (t+1) earnings management variables are generally insignificant.[49]

As an additional robustness check, we exclude financial and utility firms as they are highly regulated. This results in a sample of 38,275 firm-quarter observations containing 459 ASR firm-quarter repurchases. We rerun the logit regression models shown in Table 6 and find that the results remain robust. In addition, we divide our sample into pre- and post-financial crisis periods by using 2009 as the separating year. We find that the results are similar across the two periods and conclude that the financial crisis does not result in a significant shift in the motives for the initiation of an ASR.[50]

4.4 Summary of Findings

Our finding suggest that a firm is more likely to initiate an ASR when the repurchase is accretive, providing support for the earnings management explanation. However, ASR firms tend to be those with a positive earnings surprise prior to the repurchase and the ability to meet or exceed EPS forecast may not be a main driver of the decision to initiate an ASR. This is not surprising given that ASR firms are larger and more mature firms than non-ASR firms. While these firms may be using ASRs to obtain a larger accretive effect in order to achieve an immediate and short-term bump in earnings, our results are most consistent with the agency theory of free cash flow. More specifically, we find that, relative to firms that only repurchase through the open market, firms that are likely to include an ASR are large firms with a higher level of cash, more free cash flow, and better operating performance. Additionally, compared to non-ASR firms, ASR firms

[49] We do find that the $Accretive\_ASIF2_{t+1}$ is significant and positive only in Model 7 when included with $ASIF2\_Surprise_{t+1}$; however, $ASIF2\_Surprise_{t+1}$ as well as $MBEPS\_Surprise_{t+1}$ never enter any model significantly.

[50] All results are available from the authors upon request.

appear to be maturing in their life-cycle as their sales growth and market to book ratio are lower, indicating that they are faced with reduced investment opportunity sets. Thus, ASR firms are likely to commit to return excess cash to shareholders through the use of ASRs. This description of an ASR firm is very similar to the maturing firms found in Grullon and Michaely (2004) that repurchase their shares in the open market in an effort to signal the market, not of the firm's positive outlook, but of management's commitment to return excess cash to shareholders to avoid the agency cost of overinvestment. In the next section, we extend the studies of Grullon and Michaely and Lie (2005) by examining the post-repurchase operating performance of repurchase firms to investigate whether signaling and/or free cash flow theories can explain managements' motive for the inclusion of an ASR.

5. Signaling Undervaluation versus Free Cash Flow Hypothesis

As previously discussed, if management chooses to announce an ASR as part of its preexisting or current authorization to signal information to the market, an examination of both subsequent operating performance and the market's reaction to an ASR announcement can shed light on the information being conveyed. To do so, we extract from our ASR sample a subsample of ASRs in which firms publicly announce the repurchases. Of the 716 ASR contracts, 530 distinct ASR contracts (523 ASR programs) were publically announced through a press release or an 8-K filing with the SEC (or both). Of these 530 announced ASR contracts, 478 (90.2%) were announced as part of a pre-existing (or concurrently) announced repurchase authorization, while 52 (9.8%) are considered 'standalone' ASRs that are authorized independent of any of the firm's other repurchase authorizations. Next, we merge the announced ASRs with the repurchase announcements reported in the Securities Data Corporation (SDC) Platinum Mergers and Acquisition database. As Banyi et al. (2008) report, the SDC database gathers announcement data from multiple sources and, as such, contains duplicate announcement records. To address this

issue, we eliminate subsequent repurchase announcements if they occur in the same month and year.[51] We also eliminate announcements coded as completed or withdrawn, and all other privately negotiated announcements.[52] As some firms announce multiple ASRs contracts within the same program/announcement, we combine multiple ASR contracts under the same announcement into one distinct program, thus, arriving at a final sample of 4,151 repurchase announcements consisting of 523 ASR program announcements and 3,628 OMR program announcements.

5.1 Market Reaction to Repurchase Announcements

We analyze the markets' response to the announcement of an accelerated share repurchase relative to an OMR using our combined sample of 4,151 repurchase announcements. Of these, CRSP returns data is only available to calculate abnormal returns for 522 ASRs and 2,986 open market repurchases. We use a standard event-methodology (Brown and Warner, 1985) to calculate abnormal returns with a parameter estimation period from 255 days to 46 days prior to the announcement date with a required minimum of 100 days of returns during the estimation period. All abnormal returns are calculated based on the market-model using the value-weighted return on all CRSP firms listed on the NYSE, AMEX, and NASDAQ. The proxy for the risk-free rate is one-month T-bill rate obtained from Ken French's website. Table 8 reports 3-day, as well as 5-day, cumulative abnormal returns (CARs). Prior studies report that 3-day CARs for ASRs are lower than those found in the literature for OMR announcements.[53] For example, Bargeron et al. (2011) find mean (median) 3-day CARs of 1.42% (0.95%) while Michel and Oded find mean 3-day (5-day) CARs of 1.26% (1.34%). In the current study, however, we find significant mean (median)

[51] Firms often conduct multiple ASRs under the same original (or augmented) repurchase authorization. Also, the SDC 'capture rate' of 63.10% in the current study is similar to the 53.1% reported in Banyi et al. (2008)

[52] While ASRs are privately negotiated repurchases, the SDC database often codes these as either "OMR" or "Private". As such, we eliminate private repurchases only after matching ASRs to ensure the highest capture rate possible.

[53] For example, Lie (2005) finds mean (median) 3-day CARs of 3.0% (1.9%) for OMR announcements while Grullon and Michaely (2004) find 2.7% (1.8%). Peyer and Vermaelen (2009) report a positive 3-day CAR of 2.39% surrounding the announcement of an OMR program over the period from 1991 to 2001.

3-day CARs of 1.64% (1.40%) for ASRs versus 1.43% (1.17%) for open market authorizations, however the difference in mean or median between the two groups is not significant. When comparing the 5-day CARs [-2, +2], we find significant differences between ASRs and OMR authorizations. Mean (median) 5-day CARs for ASRs are 1.95% (1.53%) versus 1.37% (1.16%) for OMR announcements. This represents a positive mean (median) difference of 0.57% (0.41%).

Also, different from the findings of Bargeron et al. (2011), we find that the combined 3-day (5-day) CARs for ASRs that are announced *simultaneously* as part of a firm's new or augmented repurchase authorization are significantly larger than those of *subsequently* announced ASRs that are part of a preexisting authorization.[54] We find mean (median) 3-day CARs for simultaneously announced ASRs are 2.61% (2.80%) versus only 1.29% (1.13%) for subsequently announced ASRs, with differences significant at the 5% (1%) level. Also, the 3-day CARs are significantly higher for those firms that simultaneously announce an ASR versus those OMR-only firms that never include an ASR as part of their repurchase authorization, representing a mean (median) difference of 1.14% (1.61%). Since the combined information effects of the simultaneously announced repurchase authorization and the ASR contract are impounded in the cumulative abnormal returns, the market response to the ASR cannot be disentangled from the response to the repurchase authorization. However, the market responds more favorably to the firm's commitment to immediately repurchase its shares when an ASR is announced concurrently as part of a new or augmented repurchase authorization. Like Bargeron et al., we find that open market authorizations that include subsequent ASRs have significantly lower mean (median) 3-day CARs, 0.93% (0.79%), than those that never include an ASR as part of their repurchase programs, 1.46% (1.19%). As Bargeron et al. suggest, this may indicate that firms, whose initial repurchase

[54] Of the 472 (478) publicly announced ASR programs (contracts), which are part of the firm's existing (or new) share repurchase authorization, we find that 98 are announced *simultaneously* as part of a new or augmented repurchase authorization, while 374 are announced as part of, but *subsequent* to, a prior announced outstanding (pre-existing) repurchase authorization.

authorization was received poorly by the market, include a subsequently announced ASR as means to strengthen the signal.

From the univariate results, we conclude that the announcement effects of an ASR are value-increasing. To explore the determinants driving the abnormal returns, we report, in Table 9, the OLS regressions of 3-day and 5-day cumulative abnormal returns (CARs) on the set of earnings management variables, free cash flow theory measures, and control variables used in the logit regressions in Table 6.[55] We control for the announcement type with a dummy variable, ANCDTYPE, which takes a value of 1 for the announcement of an ASR and 0 for the announcement an OMR, to gauge the market response to an ASR announcement. We also control for the percent of equity sought in the repurchase announcement as larger repurchase authorizations have been found to be associated with higher abnormal returns (Comment and Jarrell, 1991). The dependent variable in Models 1 through 3 is the 3-day CAR around the repurchase announcement date [-1, +1], while in Models 4 through 6, we use the 5-day CAR [-2, +2]. All variables are winsorized at the 1% level to mitigate the effect of outliers. Coefficients on the regressors are reported with their ρ-values in parentheses, which are based on the robust standard errors clustered by firm.

We find the coefficient on ANCDTYPE is both positive and highly significant in all models, confirming our univariate results that the market response is more favorable for an ASR than an OMR. Consistent with prior studies, abnormal returns are significantly increasing in the size of the announced program. Interestingly, we find that the short-term cumulative abnormal returns are significantly positively related to the pre-repurchase measure of earnings surprise. This finding suggests that the market responds more favorably to repurchase announcements made by

[55] In Table 9 regressions, in contrast to Tables 6 & 7, we include all control variables concurrently because we find that the results are not significantly altered when excluding correlated variables as was the case in the logit regressions, however we only report the results for our variables of interest. Complete results are available upon request.

firms that have a record of positive earnings and that have could meet or exceed analyst forecasts in the past without the use of repurchases. When combined with the positive response to an ASR announcement, we suggest that the market is rewarding those firms that are already operating profitably and are committing to pay out excess cash immediately through an ASR. Taken together, these findings suggest that ASR announcements lead to a more positive short-term market reaction than OMR announcements. In addition, the market responds more favorably to a purchase conducted by firms with strong operating performance at or prior to the announcement and/or more cash on hand. The ASR firms tend to be those with solid profitability but reduced investment opportunity sets, and the market responds favorably to these firms due to their commitment to distribute excess cash and avoid the agency cost of overinvestment. Overall, our results provide further support for the free cash flow explanation, but not the signaling hypothesis.

5.2 Post-Repurchase Operating Performance

In this section, we examine changes in post-repurchase operating performance for firms that announce an ASR during the quarter. As previously discussed, if management's motivation to initiate a costly ASR is to signal its positive outlook or undervaluation, we would expect the firm's future operating performance to increase *relative* to firms that repurchase through OMR transactions (see e.g., Comment and Jarrell, 1991; Dittmar, 2000; Bargeron, 2011). However, if management's motivation for initiating an ASR is its commitment to expediently return excess cash to shareholders to avoid the agency cost of overinvestment, we would expect operating performance to remain the same or decrease *relative* to the OMR firms (Grullon and Michaely, 2004). Following the methodology in Lie (2005),[56] we measure the post-announcement operating performance over the eight quarters following a repurchase announcement using the performance-

[56] See Gong, Louis, and Sun (2008), and Chen and Wang (2013) for additional examples of this procedure.

adjusted operating return on assets (OROA).[57] The performance-adjusted OROA is calculated using on a matched sample of firms based on similar operating performance in the four quarters prior to the repurchase announcement. As the purpose of our study is differentiate the ex-post motivations to include an ASR as part of an existing repurchase authorization in which the firm's decision to authorize repurchases has been made ex-ante, we match ASR firms with firms having open market repurchase authorizations announced in the same quarter.[58] Additionally, we require repurchases in which firms acquire at least 1% of the outstanding equity as Lie finds that relative improvements in operating performance are only found in firms that purchase a significant amount of their shares in the announcement quarter.

We match the sample of 4,151 ASR and OMR repurchase announcements with the original sample of 52,441 firm-quarter repurchases to arrive at a final sample of firms that announce and repurchase shares in the same quarter. While all 523 announced ASRs are matched to firm-quarter observations, only 312 make repurchases in excess of 1% of outstanding equity and have valid Compustat data on operating performance around the announcement. To find the match pairs for ASR firms, we matched on 2-digit SIC industry code, market-to-book value of assets between 80% and 120% of the ASR sample firm at prior fiscal year-end, and average operating performance (OROA) over the (4) quarters prior to the announcement quarter between 80% and 120% of the ASR sample firm. We choose the matching firm with the lowest absolute deviation of differences in operating performance using Lie's (2005) formula as

[57] As in prior studies, we follow the definition of return on assets (ROA) as operating income before depreciation (Compustat OIBDP) scaled by the book value of cash-adjusted assets at the beginning of the quarter. Cash-adjusted assets are derived by subtracting cash and cash equivalent assets (CHE) (if available) from total assets (AT).

[58] The customary practice in the post-repurchase literature is to match repurchasing firms with 'non-repurchasing' firms to understand the original motives for announcing an OMR authorization (see e.g. Grullon and Michaely, 2004; Lie, 2005; Gong, Louis, and Sun, 2008; and Chen and Wang, 2013).

$$\left|\mathrm{OROA}_{\text{Qtr 0,ASR firm}} - \mathrm{OROA}_{\text{Qtr 0,Firm i}}\right| + \left|\mathrm{OROA}_{[-4\ Q\text{trs,Qtr 0}],\text{ASR firm}} - \mathrm{ORAO}_{[-4\ \text{Qtrs,Qtr 0}],\text{Firm i}}\right| \quad (3)$$

As in Lie, we disregard the second term if a firm lacks the data required to calculate the OROA in the prior four quarters ending with the announcement quarter. In untabulated results, we find that the pre-repurchase operating performance is very similar between the matched pairs of repurchasing firms. The mean (median) announcement quarter OROA is 4.50% (4.07%) for ASR firms and 4.49% (3.86%) for the OMR firms. Pre-announcement four-quarter mean (median) OROA is 4.53% (3.94%) for ASR sample and 4.46% (3.88%) for the OMR sample. The mean (median) differences of both measures are insignificant.

Table 10 presents the post-announcement percentage changes in OROA for eight quarters for the sample of ASR firms and the control sample of OMR-only firms. All quarterly percentage changes are in reference to the announcement quarter (Qtr. 0). Consistent with Lie (2005), we find that both ASR firms and OMR-only firms exhibit a decline in operating performance following repurchase announcements. More importantly, the difference in mean or median OROA between the two groups is not significant across individual quarters and over the (+1, +4) or (+1, +8) period. In addition, the matched-pair results suggest no significant change in the performance-adjusted OROA of an ASR firm *relative* to a matched OMR firm. In other words, ASR firms experience a similar pattern of decline as other repurchasing firms during the two years following the repurchase announcement. These results provide little support for management's use of an ASR to signal the firm's positive outlook *relative* to other non-ASR repurchasing firms. Additionally, when considering the earlier finding that the pre-repurchase cumulative abnormal returns for ASR firms are not significant, and the pre-repurchase CAR is not significantly different between the ASR and non-ASR groups, we conjecture that signaling undervaluation is not the primary motivation for management's use of an ASR. The results do, however, provide further support for the free cash

flow hypothesis. Although operating performance is declining in the post-announcement period for all repurchasing firms, ASR-firms tend to be much larger and more profitable than non-ASR firms. In addition, ASR firms are likely to be maturing firms with reduced investment opportunity sets compared to non-ASR firms. Therefore, our results strongly support the notion that management's main motivation to initiate an ASR is to convey its commitment to return excess cash to shareholders more efficiently than can be accomplished using an OMR alone.

6. Conclusion

Over the last decade, Accelerated Share Repurchase (ASR) contracts have been used by U.S. firms to quickly repurchase large amounts of their outstanding equity. In the last several years, ASRs have now become the second largest method of share repurchase in the U.S., representing 10 percent of all shares repurchased. While several researchers have examined the use of ASRs, substantial variation exists among the results in this nascent literature. Researchers have been forced to hand-collect information about ASRs which has led to substantial differences among data sets due to identification problems. As a result, the information content contained in an ASR *relative* to an OMR remains an *unresolved issue* in the literature (Farre-Mensa et al, 2014).

Using a hand-collected sample of 716 privately negotiated ASR contracts over the period from 2004 to 2015, we examine the firm's motives for the use of an ASR. As ASR contracts allow for the immediate delivery of shares, while also representing a more credible (legal) commitment to repurchase, we focus our attention on motives related to these two characteristics including quarterly earnings management, and/or signaling, either the firm's commitment to disgorge excess cash (agency theory) or undervaluation (asymmetric information hypothesis). Preconditioning only on firms that repurchase in the quarter, univariate results suggest that some firms may be utilizing ASRs in an effort to meet or beat quarterly analyst EPS forecasts. However, multivariate

analysis reveals that the likelihood of initiating an ASR is increasing in both the accretive nature of the repurchase and the *positive* pre-repurchase earning surprise. As such, we find that a firm is more likely to initiate an accretive ASR in the quarter if it would have met or exceeded its EPS forecast *without* the effect of the repurchase. Thus, while our results provide evidence that ASRs are used for short-term earnings management for some firms, they are also employed for other motives, especially for those firms with strong earnings performance prior to the repurchase.

Our univariate results are more consistent with the agency theory of free cash flow, as we find that ASR firms are larger, have similar levels of cash and leverage, have higher levels of free cash flow and higher pre-repurchase operating performance, but are facing declining investment opportunity sets as reflected in slowing rates of sales growth and lower market-to-book ratios as compared to non-ASR firms. Also, we find that pre-repurchase abnormal returns for ASR firms are indistinguishable from zero and are not significantly different from those of non-ASR firms, casting doubt on signaling undervaluation as a primary motive for ASRs. Multivariate results further strengthen the case for the free cash flow hypothesis as we find the likelihood that firms initiate an ASR are increasing in the levels of cash and free cash flow to assets, as well as operating performance, but are decreasing in both the rate of sales growth and market-to-book ratios, both proxies for the firm's growth opportunities.

We further extend our analysis of the signaling effects of an ASR by examining both the short-term market response to the announcement of an ASR as well as the post-announcement operating performance. In contrast to prior literature, we find cumulative abnormal returns (CARs) surrounding ASR announcements are positive and significantly higher than those of firms that only announce open market repurchases. However, we find that operating performance for both ASR and non-ASR firms is declining over the 8-quarters post-repurchase announcement; although, the difference is not significant between the two groups. Taken together, these findings suggest that ASR announcements lead to a more positive short-term market reaction than OMR announcements.

In addition, the market responds more favorably to a purchase conducted by firms with strong operating performance at or prior to the announcement and/or more cash on hand. The ASR firms tend to be those with solid profitability but reduced investment opportunity sets, and the market responds favorably to these firms due to their commitment to distribute excess cash and avoid the agency cost of overinvestment. However, both ASR and OMR firms experience a decline in long-term operating performance after the announcement. Overall, our results provide support for management's use of an ASR to mitigate the agency costs of free cash flow, but not primarily as a means to signal undervaluation.

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Appendix A: Control variables

Variable name	Description
Amihud illiquidity	Amihud (2002) describes his illiquidity measure as "… the average ratio of the daily absolute return to the (dollar) trading volume on that day … this ratio gives the absolute (percentage) price change per dollar of daily trading volume …" (p.34). Since our study covers both firm-quarter data and actual announcement dates, we calculate separate measures of Amihud illiquidity for each our sample datasets based on relevant dates. For our sample of firm-quarters, we calculate average Amihud illiquidity for each firm over the period beginning 255 days prior to and ending 46 days prior to the lagged actual period end date (APDEDATEQ). For our sample of repurchase announcements, we calculate average Amihud illiquidity for each firm over the period beginning 255 days prior to and ending 46 days prior to the actual announcement date. In both samples, we take the natural logarithm of average Amihud illiquidity for comparative purposes.
Total assets	Book value of total assets (AT) adjusted to 2015 dollars (CPI)
Cash to assets	Calculated as cash and cash equivalents (CHE) divided by total assets (AT).
Dividend yield	Calculated as total annual common dividends paid (DVC) divided by the market value of equity at fiscal year-end. If common dividends paid (DVC) is missing or equal to zero, dividend yield is set equal to zero.
Employee options (exercisable)	Calculated as total unexercised exercisable options (OPTEX) scaled by common shares outstanding (CSHO) at fiscal year-end
Executive options (exercisable)	Calculated as the sum of total unexercised, exercisable options (OPT_UNEX_EXER_NUM) grouped by firm (GVKEY) and year from the Execucomp Annual Compensation database scaled by common shares outstanding (CSHO) at fiscal year-end
Free cash flow	Based on the measure taken from Acharya, Almeida, and Campello (2007), as in Bargeron et al (2011), we start with operating income before depreciation (OIBDP) and subtract the sum of depreciation and amortization (DP), total income taxes (TXT), interest expense (XINT), preferred (preference) dividends (DVP), and common dividends (DVC). This amount is then scaled by total assets (AT).
HP-Index	Defined by Hadlock and Pierce (2010), the HP-Index is a relative measure of firm financial constraints based on firm size and age. The index is calculated annually by taking the log of the minimum of the firm's total assets or $4.5 billion (min (total assets, $4.5 billion)) as firm size, as well as the square of this amount (firm size squared), in addition to the minimum of the firm's total age or 37 years (min (age, 37 years)) as firm age. These variables are then multiplied by coefficients determined by Hadlock and Pierce through ordered logit regressions to arrive at a relative index value of financial constraints as such: HP-Index = (-0.737*Firm Size) + (0.043*Firm Size Squared) – (0.040* Firm Age). The smallest HP-index value (least financially constrained) is (-

	4.6368867) which represents a firm with $4.5 billion or more in total assets and that has been in existence for 37 years or longer. Financial constraints are considered increasing in the HP-index.
Leverage (book)	Calculated as long-term debt (DLTT) plus debt in current liabilities (DLC) divided by total assets (AT)
Leverage deficit	Defined as the firm's 'calculated' market leverage minus its predicted target leverage as outlined in Uysal (2011). Target leverage is the predicted value obtained by annually regressing calculated market leverage of all firms in the merged Compustat-CRSP database for years 2003 through 2015 on firm level explanatory variables that have been found to be determinants of capital structure. These explanatory variables include one-year lagged values of the natural logarithm of sales, market-to-book, research and development expense scaled by total assets, selling, general and administrative expense scaled by sales, EBITDA scaled by total assets, net property, plant and equipment scale by total assets, one-year total stock return, and market leverage.
Market to book	Calculated as the market value of assets (common shares outstanding (CSHO) multiplied by fiscal year-end closing price (PRCC_F) plus total assets (AT) minus common equity (CEQ) minus book value of deferred taxes (TXDB)) divided by the book value of total assets (AT).
Market value of equity	Calculated as common shares outstanding (CSHO) multiplied by fiscal year-end closing share price (PRCC_F) adjusted to 2015 dollars (CPI)
Operating ROA	Calculated as operating income before depreciation and amortization (OIBDP) divided by total assets (AT)
Prior stock performance	For our sample of firm-quarters, we calculate prior cumulative abnormal returns for each firm over the period beginning 44 days prior to and ending 4 days prior to the lagged actual period end date (APDEDATEQ). For our sample of repurchase announcements, we calculate prior cumulative abnormal returns for each firm over the period beginning 44 days prior to and ending 4 days prior to the actual announcement date.
Takeover Rumor	Defined as an indicator variable that takes a value of one if the firm has been the target (or rumored target) of a takeover attempt in the 6 months preceding the lagged actual period end date (APDEDATEQ) for the sample of firm-quarter repurchases or in the 6 months preceding the actual announcement date in the sample of repurchase announcements.
Sales growth	Calculated as the compound rate of sales (SALE) growth over the prior three years
Standard deviation of stock returns	For our sample of firm-quarters, we calculate the standard deviation of prior stock returns for each firm over the period beginning 255 days prior to and ending 46 days prior to the lagged actual period end date (APDEDATEQ). For our sample of repurchase announcements, we calculate the standard deviation

of prior stock returns for each firm over the period beginning 255 days prior to and ending 46 days prior to the actual announcement date.

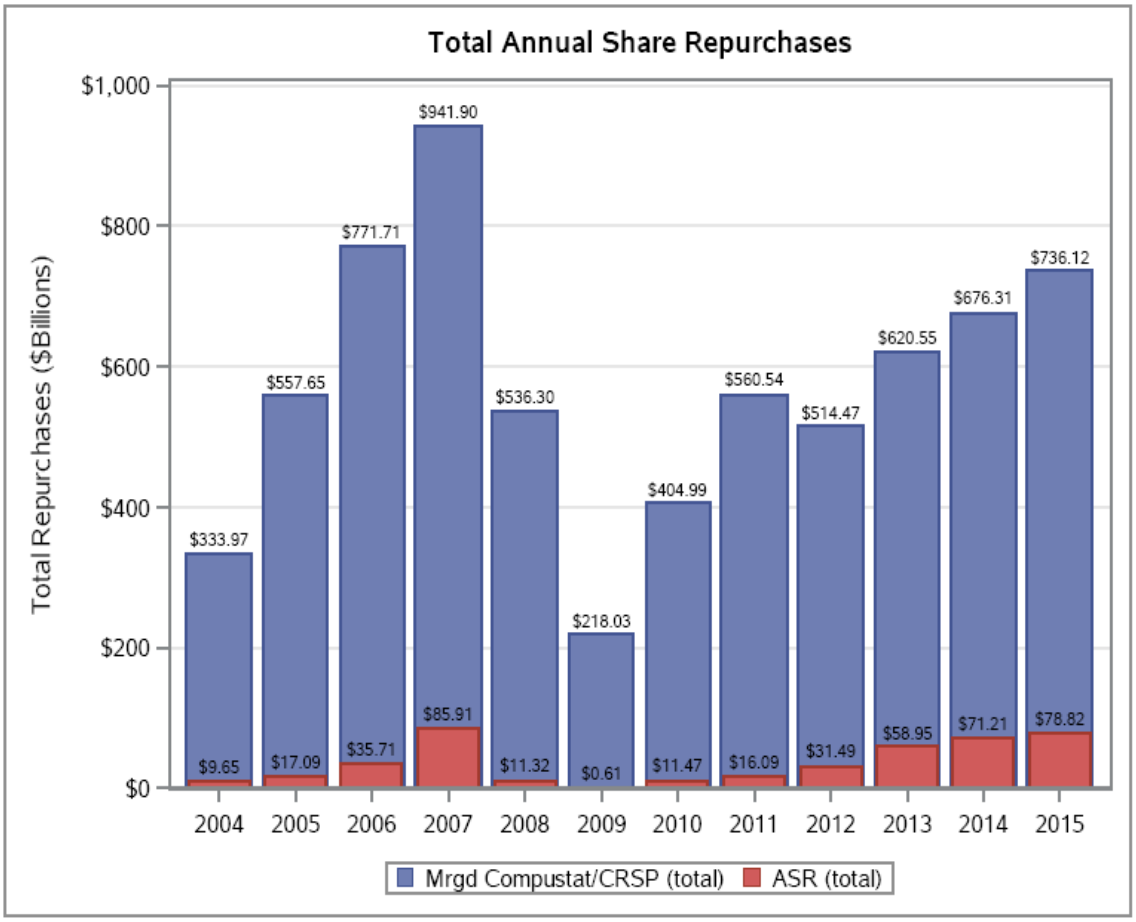

Fig 1. Total annual share repurchases 2004 to 2015: Merged Compustat/CRSP versus ASR. All dollar amounts ($billions) have been adjusted to 2015 dollars using CPI.

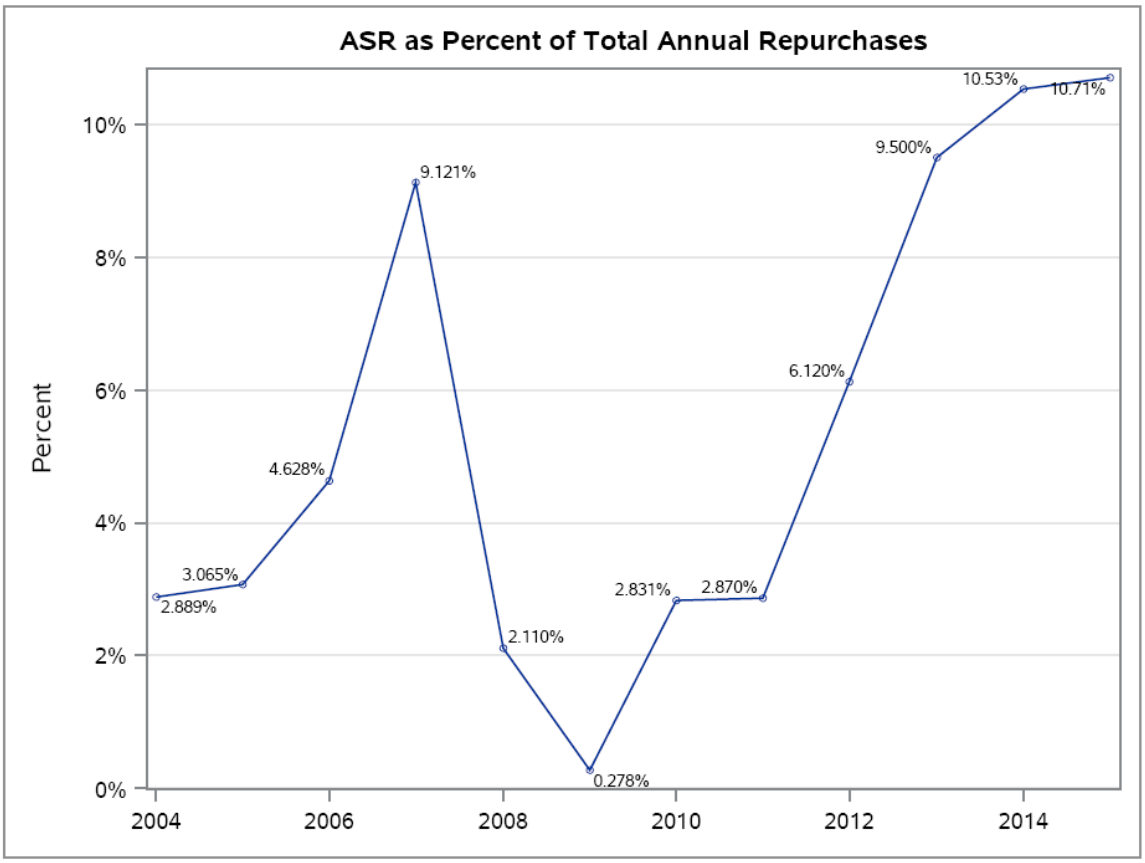

Fig 2. ASRs as a percent of total merged Compustat/CRSP repurchases.

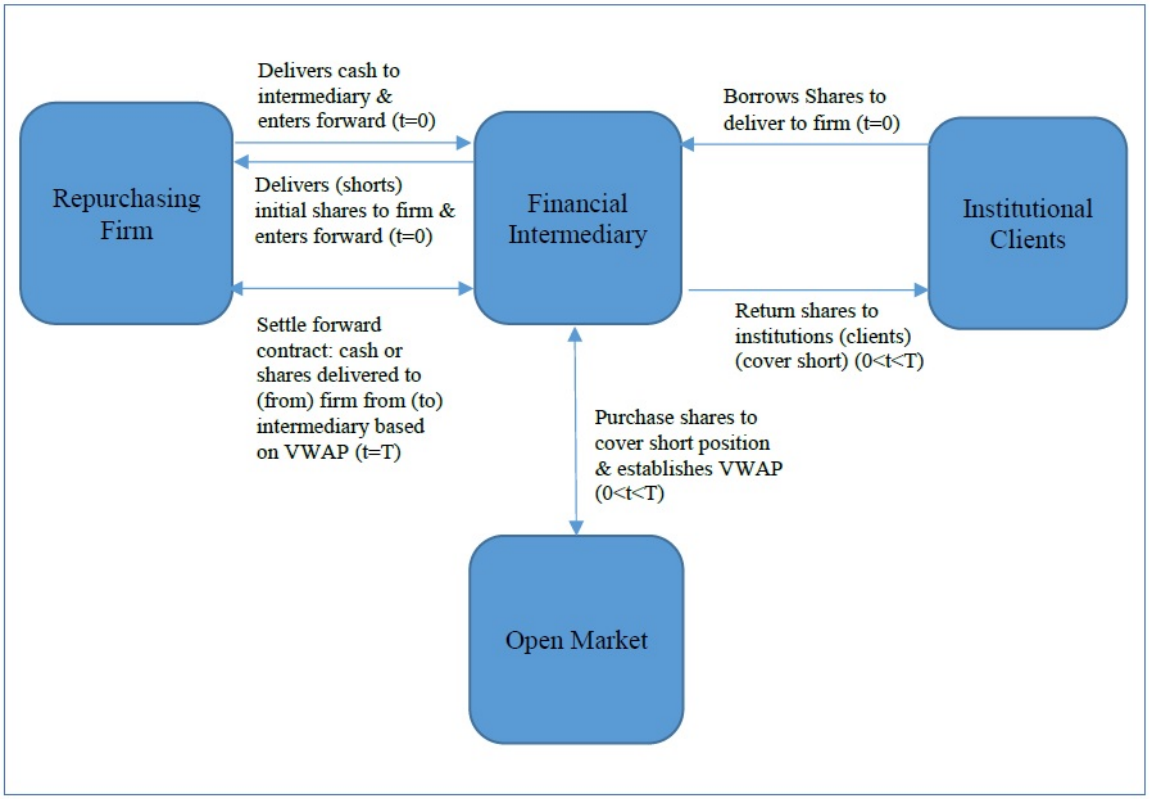

Fig 3. Contract structure of an accelerated share contract and forward agreement. At time (t=0) the firm contracts with a financial intermediary, most often an investment bank, for the immediate (or accelerated) purchase and delivery of the majority of its targeted shares (dollar amount). The intermediary typically borrows 80% or more of the dollar amount, or quantity, of shares stated in the ASR contract from institutional investors and immediately short sells them to the issuer. The intermediary then covers its short position by purchasing the shares in the open market over a contractual period, typically anywhere from a few months to a year, and thus, establishes a volume-weighted average price (VWAP) for the repurchased shares. Upon initiation of the ASR, the issuer additionally enters a long forward contract with the intermediary to eliminate the risk of price increases faced by the intermediary while it covers its short position in the open market. Upon maturity of the forward contract (t=T), if the VWAP is higher than the initial price paid by the issuer for its shares, the issuer will settle the forward by either delivering cash or additional shares to the intermediary. If the VWAP is lower, then the intermediary will have the option to deliver additional shares (which is now almost always the case) or to refund cash to the issuer.

Table 1: ASR summary statistics by year

The sample contains 716 privately negotiated Accelerated Share Repurchase (ASR) programs covering the period from 2004 through 2015. Announcement data (or subsequent mention after program completion) is hand-collected from multiple databases including the ABI/Inform database, SEC Edgar, Lexis-Nexus, Google and others. The financial details for each program are obtained from reported financial statements (8-Ks, 10-Qs, 10-Ks, EX-99s) as recorded in the Securities Exchange Commission's online Edgar database. Panel A reports the summary statistics for all ASR programs by year in number of programs, total dollar amounts (adjusted to 2015 dollars), number of distinct firms, and the percentage of all annual recorded share repurchases as reported in the merged Compustat/CRSP database. Distinct ASR firm numbers are reported by year. The total number of 346 distinct firms covers the entire period from 2004 thru 2015. Panel B reports summary statistics by year that indicate whether the firm publically announced the ASR program (as indicated by whether the firm issued a press release and/or filed a concurrent 8-K with the SEC) and, if so, was the program announced simultaneously with a new (or updated) share repurchase authorization. Panel B also reports statistics that indicate whether the ASR was part of a preexisting or concurrently announced repurchase authorization or if the ASR was a stand-alone program, either solely authorized (no other repurchase authorization exists) or authorized in addition to, but independent of, the firm's existing share repurchase authorization.

Panel A: ASR transaction data by year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
ASR contracts (distinct)	17	37	62	97	25	5	36	56	53	92	121	115	716
Percent of total ASRs	2.37%	5.17%	8.66%	13.55%	3.49%	0.70%	5.03%	7.82%	7.40%	12.85%	16.90%	16.06%	100.00%
Dollar amount ($billions)	9.65	17.09	35.71	85.91	11.32	0.61	11.47	16.09	31.49	58.95	71.21	78.82	428.31
All repurchases ($billions)	333.97	557.65	771.71	941.90	536.30	218.03	404.99	560.54	514.47	620.55	676.31	736.12	6,872.6
Percent of all repurchases	2.89%	3.07%	4.63%	9.12%	2.11%	0.28%	2.83%	2.87%	6.12%	9.50%	10.53%	10.7%	6.23%
ASR firms (distinct)	16	33	44	81	20	5	32	41	38	67	84	88	346

Panel B: ASR announcement (authorization) detail by year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Publically announced	14	34	51	88	23	5	32	45	37	62	65	74	530
Percent publically (%)	82.35%	91.89%	82.26%	90.72%	92.00%	100.00%	88.89%	80.36%	69.81%	67.39%	53.72%	64.35%	74.02%
Simultaneously announced	5	11	19	30	8	4	7	6	10	16	17	16	149
Percent simultaneously (%)	29.41%	29.73%	30.65%	30.93%	32.00%	80.00%	19.44%	10.71%	18.87%	17.39%	14.05%	13.91%	20.81%
Preexisting authorization.	16	28	56	79	24	5	32	53	50	91	118	112	664
Percent preexisting (%)	94.12%	75.68%	90.32%	81.44%	96.00%	100.00%	88.89%	94.64%	94.34%	98.91%	97.52%	97.39%	92.74%
Stand-alone ASR	1	9	6	18	1	0	4	3	3	1	3	3	52
Percent stand-alone (%)	5.88%	24.32%	9.68%	18.56%	4.00%	0.00%	11.11%	5.36%	5.66%	1.09%	2.48%	2.61%	7.26%

Table 2: ASR summary statistics by program

The above table reports summary statistics concerning the details of our sample of 716 accelerated share repurchase (ASR) programs (contracts) over the period from 2004 to 2015. Panel A reports summary statistics dealing with program dollar amount (adjusted to 2015 dollars), percent of equity sought, percent of most recent repurchase authorization (or incremental update to an existing authorization), the number of shares initially delivered by the financial intermediary, total shares received under the ASR program, total shares received during the quarter of ASR contract initiation, and the total percentage of shares received in the quarter of contract initiation. *Represents the percent of shares acquired through an ASR program out of the total shares acquired during a quarter when the firm is simultaneously purchasing shares by some method in addition to the ASR. Panel B reports the distribution of ASR programs by Fama-French 12 industry classifications.

Panel A: ASR program characteristics

	N	Mean	Min	Q1	Median	Q3	Max
Dollar amount ($mil)	716	598.20	15.02	105.37	254.36	579.70	14,289.01
Percent equity sought (%)	706	4.18	0.19	1.60	3.01	5.62	64.39
Percent of recent authorization (%)	708	42.77	2.17	20.00	33.33	58.18	400.00
Initial shares delivered (mil)	714	10.40	0.07	2.29	4.76	11.10	203.70
Initial shares delivered (%)	695	87.34	8.50	80.00	87.58	99.90	105.20
Total shares acquired - program (mil)	716	11.58	0.09	2.54	5.45	12.06	203.70
Shares acquired - initial quarter (mil)	716	10.49	0.07	2.30	4.80	11.30	203.70
Shares acquired - initial quarter (%)	716	90.64	74.71	90.52	88.06	93.70	100.00
Acquired thru ASR (w/OMR) - int. qtr. (%)*	410	76.62	6.14	63.23	81.84	92.80	99.98

Panel B: ASR programs by Fama-French (12) industries

No	Fama-French Industry	N	%
1	Consumer non-durables	31	4.33%
2	Consumer durables	13	1.82%
3	Manufacturing	75	10.47%
4	Energy	11	1.54%
5	Chemicals	25	3.49%
6	Business equipment	116	16.20%
7	Television and telecom	21	2.93%
8	Utilities	32	4.47%
9	Wholesale and retail	108	15.08%
10	Healthcare	60	8.38%
11	Finance	150	20.95%
12	Other	74	10.34%
	Total	716	100.00%

Table 3: Characteristics of repurchasing firms: ASR versus non-ASR

This table reports summary statistics for a sample of 52,443 firm-quarter observations from merged Compustat/CRSP/IBES databases with positive reported quarterly share repurchases (>$10K) over the period from 2004 to 2015. Our original hand-collected sample of 716 accelerated share repurchases (ASR) contracts are aggregated by firm-quarter (692) and then are matched, if possible, to a unique firm-quarter record from the previously merged Compustat/CRSP/IBES database resulting in positive matches for 621 ASR firm-quarter observations. Appendix A describes the construction of all variables. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Significance of differences in means (medians) are determined using standard t-tests (Wilcoxon rank sum test). We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

	Non-ASR			ASR			Differences	
Firm Characteristics	N	Mean	Median	N	Mean	Median	Mean(s)	Median(s)
Assets ($mil)	51,594	14,487.67	2,269.35	620	33,891.57	8,119.54	-19,403.90***	-5,850.19***
Market value of equity ($mil)	51,587	9,412.64	1,987.50	620	18,949.65	7,370.94	-9,537.01***	-5,383.44***
Leverage	51,351	0.2012	0.1707	617	0.2050	0.1804	-0.0038	-0.0098***
Cash to assets	51,588	0.1564	0.0930	620	0.1421	0.0953	0.0143**	-0.0023
Free cash flow	41,926	0.0489	0.0457	535	0.0560	0.0476	-0.0072***	-0.0019**
Operating ROA	50,331	0.1296	0.1226	613	0.1365	0.1331	-0.0069**	-0.0105***
Sales growth	50,347	0.1056	0.0697	614	0.0851	0.0612	0.0205***	0.0085
Market to book	51,580	1.8538	1.4590	620	1.8121	1.5252	0.0417	-0.0662
Prior stock performance	50,956	-0.0022	-0.0012	617	-0.0030	0.0000	0.0008	-0.0012
Prior stock volatility	50,956	0.0222	0.0197	617	0.0160	0.0146	0.0063***	0.0050***
Ln (Amihud illiquidity)	50,956	-6.6367	-6.9313	617	-8.5520	-8.5381	1.9153***	1.6068***
Leverage deficit	39,124	-0.0099	-0.0113	492	-0.0111	-0.0104	0.0012	-0.0009
Dividend yield	51,819	0.0141	0.0078	617	0.0131	0.0106	0.0011**	-0.0028**
HP-Index	50,820	-3.8631	-3.7893	609	-4.1215	-4.1169	0.2584***	0.3276***
Executive options (exercisable)	51,822	0.0088	0.0038	621	0.0079	0.0051	0.0009***	-0.0013***
Employee options (exercisable)	51,822	0.0374	0.0278	621	0.0319	0.0254	0.0055***	0.0024**
Target rumor	51,822	0.0000	0.0000	621	0.0129	0.0000	-0.0129***	0.0000***

Table 4: Earnings management analysis: summary statistics for firm-quarter repurchases of non-ASR versus ASR firms

These tables report summary statistics for all 52,443 firm-quarter share repurchases from 2004 to 2015. *Mean forecasted EPS* is the earliest analyst consensus forecasted EPS for the fiscal firm-quarter taken from the IBES Summary database. *Actual_EPS* is the IBES 'reported' actual EPS for the fiscal firm-quarter taken from the IBES Summary database. *Actual earnings surprise* represents the difference between the IBES reported actual EPS and the consensus forecasted EPS. *ASIF1_EPS* represents the 'pre-repurchase' EPS for the fiscal firm-quarter as if the quarterly repurchases had not occurred (mechanical 'denominator' effect only). *ASIF1 earnings surprise* represents the 'pre-repurchase' difference between the IBES *Mean forecasted EPS* and *ASIF1_EPS* for the fiscal firm-quarter (denominator effect only). *Actual_EPS - ASIF1_EPS* represents the increase (decrease) in fiscal firm-quarter EPS resulting from all quarterly share repurchases (denominator effect only). *ASIF2_EPS* represents the pre-repurchase EPS for the fiscal firm-quarter as if the quarterly repurchases had not occurred including the opportunity (financing) costs of repurchases (includes both the 'numerator' as well as the 'denominator' effects). *ASIF2 earnings surprise* represents the 'pre-repurchase' difference between the IBES *Mean forecasted EPS* and *ASIF2_EPS* for the fiscal firm-quarter (both numerator and denominator effects). *Actual_EPS – ASIF2_EPS* represents the increase (decrease) in fiscal firm-quarter EPS resulting from all quarterly share repurchases (both numerator and denominator effects). Refer to Section 4 for a complete description of the 'ASIF' variables. Panel A displays summary statistics for all firm-quarter share repurchases. Panel B displays summary statistics only for 'accretive" share repurchases, i.e. firm-quarter repurchases that increase reported EPS by at least $0.01. Panel C displays summary statistics only for those firm-quarter repurchases that allow the firm to meet or beat IBES mean forecasted EPS. Panels B and C display estimates for *ASIF2_EPS* only as it can be argued that the 'numerator' effect must be considered to determine if a repurchase is accretive to earnings. While not reported, the results for *ASIF1_EPS* estimates are like those of *ASIF2_EPS*. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Significance of differences in means (medians) are determined using standard t-tests (Wilcoxon rank sum test). We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Panel A: All firm-quarter repurchases

	All Firms (1)		Non-ASR (2)		ASR (3)		Differences (2) -(3)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Total dollar amount ($mil)	91.647	7.774	85.086	7.421	589.988	251.492	-504.902***	-244.071***
Total shares acquired (mil)	2.248	0.313	2.121	0.300	12.810	5.958	-10.689***	-5.658***
Percent equity sought	0.0111	0.0055	0.0107	0.0054	0.0421	0.0318	-0.0314***	-0.0265***
Mean forecasted EPS ($)	0.5244	0.3900	0.5218	0.3900	0.7422	0.6700	-0.2204***	-0.2800***
Actual_EPS ($)	0.5283	0.4000	0.5254	0.4000	0.7673	0.6900	-0.2419***	-0.2900***
Actual earnings surprise ($)	0.0047	0.0100	0.0045	0.0100	0.0247	0.0200	-0.0202***	-0.0100***
ASIF1_EPS ($)	0.4571	0.3550	0.4543	0.3500	0.6883	0.6087	-0.2340***	-0.2587***
ASIF1 earnings surprise ($)	-0.0739	-0.0100	-0.0741	-0.0100	-0.0603	-0.0300	-0.0138	-0.0200***
Actual_EPS - ASIF1 EPS ($)	0.0622	0.0000	0.0621	0.0000	0.0752	0.0300	-0.0131	-0.0300***
ASIF2_EPS ($)	0.4604	0.3600	0.4580	0.3500	0.6836	0.6100	-0.2256***	-0.2600***
Actual_EPS - ASIF2_EPS ($)	0.0697	0.0000	0.0695	0.0100	0.0857	0.0300	-0.0162	-0.0200***
ASIF2 earnings surprise ($)	-0.0742	-0.0100	-0.0743	-0.0100	-0.0577	-0.0300	-0.0166	-0.0200**
Number of Firms (N)	52,443		51,822		621			

Table 4: Earnings management analysis: Summary statistics for firm-quarter repurchases of non-ASR versus ASR firms (cont'd)

Panel B: Accretive repurchases: firm-quarter repurchases that increase reported EPS by at least $0.01

	All Firms (1)		Non-ASR (2)		ASR (3)		Differences (2) -(3)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Total dollar amount ($mil)	121.813	17.610	113.269	16.388	634.229	270.883	-520.960***	-254.4950***
Total shares acquired (mil)	2.8893	0.5440	2.7172	0.5150	13.2092	5.8750	-10.492***	-5.3600***
Percent equity sought	0.0127	0.0072	0.0123	0.0070	0.0410	0.0316	-0.0288***	-0.0246***
Mean forecasted EPS ($)	0.6562	0.5100	0.6536	0.5100	0.8132	0.7450	-0.1596***	-0.2350***
Actual_EPS ($)	0.6760	0.5300	0.6731	0.5200	0.8488	0.7850	-0.1756***	-0.2650***
Actual earnings surprise ($)	0.0183	0.0200	0.0181	0.0200	0.0322	0.0200	-0.0141*	-0.0000*
ASIF2_EPS ($)	0.4987	0.4100	0.4959	0.4000	0.6685	0.6200	-0.1726***	-0.2200***
Actual_EPS - ASIF2_EPS ($)	-0.1658	-0.0600	-0.1662	-0.0600	-0.1437	-0.0600	-0.0225	0.0000
ASIF2 earnings surprise ($)	0.1767	0.0600	0.1767	0.0600	0.1774	0.0700	-0.0007	-0.0100**
Number of Firms (N)	21,217		20,869		348			

Panel C: Meet/beat EPS: firm-quarter repurchases that allow the firm to meet or beat IBES mean forecasted EPS

	All Firms (1)		Non-ASR (2)		ASR (3)		Differences (2) -(3)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Total dollar amount ($mil)	107.194	12.679	99.096	12.000	678.443	250.198	-579.347***	-238.198***
Total shares acquired (mil)	2.7875	0.4765	2.6110	0.4540	15.2417	6.3468	-12.631***	-5.893***
Percent equity sought	0.0114	0.0064	0.0110	0.0062	0.0436	0.0328	-0.0326***	-0.0266***
Mean forecasted EPS ($)	0.5113	0.4000	0.5084	0.4000	0.7166	0.6700	-0.2082***	-0.2700***
Actual_EPS ($)	0.5500	0.4300	0.5468	0.4200	0.7705	0.7100	-0.2236***	-0.2900***
Actual earnings surprise ($)	0.0395	0.0200	0.0394	0.0200	0.0470	0.0200	-0.0076	-0.0000**
ASIF2_EPS ($)	0.3398	0.2900	0.3370	0.2800	0.5371	0.5000	-0.2001***	-0.2200***
Actual_EPS - ASIF2_EPS ($)	-0.1780	-0.0500	-0.1779	-0.0500	-0.1817	-0.0900	0.0038	0.0400***
ASIF2 earnings surprise ($)	0.2043	0.0900	0.2040	0.0900	0.2239	0.1400	-0.0199	-0.0500***
Number of Firms (N)	13,236		13,051		185			

Table 5: Correlation matrix

This table shows the Pearson correlation matrix for the variable ASR, the 'ASIF2' earnings management variables of interest, and firm specific control variables used in logit multivariate regressions. ASR is a dummy variable which takes a value of one if the firm receives an initial delivery of shares as part of an accelerated share repurchase contract in the current quarter, and otherwise takes a value of zero. Refer to Section 4 for a complete description of the 'ASIF2' variables. The firm level control variables are described in detail in Appendix A. All continuous variables have been winsorized at the 1% level to mitigate the effect of outliers. Significance at the 10% level or lower is denoted by *.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
ASR [1]	1.00									
ASIF2_Surprise [2]	0.01*	1.00								
Accretive_ASIF2 [3]	0.03*	-0.09*	1.00							
MBEPS_ASIF2 [4]	0.01*	-0.08*	0.41*	1.00						
Ln (total assets) [5]	0.08*	0.01	0.09*	0.00	1.00					
Sales growth [6]	-0.01*	-0.03*	0.04*	0.01*	-0.02*	1.00				
Operating ROA [7]	0.01*	0.10*	0.15*	0.02*	-0.13*	0.12*	1.00			
Cash to assets [8]	-0.01*	0.02*	0.05*	0.10*	-0.36*	0.03*	0.10*	1.00		
Ln (market to book) [9]	0.00	0.11*	0.09*	0.10*	-0.27*	0.12*	0.63*	0.43*	1.00	
Leverage [10]	0.00	-0.06*	0.01	-0.02*	0.25*	0.03*	0.03*	-0.38*	-0.16*	1.00
Dividend yield [11]	-0.01	-0.02*	-0.07*	-0.08*	0.24*	-0.07*	-0.06*	-0.22*	-0.18*	0.22*
Ln (Amihud illiquidity) [12]	-0.09*	-0.03*	-0.21*	-0.10*	-0.73*	-0.06*	-0.30*	0.05*	-0.22*	-0.16*
Free cash flow [13]	0.01*	0.11*	0.15*	0.03*	-0.07*	0.12*	0.75*	0.09*	0.47*	-0.17*
Prior stock performance [14]	0.00	0.02*	-0.01*	0.01*	0.00	-0.01*	-0.03*	-0.02*	-0.05*	-0.02*
Prior stock volatility [15]	-0.06*	-0.11*	-0.10*	-0.01*	-0.34*	0.06*	-0.06*	0.21*	-0.08*	-0.06*
Leverage deficit [16]	0.00	-0.10*	-0.03*	0.01*	0.09*	0.03*	-0.15*	-0.11*	-0.23*	0.21*
HP-Index [17]	-0.05*	-0.05*	-0.09*	0.01*	-0.58*	0.18*	-0.07*	0.32*	0.16*	-0.19*
Employee options [18]	-0.02*	-0.01*	0.02*	0.09*	-0.23*	-0.01*	-0.05*	0.26*	0.09*	-0.15*
Executive options [19]	-0.01*	0.01	0.06*	0.05*	-0.14*	-0.02*	0.08*	0.11*	0.08*	-0.07*
Target rumor [20]	0.01*	-0.01	0.02*	0.02*	0.04*	0.00	0.01*	0.00	0.00	0.01*

Table 5: Correlation matrix (cont'd)

	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
Dividend yield [11]	1.00									
Ln (Amihud illiquidity) [12]	-0.06*	1.00								
Free cash flow [13]	-0.30*	-0.19*	1.00							
Prior stock performance [14]	0.01*	0.01*	-0.02*	1.00						
Prior stock volatility [15]	-0.12*	0.33*	-0.12*	-0.03*	1.00					
Leverage deficit [16]	0.12*	0.02*	-0.14*	0.10*	0.00	1.00				
HP-Index [17]	-0.19*	0.52*	0.01	0.01	0.28*	-0.02*	1.00			
Employee options [18]	-0.17*	0.14*	0.01	0.02*	0.09*	0.03*	0.16*	1.00		
Executive options [19]	-0.14*	-0.02*	0.08*	0.01*	0.04*	0.00	0.00	0.49*	1.00	
Target rumor [20]	0.00	-0.05*	0.00	0.01*	0.01*	0.02*	-0.02*	0.01	0.00	1.00

Table 6: Logit regressions of the decision to initiate an ASR

This table reports the results from logit regressions that measure the likelihood that a firm will include an ASR in the current quarter as part of its preexisting (or currently) announced repurchase authorization. As described in Section 4.1, we condition only on firms that have positive repurchases in the quarter to arrive at a final sample of 52,443 firm-quarter observations. The dependent variable in all models (1-8) is ASR, a dummy variable which takes a value of one if the firm receives an initial delivery of shares as part of an accelerated share repurchase contract in the current quarter, and otherwise takes a value of zero. The first variable of interest is (1) ASIF2_Suprise, which measures the difference between the calculated pre-repurchase ASIF2 EPS and the IBES mean consensus EPS forecast taken at the beginning of the current quarter. We would expect the likelihood that an ASR is initiated in the quarter to be negatively related to the ASIF2_ Surprise (i.e. the probability should be decreasing in the positive size of the surprise if earnings management is the motivation). The second variable of interest is (2) ACCRETIVE_ASIF2, a dummy variable which takes a value of one if the firm's quarterly share repurchases are accretive, i.e. the repurchases increase reported EPS by one cent ($0.01) or more in the current quarter, and otherwise takes a value of zero. Lastly, the third variable of interest is (3) MBEPS_ASIF2, a dummy variable that takes a value of one if the firm is able to meet (or exceed) the IBES mean consensus EPS forecast as a result of share repurchases in the quarter, and otherwise takes a value of zero. Refer to Section 4 for a complete description of the 'ASIF2' variables. The firm level control variables are described in detail in Appendix A. In models (5-8), we omit both the Log of Total Assets as well as Operating ROA as they are highly correlated with the variables Log of Amihud Illiquidity and Free Cash Flow, respectively. See Table 5 for Pearson correlations of all variables used in the following logit regressions. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Coefficients on the regressors are reported with their ρ-values in parentheses. Reported ρ-values are based on robust standard errors clustered by firm. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ASIF2_Surprise	8.1392**			14.249***	7.7969*			13.3376**
	(0.0306)			(0.0082)	(0.0558)			(0.0237)
Accretive_ASIF2		0.3008**		0.6448***		0.2556*		0.6037***
		(0.0244)		(0.0000)		(0.0815)		(0.0000)
MBEPS_ASIF2			0.0972				0.0046	
			(0.4568)				(0.9735)	
Cash to assets	1.1504*	1.2299**	1.2607**	1.1565*	1.0919	1.1261	1.1191*	1.1459
	(0.0855)	(0.0487)	(0.0412)	(0.0899)	(0.1303)	(0.1006)	(0.0992)	(0.1199)
Free cash flow					3.4060	3.9881*	4.2101*	2.8062
					(0.1622)	(0.0753)	(0.0589)	(0.2677)
Operating ROA	4.0721**	4.5529***	4.7182***	3.8786**				
	(0.0183)	(0.0029)	(0.0023)	(0.0267)				
Sales growth	-0.4728	-0.3167	-0.2786	-0.5886	-0.4325	-0.2756	-0.2516	-0.4980
	(0.3651)	(0.4799)	(0.5242)	(0.2783)	(0.4251)	(0.5652)	(0.5950)	(0.3658)
Ln (market to book)	-0.9481**	-0.9323***	-0.9541***	-0.9461**	-1.2742***	-1.2536***	-1.2756***	-1.2338***
	(0.0111)	(0.0060)	(0.0050)	(0.0133)	(0.0002)	(0.0001)	(0.0000)	(0.0006)
Ln (total assets)	0.3734***	0.3879***	0.3932***	0.3590***				
	(0.0000)	(0.0000)	(0.0000)	(0.0000)				

Table 6: Logit regressions of the decision to initiate an ASR (cont'd)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Prior stock performance	-0.5703	-0.3532	-0.3996	-0.5237	-0.2583	0.0008	-0.0387	-0.2143
	(0.2177)	(0.4238)	(0.3617)	(0.2624)	(0.6097)	(0.9987)	(0.9364)	(0.6757)
Prior stock volatility	-72.365***	-69.133***	-71.181***	-66.854***	-62.501***	-58.552***	-60.194***	-58.247***
	(0.0000)	(0.0000)	(0.0000)	(0.0003)	(0.0017)	(0.0012)	(0.0009)	(0.0034)
Ln (Amihud illiquidity)					-0.4091***	-0.4243***	-0.4329***	-0.3895***
					(0.0000)	(0.0000)	(0.0000)	(0.0000)
Leverage deficit	-1.4703	-1.8828	-1.9652	-1.3051	-2.3088*	-2.7340**	-2.7976**	-2.1486*
	(0.2301)	(0.1616)	(0.1388)	(0.2931)	(0.0587)	(0.0431)	(0.0358)	(0.0843)
Dividend yield	-24.796***	-24.610***	-24.874***	-24.026***	-21.150*	-22.316*	-22.361*	-21.093*
	(0.0072)	(0.0036)	(0.0033)	(0.0095)	(0.0954)	(0.0638)	(0.0650)	(0.0990)
HP-Index					0.0131	-0.0248	-0.0131	-0.0095
					(0.9563)	(0.9132)	(0.9542)	(0.9685)
Employee options					0.0980	-0.0252	0.1274	-0.1727
					(0.9737)	(0.9930)	(0.9644)	(0.9539)
Target rumor					0.0920	0.2655	0.2722	0.0736
					(0.8871)	(0.6358)	(0.6252)	(0.9100)
Constant	-5.7306***	-5.9885***	-5.5714***	-6.0735***	-5.2577***	-5.6377***	-5.4813***	-5.6379***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Industry & year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	33,298	35,500	35,500	33,298	27,973	29,206	29,206	27,973
Pseudo R-Squared (scaled)	0.1177	0.1231	0.1214	0.1255	0.1308	0.1373	0.1360	0.1374

Table 7: Logit regressions of the decision to initiate an ASR: matched pair

This table reports the results from logit regressions for a matched pair sample of the 621 ASR firm-quarters in our original sample. We choose matching firms from within our sample of 52,433 firm-quarters with positive repurchases with the following characteristics: (1) same 2-digit SIC industry code, (2) book value of total assets between 80% and 120% of the ASR sample firm at prior fiscal year-end, (3) market value of equity between 80% and 120% of the ASR sample firm at prior fiscal year-end, (4) matching firm-quarter observation occurs within plus or minus one fiscal year of the current sample ASR firm-quarter, (5) the matching firm quarter cannot have the same unique Compustat firm identifier (GVKEY), and the matching firm cannot have ASR repurchases within plus or minus one fiscal year of the current ASR firm-quarter observation. See Section 4 for a complete description of the matching process. This table reports the likelihood that a firm will include an ASR in the current quarter as part of its preexisting (or currently) announced repurchase authorization. The dependent variable in all models (1-8) is ASR, a dummy variable which takes a value of one if the firm receives an initial delivery of shares as part of an accelerated share repurchase contract in the current quarter, and otherwise takes a value of zero. Please refer to Table 6 (as well as Section 4) for a complete description of the three main 'ASIF2' variables of interest. The firm level control variables are described in detail in Appendix A. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Coefficients on the regressors are reported with their ρ-values in parentheses. Reported ρ-values are based on robust standard errors clustered by firm. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ASIF2_Surprise	40.669***			43.847***	29.099**			36.426***
	(0.0009)			(0.0003)	(0.0268)			(0.0069)
Accretive_ASIF2		0.1763		0.6294**		0.2104		0.7805***
		(0.4045)		(0.0118)		(0.3796)		(0.0095)
MBEPS_ASIF2			0.1213				-0.2021	
			(0.5924)				(0.4271)	
Cash to assets	2.1868**	2.6095***	2.5779***	2.2904**	1.8721	1.7152	1.6028	2.2241
	(0.0475)	(0.0079)	(0.0085)	(0.0401)	(0.1658)	(0.1361)	(0.1601)	(0.1068)
Free cash flow					18.486***	13.5987***	14.042***	18.114***
					(0.0003)	(0.0013)	(0.0008)	(0.0005)
Operating ROA	9.4096***	10.997***	11.228***	9.1392***				
	(0.0005)	(0.0000)	(0.0000)	(0.0010)				
Sales growth	-1.3120**	-1.0773*	-1.0995*	-1.3096*	-0.8475	-0.6192	-0.6652	-0.6217
	(0.0481)	(0.0901)	(0.0811)	(0.0579)	(0.2572)	(0.3727)	(0.3372)	(0.4057)
Ln (market to book)	-1.6929	-0.3407	-0.2967	-1.6087	-2.7127**	-1.7093	-1.8569*	-2.9304**
	(0.1566)	(0.7504)	(0.7837)	(0.1860)	(0.0359)	(0.1252)	(0.0989)	(0.0278)
Ln (total assets)	9.0485***	9.8450***	9.8585***	9.3591***				
	(0.0000)	(0.0000)	(0.0000)	(0.0000)				

Table 7: Logit regressions of the decision to initiate an ASR: matched pair (cont'd)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Prior stock performance	-2.2274*	-0.7550	-0.7943	-2.4862*	-4.5479***	-2.2948*	-2.0371	-4.7456***
	(0.0806)	(0.4807)	(0.4622)	(0.0536)	(0.0018)	(0.0612)	(0.1039)	(0.0014)
Prior stock volatility	-46.501*	-58.136**	-59.028***	-40.9139***	-5.6388	-45.994*	-46.880*	1.4823
	(0.0806)	(0.0137)	(0.0122)	(0.1177)	(0.8556)	(0.0895)	(0.0849)	(0.9620)
Ln (Amihud illiquidity)					-0.5017**	-0.6034***	-0.6156***	-0.4915**
					(0.0371)	(0.0098)	(0.0087)	(0.0438)
Leverage deficit	1.9476	1.4427	1.3267	1.6749	-0.3717	-0.8239	-0.3854	-0.2479
	(0.3591)	(0.4631)	(0.5052)	(0.4414)	(0.8809)	(0.7121)	(0.8661)	(0.9215)
Dividend yield	-21.455**	-13.4913	-13.5878	-19.401*	-9.6291	-4.2494	-5.7809	-8.5341
	(0.0497)	(0.1625)	(0.1603)	(0.0789)	(0.4659)	(0.7038)	(0.6063)	(0.5391)
HP-Index					-0.3615	-0.4836	-0.4306	-0.4361
					(0.3048)	(0.1189)	(0.1673)	(0.2223)
Employee options					3.8193	-5.1360	4.8262	3.5389
					(0.5442)	(0.3429)	(0.3730)	(0.5772)
Target rumor					-19.5118	-2.5290*	-2.5855*	-19.8530
					(0.9920)	(0.0907)	(0.0832)	(0.9917)
Industry & year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	764	843	843	764	655	707	707	655
Pseudo R-Squared (scaled)	0.3470	0.3109	0.3099	0.3650	0.3655	0.2900	0.2895	0.3899

Table 8: Market response to repurchase announcements

This table reports the 3-day and 5-day cumulative abnormal returns (CARs) for both ASR announcements and open market repurchase (OMR) authorizations. Of the original sample of 716 ASR contracts over the period from 2004 to 2015, 523 distinct ASR programs (530 ASR contracts) were announced through either a press release or an 8-K filing with the SEC (or both). Of the 523 (530) announced ASRs, 478 (90.19%) were announced as part of either a pre-existing (or concurrently) announced repurchase authorization (98 are announced simultaneously as part of a larger authorization), while 52 (9.8%) are considered 'standalone' ASRs that are authorized independent of any of the firm's other repurchase authorizations. We match all ASR announcements to the original (or concurrently) announced open market share repurchase in the Thompson Reuters' Securities Data Corporation (SDC) Platinum Mergers and Acquisition database to ensure that we do not report duplicate announcements. See Section 5.1 for a complete description of this process. Our final sample comprises the original 523 ASR announcements and 3,628 open market repurchase authorizations from the SDC for a total sample of 4,151 repurchase announcements over the period from 2004 to 2015. All abnormal returns are calculated using the market-model. We use the value-weight return on all CRSP firms listed on the NYSE, AMEX, or NASDAQ as a proxy for the market. The proxy for the risk-free rate is one-month T-bill rate obtained through the Federal Reserve. We use a standard event-methodology (Brown and Warner, 1985) to calculate abnormal returns with a parameter estimation period beginning 255 days prior to and ending 46 days prior to the event date with a required minimum of 100 days of returns during the estimation period. Significance of differences in means (medians) are determined using standard t-tests (Wilcoxon rank sum test). Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

	3-day CAR [-1, 0, 1]			5-day CAR [-2, 0, 2]		
	N	Mean	Median	N	Mean	Median
I. ASR (all)	522	0.0164***	0.0140***	522	0.0195***	0.0153***
A. Part of repurchase authorization	472	0.0156***	0.0140***	472	0.0188***	0.0152***
B. Simultaneously announced w/auth.	98	0.0261***	0.0280***	98	0.0308***	0.0306***
C. Announced subsequent to auth.	374	0.0129***	0.0113***	374	0.0157***	0.0137***
D. Stand-alone ASR	50	0.0237***	0.0138***	50	0.0256***	0.0226***
II. Repurchase Authorizations (all)	2,986	0.0143***	0.0117***	2,986	0.0137***	0.0116***
A. Contains subsequently ann. ASR	329	0.0093***	0.0079***	329	0.0085***	0.0108***
B. Does not include ASR	2558	0.0146***	0.0119***	2,558	0.0138***	0.0112***
Differences in Means (Medians)						
ASR: Subsequent. vs. simultaneously ann. (I.C.-I.B.)		-0.0132**	-0.0167***		-0.0152**	-0.0169***
Auth.: no-ASR. vs. all ASR (II.B.- I.)		-0.0017	-0.0021		-0.0057**	-0.0041***
Auth.: no-ASR vs simultaneously ann. ASR (II.B.- I.B.)		-0.0114**	-0.0161***		-0.0170***	-0.0194***
Auth.: no-ASR vs subsequent. ASR (II.B.- II.A.)		0.0053**	0.0040*		0.0053*	0.0004

Table 9: OLS regressions of abnormal returns

This table reports results for OLS regressions of 3-day (5-day) cumulative abnormal returns (CARs) on the set of ASIF2 earnings management variables as well as the control variables from the logit regressions (see Appendix A). CARs are calculated using the sample of 4,151 repurchase announcements as described in Table 9. The dependent variable in models (1) thru (3) is the 3-day CAR around repurchase announcement [-1, 0, 1]. The dependent variable in models (4) thru (6) is the 5-day CAR around announcement [-2, 0, 2]. All variables have been winsorized at the 1% level to mitigate the effect of outliers. Coefficients on the regressors are reported with their ρ-values in parentheses. Reported ρ-values are based on robust standard errors clustered by firm. Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)
ANCDTYPE	0.0068***	0.0077***	0.0078***	0.0108***	0.0116***	0.0116***
	(0.0098)	(0.0017)	(0.0015)	(0.0004)	(0.0000)	(0.0000)
Equity Sought (%)	0.0324**	0.0335**	0.0337**	0.0321*	0.0304*	0.0304*
	(0.0394)	(0.0244)	(0.0238)	(0.0894)	(0.0926)	(0.0930)
ASIF2_Surprise	0.2804**			0.3773**		
	(0.0412)			(0.0106)		
Accretive_ASIF2		0.0012			0.0008	
		(0.6217)			(0.7884)	
MBEPS_ASIF2			-0.0006			0.0010
			(0.8320)			(0.7550)
Cash to assets	0.0182	0.0191	0.0191	0.0213	0.0228*	0.0228*
	(0.1576)	(0.1224)	(0.1232)	(0.1342)	(0.0977)	(0.0970)
Free cash flow	-0.0569	-0.0613	-0.0605	-0.0162	-0.0167	-0.0163
	(0.2051)	(0.1521)	(0.1561)	(0.7505)	(0.7333)	(0.7391)
Operating ROA	0.0506*	0.0580**	0.0577**	0.0443	0.0476	0.0483
	(0.0885)	(0.0419)	(0.0439)	(0.2055)	(0.1581)	(0.1544)
Sales growth	-0.0085	-0.0120	-0.0117	-0.0055	-0.0097	-0.0096
	(0.2961)	(0.1476)	(0.1566)	(0.5527)	(0.3022)	(0.3068)
Ln (market to book)	-0.0041	-0.0025	-0.0025	-0.0052	-0.0030	-0.0031
	(0.4182)	(0.6031)	(0.6032)	(0.3617)	(0.5810)	(0.5689)
Industry & year controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1,683	1,804	1,804	1,683	1,804	1,804
F value	2.23	2.29	2.27	2.79	2.47	2.47
Pr > F	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
R-square	0.0399	0.0384	0.0383	0.0481	0.0425	0.0425

Table 10: Post-repurchase operating performance

This table reports percentage changes in post repurchase announcement operating performance for a sample of 312 ASR firms. Only 312 ASR firms out of 523 that 'announce' ASRs have sufficient data to calculate operating performance. Following Lie (2005), we measure operating performance as operating income before depreciation (Compustat item OIBDP) scaled by the cash-adjusted book value of total assets over the subsequent 8-quarters after announcement. Each sample ASR firm is matched to a control firm that announces an "open-market" repurchase program over the period from 2004 to 2015, as indicated in the Thompson Reuters' SDC database. Only firms (ASR and OMR) that repurchase 1% or more of outstanding equity during the announcement quarter are included. Control firms are matched on 2-digit (1-digit) industry code, market-to-book (MB) ratios between 80% and 120% (or ± 0.01) of the ASR sample firm at prior fiscal year-end, and average operating performance (OROA) over the (4) quarters prior to the announcement quarter (0) between 80% and 120% (or ± 0.01) of the ASR sample firm. All subsequent operating performance changes are in relation to OROA at the end of the announcement quarter (Qtr. 0). The last column includes "performance-adjusted" changes in OROA as calculated by first taking the difference between the OROA of the ASR firm and the OMR firm as of the end of each quarter and then calculating the percentage change based on the performance-adjusted OROA as of the end of Qtr. (0). All variables have been winsorized at the 1% level to mitigate the effect of outliers. Coefficients on the regressors are reported with their ρ-values in parentheses. Significance of differences in means (medians) are determined using standard t-tests (Wilcoxon rank sum test). Significance levels of 1%, 5%, and 10% are indicated by ***, **, and * respectively.

	ASR		OMR		Difference		Matched Pair Adjusted	
Qtr.	Mean	Median	Mean	Median	Mean	Median	Mean	Median
+1	0.0359	-0.0051	-0.0098	-0.0044	-0.0457	0.0007	1.4625	0.0250
	(0.1438)	(0.7490)	(0.6358)	(0.2207)	(0.1545)	(0.4831)	(0.6027)	(0.5748)
+2	0.0479	-0.0160	0.0121	0.0005	-0.0358	0.0165	-2.6491	-0.0439
	(0.1163)	(0.7117)	(0.7215)	(0.8268)	(0.4313)	(0.7515)	(0.4055)	(0.5217)
+3	0.0598	-0.0277*	-0.0405	-0.0219	-0.1004	0.0056	-0.8806	-0.1007
	(0.1347)	(0.0996)	(0.2046)	(0.1725)	(0.0498)	(0.9972)	(0.8770)	(0.8661)
+4	-0.1146***	-0.0213***	-0.0863***	-0.0225***	0.0283	-0.0012	-0.6046	0.4072
	(0.0011)	(0.0055)	(0.0063)	(0.0015)	(0.5465)	(0.5974)	(0.9322)	(0.8885)
+5	-0.0023	-0.0390	-0.0508	-0.0564***	-0.0486	-0.0174	6.1787	0.0809
	(0.9456)	(0.2328)	(0.2557)	(0.0026)	(0.3396)	(0.1638)	(0.2346)	(0.1510)
+6	-0.0900**	-0.0724***	-0.0243	-0.0827**	0.0657	-0.0103	-0.4232	-0.0834
	(0.0228)	(0.0060)	(0.5154)	(0.0198)	(0.2261)	(0.7889)	(0.9573)	(0.7113)
+7	-0.0570	-0.0534*	-0.0452	-0.1020***	0.0118	-0.0486	-0.1897	0.1633
	(0.1979)	(0.0523)	(0.1424)	(0.0011)	(0.8259)	(0.4284)	(0.9765)	(0.4036)
+8	-0.0745*	-0.0595***	-0.0209	-0.0600***	0.0536	-0.0004	-3.5623	-0.0184
	(0.0599)	(0.0040)	(0.6348)	(0.0011)	(0.3648)	(0.8995)	(0.7740)	(0.9081)
Avg. (Qtrs. 1-4)	0.0134	-0.0149	-0.0187	-0.0289*	-0.0321	-0.0140	-0.6788	-0.0206
	(0.5782)	(0.2759)	(0.3979)	(0.0795)	(0.3264)	(0.5193)	(0.6401)	(0.9830)
Avg. (Qtrs. 1-8)	-0.0163	-0.0396**	-0.0350	-0.0515***	-0.0187	-0.0119	-0.0793	-0.0494
	(0.5536)	(0.0350)	(0.1729)	(0.0010)	(0.6196)	(0.3625)	(0.9830)	(0.8513)

CONCLUSION

While each essay in this dissertation stands alone in both its research question and subsequent contributions to the literature, some interesting conclusions can be drawn from the work in its entirety. The central theme throughout all three essays focuses on the question of how managerial interest alignment determines managements' ultimate purpose in wielding share repurchases. First, while recent empirical research tends to support an agency theory (i.e., returning excess free cash to avoid overinvestment) as the most compelling explanation for management's use of share repurchases (Farre-Mensa et al., 2014), I find evidence in all three studies that mangers often initiate share repurchases to serve their own self-interests. For example, in the first article, building upon prior empirical work, I find evidence that the cost of debt is reduced when entrenched managers initiate payouts to maintain control of the firm (defend against disciplinary action from external shareholders). In the second study, I find that short-term abnormal equity (bond) CARs surrounding OMR announcements are negative (positive) when agency costs of equity are highest (i.e., presence of self-interested entrenched managers). Finally, in the third work, again, I look across the spectrum of shareholder-manager alignment to attempt to understand managements' choice to initiate a privately negotiated ASR contract (when it could potentially expose them to charges of share price manipulation) and find some evidence of quarterly earnings management in roughly 30% of all ASRs. As such, while the literature often ascribes the role of corporate payouts as a governing mechanism to realign the interests of managers with external shareholders (e.g., Jensen, 1986), the findings in all three essays provide evidence that, in several instances, management continues to use share repurchases as tool to promote their own self-interests.

Second, building upon the idea that corporate share repurchases can either serve to mitigate or engender agency costs of equity, I find evidence in the first two essays that agency costs of debt resulting from share repurchases are directly related to the degree of shareholder-manager

alignment (i.e., agency cost of equity). For example, I find that average quarterly yield spreads (cost of debt) are significantly increasing around managements use of share repurchases when management is more exposed to the external market for control (shareholder-manager alignment); however, when management is shield from takeover (i.e., agency costs of equity are high), increases in yield spreads are significantly reduced (or mitigated) by over 42%, providing support for the notion that creditor interests are more aligned with those of entrenched managers. That is, takeover protection provided by firm-level anti-takeover provisions (ATP), which serve to induce agency costs of equity, mitigate agency costs of debt surrounding entrenched managements use of open market share repurchases. This finding is surprising as corporate payouts (e.g. share repurchases) are typically thought to increase agency costs of debt. These results point to *interactions* among the agency costs of debt and equity as primary determinants of the responses (wealth effects) of different classes of stakeholders to the announcement of corporate financial policies (e.g., share repurchases). While the finance literature abounds with studies examining agency cost of equity and debt individually, very little empirical research examining the interactions among these two agency costs is found in the literature. Hopefully, the first two essays in this dissertation will provide a framework for future research into the effects of these agency interactions in relation to different financial policies of the firm.

Finally, in the third essay, evidence suggests that the primary motivation for managements use of privately negotiated Accelerated Share Repurchase (ASR) contracts is to avoid agency costs of overinvestment. However, research into the use of ASRs is still severely limited by data availability as well as managerial disclosure. Until ASRs become more standardized and larger datasets become available, the ability to fully discern the information content of an ASR announcement versus that of an OMR may lie beyond the financial researchers' grasp. Hopefully, regulatory authorities will promote the future disclosure of the details of these private negotiated

ASR (derivative) contracts to allow researchers as well as investors to fully evaluate the financial impact of such instruments on firm value.

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