

Commitment and Financial Flexibility in Payout Decisions:
Evidence from Rule 10b5-1 Preset Repurchase Plans

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ABSTRACT

This paper reexamines the tradeoff between signaling commitment and maintaining timing and abandonment options in payout decisions in the context of a new form of payout: SEC Rule 10b5-1 repurchase plans, which require firms to pre-commit. Relative to open market repurchases, these preset plans provide an expanded available repurchase window and increase legal cover, albeit at the cost of forfeiting repurchase flexibility and the option to time repurchases. Firms with greater internal capital reserves or easier access to external capital are more likely to pre-commit to a repurchase plan, as are firms with a history of poor repurchase timing and firms constrained by blackout windows. Using the 2008-2009 financial crisis as a positive exogenous shock to the marginal benefit of financial flexibility, we further find that the growth in preset repurchase programs significantly stagnated during the crisis. Consistent with preset plans sending a signal of commitment, establishing a 10b5-1 plan to execute an existing repurchase—without increasing the authorized repurchase amount—is associated with positive abnormal returns of 1.1%. We find weak evidence of firms using preset repurchases to substitute for dividends; rather, preset plans are generally associated with a one percentage point increase in repurchase yield.

Keywords: Share repurchase; share buyback; Rule 10b5-1; preset trading plan; payout policy; financial crisis; repurchase plan completion rates; announcement returns; financial flexibility

JEL classification: G35; G24; G30

1. Introduction

Beginning with the SEC safe harbor provisions of 1982, payout policy has evolved dramatically over the past three decades. Share repurchases now represent the largest form of payout (Grullon and Michaely (2002) and Skinner (2008)), with more firms repurchasing than paying dividends and with aggregate repurchase volume outpacing aggregate dividend payments (Farre-Mensa, Michaely, and Schmalz (2014)). One potential explanation for the expansion of repurchase activity is that managers view repurchases as more flexible than dividends (Brav, Graham, Harvey, & Michaely, 2005). The flexibility of repurchases allows firms to more easily respond to fluctuations in stock prices and investment opportunities. This flexibility comes with a price, however, as dividends send a stronger signal of commitment to investors (Ofer and Thakor (1987)).

As the payout options available to managers have grown, so has their ability to trade-off flexibility with signaling commitment. As with any tradeoff, the optimal payout policy will differ across firms depending on the relative costs and benefits of each method. The relative benefits of financial flexibility are a function of the firm's internal capital reserves as well as its ability to access capital externally: A firm with large cash reserves, excess debt capacity, and fairly priced, liquid stock likely place less value on financial flexibility in payout policy. Further, how valuable is the option to "time the market," i.e., to increase repurchases when the firm's stock is underpriced and to reduce them when the price is at or above fair value? In an efficient market, the value of this option clearly relates to the manager's desire and ability to successfully exploit inside information. Managers face a decision of not only whether to distribute cash to shareholders, but how to do it. The tradeoff between signaling commitment and maintaining the ability to abandon payouts or time the market is at the core of payout policy.

This paper provides a fresh perspective on this tradeoff. We exploit a recent addition to the menu of payout options—preset repurchases under SEC Rule 10b5-1. Enacted in 2000, Rule 10b5-1 allows firms for the first time to repurchase stock while in possession of material, non-public information by establishing a preset trading plan with a third party. Preset repurchases under Rule 10b5-1 are unique in that they allow firms to repurchase in a continuous fashion and provide additional legal coverage, at the cost of forfeiting

the timing and abandonment options associated with open market repurchase programs. Further, when firms adopt a preset repurchase plan, they incur a real, costly commitment, which traditional open market repurchases lack. Prior to the introduction of preset repurchases, examining the signaling-flexibility tradeoff required comparing across payout methods (e.g. self-tenders, open market repurchases and dividends). Comparing preset and traditional open market repurchases provides a clean setting within which we can examine this tradeoff in payout policy.

We hand-collect 1,657 repurchase announcements between 2001 and 2013 that reference Rule 10b5-1. The use of the Rule to repurchase shares has been increasing rapidly since its enactment: We document only four such announcements in 2001, compared to at least 200 announcements per year during 2011-2013. The rapid growth in preset repurchase plans is not due to a general increase in repurchase announcements during our time period. When we scale by the total number of repurchase programs in our sample each year, we continue to find that the use of Rule 10b5-1 has increased significantly. In fact, during 2012 and 2013, approximately one quarter of all repurchase announcements included a preset component.

We first establish that preset repurchase plans indeed represent a greater commitment than open market repurchases, the most prevalent form of share repurchase. We find that, on average, the greater the portion of the repurchase program conducted under Rule 10b5-1, the higher the completion rate (the amount repurchased relative to the announced amount). In addition, conditional on completion, repurchase programs executed fully under Rule 10b5-1 are completed more than twice as quickly as non-Rule plans. In sum, Rule 10b5-1 programs are a stronger commitment to repurchase shares, and a commitment to repurchase them more quickly, than are open market repurchases.

We next study the determinants of the decision to adopt a Rule 10b5-1 preset repurchase program relative to an open market repurchase. Because firms delegate repurchase responsibilities to a third party, a preset plan reduces a firm's ability to modify future repurchases. We find that the likelihood of adopting a preset plan is greater for firms with larger cash reserves, more stable cash flows, low leverage ratios, better recent stock price performance, or more liquid stocks. These results are consistent with managers trading-off other sources of financial flexibility against financial flexibility in their payout structure, similar

in spirit to the theory of Bolton, Chen, and Wang (2011). We also draw from a new and growing literature that characterizes the 2008-2009 financial crisis as an exogenous shock to credit supply (e.g., Ivashina and Scharfstein (2010), Cornett, McNutt, Strahan, and Tehranian (2010), Bliss, Cheng, and Denis (2014)), which in turn increased the marginal benefits to financial flexibility during this period. We find that the growth of 10b5-1 repurchase plans significantly stagnated during the financial crisis relative to estimated expected growth patterns, consistent with the probability of adopting a preset repurchase plan decreasing as the marginal benefit of financial flexibility increases.

One potential advantage of traditional open market repurchases is information-based timing. In contrast, in a preset plan firms enter into a trading plan during an “open window” when they are not in possession of material, nonpublic information, limiting a firm’s ability to make information-based trades. We find that firms with a record of worse repurchase timing are more likely to adopt a 10b5-1 plan, consistent with firms that are unable to or uninterested in making information-based trades being more likely to adopt a preset plan.

Once the plan is in place, the repurchases proceed, even during future periods when the managers may have material non-public information. By allowing a firm to continue repurchasing while in possession of material non-public information, 10b5-1 plans expand a firm’s available repurchase window and provide legal cover for these trades. We find that firms that appear more constrained by blackout windows, either due to longer reporting lags or more frequent releases of material information through 8-K reports, are more likely to adopt a 10b5-1 plan than an open market repurchase. However, we find only weak evidence of firms at high risk of litigation being more likely to adopt a preset repurchase plan.

A relatively short sample window and the fact that many firms that adopt a 10b5-1 plan continue to use a preset plan for future repurchases combine to leave us with little within-firm variation. Hence, we focus on first-time adoption to strengthen identification. A Cox proportional hazard model examining the speed to first 10b5-1 plan adoption generally corroborates our prior results. Further, we find that adoption speed is positively related to share dilution.

We next turn our attention to stock returns around Rule 10b5-1 repurchase announcements. On the one hand, 10b5-1 plans, by construction, should not be information-driven, potentially reducing their announcement effect. On the other hand, establishing a preset trading plan reduces the firm's repurchasing flexibility and, on average, represents a stronger commitment to follow through on the announced repurchase plan. We find that 10b5-1 announcements are met with positive and significant abnormal returns, which are generally increasing in the expected portion of the plan to be effected under the Rule. In fact, after matching on firm characteristics associated with the 10b5-1 decision, we find evidence that returns to 10b5-1 announcements are significantly greater than returns to open market repurchase announcements.

We also examine an interesting subsample of "delayed" announcements that the firm is adopting a 10b5-1 plan to execute a previously announced repurchase program. The authorized repurchase amount does not increase; hence, the information content of these delayed announcements only relates to preset plans being used as the repurchase vehicle. We document positive and significant abnormal returns of 1.1% to delayed 10b5-1 announcements, implying that investors place considerable value on the commitment and speed of a preset trading plan, even when used to execute an existing repurchase plan.

In a final series of tests, we examine how preset repurchases fit into the broader payout policy landscape and if their addition to the menu of payout options has been associated with a decline in dividends and other forms of actual share repurchases, or rather an expansion in total payout. Using the Grullon and Michaely (2002) modified Lintner (1956) model, we estimate abnormal dividend and repurchase activity for the subset of firms with a history of consistent dividends and actual repurchases, respectively. We find weak evidence of dividend substitution and strong evidence of Rule 10b5-1 adoption being associated with an expansion in total actual share repurchase activity.

We also examine payout transition probabilities, allowing us to study changes in payout during the Rule 10b5-1 period for all firms, not just firms with a history of consistent payout. We find that firms with positive repurchases and dividends in the 1990s are most likely to adopt a preset plan between 2001 and 2013, followed by firms with positive repurchases but no dividends. Interestingly, firms classified as

dividend paying firms in the 1990s that eliminate dividends after 2000 were slightly more likely to adopt 10b5-1 plans than dividend paying firms that continued to pay dividends. Finally, we find that firms increasingly use preset plans to initiate payout: In recent years, about one in ten firms include a Rule 10b5-1 component in their payout initiation, and approximately one in four firms that repurchase for the first time adopt 10b5-1 plans.

Our findings contribute to the payout policy literature along multiple dimensions. Our analysis is most similar in spirit to the literature examining repurchase methods, as in Comment and Jarrell (1991), who compare the signaling strength of Dutch auctions, tender offers, and open market repurchases, and Barger, Kulchania, and Thomas (2011), who examine the choice to conduct repurchases through accelerated share repurchases relative to open market repurchases. We add to the literature by documenting and examining the costs and benefits associated with a new and growing form of payout—Rule 10b5-1 preset repurchase plans.

Further, we contribute to the literature examining short-run and long-run market reactions to payout announcements, particularly their relation to completion rates (e.g., Stephens and Weisbach (1998) and Bonaime (2012)). We also contribute to the growing literature focusing on how firms choose to payout. This literature has primarily examined the choice between dividends and share repurchases (e.g., Jagannathan, Stephens, and Weisbach (2000), Guay and Harford (2000), and Grullon and Michaely (2002)). Here we extend it by examining how firms respond to the addition of a new payout vehicle, and how the market reacts to the information in this choice.

Finally, we add to a nascent literature examining SEC Rule 10b5-1. Several recent studies have examined SEC Rule 10b5-1 plans with respect to trading by insiders. Jagolinzer (2009) finds that executives are trading strategically under the Rule. Using voluntary 8-K filings and SEC Form 4 footnotes, he shows that insiders consistently sell before bad news and after good news, earning higher returns than non-Rule users. Henderson, Jagolinzer, and Muller (2012) find the decision to disclose insider use of Rule 10b5-1 is positively correlated with firm level litigation risk. We find only weak evidence that litigation risk is associated with the firm's use of the Rule to repurchase stock, indicating that the motives to adopt a preset

plan to repurchase appear distinct from those associated with insider trading at the individual level. While SEC Rule 10b5-1 plans have received much attention in the academic literature and popular press with respect to trading by insiders, we are the first paper, to our knowledge, documenting the prevalence, determinants, and value and payout policy impacts of the use of Rule 10b5-1 at the firm level to repurchase stock.

2. Hypothesis Development

Financial flexibility drives corporate finance decisions. Firms need to maintain sufficient financial slack to invest in positive net present value projects as they arise. One way to maintain financial flexibility is to build it into corporate payout structure. Managers state that flexibility is one of the most important reasons they choose share repurchases over dividends (Brav, Graham, Harvey, and Michaely (2005)). Empirical evidence corroborates managers' views and shows that financial flexibility is related to both the level and form of corporate payout (e.g., Guay and Harford (2000), Jagannathan, Stephens, and Weisbach (2000), Lie (2005), and Bonaime, Hankins, and Harford (2014)). Clearly, maintaining sufficient flexibility is important to managers when choosing an optimal payout structure. However, payout vehicles that provide firms with more discretion come at the cost of sending weaker signals of commitment. For example, abnormal returns to repurchase announcements are increasing in the implied level of commitment, with returns to fixed-price tender offers being greatest, followed by Dutch auctions, then open market repurchases (Comment and Jarrell (1991)).

We reexamine the flexibility-signaling tradeoff within the context of an important recent change in the payout choice set. On October 23, 2000, the Securities and Exchange Commission (SEC) enacted Rule 10b5-1, which for the first time allows firms to repurchase shares while in possession of material, nonpublic information, by establishing a preset trading plan with a third party. Under the Rule firms enter into a trading plan during an "open window" when they are not in possession of material, nonpublic information, which provides an affirmative defense to any subsequent trading under the plan. Rule 10b5-1 states that a firm must either: (i) specify a written trading plan with either the amounts, dates, and prices to repurchase or a

trading formula in a binding contract with a broker or dealer, or (ii) delegate the repurchase decisions to a broker or dealer (the company can have no further influence). The firm may modify the plan, but only during an open window. In addition, though early termination of a preset plan is legal, it jeopardizes the affirmative defense associated with 10b5-1 repurchases. Lastly, to maintain an affirmative defense at the motion to dismiss phase of litigation, the firm must publicly announce the plan and enter into it under good faith (Henderson, Jagolinzer, and Muller (2012)). In sum, relative to open market repurchases, preset Rule 10b5-1 repurchases restrict a firm's ability to *ex post* modify repurchase activity or to exploit inside information, but expand a firm's available repurchase window and provide additional legal coverage. These costs and benefits of preset repurchases relative to open market repurchases motivate our four hypotheses below.

Preset repurchase plans provide less flexibility since they reduce a firm's ability to modify repurchases. Essentially, firms adopting a preset plan forfeit the abandonment option associated with open market repurchases. We hypothesize that firms valuing the abandonment option the least are those with ample internal and (access to) external capital to meet future investment needs, which leads to our first hypothesis:

Abandonment Option Hypothesis: Firms with sufficient internal capital or access to external capital markets will value the abandonment option inherent in open market repurchases less and thus be more likely to adopt alternative payout strategies without abandonment options, specifically, preset Rule 10b5-1 repurchase plans.

The empirical predictions of the *Abandonment Option Hypothesis* are that firms with greater levels of internally generated capital (i.e., greater cash and cash flow) and firms with predictable cash flows should be more willing to adopt 10b5-1 plans to execute share repurchases. We also predict that firms that can easily access the debt market, i.e., those with excess debt capacity, or the equity market, i.e., firms with liquid stocks that are not trading below fair value, should be more likely to adopt preset trading plans. While

it may seem counterintuitive for a firm to access external capital markets to fund distributions to shareholders, recent empirical evidence by Farre-Mensa, Michaely, and Schmalz (2015) suggests that firms rely on external capital to finance as much as one third of payouts, contradicting the pecking order theory of Myers and Majluf (1984).

Next, preset plans differ from open market repurchases in that the firm must delegate repurchase responsibility to a third party (without further influence) and thus the firm forfeits full control over the program, which prevents it from making information-based trades. A firm may be willing to forfeit the option of exploiting inside information because it prefers to allocate resources to its core business. Other firms may recognize that poor repurchase timing could lead to bad press. In 2014 many companies, including Viacom, Pfizer, C.R. Bard, Lowes, Exxon Mobil, Boeing, and EBay, were accused of poor repurchase timing in the popular press.¹ Just as managers often cite preset 10b5-1 trading plans when asked about questionable personal transactions,² companies may use Rule 10b5-1 as a buffer against accusations of poor timing. Companies less concerned about timing or with a reputation of poor timing may be most fearful of receiving bad press. We hypothesize that firms that value the timing option associated with open market repurchases the most will be less likely to adopt preset repurchase plans, which leads to our second hypothesis:

Timing Option Hypothesis: Firms with the ability or desire to exercise the timing option associated with open market repurchase plans will be less likely to adopt preset Rule 10b5-1 repurchase plans.

The empirical implications of the *Timing Option Hypothesis* are that firms with a history of poor repurchase timing will be more willing and likely to outsource their repurchase program through a 10b5-1

¹ See “Hey, Big Spender!” (*Barron’s* on January 27, 2014) and “Apple Buybacks Pay Most Ever as CEOs Spend \$211 Billion” (*Bloomberg* on August 5, 2014).

² For example, in March of 2011 when Douglas Bergeron, CEO of VeriFone Systems Inc., was questioned about selling \$14 million of VeriFone stock immediately prior to a stock price decline, Bergeron defended the sale of his stock by pointing to his preset Rule 10b5-1 trading plan. (“Executives’ Good Luck in Trading Own Stock,” *The Wall Street Journal*, November 28, 2012.)

plan either due to a lack of skill or an indifference to timing repurchases to correspond with low stock prices. We also expect that small, less financially sophisticated firms will be more likely to adopt preset plans.

Rule 10b5-1 plans expand a firm's available repurchase window, and repurchasing firms often cite avoiding blackout windows as the motivation for repurchasing under Rule 10b5-1. While the Securities and Exchange Commission (SEC) generally does not mandate blackout periods, most companies impose explicit blackout windows to minimize the costs associated with illegal insider trading (Bettis, Coles, and Lemmon (2000)). Blackout windows generally last from quarter end until the release of earnings, as well as during other major corporate events that may result in insiders possessing material, nonpublic information. Firms must release earnings within 35 days of fiscal quarter end or 60 days of fiscal year end for companies with greater than \$75 million in public float and within 45 or 90 days for smaller companies. Though firms may choose to some extent when to report earnings, factors other than the desire to repurchase sooner most likely drive reporting lags. For example, Sengupta (2004) finds that investor base, litigation risk, and accounting complexity are associated with reporting lags. Hence, blackout windows may substantially constrain firms by preventing them from repurchasing for months at a time throughout the year. In fact, some firms report blackout windows prohibiting repurchasing during two-thirds of all trading days.³ Further, a firm with a large repurchase program may not be able to execute the entire program in the desired time frame due to blackout windows and volume conditions, which limit repurchases to a maximum of 25% of the average daily trading volume. To summarize, we hypothesize that blackout windows are a real constraint, but preset repurchases will circumvent this constraint.

³ In their August 3rd, 2006 Q2 Earnings Conference Call Captaris stated that Rule 10b5-1 plans would allow them to repurchase during "blackout periods, which comprise about two-thirds of the trading days in each quarter." Further, a July 1st, 2011 article "Corporate Buybacks on the Rise" in *Traders Magazine* stated: "Corporations have about eight months out of the year when insider trading rules create blackout periods. However, under the SEC's 10b5-1 rule, companies can set up a system to perform automatic stock buybacks during those times."

Blackout Window Hypothesis: Firms that are more constrained by blackout windows are more likely to adopt a Rule 10b5-1 trading plan to circumvent blackout window restrictions

The *Blackout Window Hypothesis* predicts that firms constrained by blackout windows, either due to long reporting lags or frequent releases of material information, are more likely to adopt Rule 10b5-1 plans.

Finally, Rule 10b5-1 repurchases differ from open market repurchases in terms of legal cover. In 1982 the SEC enacted Rule 10b-18 to provide safe harbor to firms that repurchase under the manner, timing, price, and volume conditions. However, even if the firm meets all Rule 10b-18 conditions, it cannot legally engage in repurchases while in possession of material, nonpublic information. Though the new Rule 10b5-1 does not provide safe harbor, it does provide the firm with an affirmative defense. An affirmative defense differs from safe harbor in that a firm admits to breaking the law but may introduce as evidence the existence of a preset Rule 10b5-1 trading plan, which will negate any criminal liability for insider trading.⁴ Therefore, 10b5-1 plans provide companies with an additional shield from potential lawsuits related to repurchase activity. For example, during its July 25, 2014, conference call, Centene Corp. stated that "...the only way to do it [repurchase] and be clean and above board is on a 10b5-1." We hypothesize that firms subject to greater litigation risk will be more likely to adopt preset plans.

Litigation Risk Hypothesis: Firms that are more subject to litigation risk will be more likely to adopt a Rule 10b5-1 plan.

⁴ "Rule 10b-18 confers no immunity from possible Rule 10b-5 liability where the issuer engages in repurchases while in possession of favorable, material, nonpublic material, and nonpublic information concerning its securities." 1982 Adopting Release, *supra* note 4, at 47 FR 53333.

The empirical predictions of the *Litigation Risk Hypothesis* are that firms in industries with a high incidence of law suits related to stock price manipulation and misleading investors in general or firms with a high estimated probability of litigation are more likely to adopt a preset repurchase plan.

3. Sample formation and descriptive statistics

3.1 Sample construction

To construct our sample of Rule 10b5-1 repurchases, we search Factiva for Rule 10b5-1 repurchase announcements over the period 2001 to 2013. We verify all Factiva results to ensure that the use of Rule 10b5-1 corresponds to a repurchase and not an insider transaction. Further, as most firms announce preset plans in conjunction with open market repurchase announcements, we merge our hand-collected Rule 10b5-1 data with repurchase announcements from Thomson Financial's Securities Data Company (SDC) Mergers & Acquisitions and Repurchases databases. We use non-Rule 10b5-1 open market repurchases as our control group. We further exclude block transactions and any repurchase program with missing data on the size of the announced program. We reconcile slight discrepancies in dates between the two SDC databases by searching Factiva for the repurchase announcement and recording the first available announcement date.

We merge our repurchase announcement sample with several databases to construct other variables of interest and control variables. Specifically, accounting data and data on actual repurchases are from Compustat quarterly or annual filings, stock price data are from CRSP, institutional ownership data are from Thomson Financial 13F filings, options data are from Execucomp, and 8-K filings are from Edgar.

3.2 Rule 10b5-1 frequency and plan details

Our search identifies 1,657 repurchase announcements that reference Rule 10b5-1 in the repurchase authorization. As shown in Figure 1 and Panel A of Table 1, the number of announcements has steadily increased in the recent past. In 2001, the first year during which firms could adopt a preset plan, only four announcements contained such adoptions. Yet during the last three years in our sample period (2011-2013), at least 200 announcements contained a Rule 10b5-1 adoption each year. The growth in preset plans cannot

be explained by the growth in repurchase announcements during our time period. When we scale by the total number of repurchase programs in our sample each year, we reach the same conclusion: The use of Rule 10b5-1 has increased significantly since the Rule's inception. In fact, during 2012 and 2013 over one-quarter of repurchase announcements in our sample included a preset component.⁵

Some firms mention the use of a Rule 10b5-1 plan in other corporate announcements, e.g., earnings reports and conference calls. We observe 654 such cases, which we record in Panel A of Table 1. While there is some overlap with our sample of 10b5-1 announcing firms, we calculate that 388 of these 10b5-1 mentions correspond to distinct firm-year observations, implying that our original estimates of the use of preset plans are likely conservative.

We collect Rule 10b5-1 plan details regarding size, duration, motive and broker, if mentioned and report summary statistics in Panel B of Table 1. For the subset of firms that report Rule 10b5-1 repurchase size, the average (median) 10b5-1 program represents 5% (3%) of shares outstanding. While the size of 10b5-1 programs appears smaller than that of other repurchase programs, in untabulated results we examine the difference in the *total* (i.e., both Rule 10b5-1 and other) repurchase size for repurchase programs including and not including 10b5-1 components. We find that the total repurchase size is almost identical across groups; the mean (median) repurchase size for both Rule 10b5-1 and non-Rule 10b5-1 plans is 8% (6%) of shares.

The dollar value of preset plans varies substantially from \$2 million at the 10th percentile to \$200 million at the 90th percentile. The mean (median) dollar value is \$80 million (\$15 million). For firms that report the size of their repurchase program, the mean (median) percentage of the repurchase program under Rule 10b5-1 plan is 94% (100%). Of announcements that report the size of the 10b5-1 plan, 307 or 84% will be conducted 100% through a preset plan. We should note, however, that this figure is biased upward because most firms that combine 10b5-1 plans with other plans do not separately report the value of the Rule 10b5-1 component.

⁵ This ratio drops slightly to approximately 25% if we include Dutch auctions, fixed priced tender offers, and block transactions.

The mean (median) time to commencement is 13 days (4 days) and 67 plans, or approximately one-third, begin within one day of the announcement. Rule 10b5-1 plans last 199 days on average, and the most frequently observed duration of one year is reported by approximately one in six (45 out of 273) firms. Other common time windows include one month (13 plans or 5%), two months (29 plans or 11%), three months (20 plans or 7%), and six months (19 plans or 7%). In sum, the majority of preset plans are rather long, representing a real and costly commitment.

We collect three additional pieces of information not shown in Table 1. First, of the 625 announcements associated with a clear motive, we find that 583 or 93% relate to circumventing blackout windows or repurchase regularity. Next, we learn that 142 Rule 10b5-1 announcements mention 42 unique brokers that will conduct the repurchase program. Finally, we collect data on 10b5-1 repurchase program terminations. We observe only 27 termination announcements, which occur 132 days on average after the plan begins, and most termination announcements are due to a merger or another trigger that automatically suspends the plan.

3.3 Varying types of Rule 10b5-1 announcements

Rule 10b5-1 announcements vary significantly by the expected portion of the repurchase to be effected under the Rule. Panel C of Table 1 presents 10b5-1 announcements by type, and we provide examples in Appendix A. We label cases where the firm is conducting the entire repurchase program through a Rule 10b5-1 plan the highest level of commitment “pure” plans. Of our sample of 10b5-1 announcements, about 15% of plans cover the full repurchase program. When we include Rule 10b5-1 mentions in other announcements, slightly fewer (13%) announcements are pure.

“Partial” plans include a preset component—with certainty. Partial plans use definitive language or provide specific institutional details about the preset component of the plan. Approximately one quarter of Rule 10b5-1 announcements are partial; further, most (71%) of Rule 10b5-1 mentions in other announcements are partial. When we aggregate 10b5-1 announcements and mentions, 39% of total 10b5-1 announcements correspond to partial plans.

“Expected” plans indicate that the company “expects to” or “intends to” adopt a preset component. The firm often follows these announcements with a general description of preset plans. Expected plans make up the smallest group of announcements: 13% of 10b5-1 announcements or 11% when including Rule 10b5-1 mentions as well.

Finally, we refer to announcements as “boilerplate” if the firm “may” adopt a preset plan or conduct the repurchase through other means such as open market purchases, privately negotiated transactions, or block transactions. Boilerplate is the largest group within 10b5-1 announcements and the second largest if we include Rule 10b5-1 mentions in other announcements.

4. Rule 10b5-1 commitment

The firm can only put into place or modify a preset repurchase plan during an open window, thus creating a greater commitment for the firm than an open market repurchase. If preset plans represent a greater commitment to follow through with the announced repurchase, we should observe greater completion rates and more plans completed.

We limit the sample to the period from 2004 to 2013 since less than 5% of repurchases contained a 10b5-1 component prior to 2004. Further, after 2003 firms are required to report more detailed quarterly information on actual shares repurchased. We calculate completion rate beginning the quarter the firm announces the repurchase program through the following eight quarters. Completion rate is the dollar value of shares repurchased, i.e., the number of shares repurchased times the average repurchase price per share as reported in Compustat, divided by the dollar value of the announced repurchase from SDC. Following Stephens and Weisbach (1998), we truncate completion rate at 100%. We report average cumulative completion rates for Rule 10b5-1 plans along varying levels of commitment as well as non-Rule 10b5-1 plans.

Panel A of Table 2 shows that preset plans appear to be associated with higher completion rates earlier in the program and that completion rates are generally increasing in the level of commitment to a 10b5-1 plan. For example, by quarter one, pure plans are on average 54.4% complete, which is significantly

greater than the 39.1% completion rate for non-Rule programs. Similar patterns hold throughout the first year of the repurchase program and are especially strong when excluding boilerplate 10b5-1 plans: When we exclude boilerplate plans, we find that completion rates are on average 3.3% to 11.2% greater for Rule 10b5-1 repurchases than non-Rule repurchases during the first seven quarters after the announcements. By quarter seven completion rates stabilize across groups, indicating that executing a repurchase program through a preset plan may not increase the ultimate completion rate of the program but rather significantly increases the speed of completion. By quarter eight we identify average completion rates ranging from 67.2% to 77.4% across all groups, similar to open market repurchase completion rates documented in previous studies (e.g., Stephens and Weisbach (1998), Bonaime (2012), and Babenko, Tserlukevich, and Vedrashko (2012)). It is interesting to note that even the adoption of a pure 10b5-1 plan does not imply that the firm will repurchase 100% of authorized shares with certainty. These results perhaps point to a non-trivial portion of firms establishing a conservative price matrix or allowing brokers some discretion over trades.

In Panel B, we examine the percent of repurchase plans completed each quarter by level of commitment to a preset plan. During the first year preset repurchase plans have a significantly greater percentage of plans completed, and the percentage of plans completed generally increases with commitment level. By quarter four approximately half of partial and pure plans are complete, while only 35.0% of non-Rule 10b5-1 repurchases are complete. By quarter eight, approximately half of preset plans are complete regardless of the type of plan, with the exception of partial plans, of which 62.1% are complete. These univariate results suggest a trend of completion rates increasing with the level of commitment, specifically during the first year to year and a half of the repurchase program.

It is possible that firm characteristics correlated with adopting a preset repurchase program are driving completion rates. To circumvent this issue, we identify control firms that strongly resemble Rule 10b5-1 announcers but do not repurchase under the Rule. We then examine differences in completion rates and percentage of plans completed between matched control firms and sample firms. To construct a control group of firms we match on firm characteristics as defined in Appendix B. Specifically, we propensity score

match to the five nearest neighbors using the logit model specifications presented in Table C.2 of Appendix C.

Panel C of Table 2 reports the average treatment effect on the treated, i.e., the difference in completion rates or percentage of plans completed between Rule 10b5-1 repurchase programs and similar non-Rule 10b5-1 programs. To account for the fact that we estimate propensity scores, we use the correction proposed by Abadie and Imbens (2012), who find that ignoring the estimation error can lead to confidence intervals of the average treatment effect that can bias results in either direction. Relative to non-Rule 10b5-1 users, completion rates are significantly greater in quarters one through five for Rule 10b5-1 plans than for non-Rule 10b5-1 plans and in all quarters when we exclude boilerplate plans. By quarter eight, pure plans have a completion rate 4.5 percentage points greater than that of non-Rule 10b5-1 plans. We find similar results for the difference in percent of plans completed: By the second quarter after the announcement 19% more pure plans are completed than matched non-Rule plans. Furthermore, if we exclude boilerplate plans, then by quarter eight significantly more (7% more) 10b5-1 plans are complete than control non-Rule plans.

Our results suggest preset plans are associated with greater completion rates, especially earlier in the life of the repurchase program. These results point to firms completing preset plans more quickly, which we test directly in Panel D using the subsample of completed repurchase programs. We examine time to completion, defined as the number of quarters to completion (conditional on completion). Consistent with expectations, we find that time to completion is monotonically decreasing with the level of commitment to a Rule 10b5-1 plan. In other words, firms complete preset plans faster, and the greater the commitment to repurchasing under Rule 10b5-1, the faster the completion. Conditional on completion, firms complete non-Rule 10b5-1 plans in 3.3 quarters on average, whereas firms complete partial and pure Rule 10b5-1 plans within 2.5 and 1.4 quarters, respectively. These differences are significant at the 1% level and strengthened when using propensity score matching to create a control group.

Overall, these results are consistent with preset plans being associated with stronger commitments to repurchase previously announced shares. Firms buy back larger portions of the announced repurchase

under Rule 10b5-1 earlier in the program. Further, we find that preset plans are strongly associated with an increase in the speed of completion, and this speed of completion is increasing in the level of commitment to Rule 10b5-1.

5. The determinants of Rule 10b5-1 adoption

Understanding which firms choose preset plans and what motivates them to do so provides unique insights into the signaling-flexibility tradeoff. In this section we study the determinants of the decision to adopt a preset plan, both at the aggregate level (i.e., any 10b5-1 plan) and by type of 10b5-1 plan.

5.1 Univariate comparison of Rule 10b5-1 plans and open market repurchases

Table 3 shows characteristics of repurchasing firms based on whether or not the repurchase includes a 10b5-1 component. We present results at the firm-year level and label firms that announce a preset plan during the fiscal year “Rule 10b5-1 firms” that year; firms that announce open market repurchases without a 10b5-1 component are control firms. If a firm announced more than one repurchase in a fiscal year, we categorize the firm as a Rule 10b5-1 firm if at least one of the repurchase announcements includes a preset plan. When we condition on the availability of control variables and collapse our sample to the firm-year level, our sample consists of 796 Rule 10b5-1 firm-year observations and 3,262 non-Rule 10b5-1 observations, unless otherwise noted. We match each repurchase announcement to prior fiscal year end accounting data from Compustat and stock price data from CRSP. All variables are defined in Appendix B.

Given the usual caveat that we must view univariate results with skepticism, we will only summarize the results briefly. Overall, our univariate results are generally consistent with our four hypotheses. Supportive of the *Abandonment Option Hypothesis*, Rule 10b5-1 firms have more cash, less leverage, more liquid stocks, lower dividend yields, more liquid stocks, greater book-to-market ratios, and better prior stock performance. These results are consistent with firms that have greater access to internally generated capital or external capital markets being more likely to adopt a 10b5-1 plan to repurchase stock. The fact that Rule 10b5-1 firms have lower dividends yields is consistent with firms with existing payout commitments being less likely commit to additional payouts through preset plans. We further find that the

likelihood of adopting a preset plan is significantly related to worse prior repurchase timing, consistent with the *Timing Option Hypothesis*. Rule 10b5-1 firms also have longer blackout windows and more frequent releases of material information, consistent with the *Blackout Window Hypothesis* that firms more constrained by insider trading rules use preset trading plans to circumvent blackout windows. We find evidence that Rule 10b5-1 adoption is more prevalent for firms in industries with high litigation risk (as identified by Francis, Philbrick and Schipper (1994)), but unrelated to a continuous measure of litigation risk, proposed by Kim and Skinner (2012). Other control variables reveal that firms adopting 10b5-1 plans tend to have more volatile prior repurchases, more volatile returns, and greater institutional ownership. Finally, in this univariate setting, Rule 10b5-1 firms do not significantly differ from firms conducting open market repurchases along the dimensions of repurchase frequency, financial sophistication, firm size, cash flow, cash flow volatility, option exercise, or share dilution.

5.2 Logistic regressions of the decision to adopt a Rule 10b5-1 plan

Table 4 reports the results of logit regressions modeling the decision to repurchase shares through a preset plan. Again, we collapse our data to the firm-year level and categorize firms with at least one preset repurchase program during the fiscal year as a Rule 10b5-1 firm-year, for which the dependent variable equals one. We report the coefficients on the independent variables along with their z -statistics calculated using robust standard errors clustered by firm. We include year dummies in all specifications and Fama and French (1997) 12 industry dummies in specifications without our measure of high litigation industry, which is based on industry classification. Since the inclusion of 8-K reporting frequency, repurchase timing, litigation risk, and options reduces our sample size, we show results both with and without these variables.

Panel A of Table 4 presents logit regressions. Consistent with the *Abandonment Option Hypothesis* we find the likelihood of adopting a preset repurchase plan is increasing in cash holdings and stability of cash flows. The coefficient on cash in Model (1) indicates a one standard deviation increase in cash increases the likelihood of adopting a preset repurchase relative to an open market repurchase by 17%. We find further support of the *Abandonment Option Hypothesis* as firms with less leverage, better prior stock performance, and more liquid stock are more likely to adopt a 10b5-1 plan. Our multivariate results are

consistent with firms that generate large and stable internal capital and firms that have better access to external capital being more likely to adopt a preset repurchase program.

The *Timing Hypothesis* predicts that firms with a history of poor repurchase timing will be more likely to adopt a 10b5-1 plan. Consistent with this prediction, we observe a significant and positive coefficient on our measure of repurchase timing. A one standard deviation increase in repurchase timing (implying worse timing) is associated with a 15% increase in the likelihood of adopting a preset plan. The coefficients on financial sophistication and firm size are both negative, as predicted by the *Timing Hypothesis*, but they fail to achieve statistical significance in most models.

Adopting a 10b5-1 repurchase program allows firms to circumvent blackout windows. We find that the duration of prior blackout windows is positively and significantly related to the likelihood of adopting a preset plan across all specifications. The standardized odds ratio in Model (1) is 1.27, indicating a one standard deviation increase in blackout windows over the prior 12 quarters will increase the likelihood of adopting a 10b5-1 plan by 27% relative to a non-Rule 10b5-1 plan. We also find that 8-K filing frequency is positively correlated with adopting a preset plan. Supportive of the *Blackout Window Hypothesis*, firms that face greater constraints to repurchasing due to long blackout windows or more frequent releases of material information are significantly more likely to use a preset repurchase plan.

Though Rule 10b5-1 provides additional legal protection that is unavailable in an open market repurchase, we find no evidence that firms facing greater litigation risk are more likely to adopt a preset plan relative to an open market repurchase. The coefficients on the high litigation industry dummy identified by Francis et al. (1994) and the continuous litigation risk measure of Kim and Skinner (2012) both fail to achieve statistical significance in a multivariate setting.

Overall, our initial multivariate results are consistent with the *Abandonment Option*, *Timing Option*, and *Blackout Window Hypotheses*, but we fail to find support for the *Litigation Risk Hypothesis*. We next examine the decision to adopt a preset repurchase plan by type of plan.

5.3 Multinomial logits

Panel B of Table 4 reports the results of multinomial logit regressions modeling the decision to repurchase shares by type of Rule 10b5-1 announcement, defined in Appendix A. The base case is repurchases not containing a 10b5-1 component. Hence, we can interpret coefficients relative to non-Rule 10b5-1 announcements; the value of the coefficient represents a change in the log-odds ratio of the likelihood of choosing the specific type of 10b5-1 plan relative to non-Rule 10b5-1 plan associated with a one-unit increase in the independent variable, holding all other variables constant. We report the coefficients along with their z -statistics. We include year and industry controls in all regressions.

We gain several new insights into the decision to adopt a preset plan when we segment on level of commitment to repurchasing under the Rule. In general, we find that flexibility is an important determinant across all types of 10b5-1. Further supporting the *Abandonment Hypothesis*, a firm's likelihood of adopting preset plan—regardless of the type—is generally increasing in the firm's ability to access both internal and external capital. With the exception of the partial group, we find poor repurchase timing to be a strong determinant of preset repurchase plans. Interestingly, firms more likely to outsource the entire repurchase program are significantly smaller and financially unsophisticated. These firms most likely lack the sophistication or desire to exercise the timing option associated with open market repurchases and thus are more likely to adopt a 10b5-1 plan, supporting our *Timing Option Hypothesis*. With the exception of the expected 10b5-1 group, we continue to find strong support for the *Blackout Window Hypothesis*. In untabulated results, we find no support of the *Litigation Risk Hypothesis* regardless of the type of 10b5-1. Taken together, we see that our main findings are not driven by one specific type of preset repurchase plans, but rather generally hold across groups.

5.4 What determines the speed to first Rule 10b5-1 plan adoption?

Many firms that adopt a Rule 10b5-1 plan continue to use a 10b5-1 plan for future repurchases. In fact, we observe only 163 cases of firms that previously announced a preset repurchase plan subsequently announcing an open market repurchase without a Rule 10b5-1 component. Of these cases, 81% have no further repurchase announcements in the sample period, and the remaining 19% re-adopt a preset plan in

their next repurchase announcement. Due to our relatively short sample period, which provides little within-firm variation, we focus on the decision to adopt a preset plan for the first time to strengthen identification.

In Table 5 we employ a Cox proportional hazard model to examine 10b5-1 plan adoption speed.⁶ We measure the duration to adoption as the number of calendar days from the end of 2003 to the first time a firm adopts a 10b5-1 plan. The hazard models generally corroborate the results from our logit models and are consistent with the *Abandonment Option*, *Timing Option*, and *Blackout Window Hypotheses*: Firms that have more cash on hand, have more stable cash flows, are more liquid, have a record of poor repurchase timing, are smaller, have longer blackout windows, and disclose material information more frequently adopt preset plans earlier than other repurchasing firms. In addition, we find that firms that repurchased less frequently in the past, that are less financially sophisticated, and that have lower dividend yields and greater dilution adopt preset plans more quickly.

5.5 Exogenous shock to cost of adopting a Rule 10b5-1 plan

Rule 10b5-1 plans are associated with a greater commitment to follow through on previously announced repurchases, but this increased commitment comes at a cost to the firm. Namely, firms that adopt preset plans instead of open market repurchases forfeit financial flexibility since they cannot modify a preset repurchase program as easily, if at all. In this section we examine whether an exogenous shock to the marginal benefit of financial flexibility affects the likelihood of adopting a preset plan. Specifically, prior literature identifies the financial crisis of 2008 and 2009 as an exogenous shock to the supply of credit available to firms (Ivashina and Scharfstein (2010), Cornett, McNutt, Strahan, and Tehranian (2010), and Bliss, Cheng, and Denis (2015)), and a credit supply shock should increase the marginal benefit of financial flexibility. Therefore, adopting a preset repurchase plan became more costly around the financial crisis, and we expect to see fewer firms adopting Rule 10b5-1 plans during the crisis.

Table 6 presents results on the effect of the exogenous shock to the benefits of financial flexibility on the likelihood of adopting a preset plan. Mirroring our logit analysis in Table 4, we condense our sample

⁶ The results are robust to assuming a Weibull, exponential, or Gompertz distribution.

to the firm-year level and estimate the probability of adopting a preset plan, conditional on announcing a repurchase. We include the same list of control variables (though we only show our variables of interest to conserve space), but we replace our year dummies with two variables: (1) a trend variable capturing the increasing tendency for firms to adopt 10b5-1 plans over time and (2) an indicator variable to demarcate the financial crisis. Figure 2 provides a hypothetical example to illustrate the effect of the financial crisis on the probability of adopting a preset plan. The marginal effect of our trend variable captures the growth in Rule 10b5-1 usage across time and would be the slope of the line in Figure 2. The financial crisis indicator variable captures any shift in the probability of announcing a preset plan during the crisis.

As expected, we observe a significant upward trend in the likelihood of adopting a preset plan relative to adopting an open market repurchase. Holding other variables constant at the mean, the coefficient on our trend variable implies that the likelihood of adopting a preset plan, conditional on announcing a repurchase, increases by approximately 2.4% each year. However, the growth in preset repurchase plans significantly stagnates during the financial crisis. Repurchasing firms are 4.2% less likely to adopt a preset plan during the crisis. In robustness tests, we run an “out-of-sample” logit model following Model (1) of Table 6 using the non-crisis period (2004-2007 and 2010-2013) and excluding the financial crisis indicator variable. We then predict the likelihood of announcing a preset plan during the financial crisis. The average predicted value during the financial crisis is 20.7%, significantly different at the 1% level from the actual value of 15.9%. This 4.8% difference is in line with our prior results. Overall, we find strong evidence consistent with an exogenous positive shock to the marginal benefits of financial flexibility being associated with declines in the likelihood of adopting Rule 10b5-1 plans.

6. Rule 10b5-1 announcement returns

We next examine abnormal returns surrounding announcements of Rule 10b5-1 repurchases, relative to open market repurchase announcements. Rule 10b5-1 repurchases are unique in that, relative to an open market repurchase, private information should play a smaller role, if any. Thus, we may expect announcement returns to be lower for preset trading plans. On the other hand, preset plans represent a

greater commitment to repurchase shares and announcement returns may be greater in response to this signal.

6.1 Announcement returns

Panel A of Table 7 reports five-day cumulative abnormal returns (CARs) from trading days -2 to +2 around the announcement by type of repurchase (Rule 10b5-1 versus non-Rule 10b5-1) and by level of commitment to repurchasing under the Rule. We estimate the parameters of the market model using Eventus over 255 trading days, ending 46 days prior to the announcement. We use the Center for Research in Security and Prices (CRSP) value weighted index as the market portfolio and require a minimum of 100 trading days over the estimation window. Panel B presents difference in means tests, calculated using standard *t*-tests as well as propensity score matching, which controls for observable firm characteristics likely to affect announcement returns. Control firms are the five nearest neighbors identified through our propensity score matching process based on logit regressions in Table C.2 of Appendix C.

We find positive and significant five-day cumulative abnormal returns (CARs) to 10b5-1 repurchase announcements, which generally increase in the level of commitment to Rule 10b5-1. In the aggregate, preset plans are met with CARs of 1.6%. Boilerplate plans are associated with the lowest CARs of 1.3% while pure plans are associated with CARs of 2.5%; the returns to partial and expected 10b5-1 plans fall in between. When we exclude boilerplate plans, we find that preset plans are associated with CARs that are approximately 0.8% greater than non-Rule plans, which represents an increase of over 64% from the average non-Rule CAR of 1.3%. The difference in returns is especially strong when we condition on pure plans, which we know with certainty are executed fully through a 10b5-1 program. Pure plans are associated with CARs that are 1.2% greater than non-Rule 10b5-1 plans. Further, when we control for firms characteristics likely to affect repurchase announcement returns, we find that announcement returns to pure 10b5-1 announcements are 1.7% greater—or more than double—abnormal returns to non-Rule 10b5-1 announcements. These results are consistent with investors valuing the increased commitment implied by preset plans as opposed to discounting these repurchases for not exploiting private information.

In a further effort to establish the added value of Rule 10b5-1 repurchases, we examine an interesting subsample of 192 “delayed” Rule 10b5-1 announcements. These announcements follow the original repurchase authorization and do not increase the authorized repurchase amount; rather, they state that the firm will use the Rule to conduct a previously announced repurchase program.. Delayed announcements are met with a positive and significant abnormal return of 1.1%. This result indicates that the sole act of adopting a 10b5-1 plan to facilitate the repurchase of a previously announced plan, without adding to the repurchase amount, is associated with an increase in firm value.⁷

6.2 Long-run returns

We further examine long-run abnormal returns over the 12-month window following Rule 10b5-1 repurchase announcements. Panel C of Table 7 presents Fama-French four-factor calendar time portfolio regressions: $R_t - R_{f,t} = \alpha_1 + \beta_1(R_{mkt,t} - R_{f,t}) + \beta_2SMB_t + \beta_3HML_t + \beta_4MOM_t$, where R_t is the return on an equally weighted portfolio of stocks, $R_{f,t}$ is the risk-free rate, $R_{mkt,t}$ is the return on the market, and SMB_t , HML_t , and MOM_t are the monthly returns on the Fama-French size, book-to-market, and momentum factors in month t .⁸ The intercept term (α) of the regression represents the average monthly abnormal return. The last row represents the difference in abnormal returns in Rule 10b5-1 firms and non-Rule 10b5-1 firms.

When we combine Rule 10b5-1 and open market repurchase announcements, we document positive and significant abnormal returns of approximately 30 basis points per month over the following 12 months. When we split the sample based on the inclusion of a 10b5-1 component in the announcement, we document abnormal returns of 35 basis points for 10b5-1 announcements, greater though not statistically different than the 29 basis point monthly abnormal returns associated with open market repurchase announcements. Given that firms may not be in possession of material, non-public information when they establish a preset

⁷ It may be the case that the market is reacting to the resumption of repurchases as in Barger, Bonaime, and Thomas (2014) and not the fact that the repurchase will be effected under Rule 10b5-1. If this were the case, we would expect returns to delayed announcements to be increasing in the time elapsed between the authorization and the delayed announcement. Instead, we find a correlation between abnormal returns and time elapsed of -0.0406 ($p = 0.5779$). Further, we find that average returns to delayed announcement that occur after the median time elapsed (0.870%) are not statistically different from returns to announcements that occurred before (1.429%).

⁸ http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

plan, it is curious that preset plans are associated with long-run abnormal returns. However, we know that many firms announce preset plans concurrently with open market repurchases. When we segment on announcement type, we discover that long-run abnormal returns are generally decreasing in level of commitment and are not statistically different from zero with the exception of boilerplate 10b5-1 plans, which are concurrent with open market repurchases and associated with the lowest commitment level.

Overall, our results are consistent with short-run abnormal announcement returns increasing in the level of commitment to repurchasing under the Rule, but with long-run returns decreasing in commitment level. Investors appear to recognize and immediately respond to the commitment to repurchase inherent in preset repurchase plans while the long-run returns results are consistent with preset plans conveying less private information about future stock price movements than open market repurchases.

7. Do Rule 10b5-1 repurchase plans substitute for other forms of payout?

In a final series of tests, we examine whether firms use Rule 10b5-1 repurchases in lieu of or in addition to other forms of payout. We begin by studying firms with a history of consistent payout, which allows us to model their expected future payouts and detect deviations. Panel A of Table 8 reports results from Fama-MacBeth cross-sectional regressions where the dependent variable equals dividend error, calculated using the Grullon and Michaely (2002) modified Lintner (1956) model. Dividend error represents the difference in actual and expected dividends, scaled by market capitalization at the beginning of the period. Following Grullon and Michaely (2002), we require that firms continuously pay dividends during the 5-year or 10-year estimation window, as noted, and delete cases where the absolute value of dividend error exceeds 5%.

Our variable of interest is the interaction between a Rule 10b5-1 indicator variable and repurchase yield. The Rule 10b5-1 indicator equals one if the firm announced a 10b5-1 repurchase during the fiscal year. Repurchase yield is the total dollar value of repurchases (Compustat purchase of common and preferred stock minus any decrease in preferred stock) scaled by lagged market capitalization during the year. The interaction of the Rule 10b5-1 indicator and repurchase yield captures the extent to which preset

repurchases substitute for dividends, relative to other repurchases. The coefficient on this interaction is negative in all cases except pure 10b5-1 repurchases, but only statistically significant in one specification. These results point to only a weak dividend substitution effect. Surprisingly, the coefficients on repurchase yield are not different from zero. Our results likely differ from those of Grullon and Michaely (2002) due to differing time periods and suggest repurchases in general are not substituting for dividends within these firms with a history of consistent dividend payments during our sample period. We also find that unexpected dividend increases are positively associated with return on assets (cash flow scaled by assets) and non-operating income and negatively associated with cash flow volatility and leverage.

Panel B shows similar analyses for repurchase error. We calculate repurchase error analogously to dividend error, replacing dividends with total actual repurchase dollars in the estimation model. Now our variable of interest is the Rule 10b5-1 indicator, which captures the effect of adopting a preset plan on unexpected repurchases within firms with a history of consistently repurchasing. In this case, a positive coefficient suggests that Rule 10b5-1 repurchases are associated with repurchases levels greater than expected, consistent with an expansion in repurchasing activity. An insignificant coefficient implies that Rule 10b5-1 firms maintain expected levels of repurchases, suggesting that preset repurchases are replacing other forms of repurchase. We find that 10b5-1 plan adoptions are generally associated with an expansion in repurchases. With the exception of pure plans, repurchase yields increase significantly by 0.9 to 1.4 percentage points per year when a firm adopts a preset plan. Pure 10b5-1 adoption, on the other hand, is not associated with an increase in repurchase activity, implying that firms adopt pure plans to substitute for existing repurchase plans.

Panel A of Table 9 shows payout transition probabilities, which allows us to examine payout changes within all firms, not just firms with a history of consistent payout. We categorize firms according to their payout (repurchases, dividends, or both) from 1990 to 2000 then examine payout during the Rule 10b5-1 period from 2001 to 2013. The firm must exist in both periods to be included in this analysis. Firms that repurchased in the 1990s are more likely to adopt a preset plan. The firms most likely to adopt preset repurchase plans were already distributing cash to shareholders through both repurchases and dividends in

the 1990s, followed by firms that repurchased and did not pay dividends in the 1990s. Of firms with positive repurchases and no dividends in the 1990s, 7.84% repurchase using preset plans after 2000. Of firms with positive repurchases and dividends in the 1990s, 7.34% continued to pay dividends and repurchased using preset plans while 1.45% of firms cut their dividend but repurchased using Rule 10b5-1. Dividend paying firms that eliminated dividends in the 21st century were slightly more likely to adopt preset plans: 5.43% of firms that paid dividends only in the 1990s and cut dividends adopted 10b5-1 plans relative to 3.95% of those that did not cut dividends, and 9.53% of firms that paid dividends and repurchased in the 1990s but cut dividends adopted preset plans relative to 8.66% of firms that did not cut dividends.

The payout transition probabilities show some persistence in payout behavior. Hence, an interesting subset of firms are those that initiated payout for the first time after 2001, during which a firm could adopt a preset plan. Payout initiators should be less influenced by the status quo. We find that 13.63% of firms that initiated payout after 2001 used a preset plan, and 20.1% of firms whose first payout was a repurchase used preset plans at some point after 2001. Hence, firms initiating payout during a time when 10b5-1 plans are available on the menu of payout options are quite likely to use these preset trading plans.

We devote more attention to the subset of firms that initiated payouts during the Rule 10b5-1 period. Specifically, we define a “payout initiation” (“repurchase initiation”) as the first payout (repurchase) since 1990. We present initiations by year in Panel B of Table 9 and in Figure 3. We observe an upward trend in preset repurchases as a tool to initiate payout. In recent years (2011-2013) between 8 and 10% of payout initiations include a 10b5-1 component. When we condition on firms that repurchase for the first time, we observe that in recent years between 22 and 32% of repurchase initiations include a 10b5-1 component.

8. Concluding remarks

This paper exploits a new addition to the menu of payouts, SEC Rule 10b5-1 preset repurchase plans, to reexamine a choice at the core of corporate payout decisions: whether to send a stronger signal of commitment or maintain options to abandon and time payouts. Rule 10b5-1 repurchases differ from open

market repurchases by allowing a firm to repurchase while in possession of material, nonpublic information but to maintain an affirmative defense against insider trading allegations. However, firms forfeit the timing and abandonment options associated with open market repurchase in the process. We are the first to our knowledge to document and study the widespread use and rapid growth of Rule 10b5-1, which firms are now using in approximately one quarter of all repurchase announcements.

Consistent with Rule 10b5-1 plans signaling a greater commitment, the larger the portion of the repurchase plan to be executed under the Rule, the greater the completion rate and the faster the plan is completed. Next, we find that the likelihood of repurchasing under the Rule is greater for firms that should value timing and abandon options the least: firms that have greater cash reserves, greater access to external capital, and have a record of poor repurchase timing. Further, using the 2008-2009 financial crisis as a positive exogenous shock to the marginal benefit of financial flexibility, we continue to find strong evidence consistent with the marginal benefits of financial flexibility being associated with declines in the likelihood of adopting Rule 10b5-1 plans.

Preset repurchase plans send a strong signal of commitment. We examine the market reaction to Rule 10b5-1 announcements and document a positive and significant response to Rule 10b5-1 announcements across all levels of commitment, though returns are generally increasing in commitment level. We also examine a unique subsample of delayed Rule 10b5-1 announcements whose sole information content is that the repurchase will be executed through a Rule 10b5-1 plan. We find that these announcements are associated with positive and significant abnormal returns of around 1.1%, consistent with Rule 10b5-1 plans adding value to existing repurchase programs.

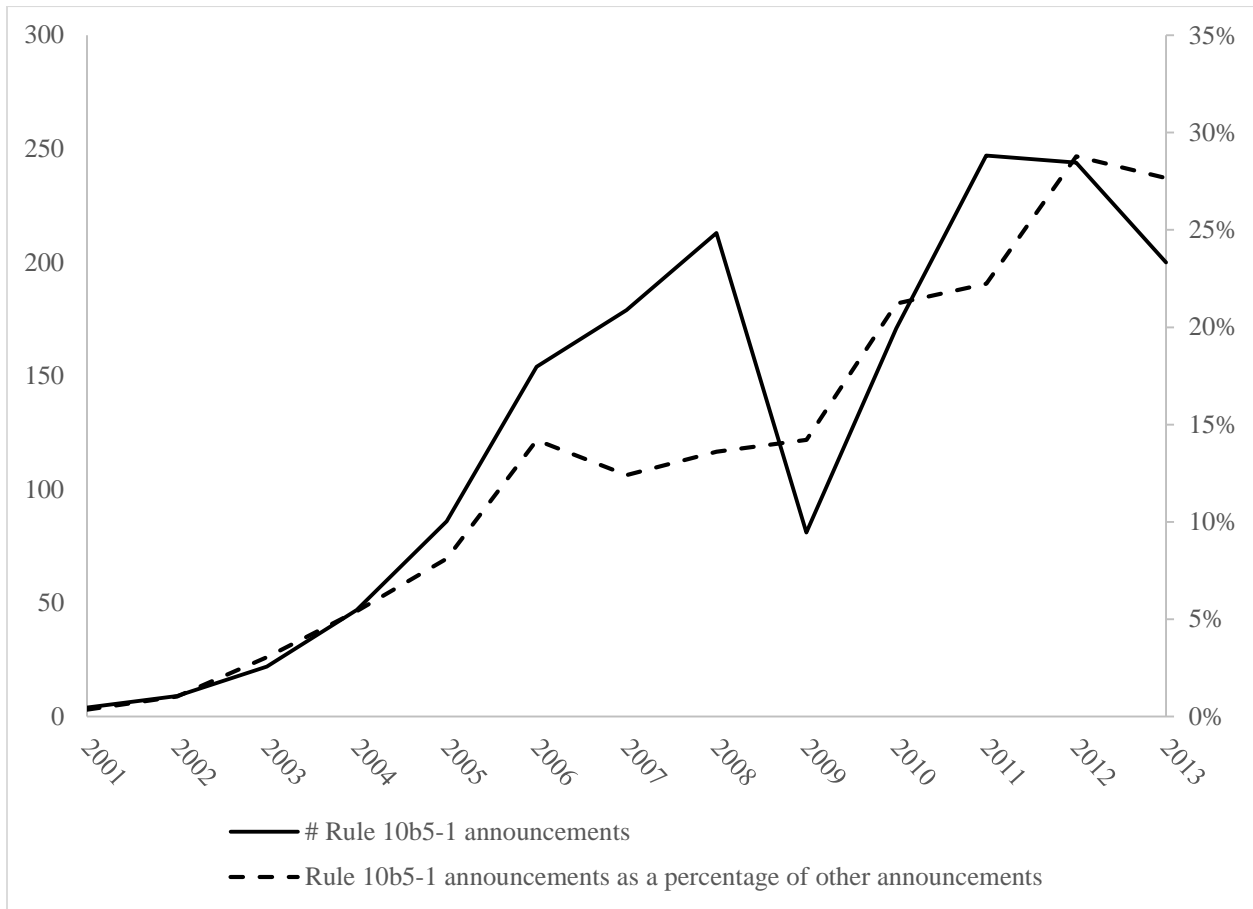
Finally, though Rule 10b5-1 repurchases represent a greater commitment, they only weakly substitute for dividends. Rather, they are generally associated with a one percentage point increase in repurchase yield.

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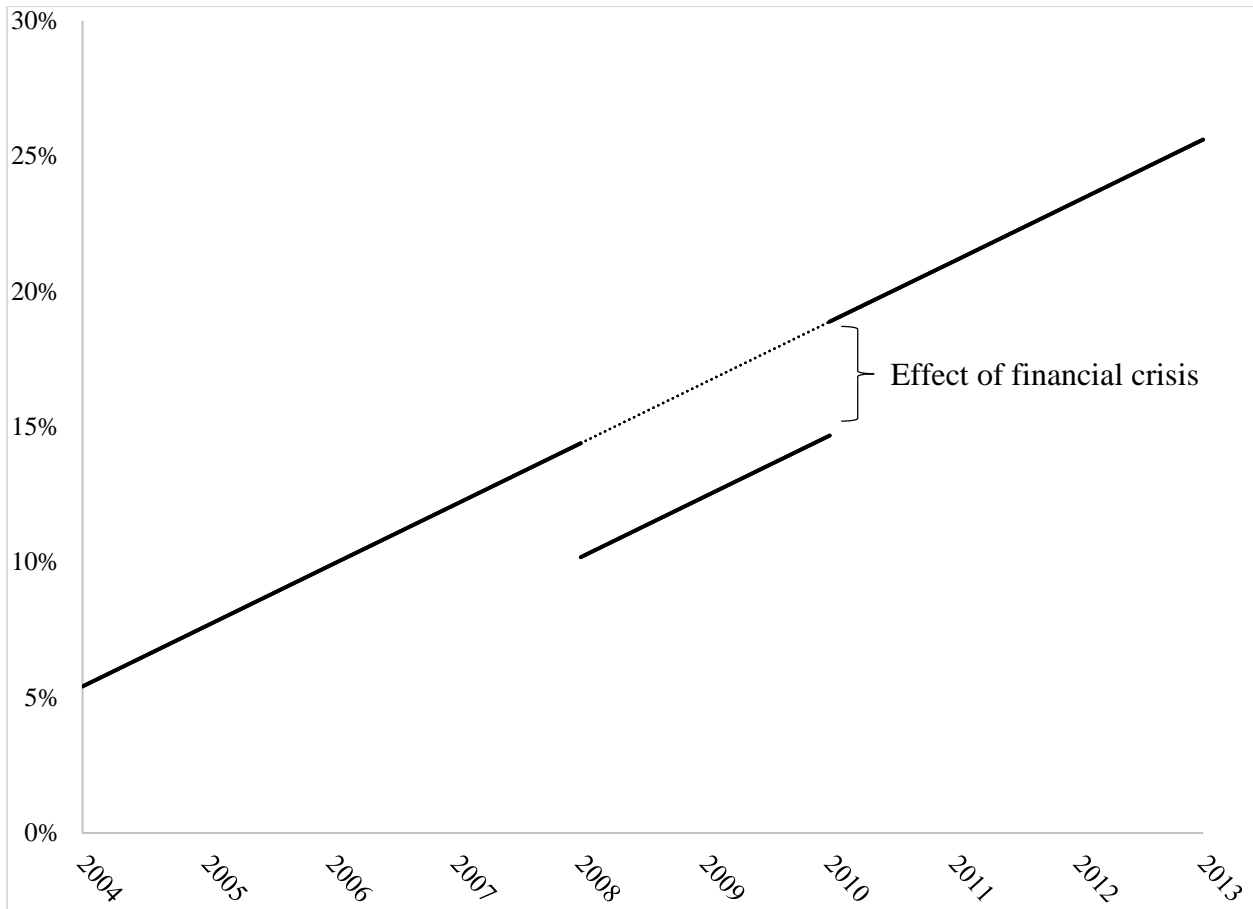
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Figure 1. Rule 10b5-1 repurchase announcements



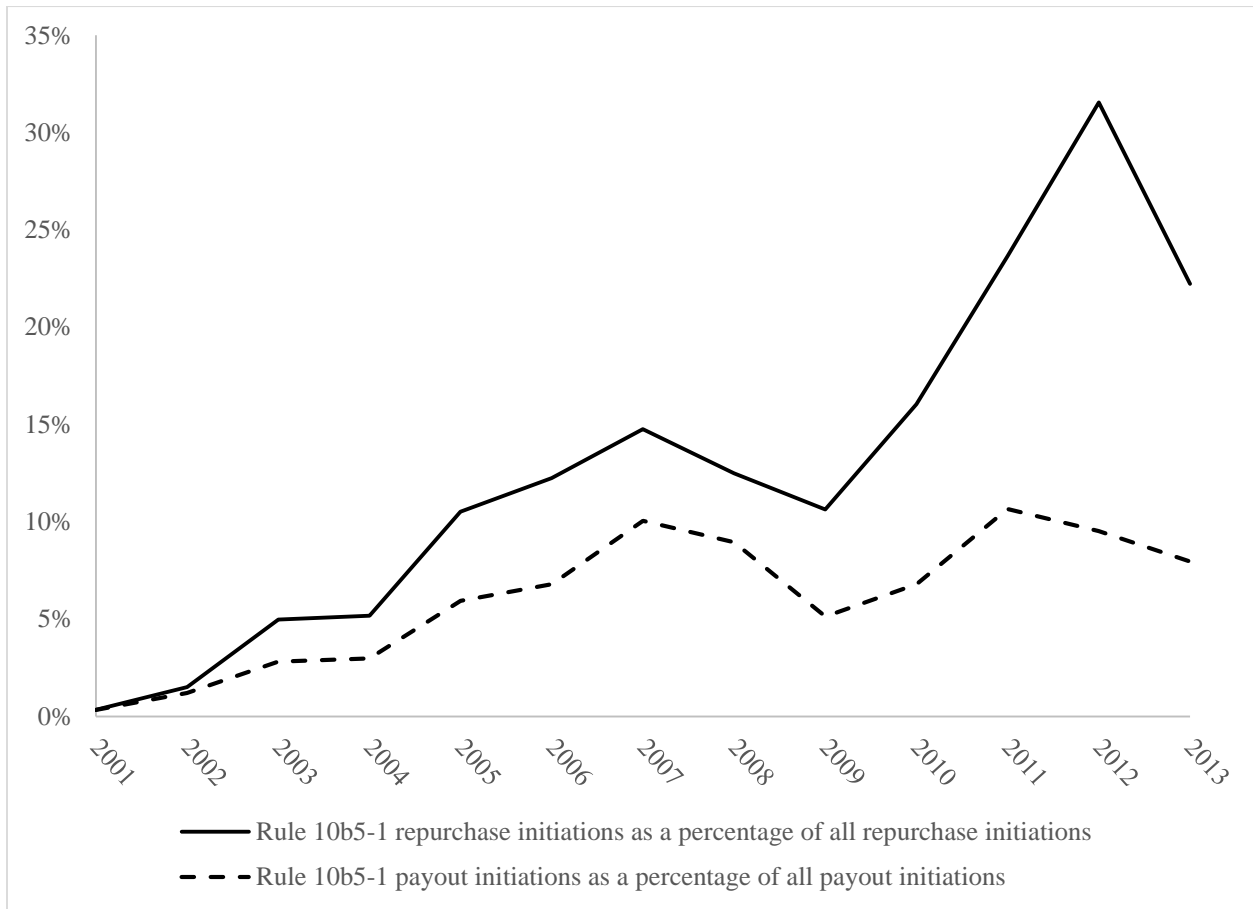
This figure shows the number of repurchase announcements containing a Rule 10b5-1 repurchase plan (left axis) and the percentage of repurchase announcements that include a Rule 10b5-1 repurchase component (right axis) from 2001 to 2013.

Figure 2. The effect of the financial crisis on the probability of Rule 10b5-1 adoption



This figure shows the hypothetical effect of the financial crisis on the growth in Rule 10b5-1 adoption. The x-axis is time in years, the y-axis the likelihood of adopting a Rule 10b5-1 plan, conditional on announcing a repurchase. The slope of the line corresponds to 0.0224, the marginal effect of the trend variable in Table 6, Model (1). The effect of the financial crisis corresponds to -0.0420, the effect of a discrete change in the financial crisis indicator variable in Table 6, Model (1).

Figure 3. Do firms use Rule 10b5-1 plans to initiate payouts?



This figure presents initiations that include a Rule 10b5-1 repurchase component as a percentage of repurchase initiations (solid line) and all payout initiations (dashed line). Repurchase (payout) initiations are defined as the first repurchase (payout) since 1990.

Table 1: Rule 10b5-1 frequency by year and plan details

Panel A: Annual Rule 10b5-1 frequencies

Year	Rule 10b5-1 announcements	Rule 10b5-1 firms	Total Rule 10b5-1 and OMR announcements	Rule 10b5-1 announcements/total announcements	Rule 10b5-1 mentions in other announcements
2001	4	3	1,122	0.36%	0
2002	9	8	881	1.02%	5
2003	22	20	721	3.05%	7
2004	47	41	868	5.41%	17
2005	86	76	1,060	8.11%	56
2006	154	121	1,085	14.19%	80
2007	179	149	1,443	12.40%	111
2008	213	192	1,566	13.60%	61
2009	81	68	570	14.21%	54
2010	171	141	806	21.22%	61
2011	247	206	1,111	22.23%	65
2012	244	215	848	28.77%	86
2013	200	174	723	27.66%	51
Total	1,657	1,414	12,804	12.94%	654

Panel B: Rule 10b5-1 repurchase plan details

	N	Mean	10th percentile	Median	90th percentile	Standard Dev
% shares outstanding	289	4.62	0.83	3.28	10.43	4.31
\$ millions	376	80.06	2.00	15.00	200.00	288.13
% total repurchase	365	93.50	76.67	100.00	100.00	20.01
Time to commencement (in days)	208	13.48	0	4	36	19.32
Duration of plan (in days)	273	199.21	36	152	366	166.35

Panel C: Rule 10b5-1 announcements by level of commitment

	Pure	Partial	Expected	Boilerplate	Total
Rule 10b5-1 announcements	253 15.27%	429 25.89%	219 13.22%	756 45.62%	1,657 100.00%
Rule 10b5-1 mentions in other announcements	54 8.26%	466 71.25%	39 5.96%	95 14.53%	654 100.00%
Total	297 13.11%	873 38.53%	253 11.17%	843 37.20%	2,266 100.00%

This table presents the annual frequency of Rule 10b5-1 plans (Panel A), summary statistics on Rule 10b5-1 repurchase plan details for the subset of announcements that include such details (Panel B), and number of Rule 10b5-1 announcements by level of commitment (Panel C). Panel A reports the annual frequency of Rule 10b5-1

announcements, the number of individual firms announcing Rule 10b5-1 plans, the total number of Rule 10b5-1 and other open market repurchase announcements, and Rule 10b5-1 mentions in other announcements. Rule 10b5-1 mentions in other announcements are cases where the firm mentions using Rule 10b5-1 repurchases in a non-repurchase announcement, such as an earnings announcement, conference call, or annual report. In Panel B the size of the Rule 10b5-1 repurchase is reported as a percentage of shares outstanding, in millions of dollars, or as a percentage of the total repurchase plan. Time to commencement is the number of days between the repurchase announcement and the commencement of the Rule 10b5-1 plan. Duration of the plan is the number of days during which the Rule 10b5-1 trading plan is effective. Panel C reports the frequency of Rule 10b5-1 announcements by level of commitment. “Pure” (“Partial”) Rule 10b5-1 plans represent repurchase programs that are executed fully (in part) through a Rule 10b5-1 plan. We refer to Rule 10b5-1 plans as “expected” if the firm indicates that it expects to or intends to adopt a Rule 10b5-1 plan to execute its announced repurchase. “Boilerplate” refers to announcements that shares may be repurchased through a Rule 10b5-1 plan or through other means. For further details of our categorization of Rule 10b5-1 announcements, please see the Appendix A.

Table 2: Completion rates*Panel A: Average completion rates and difference in means tests*

Quarter	Non-Rule		All Rule 10b5-1 - Expected, Partial, & Pure - Non				Partial & Pure - Non		Pure - Non
	10b5-1	Boilerplate	Expected	Partial	Pure	Non	& Pure - Non	Non	
0	0.233	0.221	0.242	0.302	0.310	0.012	0.046 ***	0.073 ***	0.076 **
1	0.391	0.389	0.453	0.531	0.544	0.045 ***	0.112 ***	0.147 ***	0.153 ***
2	0.492	0.493	0.570	0.630	0.610	0.045 ***	0.107 ***	0.127 ***	0.118 ***
3	0.560	0.552	0.627	0.690	0.642	0.031 **	0.088 ***	0.103 ***	0.082 **
4	0.609	0.597	0.662	0.724	0.660	0.021	0.069 ***	0.079 ***	0.051
5	0.641	0.631	0.682	0.748	0.670	0.016	0.054 ***	0.064 **	0.029
6	0.666	0.648	0.700	0.760	0.677	0.007	0.042 **	0.048 *	0.011
7	0.685	0.661	0.713	0.769	0.684	0.000	0.033 *	0.037	-0.001
8	0.698	0.672	0.726	0.774	0.686	-0.004	0.027	0.027	-0.012

Panel B: Percent of plans completed and difference in means tests

Quarter	Non-Rule		All Rule 10b5-1 - Expected, Partial, & Pure - Non				Partial & Pure - Non		Pure - Non
	10b5-1	Boilerplate	Expected	Partial	Pure	Non	& Pure - Non	Non	
0	0.047	0.044	0.067	0.105	0.125	0.018 **	0.049 ***	0.069 ***	0.078 **
1	0.124	0.118	0.167	0.253	0.333	0.045 ***	0.120 ***	0.173 ***	0.209 ***
2	0.207	0.198	0.267	0.358	0.425	0.050 ***	0.135 ***	0.188 ***	0.218 ***
3	0.286	0.262	0.347	0.463	0.450	0.038 **	0.125 ***	0.170 ***	0.164 ***
4	0.350	0.326	0.393	0.516	0.483	0.029 *	0.105 ***	0.148 ***	0.133 ***
5	0.400	0.385	0.420	0.547	0.492	0.023	0.076 ***	0.116 ***	0.091 *
6	0.442	0.420	0.460	0.568	0.492	0.010	0.056 **	0.083 **	0.049
7	0.473	0.447	0.480	0.589	0.492	0.001	0.040	0.062 *	0.019
8	0.496	0.468	0.493	0.621	0.500	-0.003	0.033	0.057 *	0.004

Panel C: Differences in means using propensity score matching

Quarter	Difference in completion rate				Difference in percent of plans completed			
	All Rule 10b5-1 - Non	Expected, Partial, & Pure - Non			All Rule 10b5-1 - Non	Expected, Partial, & Pure - Non		
		Pure - Non	Partial & Pure - Non	Partial, & Pure - Non		Pure - Non	Partial & Pure - Non	Partial, & Pure - Non
0	-0.007	0.037 *	0.052 *	0.077 **	0.019 *	0.039 **	0.037	0.053 ***
1	0.067 ***	0.144 ***	0.165 ***	0.195 ***	0.036 **	0.116 ***	0.117 ***	0.191 ***
2	0.068 ***	0.144 ***	0.169 ***	0.198 ***	0.055 ***	0.154 ***	0.185 ***	0.247 ***
3	0.051 ***	0.120 ***	0.138 ***	0.156 ***	0.049 **	0.157 ***	0.195 ***	0.203 ***
4	0.039 **	0.097 ***	0.107 ***	0.125 ***	0.043 **	0.134 ***	0.168 ***	0.176 ***
5	0.035 **	0.079 ***	0.088 **	0.099 ***	0.045 **	0.109 ***	0.148 ***	0.147 ***
6	0.026	0.067 **	0.078 **	0.083 ***	0.048 **	0.094 ***	0.105 **	0.085 **
7	0.020	0.055 **	0.067 *	0.056 **	0.037	0.081 **	0.068	0.035
8	0.015	0.048 *	0.055	0.045 **	0.031	0.067 **	0.047	0.018

Panel D: Time to completion

Mean time to completion					Differences in means			
Non-Rule 10b5-1	Boilerplate	Expected	Partial	Pure	All Rule 10b5-1 - Non	Expected, Partial, & Pure - Non	Partial & Pure - Non	Pure - Non
3.303	3.300	2.730	2.525	1.417	-0.464 ***	-1.044 ***	-1.337 ***	-1.886 ***

Difference in means (propensity score match)			
Expected, Partial, & Pure - Non			
All Rule 10b5-1 - Non	Pure - Non	Partial & Pure - Non	Pure - Non
-0.362 **	-1.298 ***	-1.630 ***	-1.844 ***

This table examines completion rates around Rule 10b5-1 repurchase announcements (by level of commitment) and around non-Rule 10b5-1 announcements, i.e., open market repurchase announcements without a Rule 10b5-1 component. Panel A presents average cumulative quarterly completion rates, where Quarter 0 corresponds to the quarter of the announcement, and difference in means tests. Completion rates are truncated at 100%. Panel B presents the cumulative quarterly percentage of repurchase plans completed and difference in means tests. Panel C presents the average treatment effect of including a Rule 10b5-1 plan (by level of commitment) on completion rate and on percentage of plans completed. The propensity score matching process, based on logit regressions presented in Table C.2, yields the 5 nearest neighbors. Panel D presents the average time to completion, i.e., the number of quarters until the plan is complete, difference in means tests, and the average treatment effect using propensity score matching. ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 3: Characteristics of repurchasing firms by inclusion of a Rule 10b5-1 plan

	Rule 10b5-1		Non Rule 10b5-1		Difference in	
	Mean	Std. Dev.	Mean	Std. Dev.	means	T-stat
Cash	0.213	0.199	0.170	0.173	0.043	6.089 ***
Cash flow	0.035	0.028	0.034	0.030	0.001	1.211
Standard deviation of cash flow	0.012	0.012	0.012	0.014	0.000	-0.232
Leverage	0.150	0.165	0.174	0.170	-0.024	-3.611 ***
Dividend yield	0.011	0.019	0.013	0.018	-0.002	-2.957 ***
Ln(illiquidity)	-19.742	2.728	-19.479	3.107	-0.262	-2.184 **
Book-to-market	0.585	0.378	0.544	0.374	0.041	2.736 ***
Prior stock performance	-0.024	0.142	-0.040	0.139	0.016	2.836 ***
Standard deviation of returns	0.025	0.011	0.024	0.011	0.001	2.823 ***
Repurchase timing	-0.009	0.098	-0.019	0.095	0.009	2.009 **
Financial sophistication	0.022	0.020	0.023	0.024	-0.001	-0.845
Ln(Market Cap)	7.105	1.776	7.084	1.963	0.021	0.270
Blackout window (days)	398.651	112.260	371.234	121.767	27.417	5.781 ***
8-K reporting frequency	7.077	5.729	6.526	3.514	0.551	3.160 ***
High litigation industry	0.369	0.483	0.287	0.452	0.083	4.564 ***
Litigation risk	0.024	0.015	0.024	0.025	0.000	0.014
Standard deviation of repurchases	0.865	1.056	0.738	0.957	0.127	3.279 ***
Repurchase frequency	0.455	0.362	0.453	0.368	0.003	0.187
Institutional ownership	0.725	0.268	0.677	0.289	0.048	4.302 ***
Options	0.191	0.393	0.193	0.395	-0.002	-0.159
Dilution	0.026	0.039	0.026	0.040	0.000	0.171

This table presents summary statistics on characteristics of firms that announce Rule 10b5-1 trading plans and firms that announce open market repurchases without a Rule 10b5-1 component between 2004 and 2013. We collapse our data to the firm-year level, implying that firms with at least one Rule 10b5-1 repurchase program are considered Rule 10b5-1 firms in the year of the announcement. Each repurchase announcement is matched to annual data from the prior fiscal year-end, unless otherwise noted. Variable definitions are in Appendix B. Our sample generally consists of 796 Rule 10b5-1 firm-year observations, and 3,262 non-Rule 10b5-1 firm-year observations but drops to 557 (503) Rule 10b5-1 firms and 2,110 (2,042) non Rule 10b5-1 firms for our measure of repurchase timing (options). ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 4: The decision to adopt a Rule 10b5-1 repurchase plan

	<i>Panel A: Logit models</i>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cash	1.000*** (2.605)	0.912* (1.840)	0.819** (1.976)	1.006*** (2.680)	0.662* (1.653)	0.819 (1.497)	1.115*** (2.903)
Cash flow	2.389 (1.167)	4.451* (1.774)	3.410 (1.530)	2.767 (1.375)	1.980 (0.951)	3.150 (1.039)	2.138 (1.053)
Standard deviation of cash flow	-12.862** (-2.504)	-19.471** (-2.493)	-15.390*** (-2.695)	-13.730*** (-2.682)	-11.862** (-2.186)	-22.270** (-2.365)	-10.157** (-2.094)
Leverage	-0.752** (-2.032)	-0.910** (-2.003)	-0.836** (-2.139)	-0.666* (-1.839)	-0.711* (-1.747)	-1.008** (-1.990)	-0.698* (-1.906)
Dividend yield	-3.693 (-1.212)	-3.908 (-0.973)	-7.060* (-1.799)	-3.602 (-1.207)	-5.132 (-1.432)	-7.946 (-1.608)	-2.530 (-0.859)
Book-to-market	0.275 (1.589)	0.252 (1.131)	0.188 (0.998)	0.237 (1.381)	0.156 (0.831)	0.249 (0.914)	0.351** (2.024)
Prior stock performance	0.607* (1.898)	0.543 (1.348)	0.673** (1.999)	0.621* (1.955)	0.603* (1.807)	1.047** (2.332)	0.541* (1.648)
Standard deviation of returns	3.083 (0.493)	6.632 (0.830)	0.104 (0.015)	1.197 (0.191)	-0.294 (-0.042)	-2.622 (-0.263)	0.656 (0.104)
Ln(illiquidity)	-0.177** (-2.298)	-0.168 (-1.626)	-0.185** (-2.406)	-0.163** (-2.176)	-0.202** (-2.271)	-0.202 (-1.537)	-0.175** (-2.310)
Financial sophistication	-0.148 (-1.134)	-0.020 (-0.136)	-0.167 (-1.198)	-0.168 (-1.297)	-0.206 (-1.448)	-0.093 (-0.572)	-0.112 (-0.851)
Ln(Market Cap)	-0.177 (-1.479)	-0.205 (-1.303)	-0.245** (-2.277)	-0.172 (-1.455)	-0.257* (-1.836)	-0.330* (-1.907)	-0.185 (-1.557)
Blackout window (days)	0.002*** (4.102)	0.002*** (3.613)	0.002*** (3.409)	0.002*** (4.297)	0.002*** (2.854)	0.002** (2.465)	0.002*** (3.806)
Standard deviation of repurchases	0.060 (1.088)	0.059 (0.913)	0.057 (0.915)	0.060 (1.103)	0.042 (0.715)	0.107 (1.580)	0.062 (1.133)
Repurchase frequency	-0.035 (-0.194)	-0.200 (-0.881)	0.018 (0.100)	-0.034 (-0.191)	-0.020 (-0.103)	0.034 (0.162)	-0.063 (-0.356)
Institutional ownership	-0.033 (-0.121)	0.112 (0.318)	-0.044 (-0.144)	0.045 (0.159)	-0.100 (-0.332)	0.093 (0.198)	0.008 (0.029)
Repurchase timing		1.469*** (2.590)					
8-K reporting frequency			0.049*** (3.317)				
High litigation industry				0.086 (0.678)			
Litigation risk					-1.657 (-0.488)		
Options						-4.655 (-1.420)	
Dilution							0.580 (0.459)
Observations	4,058	2,681	3,539	4,058	3,249	2,549	4,058
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	No	Yes	Yes	Yes
Pseudo R-squared	0.0712	0.0667	0.0723	0.0660	0.0647	0.0632	0.0714

Panel B: Multinomial logits

	Boilerplate	Expected	Partial	Pure	Boilerplate	Expected	Partial	Pure	Boilerplate	Expected	Partial	Pure
Cash	0.855** (1.967)	0.976 (1.419)	0.629 (1.382)	1.796*** (2.702)	1.393*** (2.757)	1.132 (1.362)	-0.031 (-0.058)	1.985*** (2.600)	0.578 (1.140)	-0.214 (-0.266)	0.720 (1.450)	2.054*** (2.935)
Cash flow	4.106 (1.560)	-8.272* (-1.922)	5.451** (1.992)	-0.585 (-0.133)	7.600** (2.314)	-11.585** (-2.240)	7.127** (2.176)	1.913 (0.364)	6.975** (2.289)	-10.609** (-2.220)	5.833* (1.906)	2.997 (0.637)
Standard deviation of cash flow	-15.022** (-2.342)	-10.735 (-1.163)	-12.497* (-1.855)	-21.372* (-1.902)	-29.490*** (-2.942)	0.664 (0.056)	-25.829*** (-2.666)	-27.231* (-1.836)	-19.899** (-2.560)	-7.987 (-0.800)	-17.231** (-2.175)	-20.046* (-1.676)
Leverage	-0.800* (-1.904)	-0.104 (-0.156)	-1.459*** (-3.046)	-0.288 (-0.392)	-0.815 (-1.571)	-0.142 (-0.167)	-1.703*** (-3.110)	0.099 (0.117)	-1.091** (-2.225)	-0.537 (-0.720)	-1.233** (-2.391)	0.089 (0.119)
Dividend yield	-8.658** (-2.121)	9.896** (2.161)	-7.795* (-1.710)	-4.030 (-0.599)	-10.765** (-2.022)	7.465 (1.078)	-2.193 (-0.432)	-5.512 (-0.688)	-10.817** (-2.089)	9.041 (1.618)	-12.779** (-2.218)	-9.137 (-1.093)
Book-to-market	0.526** (2.554)	-0.009 (-0.024)	-0.074 (-0.319)	0.475 (1.610)	0.548** (2.128)	-0.565 (-1.123)	-0.326 (-1.110)	0.711** (2.012)	0.501** (2.073)	-0.459 (-1.042)	-0.106 (-0.409)	0.473 (1.453)
Prior stock performance	0.089 (0.194)	1.372* (1.813)	0.939* (1.899)	0.653 (0.928)	0.090 (0.154)	1.231 (1.132)	0.936 (1.579)	0.382 (0.449)	0.222 (0.434)	1.410* (1.689)	0.983* (1.824)	0.409 (0.545)
Standard deviation of returns	8.508 (1.053)	7.041 (0.559)	-6.233 (-0.699)	6.908 (0.610)	8.828 (0.853)	-8.614 (-0.476)	0.746 (0.070)	1.939 (0.134)	8.311 (0.934)	8.848 (0.665)	-13.075 (-1.343)	-0.066 (-0.005)
Ln(illiquidity)	-0.153* (-1.959)	-0.241* (-1.863)	-0.196** (-2.291)	-0.085 (-0.773)	-0.076 (-0.746)	-0.409* (-1.868)	-0.213* (-1.925)	-0.223 (-1.526)	-0.183* (-1.913)	-0.280* (-1.866)	-0.219** (-2.231)	-0.104 (-0.832)
Financial sophistication	0.072 (0.496)	-0.433 (-1.518)	-0.211 (-1.247)	-0.694** (-2.018)	0.202 (1.200)	-0.334 (-0.999)	-0.147 (-0.783)	-0.438 (-1.229)	0.040 (0.238)	-0.412 (-1.292)	-0.201 (-1.086)	-0.676* (-1.845)
Ln(Market Cap)	-0.006 (-0.059)	-0.177 (-0.959)	-0.312** (-2.514)	-0.346* (-1.942)	0.043 (0.304)	-0.433 (-1.505)	-0.366** (-2.345)	-0.558** (-2.412)	-0.096 (-0.718)	-0.310 (-1.439)	-0.373*** (-2.632)	-0.457** (-2.260)
Blackout window (days)	0.002*** (4.100)	0.001 (1.431)	0.002*** (2.857)	0.002** (2.379)	0.002*** (2.977)	0.001 (1.099)	0.002*** (2.865)	0.003*** (2.626)	0.002*** (3.116)	0.001 (0.462)	0.002** (2.292)	0.002** (2.343)
Standard deviation of repurchases	-0.063 (-0.879)	0.162* (1.746)	0.140** (2.168)	0.015 (0.139)	-0.094 (-1.115)	0.254** (2.362)	0.165** (2.336)	-0.085 (-0.678)	-0.108 (-1.298)	0.210** (2.137)	0.137** (1.964)	0.007 (0.061)
Repurchase frequency	-0.126 (-0.636)	-0.354 (-1.031)	0.101 (0.461)	0.337 (0.945)	-0.232 (-0.909)	-0.232 (-0.500)	-0.086 (-0.318)	-0.598 (-1.379)	-0.067 (-0.297)	-0.515 (-1.322)	0.169 (0.711)	0.487 (1.271)
Institutional ownership	0.122 (0.365)	-0.926* (-1.741)	0.302 (0.824)	0.180 (0.333)	-0.058 (-0.133)	0.227 (0.281)	0.509 (1.128)	-0.051 (-0.077)	0.073 (0.189)	-0.922 (-1.526)	0.273 (0.675)	0.216 (0.363)
Repurchase timing					1.715** (2.090)	3.720** (2.530)	0.324 (0.406)	2.432** (2.078)				
8-K reporting frequency									0.058*** (3.924)	0.054** (2.438)	0.024 (1.114)	0.069*** (2.872)
Observations		4,079				2,697				3,539		
Year fixed effects		Yes				Yes				Yes		
Industry fixed effects		Yes				Yes				Yes		
Pseudo R-squared		0.0806				0.0767				0.0856		

In this table we model the decision to adopt a Rule 10b5-1 plan relative to the decision to adopt an open market repurchase without a Rule 10b5-1 component. Panel A reports results from logit regressions where the dependent variable takes a value of one if a firm announced a Rule 10b5-1 as part of its repurchase program and zero otherwise. Panel B reports results of multinomial logit regressions for all repurchase announcements (Rule 10b5-1 plans and open market repurchases), where the base case is repurchases not associated with a Rule 10b5-1 plan. We collapse our data to the firm-year level, implying that firms with at least one Rule 10b5-1 repurchase program are considered Rule 10b5-1 firms. For the multinomial logits, if a firm announces multiple Rule 10b5-1 repurchase plans within the same year, we categorize it according to the announcement with the highest level of commitment. Independent variables are as defined in Appendix B. Table 1 and Appendix A explain our categorization of Rule 10b5-1 announcements. Year fixed effects are included in all specifications. Industry controls are based on Fama and French (1997) 12 industry classifications but are excluded in the specification with the high litigation industry indicator. Z-statistics are reported in parentheses and are based on robust standard errors clustered by firm. ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 5: Hazard models of Rule 10b5-1 adoption

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cash	0.663** (1.983)	0.375 (0.845)	0.513 (1.359)	0.651* (1.946)	0.581 (1.601)	0.394 (0.769)	0.734** (2.202)
Cash flow	-0.472 (-0.251)	-0.330 (-0.144)	-0.820 (-0.396)	-0.486 (-0.257)	-0.350 (-0.174)	0.263 (0.090)	-0.733 (-0.395)
Standard deviation of cash flow	-10.119** (-2.405)	-11.569 (-1.583)	-9.176* (-1.829)	-10.354** (-2.412)	-9.705** (-2.160)	-12.987 (-1.618)	-7.513* (-1.915)
Leverage	-0.464 (-1.490)	-0.533 (-1.260)	-0.631* (-1.893)	-0.465 (-1.492)	-0.552 (-1.539)	-0.450 (-1.080)	-0.484 (-1.544)
Dividend yield	-9.664*** (-2.888)	-11.777** (-2.383)	-10.815** (-2.493)	-9.638*** (-2.881)	-10.516** (-2.575)	-10.045* (-1.894)	-7.898** (-2.492)
Book-to-market	-0.018 (-0.123)	0.092 (0.438)	-0.084 (-0.481)	-0.017 (-0.118)	0.028 (0.175)	0.005 (0.022)	0.017 (0.120)
Prior stock performance	-0.097 (-0.285)	-0.064 (-0.138)	0.172 (0.459)	-0.104 (-0.305)	0.029 (0.079)	0.757 (1.439)	-0.061 (-0.180)
Standard deviation of returns	-1.781 (-0.314)	-0.481 (-0.064)	-13.554** (-2.017)	-1.841 (-0.325)	-5.106 (-0.783)	-5.955 (-0.650)	-3.590 (-0.614)
Ln(illiquidity)	-0.168*** (-2.933)	-0.154 (-1.617)	-0.134** (-2.093)	-0.168*** (-2.933)	-0.193*** (-2.940)	-0.086 (-0.758)	-0.166*** (-2.966)
Financial sophistication	-0.356*** (-2.770)	-0.226 (-1.430)	-0.398*** (-2.737)	-0.359*** (-2.789)	-0.376*** (-2.670)	-0.301* (-1.926)	-0.353*** (-2.751)
Ln(Market Cap)	-0.181** (-2.070)	-0.179 (-1.330)	-0.188** (-1.993)	-0.183** (-2.090)	-0.248** (-2.417)	-0.132 (-0.941)	-0.192** (-2.212)
Blackout window (days)	0.001*** (2.693)	0.002*** (3.088)	0.001** (2.264)	0.001*** (2.718)	0.001* (1.660)	0.001** (2.279)	0.001** (2.193)
Standard deviation of repurchases	0.064 (1.160)	0.094 (1.475)	0.033 (0.544)	0.061 (1.102)	0.054 (0.892)	0.084 (1.202)	0.064 (1.140)
Repurchase frequency	-0.497*** (-2.953)	-0.669*** (-3.107)	-0.383** (-2.186)	-0.492*** (-2.906)	-0.504*** (-2.749)	-0.449** (-2.173)	-0.536*** (-3.127)
Institutional ownership	-0.252 (-0.963)	-0.015 (-0.037)	-0.272 (-0.935)	-0.247 (-0.944)	-0.211 (-0.729)	0.343 (0.805)	-0.159 (-0.612)
Repurchase timing		1.710*** (2.917)					
8-K reporting frequency			0.048*** (2.859)				
High litigation industry				0.071 (0.421)			
Litigation risk					-3.266 (-0.601)		
Options						2.322 (0.904)	
Dilution							2.685** (2.508)
Observations	3,473	2,187	3,092	3,473	2,738	2,137	3473
Pseudo R-squared	0.0161	0.0264	0.0179	0.0162	0.0186	0.0194	0.0176

In this table we model the duration to Rule 10b5-1 plan adoption using a Cox proportional hazard model. The duration to adoption is measured as the number of calendar days from the end of 2003 to the first time a firm adopts a Rule 10b5-1 plan. If the firm enters the sample after 2003 we calculate duration as the number of days from the end of the first calendar year in Compustat. Independent variables are as defined in Appendix B. We also include industry dummies based on Fama and French (1997) 12 industry classifications. We report coefficients with Z-statistics based on robust standard errors clustered by firm in parentheses. ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 6: Exogenous shock to cost of adopting a Rule 10b5-1 plan

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trend	0.156*** (7.900)	0.135*** (5.555)	0.177*** (7.476)	0.158*** (8.003)	0.170*** (7.982)	0.113*** (4.405)	0.152*** (7.490)
Financial crisis	-0.311*** (-2.703)	-0.235* (-1.714)	-0.283** (-2.406)	-0.305*** (-2.640)	-0.377*** (-2.998)	-0.418*** (-2.851)	-0.356*** (-3.037)
Repurchase timing		1.438** (2.567)					
8-K reporting frequency			0.048*** (3.339)				
High litigation industry				0.088 (0.695)			
Litigation risk					-1.705 (-0.454)		
Options						-4.953 (-1.521)	
Dilution							0.464 (0.373)
Observations	4,058	2,684	3,539	4,058	3,249	2,549	4,058
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	No	No	No
Industry FE	Yes	Yes	Yes	No	Yes	Yes	Yes
Pseudo R-squared	0.0679	0.0653	0.0692	0.0628	0.0612	0.0603	0.0678

This table reports results from logit regressions where the dependent variable takes a value of one if a firm announced a Rule 10b5-1 as part of its repurchase program and zero otherwise. We collapse our data to the firm-year level, implying that firms with at least one Rule 10b5-1 repurchase program are considered Rule 10b5-1 firms. Trend is a count variable equal to 1 for observations in 2004, 2 for observations in 2005, etc. Financial crisis is an indicator variable equal to 1 for announcements made during 2008 or 2009. Other independent variables are defined in Appendix B. All specifications include control variables (Cash, Cash flow, Standard deviation of cash flow, Leverage, Dividend yield, Book-to-market, Prior stock performance, Standard deviation of returns, Ln(illiquidity), and Institutional ownership) and year fixed effects. Industry controls are based on Fama and French (1997) 12 industry classifications but are excluded in the specification with the high litigation industry indicator. Z-statistics are reported in parentheses and are based on robust standard errors clustered by firm. ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 7: Abnormal returns around Rule 10b5-1 announcements*Panel A: Abnormal returns at announcement by type of repurchase*

	Rule 10b5-1 at authorization					Delayed Rule 10b5-1	Non-Rule 10b5-1
	All	Boilerplate	Expected	Partial	Pure		
Mean	1.625	1.305	1.990	1.738	2.452	1.091	1.263
T-statistic	6.960	4.211	3.894	2.450	3.743	2.390	14.241
N	968	565	158	111	134	192	5,658

Panel B: Difference in means tests

Differences in means			
Expected, Partial, &			
All Rule 10b5-1 - Non	Pure - Non	Partial & Pure - Non	Pure - Non
0.362	0.811 **	0.866 **	1.189 **
Difference in means (propensity score match)			
Expected, Partial, &			
All Rule 10b5-1 - Non	Pure - Non	Partial & Pure - Non	Pure - Non
0.619 *	0.873 *	1.138 *	1.671 **

Panel C: Long-run abnormal returns

Sample	Full	Non-Rule 10b5-1	Rule 10b5-1	Expected,	Partial &	Pure
				Partial & Pure	Partial & Pure	Pure
α	0.299*** (4.056)	0.290*** (3.688)	0.353** (2.587)	0.262 (1.506)	0.286 (1.493)	0.168 (0.538)
Rmkt,t - Rf,t	0.885*** (43.255)	0.880*** (40.319)	0.931*** (25.067)	0.889*** (18.891)	0.903*** (17.500)	0.861*** (10.425)
SMB	0.538*** (14.322)	0.521*** (12.993)	0.628*** (9.064)	0.718*** (8.145)	0.778*** (7.998)	0.843*** (5.321)
HML	-0.090*** (-2.627)	-0.089** (-2.433)	-0.122* (-1.928)	-0.068 (-0.844)	-0.081 (-0.924)	0.026 (0.177)
MOM	-0.178*** (-10.762)	-0.174*** (-9.857)	-0.191*** (-6.315)	-0.174*** (-4.557)	-0.185*** (-4.376)	-0.144** (-2.131)
Adjusted R2	0.973	0.969	0.930	0.891	0.879	0.742
α - Non-Rule 10b5-1 α	N/A	N/A	0.063 (0.404)	-0.029 (-0.153)	-0.005 (-0.024)	-0.122 (-0.411)

This table reports five-day cumulative abnormal returns for Rule 10b5-1 and non-Rule 10b5-1 announcements. Panel A shows abnormal returns by type of repurchase announcement. Table 1 and Appendix A explain our categorization of Rule 10b5-1 announcements. Delayed announcements refer to the adoption of a Rule 10b5-1 plan to facilitate a previously announced program. Panel B examines the difference in abnormal returns around Rule 10b5-1 repurchase plans and repurchase plans that do not include a Rule 10b5-1 component. Significance of mean abnormal returns is assessed using a *t*-test or propensity score matching, as indicated. We use the 5 nearest neighbors identified from the logit regressions in Table C.2 as matched control firms then calculate the average treatment effect. Panel C presents long-run abnormal returns calculated over the 12-month window beginning the month after the announcement. Monthly abnormal returns (α) are estimated from Fama-French four-factor calendar time portfolio regressions: $R_t - R_{f,t} = \alpha_1 + \beta_1(R_{mkt,t} - R_{f,t}) + \beta_2SMB_t + \beta_3HML_t + \beta_4MOM_t$, where R_t is the return

on an equally weighted portfolio of stocks at time t . $R_{f,t}$ and $R_{mkt,t}$ are the risk-free rate and the return on the market at time t . SMB_t , HML_t , and MOM_t are the monthly returns on the Fama-French size, book-to-market, and momentum factors in month t . The intercept term (α) of the regression represents the average monthly abnormal return. The last row represents the difference in abnormal returns in Rule 10b5-1 firms and non-Rule 10b5-1 firms. t -statistics are in parentheses. ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 8: Payout substitution*Panel A: Dividend forecast error*

	10-year estimation window				5-year estimation window			
	All Rule 10b5-1	Expected, Partial, & Pure	Partial & Pure	Pure	All Rule 10b5-1	Expected, Partial, & Pure	Partial & Pure	Pure
Rule 10b5-1	0.002 (1.587)	0.002 (1.394)	0.002 (0.739)	-0.001 (-0.866)	0.002 (1.316)	0.003 (1.565)	0.006 (1.016)	-0.004 (-0.930)
Rule 10b5-1 x Repurchase yield	-0.029 (-1.311)	-0.041* (-2.093)	-0.074 (-1.350)	0.037 (0.580)	-0.016 (-0.814)	-0.031 (-1.053)	-0.157 (-0.952)	0.301 (1.013)
Repurchase yield	0.006 (0.762)	0.006 (0.762)	0.006 (0.749)	0.006 (0.749)	-0.001 (-0.222)	-0.001 (-0.208)	-0.001 (-0.227)	-0.001 (-0.228)
Ln(Market Cap)	0.000 (1.424)	0.000 (1.366)	0.000 (1.430)	0.000 (1.477)	0.000 (0.756)	0.000 (0.717)	0.000 (0.737)	0.000 (0.763)
Cash flow	0.005* (2.004)	0.005* (2.016)	0.005* (2.029)	0.005* (2.003)	0.006* (1.946)	0.006* (1.971)	0.006* (1.990)	0.006* (1.973)
Standard deviation of cash flow	-0.014** (-2.469)	-0.014** (-2.493)	-0.014** (-2.492)	-0.013** (-2.463)	-0.012** (-2.481)	-0.012** (-2.520)	-0.012** (-2.501)	-0.011** (-2.474)
Non-operating income	0.022** (2.439)	0.022** (2.448)	0.021** (2.283)	0.021** (2.261)	0.023* (1.875)	0.023* (1.863)	0.022 (1.764)	0.022 (1.767)
Leverage	-0.002*** (-3.292)	-0.002*** (-3.320)	-0.002*** (-3.366)	-0.002*** (-3.424)	-0.002** (-2.610)	-0.002** (-2.616)	-0.002** (-2.623)	-0.002** (-2.591)
Constant	-0.000 (-0.434)	-0.000 (-0.416)	-0.000 (-0.428)	-0.000 (-0.423)	-0.000 (-0.389)	-0.000 (-0.371)	-0.000 (-0.383)	-0.000 (-0.383)
Observations	9,779	9,715	9,690	9,637	12,038	11,968	11,935	11,862
R-squared	0.010	0.010	0.009	0.010	0.006	0.006	0.003	0.003

Panel B: Repurchase forecast error

	10-year estimation window				5-year estimation window			
	All Rule 10b5-1	Expected, Partial, & Pure	Partial & Pure	Pure	All Rule 10b5-1	Expected, Partial, & Pure	Partial & Pure	Pure
Rule 10b5-1	0.009*** (4.184)	0.011** (2.484)	0.012** (2.382)	0.001 (1.000)	0.009** (2.840)	0.012** (3.115)	0.014*** (3.314)	0.003 (0.481)
Ln(Market Cap)	0.000 (0.356)	0.000 (0.441)	0.000 (0.476)	0.000 (0.442)	-0.000 (-0.549)	-0.000 (-0.472)	-0.000 (-0.482)	-0.000 (-0.452)
Cash flow	0.005 (0.525)	0.005 (0.502)	0.004 (0.471)	0.005 (0.504)	0.009 (1.494)	0.009 (1.530)	0.009 (1.521)	0.009 (1.475)
Standard deviation of cash flow	-0.008 (-0.250)	-0.007 (-0.219)	-0.006 (-0.205)	-0.006 (-0.200)	-0.006 (-0.313)	-0.009 (-0.415)	-0.009 (-0.434)	-0.007 (-0.365)
Non-operating income	0.065* (2.009)	0.066* (2.021)	0.066* (2.005)	0.064* (1.995)	0.032 (1.414)	0.030 (1.332)	0.030 (1.291)	0.030 (1.297)
Leverage	-0.001 (-0.509)	-0.001 (-0.467)	-0.001 (-0.557)	-0.001 (-0.522)	0.000 (0.029)	-0.000 (-0.086)	-0.000 (-0.063)	-0.000 (-0.005)
Constant	-0.005* (-2.038)	-0.006** (-2.350)	-0.005** (-2.301)	-0.005** (-2.290)	-0.001 (-0.413)	-0.001 (-0.481)	-0.001 (-0.469)	-0.001 (-0.517)
Observations	1,583	1,562	1,558	1,537	4,016	3,984	3,970	3,924
R-squared	0.012	0.011	0.011	0.007	0.005	0.006	0.006	0.003

This table reports results from Fama-MacBeth cross-sectional regressions where the dependent variable equals dividend error (Panel A) or repurchase error (Panel B). Dividend error is calculated using the Grullon and Michaely (2002) method: $Error_{t,i} = [\Delta Div_{t,i} - (\beta_{1,i} + \beta_{2,i} EARN_{t,i} + \beta_{3,i} DIV_{t-1,i})] / MV_{t-1,i}$, where DIV equals total dollar dividends, EARN equals total earnings before extraordinary items, and MV equals market value. We calculate repurchase error analogously by replacing DIV with total repurchases, defined as purchases of common and preferred stock minus any decrease in preferred stock. Errors are calculated over 5- and 10-year rolling windows, as indicated. Rule 10b5-1 is an indicator variable equal to one if the firm announced a Rule 10b5-1 repurchase during the year. Repurchase yield is purchases of common and preferred stock minus any decrease in preferred stock, scaled by lagged market value. Following Grullon and Michaely (2002) the standard deviation of cash flow is calculated over three years from year -1 to year +1. Non-operating income is non-operating income scaled by assets. Other independent variables are defined in Appendix B. Coefficients and standard errors are estimated by Fama-MacBeth regressions and t-statistics are reported in parentheses. ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 9: Payout initiations and modifications

Panel A: Payout transition probabilities

		2001-2013					
		Repurchases = 0 Dividends = 0	Repurchases > 0 Dividends = 0 Rule 10b5-1 = 0	Repurchases > 0 Dividends = 0 Rule 10b5-1 > 0	Repurchases = 0 Dividends > 0	Repurchases > 0 Dividends > 0 Rule 10b5-1 = 0	Repurchases > 0 Dividends > 0 Rule 10b5-1 > 0
1990-2000	Repurchases = 0 Dividends = 0	71.90%	11.10%	2.59%	9.06%	4.12%	1.24%
	Repurchases > 0 Dividends = 0	47.29%	22.38%	4.61%	7.73%	14.76%	3.23%
	Repurchases = 0 Dividends > 0	18.44%	4.57%	1.32%	56.24%	16.44%	2.99%
	Repurchases > 0 Dividends > 0	9.55%	4.22%	1.45%	32.18%	45.26%	7.34%

Panel B: Payout initiations

Year	Payout initiations			Repurchase initiations			
	Repurchases > 0 Dividends = 0 Rule 10b5-1 = 0	Repurchases > 0 Dividends = 0 Rule 10b5-1 > 0	Repurchases = 0 Dividends > 0	Repurchases > 0 Dividends > 0 Rule 10b5-1 = 0	Repurchases > 0 Dividends > 0 Rule 10b5-1 > 0	Repurchases > 0 Rule 10b5-1 = 0	Repurchases > 0 Rule 10b5-1 > 0
2001	67.77%	0.33%	30.74%	1.16%	0.00%	99.65%	0.35%
2002	57.63%	1.21%	39.95%	1.21%	0.00%	98.48%	1.52%
2003	38.98%	2.82%	57.91%	0.28%	0.00%	95.02%	4.98%
2004	33.67%	2.99%	61.10%	2.24%	0.00%	94.83%	5.17%
2005	38.39%	5.95%	54.51%	1.15%	0.00%	89.47%	10.53%
2006	38.16%	6.58%	53.51%	1.54%	0.22%	87.75%	12.25%
2007	50.89%	9.66%	37.08%	1.97%	0.39%	85.23%	14.77%
2008	64.52%	8.95%	25.12%	1.41%	0.00%	87.50%	12.50%
2009	45.79%	5.14%	48.13%	0.93%	0.00%	89.36%	10.64%
2010	34.95%	6.15%	56.63%	1.62%	0.65%	83.96%	16.04%
2011	34.01%	9.80%	54.47%	0.86%	0.86%	76.35%	23.65%
2012	22.97%	8.12%	66.39%	1.12%	1.40%	68.45%	31.55%
2013	22.39%	7.46%	67.16%	2.49%	0.50%	77.78%	22.22%

This table reports the probability of selecting a payout policy conditional on prior payout decisions. Panel A reports the transition probabilities of changing from payout policy i in the pre-Rule 10b5-1 period (1990-2000) to payout policy j in the post-Rule 10b5-1 period (2001-2013) for 10,449 firms in existence in both time periods. We classify repurchases as greater than zero if we observe at least one open market repurchase announcement in the period and zero otherwise. Dividends are greater than zero for the period if at any time we observe the firm paying a dividend and zero otherwise. Rule 10b5-1 is greater than zero if at any time in the 2001-2013 period the firm made a Rule 10b5-1 announcement. Panel B presents the probability of initiating payout policy j for each year from 2001 to 2013 for the 5,145 firms with zero payout in the pre-Rule period. Payout (repurchase) initiations are defined as the first payout (repurchase) since 1990.

Appendix A: Examples of Rule 10b5-1 repurchase announcements

Pure Rule 10b5-1: Announcement to conduct the entire repurchase program under Rule 10b5-1.

Excerpt from March 1, 2007 Business Wire article “Clifton Savings Bancorp, Inc. Announces Fourth Stock Repurchase Plan”

Clifton Savings Bancorp, Inc. (NASDAQ:CSBK) announced today that the Company's board of directors has approved the repurchase for up to 615,000 shares, or approximately 5% of the Company's outstanding common stock held by persons other than Clifton MHC. **These repurchases will be conducted solely through a Rule 10b5-1 repurchase plan with Keefe, Bruyette & Woods, Inc., based upon parameters of the Rule 10b5-1 repurchase plan.** Repurchased shares will be held in treasury. The Rule 10b5-1 repurchase plan allows the Company to repurchase its shares during periods when it would normally not be active in the market due to its internal trading blackout period.

Partial Rule 10b5-1: Announcements that definitely contain a Rule 10b5-1 component.

Excerpt from February 25, 2010 Canada Stockwatch article “THI Tim Hortons to buy back \$200-million worth of shares”

Tim Hortons Inc.'s board has approved a new 12-month, \$200-million share repurchase program to commence in March, 2010, subject to receipt of final regulatory approval. The company's common shares will be purchased under the program **through a combination of a 10b5-1 automatic trading plan as well as at management's discretion** in compliance with regulatory requirements, and given market, cost and other considerations.

Expected Rule 10b5-1: Announcements that “expect to/intend to” have a 10b5-1 component.

Excerpt from March 2, 2012 US Fed News article “Lattice Semiconductor files current report”

Lattice Semiconductor Corporation (the "Company") issued a press release announcing that its Board of Directors has authorized a share repurchase program of up to \$20.0 million of the Company's common stock over the next 12 months. **In connection with the new stock repurchase program, the Company intends to enter into a 10b5-1 plan**, which will allow for repurchases of up to \$20.0 million. How much common stock, if any, will be repurchased will depend on market conditions, including the price of the common stock.

Boilerplate Rule 10b5-1: Announcements that “may” have a 10b5-1 component.

Excerpt from October 1, 2012 Theflyonthewall.com article “TRW Automotive announces \$1B share repurchase program”

TRW Automotive announced that its board has authorized a \$1B share repurchase program. The repurchase program, which will commence in the fourth quarter of this year, is expected to be

executed over two years. In implementing the program, **the company may utilize a variety of methods, which may include negotiated block transactions, accelerated share repurchase transactions or open market purchases, some of which may be effected through Rule 10b5-1 plans, or by any combination of the foregoing.**

Delayed Rule 10b5-1: Announcements of the adoption of a Rule 10b5-1 plan to facilitate the repurchase of a previously announced program.

Excerpt from March 8, 2007 Business Wire article “CBRL Group Announces Adoption of 10b5-1 Plan”

CBRL Group, Inc. (the "Company") (Nasdaq: CBRL) **announced today that it adopted a written trading plan under Rule 10b5-1 of the Securities and Exchange Commission (the "Company 10b5-1 Plan") to facilitate repurchases under its previously announced \$100 million share repurchase authorization**, of which approximately \$36.1 million remains. The Company announced yesterday that it had repurchased 1,352,500 shares of its common stock for approximately \$63.9 million under a previous 10b5-1 plan that expired on Friday, March 2, 2007. The \$36.1 million repurchase authorization is in addition to management's authority to purchase 821,081 shares that remains from a 2005 repurchase, authorization.

Rule 10b5-1 mentions in other announcements

Excerpt from August 1, 2005 Business Wire article “Post Properties Announces Second Quarter 2005 Earnings”

From April 1, 2005 through August 1, 2005, **the Company repurchased 412,600 shares of its common stock totaling approximately \$13.6 million under 10b5-1 stock purchase plans**, the most recent of which will expire on August 31, 2005. These shares were repurchased at an average price of \$32.95 per share. Year-to-date through August 1, 2005, **the Company has repurchased 698,400 shares of its common stock totaling approximately \$22.6 million under 10b5-1 stock purchase plans at an average price of \$32.42 per share.**

Appendix B: Variable definitions

Variable name	Description
8-K reporting frequency	The total number of 8-Ks filed by the company in the 6-month period following the repurchase announcement.
Blackout window	The minimum number of days over the past 12 quarters during which the firm was most likely to observe a blackout window. We calculate the most common stated blackout window as the sum of the days elapsed between each quarter end and the release of earnings for that quarter as stated in Compustat. Blackout window is winsorized at the 1 st and 99 th percentile.
Book-to-market	Total common equity over market capitalization, winsorized at the 1 st and 99 th percentile.
Cash	Cash and short-term securities scaled by assets, winsorized at the 1 st and 99 th percentile.
Cash flow	Operating income before depreciation scaled by assets, winsorized at the 1 st and 99 th percentile.
Dilution	The difference in the number of common shares used to calculate diluted earnings per share (diluted shares) and the number of common shares outstanding used to calculate basic earnings per share (basic shares), divided by the number of basic shares. Dilution is winsorized at the 1 st and 99 th percentile.
Dividend yield	Total dividends, scaled by market capitalization at the beginning of the fiscal year, winsorized at the 1 st and 99 th percentile.
Financial crisis	An indicator variable equal to 1 for announcements made during 2008 or 2009.
Financial sophistication	An indicator dummy variable equal to 1 if the firm reports a non-missing value for gain/loss on ineffective hedges (HEDGEGL) found in Compustat and zero otherwise.
High litigation industry	An indicator variable equal to 1 if the firm's four digit SIC industry has a high incidence of past litigation (categorized by Francis, Philbrick and Schipper (1994) as SIC codes 2833–2836 and 8731–8734 (biotechnology); 3570–3577 and 7370–7374 (computers); 3600–3674 (electronics) and 5200–5961 (retailing)). This measure has been used as a proxy for litigation risk in numerous studies (e.g., Rogers and Stocken (2005) and Heitzman, Wasley, and Zimmerman (2010)).
Institutional ownership	Shares held by institutions (from Thomson Reuters 13F filings database) as a percentage of shares outstanding, measured at the end of the calendar quarter prior to the announcement.
Leverage	The sum of long-term debt and debt in current liabilities scaled by total assets, winsorized at the 1 st and 99 th percentile.
Litigation risk	Using the model to predict litigation risk from Kim and Skinner (2012), we supplement our high litigation industry dummy and thus improve predictive ability. We create a probability of facing a class action lawsuit for each firm from the predicted values of the logit model found in Table C.1 of Appendix C.

Ln(illiquidity)	The natural log of the Amihud (2002) measure of illiquidity: the ratio of the daily absolute return to the dollar trading volume on that day. We average daily illiquidity for each firm over the period starting 255 trading days prior to the repurchase announcement and ending 46 trading days prior to the announcement. Ln(illiquidity) is winsorized at the 1 st and 99 th percentile.
Ln(Market Cap)	The natural log of the firm's market capitalization, winsorized at the 1 st and 99 th percentile.
Options	The sum of all unexercised exercisable options and all unexercised exercisable options, scaled by shares outstanding, winsorized at the 1 st and 99 th percentile.
Prior stock performance	The cumulative abnormal return starting 46 trading days prior to the announcement and ending 6 days prior to the announcement, winsorized at the 1 st and 99 th percentile.
Repurchase frequency	The portion of the prior 12 quarters during which the firm repurchased any stock.
Repurchase timing	The percentage difference in repurchase volume-weighted stock price and volume-weighted stock price. The repurchase volume-weighted price is the sum of quarterly shares repurchased times the average quarterly repurchase price per share, divided by the total number of shares repurchased. Volume-weighted price is the trading volume weighted average daily closing price over the prior fiscal year. Positive values are associated with poor repurchase timing and negative values with good timing. Conditioning on prior year of repurchases causes sample size to fall. Repurchase timing is winsorized at the 1 st and 99 th percentile.
Standard deviation of cash flow	The standard deviation of quarterly operating income before depreciation scaled by assets calculated over the 12 quarters preceding the repurchase announcement, winsorized at the 1 st and 99 th percentile.
Standard deviation of repurchases	The standard deviation of quarterly repurchases over the previous 12 quarters. Repurchases are calculated as the number of shares repurchase times the average price paid per share. This variable is winsorized at the 1 st and 99 th percentile.
Standard deviation of returns	The standard deviation of daily stock returns over the period from 255 to 46 trading days prior to the repurchase announcement. We require a minimum of 100 trading days. This variable is winsorized at the 1 st and 99 th percentile.
Trend	A count variable equal to 1 for observations in 2004, 2 for observations in 2005, etc.

Appendix C: Additional models

Table C.1: Model for litigation risk

	(1)
High litigation industry _t	0.705*** (11.648)
Ln(assets) _{t-1}	0.270*** (16.081)
Sales growth _{t-1}	0.391*** (6.287)
Return _{t-1}	0.029 (0.684)
Return skewness _{t-1}	-0.247*** (-6.452)
Standard deviation of returns _{t-1}	9.444*** (5.784)
Turnover _{t-1}	0.177*** (19.991)
Constant	-6.559*** (-43.584)
Observations	65,145
Pseudo R2 (McFadden)	0.0961
Pseudo R2 (Cox-Snell)	0.020

This table reports results from a logit regression predicting litigation risk for all Compustat firms with non-missing data for the period 1996-2013. The dependent variable is set equal to one if the firm faced a class action lawsuit according to the filings listed on Stanford Law School Securities Class Action Clearinghouse (<http://securities.stanford.edu>) during the year and zero otherwise. Following Kim and Skinner (2012) we exclude filings related to IPOs, hedge funds, mutual funds, and analysts. High litigation industry and standard deviation of returns are as defined in Appendix B. Ln (assets) is the natural log of assets at the end of year $t - 1$. Sales growth is year $t - 1$ sales minus year $t - 2$ sales scaled by total assets at the beginning of year $t - 1$. Return is the market adjusted value-weighted 12-month stock return for the year $t - 1$. Return skewness is the skewness of the firm's 12-month return for year $t - 1$. Turnover is trading volume accumulated over the 12-month period ending with the $t - 1$ fiscal year-end before lawsuit scaled by beginning of year $t - 1$ shares outstanding. All return measures and turnover require at least 200 trading days. T -statistics are reported in parentheses and are based on robust standard errors. ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table C.2 Logit regressions for propensity score matching

	Expected,			
	All Rule 10b5-1	Partial & Pure	Partial & Pure	Pure
Blackout window (days)	0.002*** (4.035)	0.002*** (3.114)	0.003*** (3.287)	0.002* (1.898)
Standard deviation of repurchases	-0.000 (-0.003)	0.072 (0.775)	-0.061 (-0.529)	0.082 (0.598)
Repurchase frequency	-0.154 (-0.731)	-0.161 (-0.533)	0.168 (0.417)	0.125 (0.249)
Financial sophistication	0.020 (0.132)	-0.120 (-0.499)	-0.101 (-0.312)	-0.099 (-0.253)
Ln(Market Cap)	-0.133 (-1.105)	-0.235 (-1.522)	-0.289 (-1.347)	-0.469* (-1.666)
Cash	1.333*** (3.018)	1.546** (2.376)	1.709** (2.387)	3.069*** (3.668)
Cash flow	3.232 (1.340)	0.546 (0.153)	2.529 (0.608)	2.355 (0.553)
Standard deviation of cash flow	-11.936** (-2.058)	-9.366 (-1.201)	-8.460 (-0.988)	-5.565 (-0.503)
Leverage	-0.430 (-1.001)	-0.427 (-0.674)	-1.452 (-1.535)	0.191 (0.182)
Dividend yield	-1.880 (-0.567)	1.977 (0.458)	-6.638 (-0.995)	-1.304 (-0.171)
Book-to-market	0.475** (2.462)	0.387 (1.572)	0.405 (1.302)	0.884** (2.321)
Prior stock performance	0.207 (0.548)	0.551 (1.005)	0.159 (0.217)	-0.104 (-0.116)
Standard deviation of returns	3.150 (0.439)	-3.106 (-0.319)	-3.734 (-0.298)	1.790 (0.113)
Ln(illiquidity)	-0.150* (-1.872)	-0.141 (-1.330)	-0.068 (-0.512)	-0.127 (-0.716)
Institutional ownership	-0.159 (-0.518)	-0.363 (-0.799)	0.415 (0.750)	0.537 (0.818)
Percentage of equity	-0.016 (-1.462)	-0.027 (-1.533)	-0.015 (-0.717)	-0.104** (-2.487)
Observations	4,013	3,595	3,497	3,433
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.0737	0.0646	0.0854	0.122

This table reports results from logit regressions where the dependent variable takes a value of zero for open market repurchases in all specifications and a value of one for the specified group of Rule 10b5-1 announcers. Percentage of equity is defined as the announced size of the repurchase program (in shares) divided by shares outstanding. Other independent variables are as defined in Appendix B. Year fixed effects are included in all specifications. Industry controls are based on Fama and French (1997) 12 industry classifications and are included in all specifications. Z-statistics are reported in parentheses and are based on robust standard errors clustered by firm. ***, **, * represent significance at the 0.01, 0.05, and 0.10 levels, respectively.