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THE CAPITAL AND CASH FLOW SOURCES AND USES OF INITIAL STOCK REPURCHASE FIRMS

Luís Krug Pacheco

Universidade Católica Portuguesa (Porto)

Clara Raposo

ISCTE

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Luis Krug Pacheco

Universidade Católica Portuguesa

Centro Regional do Porto

Rua Diogo Botelho 1327

4169-005 Porto

Portugal

lpacheco@porto.ucp.pt

Clara Raposo

ISCTE

Business School

Av. Prof Aníbal de Bettencourt

1600-189 Lisboa

Portugal

clara.raposo@iscte.pt

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ABSTRACT

This study investigates the capital sources and uses of firms that are conducting stock repurchase transactions for the first time, both prior and subsequent to those financial operations. We hypothesize that this capital and cash flow analysis may shed some light about the relative importance of some financial motivations and theoretical hypotheses in explaining initial stock repurchases. In particular, our findings support the risk reduction signaling and the dividends substitution hypotheses as the primary drivers for the initial stock repurchase decision. We also find that the importance of the most theoretical explanations and financial motivations vary according to whether initial repurchase firms are also conducting acquisitions and significant divestitures, distributing cash dividends, relying on external financing and using debt or cash reserves.

THE CAPITAL AND CASH FLOW SOURCES AND APPLICATIONS OF INITIAL STOCK REPURCHASE FIRMS

1. Introduction

Firms use stock repurchases as an instrument of financial policy related to investment, financing, cash flow distribution and management compensation decisions. Presumably, firms define their financial policies according to the flow of economic and financial information they possess, which may evolve over time. To capture that flow of information directly is, of course, a Herculean task, if possible at all. However, we argue that this information may be included in a firm's financial attributes, such as cash levels, debt ratios and several cash flow variables. Therefore, we believe that both ex-ante and ex-post information about these financial stocks and flows may help to explain financial transactions (as argued by Jagannathan *et al*, 2000 and Lie, 2005, among others). In fact, some empirical studies focus on cash flows as an indicator of financial strength (Guay and Harford, 2000; Jagannathan *et al*., 2000; Evans *et al*., 2001). We agree, but as Lie (2005) stresses, firms may have accumulated substantial cash balances or low debt ratios despite current low operating cash flows. These cash accumulations or low debt ratios may arise from strong operating cash flows in the past or recent extraordinary cash flows, such as asset and division sales. A complete picture of financial conditions requires not only cash flow characteristics but also financial stocks (or stocks of capital), like equity, leverage and cash.

Thus, we are interested in initial stock repurchase transactions and the information content conveyed by financial flows (several operating, extraordinary, investment and financing flows) but also by financial stocks. In this context, we hypothesize that firms initiate stock repurchases for the first time according to several financial motivations which are explained by different theoretical hypotheses, and those may be better identified if we use other (recent) past and future financial transactions, related to both capital and cash flow uses (as acquisitions and dividend payments) and capital and cash flow sources (e.g., external or internal, extra or regular cash flows, leverage related or cash related financing and divestitures). For instance, we may argue that firms engaging in substantial divestments could use stock repurchases with a different rationale than firms which are not making divestments.

The overall research question of this study is: which capital and cash flow variables induce firms to repurchase their own stock for the first time? Thus, this study investigates the capital and cash flow sources and uses of firms that are conducting stock repurchase transactions for the first time, both prior and subsequent to those financial operations. We achieve this by decomposing the statement of cash flows in several variables with important financial meaning (operating cash flows, extraordinary cash flows, change in debt and in external equity, capital expenditures, etc) and analyzing financial stocks on the balance sheet (cash and debt mostly) and their change over time.

We also explore the role of acquisitions and divestitures in explaining the initial repurchase decision. We believe that this type of cash flow analysis will provide valuable insights into why firms choose to repurchase stock for the first time, by reflecting managerial decision making relative to operating, investing and financing trade-offs and correspondent signals concerning firms' financial health and strategic performance (regardless of whether management deliberately uses financial flows for signaling and conveying information to the financial markets). In addition, we also analyze the impact of these variables on other important financial attributes of the firm, such as growth, operating risk and market-to-book. Finally, this analysis enables us to study several empirical hypotheses with the potential to provide important insights that better explain initial stock repurchases.

Using a sample of initial stock repurchase firms and a matched-control sample of non-repurchase firms, we find evidence consistent with the risk reduction signaling (Jagannathan *et al*., 2000; Grullon and Michaely, 2004; Lie, 2005) and the dividend substitution (Grullon and Michaely, 2002) theoretical hypotheses. Our findings also support the flexibility motivation for distributing extraordinary cash flows (especially divesting cash flows) related to the dividend substitution theory (Guay and Harford, 2000; Grullon and Michaely, 2002). We find that the risk reduction signaling hypothesis is significant for initial repurchase firms with the following attributes: larger size, non-dividend payers, acquirers, cash and debt financed and with positive external financing, whereas the dividend substitution hypothesis has consistent support in all quartiles of size and sub-samples. The other theoretical explanations and financial motivations for initial repurchasing have, at most, only mixed support.

The most similar paper to our empirical analysis is a working paper by Evans *et al*., (2001), which also analyze the level and changes of cash flow components of firms conducting stock repurchases, using similar quantitative methodologies. However, it differs in several points. First, we only analyze initial stock repurchases. Second, Evans *et al*., (2001)

use only five financial cash flow concepts (free cash flow, net operating flow, net investment flows, net working capital flows and net financing flows). We do not use the net working capital flows related to operating decisions because we want to explore more strategic decisions, such as acquisitions, divestitures and capital expenditures. Further, we use all other cash flow concepts and decompose a little farther the net investment cash flows and the net financing cash flows and also explore the impact of dividends on stock repurchases and vice-versa. Finally, we analyze initial stock repurchase firms in isolation and compared to contemporaneous industry and size matched sample of firms that never repurchased their stock before.

The goal of this study is to contribute to and expand upon previous empirical studies. First, this is the first study that attempts to explain the capital and cash flow attributes of initial repurchase firms. Even for overall stock repurchases, there are only a few studies we are aware of, that attempt to explain these attributes and our investigation is more complete. Further, while considerable attention has been devoted in the financial literature to related subjects, such as stock repurchases versus (extra and regular) dividend payments, little consideration has been given to both the financing of stock repurchase decisions and the relation between stock repurchases and other mechanisms of cash flow distribution. Therefore, while we agree that market, stockholder and institutional factors may have strong influence in the initial repurchase decision, we hope that the focus of our study on other fundamental determinant of this decision, the capital and cash flow sources and uses of firms, may be considered as an important contribution to the literature.

The remainder of this paper is organized as follows. In the next section, we review the relevant literature. We present our hypotheses and empirical predictions in section 3. Section 4 provides information about data, sample selection and methodology used. Section 5 presents and discusses the empirical results and section 6 provides the conclusions.

2. Review of Related Literature

Financial theory and empirical literature offer little guidance on initial stock repurchase events, in contrast to with related topics, such as dividend initiations and stock repurchases in general. In chapters 2 and 3, we discuss the determinants and timing of this type of financial transaction, with an extended literature review of stock repurchases. Dittmar (2000) also presents an excellent literature review of stock repurchases. Here, the focus is on

the financial literature about both financing and capital uses related to specific transactions, such as investments, acquisitions and, in particular, (extra or regular) cash dividends and stock repurchases (never specifically on initial repurchases).

Although they are strongly related and sometimes very hard to isolate (stock repurchases are a perfect example), most articles study each dimension (financing and uses) in isolation, rarely together. For instance, there is a huge flow of literature on the factors that drive the composition of payout decisions, in particular the choice between cash dividends (levels and increases) and stock repurchases (e.g., Jagannathan *et al*., 2000; Guay and Harford, 2000; Fama and French, 2001; Grullon and Michaely, 2002 and 2004). In spite of some disagreement in relation to the substitution effect between these two payout devices[1], some papers conclude that dividend increasers have different financial characteristics than stock repurchase firms, in terms of size (e.g., Fama and French, 2001; DeAngelo *et al*., 2002; Alan and Michaely, 2002), operating and permanent cash flows (e.g., Stephens and Weisbach, 1998; Fenn and Liang, 2001; Grullon and Michaely, 2002), operating volatility (e.g., Jagannathan *et al*., 2000; Lie, 2005), market-to-book ratios (e.g., Fama and French, 2001), ex-post profitability (e.g., Jagannathan *et al*., 2000; Guay and Harford, 2000), among others. Some papers find specific attributes for stock repurchase firms in relation to regular dividend payers (e.g., Grullon and Michaely, 2002; Lie, 2005) and/or extra-dividend payers (e.g., Howe *et al*., 1992; Lie 2000 and 2005), and only stock repurchases (e.g., Nohel and Tarhan, 1998; Kahle, 2002; Jagannathan-Stephens, 2003; Grullon and Michaely, 2004). Summarizing, most of these studies conclude that stock repurchase firms have higher operating risk and higher transitory cash flows than regular dividend payers, while extra-dividend payers lie somewhere in between the other two types of firms. They also offer mixed support for both the free cash flow and signaling theoretical hypotheses but they all agree that the underlying flexibility is a strong motivation for stock repurchases.

However, as discussed by Cai (2005), it is only by simultaneously examining payout decisions and other cash flows uses (such as acquisitions and investments in new ventures) that one can have a more complete and sharper view of the theories offered to explain the cash distribution behavior of firms. Also, Brav *et al*., (2005) find that decision makers view payout choices as an important component of overall cash flow uses. Related to this view, an early study by Bagwell and Shoven (1988) examines the role of acquisitions and stock

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[1] Grullon and Michaely (2002) argue that larger firms do not cut dividends but replace dividend increases with stock repurchases. In contrast, Fama and French (2001) posit that the lower propensity to pay dividends is motivated by a changing population of publicly traded firms and that stock repurchase firms continue to pay dividends, while others have attributes of non-dividend paying firms.

repurchases as mechanisms of distributing cash flow (own firm or other firm's purchase of stock) and find that both transactions may be related to free cash flow considerations (stock repurchases mitigate agency costs, while acquisitions may increase them). More recently, Cai (2005) argues that repurchase firms and acquisition firms belong to different phases of the life cycle. He suggests a pecking order of uses and points out that, after exhausting internal investment opportunities, some firms are still in a mode of outside expansion (acquiring other firms), while others start to distribute cash to stockholders in the form of stock repurchases and/or dividends, because they may be in a later phase of the life cycle. These latter firms may choose not to pursue acquisitions because they are usually value destroying (Harford, 1999; Opler *et al*., 1999). In support of this, Brav *et al*., (2005) also report that stock repurchase decisions are of secondary importance in relation to both capital expenditures and acquisitions. Other empirical works discuss the relation between acquisitions and dividends. For instance, Denis *et al*., (1994) and Yoon and Starks (1995) find that capital expenditures increase following dividend increases.[2] Finally, Shyam-Sunder and Myers (1999) argue that adverse selection in the "pecking-order" works in the opposite direction when the firm has financial slack and seeks to distribute cash to stockholders. When management is more confident about the future prospects of the firm, they prefer to repurchase stock rather than to reduce debt because they perceive their firm's stock as undervalued.

On another front, there has been very little effort made to explain the financing side of stock repurchases, as researchers may argue that they are, in fact, a mechanism of making financing decisions in order to increase leverage (this would not occur only if and only if the stock repurchase transaction is financed solely by … a stock issue).[3] Lie (2005) is a notable exception. Lie (2005) finds that firms that use debt to finance the repurchase have lower volatility of operating income than firms that use cash (which he labels as cash-rich firms) and concludes that debt-financed repurchases are similar to dividend increases in that both are undertaken by firms with low operating risk, probably because both events effectively commit future cash flows to be distributed to stockholders. Two other papers, by Barth and Kasznick (1999) and Evans *et al*., (2001), also study cash flow formation prior to and following stock repurchase transactions. Barth and Kasznick (1999) study the relation between stock repurchases and intangible assets and show that the market reactions to stock repurchase

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[2] Other studies show that stock repurchases may be used as a mechanism to prevent takeovers (Schleifer, 1986; Bagwell, 1991; and Persons, 1994).

[3] We include the studies on the impact of the type of cash flow (operating or permanent versus extraordinary and transitory) available to firms that distribute them to stockholders (such as Stephens and Weisbach, 1998; Guay

announcements are negative when stock repurchase firms have excess cash and lack attractive investment alternatives. They demonstrate that by constructing three proxies for "idle cash" using the concepts of operating, investing and financing cash flows. Evans *et al*., (2001) is the closest paper to ours. It analyzes the level of and changes in cash flow components of firms conducting stock repurchases, using similar quantitative methodologies. They conclude that, subsequent to repurchases, net working capital, net operating flow and external finance reliance decrease, while net investing flow actually increases. They conclude that their findings support free cash flow as a primary driver for repurchasing stock. Finally, Billet and Xue (2004) study stock repurchase firms financed with external equity, to show that these firms are special, as they have better investment opportunities, less internal cash flow and face severe financial constraints. The spirit of this article is close to ours but its focus is only on the external equity financing and the signaling role of stock repurchase announcements by firms that rely on external equity.

Of course, there have been some papers which analyze the financing of other cash flow uses. For instance, Harford (1999) shows that cash rich firms are more likely to conduct acquisitions (although these transactions are usually value-decreasing, as evidenced by negative stock returns). Elsas *et al*., (2006) analyze the financing decisions for "major investments" (they label them as "major" when the investment exceeds 200% of the firm's past three year average investment level) and find that those major investments are mostly externally financed, with debt playing the dominant role. However, they show that internal financing increases over time, thus reversing the initial effect of debt finance. They also find that financing proportions vary with firm size, with smaller firms relying more on external equity finance.

3. Hypotheses Development and Empirical Predictions

3.1. Hypotheses and Predictions to the Complete Sample of Initial Repurchase Firms

Some financial literature (Jagannathan *et al*., 2000; Grullon and Michaely, 2004; Lie, 2005, among others) predict that stock repurchase firms tend to be moderate-to-large, mature firms, with low leverage and growth potential, large cash reserves, higher profits and with

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and Harford, 2000; and Jagannathan et al., 2000) as literature related to payout decisions, instead of related to the financing side of stock repurchases.

higher non-operating cash flows. To test whether these findings apply to initial repurchases, we predict that firms are more likely to conduct initial repurchases if managers believe that their firms have enough financial strength due to the following: (i) the current stock of cash is relatively high, (ii) the current debt ratio is relatively low, although (iii) the operating volatility is relatively large, (iv) there were recent large transitory inflows, and (v) future growth will not be very high. The underlying arguments related to these predictions, in particular, excess cash and low leverage ratios and growth, highlight the free cash flow and maturity hypotheses.

Guay and Harford (2000) and Jagannathan *et al*., (2000) argue that dividend increases will be observed following permanent improvements in operating cash flows, while stock repurchases will be used to distribute more transitory and non-operating cash flows in order to avoid over-investment problems. Therefore, we test a second, related hypothesis: we predict that initial stock repurchases will be positively related to extraordinary cash flows, such as extraordinary items and divestitures.

However, the operating signaling hypothesis is also plausible as an alternative explanation of initial stock repurchases. For instance, Nohel and Tarhan (1998) argue that management use stock repurchases to signal confidence in improved future operating performance, either operating cash flow increases or operating risk decreases. However, alternatively, the cash or debt employed in financing stock repurchases may result in less cash or less debt available to invest in capital expenditures and acquisitions. Thus, another interpretation of the initial repurchase as a signal is that the firms lack attractive investment opportunities (e.g., Grullon and Michaely, 2004). In order to test this theoretical explanation of stock repurchases, we will analyze whether increases over time in both market-to-book and operating cash flows occur in the overall sample of initial repurchases.

In addition to these predictions related to the full sample, we test other hypotheses related to the sub-samples in the sections that follow. In particular, we will check for the dividend characteristics of several sub-samples of firms, as we believe that this is a privileged test of the dividend substitution hypothesis (as long as the maturity hypothesis may also apply).

3.2. Hypotheses and Predictions to the Samples of Dividend Payers and Non-Dividend Payers

The studies on dividend increases (e.g., Healy and Palepu, 1988; Benartzi *et al*., 1997; Grullon, *et al*., 2002), cash dividends initiations (e.g., Bulan *et al*., 2006; Kale *et al*., 2006) and special versus regular dividend increases (e.g., Brickley, 1983; Lie, 2000) show that dividend payments convey more positive information when they are more "sticky" payments (Lintner, 1956; Fama and Babiak, 1968; Asquith and Mullins, 1983). In the same spirit, like extra dividends, stock repurchases are also one-time cash disbursements. This leads to the following prediction: initial stock repurchases conducted by dividend payers are not related to signaling operating performance improvements, but rather to free cash flow or maturity considerations. This prediction may not be valid for non-dividend payers.

In addition, we test the dividends substitution hypothesis by analyzing whether initial repurchase firms that are also dividend payers will have the same or different changes in dividends and total payouts, relative to their matched counterparts.

3.3. Hypotheses and Predictions to the Samples of Acquisition and Non-Acquisition Firms

As discussed before, acquisitions and stock repurchases are concurrent uses, which are on the opposite side of Jensen's free cash flow hypothesis (Bagwell and Shoven, 1988; Cai, 2005). We will check if either of these two sub-samples (ex-ante, all firms are non-repurchase firms) have different (ex-ante and ex-post) characteristics which may explain why they choose to repurchase stock for the first time and have different behaviors in terms of acquisitions.

Denis *et al*., (1994) and Yoon and Starks (1995) find that capital expenditures increase following dividend increases. We predict that this may also occur following initial stock repurchases meaning that these transactions would not be related to the avoidance of free cash flow problems and managerial overinvestment. On the contrary, increased acquisition spending is plausibly a more accurate manifestation of free cash flow agency problems.

Finally, the choice between stock repurchases and acquisitions involves managerial discretion, while capital expenditures and other cash spending can be "sticky" (Brav *et al*., 2005). Thus, we can check if data reflects a priority structure in terms of capital uses between stock repurchases and acquisitions. Cai (2005) argues that there is a pecking order of capital uses because stock repurchase firms belong to a later phase of the firm life cycle, in relation to firms that engage in acquisitions. If this is true, then initial repurchase firms should decrease their acquisitions spending, while the non-acquisitions sample of initial repurchase firms

should maintain their track record of no acquisitions. In addition, they should present more maturity attributes ex-post (such as, low growth and operating risk, and higher cash balances).[4]

3.4. Hypotheses and Predictions for Firms with Negative and Positive External Financing

Firms with negative reliance on external financing may conduct initial repurchases with different motivations and in response to different theoretical determinants relative to those which rely on both internal and external financing. Therefore, we predict that the former have maturity attributes (especially, low growth), may suffer from free cash flow problems (avoiding the so-called "market discipline") or aim to signal operating risk reduction, while this may not be valid for the latter firms.

3.5. Hypotheses and Predictions for Cash and Debt Financing of Initial Stock Repurchases

Large cash reserves are a valuable source to finance stock repurchases. However, these cash accumulations may generate agency problems as firms increase their ability to spend large sums while removing the discipline of the external financial market from their capital allocation decisions. Therefore, the behavior of firms in accumulating large amounts of cash is consistent with the free cash flow hypothesis related to potential over-investment decisions. In view of this, we predict that the flexibility and independence that the cash reserves provide to firms may induce stock repurchases to mitigate these potential free cash flow agency costs. One may argue that cash accumulation or, alternatively, having particularly low debt ratios, have a similar impact on firm value because they both provide flexibility to firms in order to pursue expansion and acquisitions. But while the accumulation of cash reserves reduces a firm's reliance on external financing, low leverage ratios only increase the debt capacity of the firm, thus increasing the likelihood of new external financing. We expect that stock

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[4] As a robustness check, we will also compare two non-matched sub-samples of acquisition firms: one with initial repurchase firms and another with non-repurchase firms. In this way we check whether the maturity hypothesis or Cai's pecking order will prevail for initial repurchase firms.

repurchases financed by debt have more ambiguous financial motivations (than those that imply only a decrease in cash balances), which may be explained by the performance signaling hypothesis, as additional debt is a stronger commitment to future payments (Grullon and Michaely, 2002), risk reduction signaling (Lie, 2005) or the dividends substitution hypothesis (Lie, 2005). To summarize, we aim to test whether initial stock repurchases financed by cash are consistent with the free cash flow hypothesis, and whether the initial repurchases financed by debt or any other financing arrangements (both debt and cash, divestments, etc) have different underlying motivations and are explained by different theoretical hypotheses.

3.6. Hypotheses and Predictions for Samples with Significant and Non-Significant Divestitures

Financial literature usually claims that firms that have experienced a non-recurring accumulation of cash, for example due to divestitures or asset sales, should distribute this excess cash through stock repurchases rather than through an increase in cash dividends (since this latter would commit the firm to pay higher future dividends, whereas stock repurchases are generally stand-alone actions or one-time cash disbursements). All else equal, divesting activity may be considered an exogenous and transitory increase in the capital available to several uses, that should be more likely to be distributed by repurchasing stock. In contrast, firms that divest could be giving a signal of approaching maturity and the absence of growth opportunities. In addition, these firms may be reversing previous "empire building" activities, in order to mitigate free cash flow problems. We expect to find the former statement, rather than the two latter ones. This leads to our following prediction for initial stock repurchase firms that conduct significant divestments: the combination of divestments and stock repurchases is only an integrated signal that the firm is conducting a reorganization (thus focusing its activity only in some core businesses). Therefore, we expect that initial stock repurchase firms which engage in divestments are neither approaching maturity, nor suffer from free cash flow problems.

4. Data and Methodology

4. 1. Sample Selection and Data Collection

In this study, we analyze the capital and cash flow sources and uses of initial stock repurchase firms and empirically examine the extent to which firms formulate their repurchase decision according to some theoretical hypotheses. The data for this study came from Compustat database for the period 1975 through 2004, inclusive. We focus on actual stock repurchases and track a sample of 630 firms listed on NYSE, AMEX and NASDAQ which went public after 1975, and that initiated stock repurchases in the period of 1980-2002 (henceforth, initial repurchase firms or "initial repurchasers"). An initial repurchase is defined as the first repurchase that a firm makes since its IPO. We will assume that the IPO year is the first year in which the firm had a positive stock price on Compustat (as Baker and Wurgler, 2002; Lemmon and Zender, 2003 and Bulan *et al.*, 2006). We use the measure of stock repurchases that Allen and Michaely (2002) and Banyi *et al.*, (2005) consider as the most accurate (or least biased) measure of the actual dollar amount spent on repurchases that they name as Compustat purchases of common and preferred stock adjusted for the change in preferred stock.[5] We follow previous literature when we further restrict the sample to initial repurchases that represent more than one million US dollars. Also, in line with previous studies, we truncate all variables at the top and bottom one percentiles and we exclude those firms for which several relevant variables from our analysis are missing. We further excluded financial companies and utilities (SIC codes 4813, 4900-4999 and 6000-6999) from our sample.

4. 2. Variables

To study the sources and uses of capital and cash flow of initial stock repurchase firms, we will use a set of variables related to the financial strength of a firm, which includes several concepts and measures of cash flow (operating, free, extraordinary, investment and financing flows) and their main components (e.g., we divide external financing into external

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[5] The Compustat data item overstates open market repurchases of common stock for a number of reasons (Stephens-Weisbach, 1998; Jagannathan et al 2000). First, it includes repurchases of preferred stock. Second, it includes a variety of other transactions such as the conversion of other classes of stock into common stock. In some cases Compustat data item #115 corresponds to repurchases net of equity issuance, which *Compustat* indicates with a combined figure code. Therefore, we identify stock repurchases as the amount of purchase of common and preferred stock (Compustat data item #115) minus any reduction in the value (retirement,

equity and change in debt and we divide the investing cash flow into capital expenditures, acquisitions and divestments), and also capital stocks (as equity, debt and cash). We use other key measures of interest, such as market-to-book, growth opportunities and operating risk, all of which can affect a firm' financial health.

We examine ex-ante and ex-post differences and also changes in firms' attributes over the period in which initial repurchases take place. We use three-year averages for all variables (unless otherwise noted) as in Jagannathan *et al* (2000), both because it is possible that firms may initiate stock repurchases in response to cumulative performance, liquidity and risk from the previous years and also in order to reduce noise induced by year-to-year variations in many of the variables. That is, average values for years –3 through –1 relative to the initial repurchase year are used for variables prior to the initial repurchase year and average values for years 0 through +2 relative to the initial repurchase year are used for the variables subsequent to the repurchase initiation. In this context, the sample for our analysis is limited to the period from 1980 to 2002 to allow for measurement of prior and subsequent variables.

The absolute values of all variables are scaled by total assets (#6), unless otherwise stated, to control for scale effects and mitigate heteroskedasticity. Table 1 presents a synthesis of the definition and measure of all variables used.

4.3. Methodology

Our main goal is to study initial stock repurchases using a more developed set of capital and cash flow variables than previous studies related to other financial transactions. We identified operating cash flow, extraordinary cash flows (extraordinary items and divestitures), change in debt and change in external equity as financing sources and capital expenditures, acquisitions, dividends and stock repurchases and changes in dividends as uses. We track net changes in these variables in periods surrounding the initial repurchase event. As we are interested in the potentially unique role of initial repurchases, we use the matched-pairs methodology in order to understand the real specificity of these transactions. We achieve this by using a cross-section of initial repurchase firms matched to a control sample that includes non-repurchase firms. Each initial repurchase firm-year observation is paired with a non-repurchase firm-year observation that is closest in terms of size (measured by total assets,

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conversion, and/or redemption of preferred stock, Compustat items #56 and #130) of the net number of preferred stocks outstanding.

within an interval of +/-25%) and within the same industry grouping (assuming the 4-digit SIC code as primary matching and 2-digit SIC code for the remaining cases). This analysis provides us with the possibility of testing several empirical hypotheses and theoretical explanations by using statistical procedures, such as differences in means or medians testing, and logistic regressions.[6]

We have constructed our sub-samples according to the hypotheses we aim to test. First, we consider one firm as belonging to the non-dividend sub-sample and the non-acquisition sub-sample, if the firm does not pay any cash dividend or engage in acquisitions, respectively, in the three years preceding the initial repurchase year. Analogously, we include one firm in the negative external financing sub-sample if that firm has a negative value for the external financing variable (change in debt plus change in external equity). In addition, we consider that a initial stock repurchase is financed by cash if two situations occur simultaneously: the cash balance value decreases and the debt ratio also decreases. We include an initial stock repurchase in the debt financed sub-sample if, again, two situations occur simultaneously: the debt ratio also increases and the cash balance value also increases. All other situations are included in the sample of non-debt or cash financed repurchases. Finally, we construct two sub-samples for testing the impact of significant divestitures on the theoretical labeling of (initial) stock repurchases. We include an initial repurchase firm in the significant divesting firms if that firm has a value for the divesting cash flow variable higher than 5%. Otherwise, the firm will be included in the non-significant divesting sub-sample.[7]

5. Results

5.1. Results From the Complete Sample of Initial Repurchase Firms

Tables 2A to 2C and panel 1 of table 4 show the results of our univariate analysis and logistic regressions, respectively, related to our full sample of initial repurchase firms and their matched non-repurchase counterparts. In short, our evidence offers empirical support for some of our hypotheses reported in section 3.1. In particular, initial repurchase firms have

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[6] As a robustness check, we used three alternative logistic models, one without any changes in the variables, the other with only cash, leverage and operating cash flow changes and the last one with most variable changes (the one displayed in tables 4). Again, the results were very similar.

significantly higher cash balances and operating cash flows, lower leverage and operating volatility, and no significant differences in terms of growth (confirmed by the absence of significant differences in capital expenditures, acquisitions and total investing cash flows).

These findings support the overall hypothesis that initial repurchase firms have greater financial strength than their matched non-repurchase firms. Initial repurchase firms also have higher transitory cash flows that come from divestitures, as predicted. Our findings support the risk reduction signaling hypothesis for repurchases of Grullon and Michaely (2004), because the coefficient of changes in operating risk has a significant negative value. Two predictions related to the dividend substitution hypothesis are also supported. First, consistent with the flexibility motivation for repurchasing (Guay and Harford, 2000; Grullon and Michaely, 2002, among others), we find that initial repurchases seem to be used to distribute non-operating cash flows that are not likely to be sustainable in the long term, as is the case of divesting cash flows. Further, the coefficients of changes in dividends (CHDIV) and changes in CHDIV variables in table 4 panel 1 are negative and significant, while the coefficients of total payouts (DIVREP) and changes in DIVREP are positive and significant. These results suggest that initial repurchases are followed by changes in the magnitude and composition of total payouts, in which dividend increases are substituted by stock repurchases. The fact that the differences relative to the matched samples in the variables that represent the payout policy are significant only ex-post, indicate that initial repurchases may configure the start of a relevant change in the composition of payout policy in favor of a higher proportion of stock repurchases in total payouts.

The other hypotheses tested have, at most, only mixed support. Although table 2A shows that initial repurchase firms have higher median cash balances than non-repurchase firms and table 2C reports a significant decrease in cash balances (both in absolute terms and in relation to non-repurchase firms), table 4 panel 1 shows that cash and changes in cash do not increase the initial repurchase likelihood. Their coefficients are actually negative and significant. Further, there are no significant differences in terms of growth. Thus, although initial repurchase firms have higher operating cash flows both prior to and subsequent to initial repurchases, the free cash flow hypothesis and the excess cash distribution motivation for repurchases are not supported. The same conclusion applies to the operating performance signaling and maturity hypotheses. First, the operating signaling hypothesis is not supported as both changes in market-to-book and in operating cash flows are negatively related to initial

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7 As a robustness check, we tried other than 5% cutting points, as 3% and 2%, but both the number of observations in each sub-sample and the results, remained the same.

repurchase likelihood. Further, most financial attributes of approaching maturity do not increase initial repurchase likelihood (with the exception of decreases in operating risk). Finally, initial repurchase firms have lower debt ratios but the negative sign of change in leverage in table 4 panel 1 does not allow us to reach a conclusion about the relevance of the increasing leverage motivation for initial stock repurchases.

5.2. Results From the Sample of Dividend and Non-Dividend Payers

Tables 3 (panels 1 and 2) and 4 (panel 2) show the results of our univariate analysis and logistic regressions, respectively, for the sub-samples of initial repurchase firms that are dividend and non-dividend payers, and their matched non-repurchase firms. The main differences between the two sub-samples are the following: dividend payers have lower operating risk, cash balances, acquisitions spending and divesting cash flows, higher capital expenditures and present decreases in total investing cash flows. Also, the dividend payers sub-sample is one of the few that does not present decreases ex-post in market-to-book ratios. Both sub-samples present decreases in cash but in neither do we find significant increases in debt ratios (although they have prior lower debt ratios relative to their matched non-repurchase firms).

The logistic regressions presented in table-panel 2 have other interesting results. Dividend payers conduct initial repurchases in response not only to their lower operating risk and leverage but also to higher extraordinary items. Non-dividend payers also conduct initial repurchases for their lower operating risk and leverage (and future changes in those variables) and in response to extra cash flow related to divestitures.

These results seem to slightly support the risk reduction signaling hypothesis (due to the significant negative relation of changes in operating risk and initial repurchase likelihood) and the free cash flow hypothesis (especially for having higher operating cash flows and disgorging excess cash balances) for non-dividend payers and the maturity hypothesis for dividend payers (mainly due to decreases in the three categories of investing cash flows and in the total external financing). Furthermore, we document evidence supporting the flexibility motivation for both sub-samples and distributing excess cash for the sub-sample of non-dividend payers. Finally, there are some differences in terms of future cash flow distributions. As in most sub-samples, the increases in total payouts and decreases in changes in dividends are significant. In addition, we find that non-dividend payers do not increase changes in dividends in the future, while dividend payers increase total payouts only slightly. These findings support the Fama and French (2001) contention that repurchase firms that are dividend payers are different from non-dividend payers because the latter firms maintain their policy of not paying dividends while the former may conduct repurchases for distributing extraordinary cash flows but also pay dividends. However, it also seems that dividend payers

may sometimes substitute dividend increases for stock repurchases (Grullon and Michaely, 2002).

5.3. Results From the Sample of Acquisition and Non-Acquisition Firms

When comparing the two sub-samples of firms, considering the matched-samples on tables 3 (panels 3 and 4) and 4 (panel 3), we find that the acquisition firms have higher leverage and lower operating risk, (internal) growth and cash balances than the sample of non-acquisition firms. Furthermore, in contrast to non-acquisition firms, their market-to-book ratios, (internal) growth and cash balances decrease. In terms of other cash flow statement items (of course, not including acquisitions), we document that the non-acquisitions sub-sample of firms has significantly higher divesting cash flows and relies less on external financing (both leverage and equity). We consider this to be evidence that acquisitions are financed by external financing (in addition to cash balances). Interestingly, the sub-sample of non-acquisition firms that are also initial repurchase firms is the only one for which the debt ratios are higher for initial repurchase firms than their matched counterparts (both ex-ante and ex-post). The same holds true for the sub-sample of acquisition firms in terms of non-significant changes in cash balances, which is not a common result.

However, in spite of being interesting, the results reported below do not help us much in explaining why a firm conducts an initial repurchase. There is no clear support of any theoretical hypothesis and most of the differences in financial attributes of these two sub-samples seem to be related to whether they do or do not conduct acquisitions (e.g., lower internal growth, lower external financing). Furthermore, we do not find that there is a pecking order of financial applications (Cai, 2005; Brav *et al*., 2005), in which repurchase firms are in a latter phase of the firm life cycle in relation to acquisition firms. On one hand, we note that the acquisition spending of initial repurchase firms that also conduct acquisitions decreases after the initial repurchase event. However, on the other hand, it is also true that acquisitions spending increases for the sub-sample of non-acquisition firms. Thus, it is plausible that non-acquisition firms will turn into acquisition firms after the initial repurchase. In addition, acquisition firms do not have attributes of more mature firms (in spite of their lower operating risk and lower internal growth), since they have higher total investing cash flows, lower cash balances and operating cash flows. In addition, we do not have evidence consistent with the statement that capital expenditures increase following initial repurchases (as found for

dividend increasers by Denis *et al*., 1994 and Yon and Starks, 1995).[8] Finally, we note that, for the sub-sample of acquisition firms, the differences relative to the matched samples in the payout variables are only significant ex-post, which indicates that the initial repurchase transaction marks an important change in the payout policy specially for these firms.

5.4. Results From the Samples of Firms with Negative and Positive External Financing

Our results are reported in tables 3 (panels 5 and 6) and 4 (panel 4). We find that initial repurchase firms with negative reliance on external financing present lower growth, operating risk and debt ratios and higher operating cash flows than their matched counterparts. However, the most striking result is that this sub-sample of initial repurchase firms is the only one to present the same market-to-book ratio as their control firms and a positive change in this ratio ex-post. This evidence seems to suggest that these firms use initial repurchases to signal their perceived undervaluation. As predicted, they have some attributes suggesting that they are in the maturity phase of their life cycle or that they face free cash flow problems (lower operating risk, growth and higher operating cash flows), while other variables suggest the opposite (relatively low cash balances and increases in total investing cash flows). The sub-sample of initial repurchase firms with positive external financing has some similar attributes to the other sub-sample but has much higher cash balances (that decrease ex-post) and diversting cash flows (that even increase ex-post). Therefore, they seem to be distributing excess cash and transitory cash flows to avoid incurring free cash flow agency costs. Finally, as in previous sections, in both samples the amount of change in dividends decreases over time, while the total payout increases substantially. This means that initial repurchases are followed by changes in the magnitude and composition of total payouts, in which dividend increases are substituted by stock repurchases. The ex-post differences are particularly strong for the positive external financing sub-sample.

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[8] As a robustness check, we compared two non-matched sub-sample of acquisition firms (a non-matched-pairs analysis): one with initial repurchase firms and the other with non-repurchase firms. In this way we checked whether the maturity hypothesis or the Cai's pecking order would prevail for initial repurchase firms. However, with the exception of higher leverage and lower (internal) growth, also presented in the initial repurchase sub-samples, there were no significant differences between the matched sample of non-repurchase firms (presented in table 3-panel 4) and the non-repurchase firms which are also acquisition firms.

5.5. Results From the Samples of Cash and Debt Financing of Initial Repurchases

Our results show that cash and debt financed transactions present different attributes that suggest different economic motivations and theoretical explanations underlying the decision to conduct initial repurchases (see table 3 - panels 7 and 8 - and table 4 - panel 5). Firstly, the debt financed firms present the same market-to-book as their matched-pairs, which even increases (although not significantly) ex-post. This may indicate that the increase in leverage and the stock repurchase decision may signal undervaluation, operating performance improvements (such as operating cash flow increases, although again not significantly), or both. This evidence is consistent with Grullon and Michaely (2002), who state that debt is a stronger commitment to the future and thus a stronger signal to markets. In contrast, the sub-sample of cash financed firms does not present any of these results. These latter firms present a stronger than expected decrease in leverage (more than 50% of the initial value, which is much more than anticipated due to the fact that we impose a decrease in leverage to categorize the sub-samples) and in cash balances (again, more than 60% of the initial value). However, we do not relate these findings to the free cash flow or maturity hypotheses, as this sub-sample presents higher values for the external equity financing variable and only small decreases in acquisitions and total investing cash flows. The non-debt or cash financed initial repurchases present attributes more closely related to those of the cash financed sub-sample, rather than the debt financed sub-sample. In addition, the data suggest that divesting cash flows, and thus the flexibility motivation, may have a role in explaining initial repurchases for this sub-sample. Finally, as before, we find that changes in dividends decrease and the total payouts increase over time for all sub-samples. For both cash and debt financed repurchases, the differences between the figures for these two variables relative to the matched samples are significant only ex-post. This indicates that initial repurchases in those cases may configure the start of a relevant change in the composition of payout policy in favor of a higher proportion of stock repurchases to total payouts.

5.6. Results From the Samples with Significant and Non-Significant Divestitures

We find evidence that initial repurchase firms that also conduct significant divestments (higher than 5% of total book assets) are doing so as a part of a reorganization process (see tables 3 - panels 10 and 11 - and 4 – panel 6). Neither the maturity, free cash

flow or any other hypothesis help us to explain these transactions. Our conclusion is due to the following significant results. Firstly, the firms in this sub-sample do not present lower growth and operating risk than their matched-pairs (in contrast to the sub-sample of non-significant divesting firms). In addition, over time, there is no significant increase in the debt ratio nor a significant decrease in cash balances. Also, we note that the divesting activity is contemporaneous with higher capital expenditures, so that these firms still have higher total investing cash flows than initial repurchase firms included in the non-significant divesting sub-sample, both ex-ante and ex-post. Furthermore, the sub-sample of significant divesting firms is one of the few initial repurchase sub-samples that does not present a significant decrease in market-to-book, which may suggest that reorganizations do not have a negative impact on stock market prices. Finally, again, the amount of change in dividends decreases over time, while total payouts increase substantially. Thus, the substitution of dividend increases by stock repurchases is once again supported.

5.7. Is There a Size Effect?

The matched-pairs design has both the drawback and the benefit of mitigating (at least partially) the size effect in our empirical analysis. Therefore, one last test is in order: we are now splitting our initial repurchase observations in quartiles of size to analyze whether our conclusions apply irrespective of size by using logistic regressions for each quartile.

We find that some variables have statistical significance only for low size observations (the negative impact of market-to-book ratios and the positive effect of operating cash flows, change in external equity and change in capital expenditures), while others have significant effect only in the higher quartiles (the negative impact of operating risk and changes in operating risk). From these results, we conclude that the operating risk reduction signaling hypothesis is only supported for larger size initial repurchase firms. In addition, only the four variables directly related to payout policy have significant effect for all (or almost all) size quartiles: the DIVREP, CHDIVREP, CHDIV and CHCHDIV. The two former variables have a positive impact and the latter two a negative effect on initial repurchase likelihood. All other variables have either little (or no) impact or contradictory signs. However, no case is there to conclude that a specific theoretical hypothesis or financial motivation is specific to a particular quartile.

6. Conclusions

In this study we investigate the capital and cash flow sources and uses of initial stock repurchase firms, using univariate analysis and logistic regressions. Overall, our evidence is broadly consistent with the risk reduction signaling (Jagannathan *et al*., 2000; Grullon and Michaely, 2004; Lie, 2005) and the dividend substitution (Grullon and Michaely, 2002) theoretical hypotheses. Our findings are also consistent with the flexibility motivation for distributing extraordinary cash flows (especially divesting cash flows) related to the dividend substitution theory (Guay and Harford, 2000; Grullon and Michaely, 2002). We find that the risk reduction signaling hypothesis is significant for initial repurchase firms with the following attributes: larger size, non-dividend payers, acquirers, cash and debt financed and with positive external financing, whereas the dividend substitution hypothesis has consistent support in all quartiles of size and sub-samples. In addition, the other theoretical explanations and financial motivations for initial repurchasing have, at most, only slight support. We were not able to find significant improvement in future operating cash flows relative to matched counterparts in any sub-sample of initial repurchase firms used (Lie and McConnell, 1998; Grullon and Michaely, 2002), although initial repurchase firms typically generate more operating cash flows than their matched counterparts prior to and after the initial repurchase event. One exception, may be valid for smaller initial repurchase firms, however. Furthermore, subsequent to the initial repurchase decision, the external financing variables always decline. This reduced reliance on external financing combined with a decrease in operating cash flows and operating risk suggest initial repurchase firms are reaching maturity, but other evidence, like constant growth and increases in total investing cash flows, suggests otherwise. Furthermore, in most sub-samples, initial repurchase firms have lower debt ratios. However, the negative sign of change in leverage in most logistic regressions does not allow us to reach a conclusion on the relevance of increased leverage as a motivation for initial stock repurchases. Finally, although the median cash balances of initial repurchase firms decrease substantially ex-post, most of our evidence indicates that the significance of cash and changes in cash in explaining initial repurchase likelihood is surprisingly low and has unexpected negative signs. Therefore, the excess cash motivation for initial repurchases is also not supported.

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Table 1: Definition and Measurement of Variables

List of variables used with definition and Compustat code. Data for firms characteristics are obtained from the Compustat database.

Variables	Definition	Compustat #
SIZE	Natural log of the book value of assets	ln(#6)
LEVERAGE	Book value of total debt	(#9+#44)/#6
CASH	Cash balances	#1/(#6-#1)
MARKET-TO-BOOK	Equity market-to-book ratio	(#24*#25)/#60
OPRISK	Operating risk	Stdev(#18/#6)
GROWTH	Capex advertising and R&D	(#128+#45+#46)/#6
EXTITEMS	Extraordinary items	(#106+#124+#213+#217+#314)/#6
OPCF	Operating cash flow	(#110+#308)/#6
CHDEBT	Change in total debt	(#9+#44)(t/t-1/#6
CHEXTEQ	Change in external equity	#108
AFINCF	Adjusted financing cash flow	CHDEBT+CHEXTEQ
CAPEX	Capital expenditures	(#113+#128+#310)/#6
ACQUIS	Acquisitions	#129/#6
DIVEST	Divesting cash flow	(#107+#109+#309)/#6
INVCF	Investing cash flow	CAPEX+ACQUIS-DIVEST
TCF	Total cash flow	OPCF+AFINCF
DIVREP	Dividends and repurchases	[(#21+#115-#56(t/t-1)]/#6
CHDIV	Change in dividends	#21(t/t-1)/#6

Table 2A: Ex-Ante Descriptive Statistics for Event Firms and Non-Repurchase Firms

Summary descriptive statistics for event firms (R1) and for non-repurchase matched-pairs control firms (R0). Ex-ante means that calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). A t-test on differences in means is performed for ACQUIS, DIVEST, DIVREP and CHDIV. A non-parametric Mann/Whitney ranksum test on differences in medians between these two types of firms is conducted for all other variables. The sign *** denotes significance at 1%-level, ** indicates significance at 5%-level and * denotes significance at 10%-level. See Table 2 for variable definitions and text for details.

Variables	Event Firms (R1)			Non-Repurchase Firms (R0)			Difference
	Mean	St. Dev.	Median	Mean	St. Dev.	Median	
MARKET-TO-BOOK	3.502	4.421	2.498	3.413	6.268	2.054	***
LEVERAGE	0.172	0.179	0.124	0.222	0.238	0.148	***
CASH	0.418	0.677	0.166	0.482	1.175	0.124	*
GROWTH	0.133	0.09	0.115	0.154	0.146	0.120	
OPRISK	0.066	0.108	0.035	0.101	0.220	0.039	**
EXTITEMS	0.018	0.091	0.005	0.030	0.108	0.005	
OPCF	0.097	0.102	0.100	0.053	0.158	0.071	***
CHDEBT	0.014	0.093	0.000	0.028	0.134	0.004	**
CHEXTEQ	0.099	0.132	0.047	0.119	0.175	0.039	
AFINCF	0.113	0.159	0.076	0.147	0.215	0.091	**
CAPEX	0.112	0.178	0.073	0.107	0.126	0.076	
ACQUIS	0.037	0.072	0.002	0.034	0.067	0.000	
DIVESTCF	0.034	0.151	0.001	0.020	0.054	0.001	**
INVCF	0.115	0.121	0.096	0.122	0.124	0.098	
TCF	0.210	0.152	0.189	0.200	0.161	0.175	*
DIVREP	0.018	0.070	0.001	0.015	0.045	0.000	
CHDIV	0.006	0.025	0.000	0.006	0.023	0.000	

Table 2B: Ex-Post Descriptive Statistics for Event Firms and Non-Repurchase Firms

Summary descriptive statistics for event firms (R1) and for non-repurchase matched-pairs control firms (R0). Ex-post means that calculations are based on three-year averages subsequent to the initial repurchase event (years 0 to +2). A t-test on differences in means is performed for ACQUIS, DIVEST, DIVREP and CHDIV. A non-parametric Mann/Whitney ranksum test on differences in medians between these two types of firms is conducted for all other variables. The sign *** denotes significance at 1%-level, ** indicates significance at 5%-level and * denotes significance at 10%-level. See Table 2 for variable definitions and text for details.

Variables	Event Firms (R1)			No Repurchases Firms (R0)			Difference
	Mean	St. Dev.	Median	Mean	St. Dev.	Median	
MARKET-TO-BOOK	2.749	2.358	2.137	2.750	3.639	1.890	***
LEVERAGE	0.181	0.172	0.144	0.248	0.270	0.177	
CASH	0.330	0.522	0.121	0.380	0.938	0.106	
GROWTH	0.122	0.086	0.108	0.129	0.109	0.102	
OPRISK	0.066	0.113	0.035	0.122	0.184	0.046	***
EXTITEMS	0.021	0.071	0.007	0.046	0.157	0.009	***
OPCF	0.096	0.074	0.092	0.061	0.148	0.070	***
CHDEBT	0.018	0.074	0.002	0.015	0.092	0.001	
CHEXTEQ	0.035	0.063	0.010	0.042	0.077	0.012	
AFINCF	0.053	0.088	0.033	0.058	0.121	0.037	
CAPEX	0.125	0.248	0.069	0.113	0.155	0.066	
ACQUIS	0.032	0.052	0.010	0.028	0.066	0.003	
DIVEST	0.054	0.242	0.002	0.040	0.138	0.002	
INVCF	0.104	0.097	0.089	0.101	0.111	0.082	
TCF	0.148	0.106	0.138	0.118	0.168	0.113	***
DIVREP	0.037	0.046	0.023	0.013	0.034	0.000	***
CHDIV	0.002	0.005	0.000	0.003	0.015	0.000	**

Table 2C: Ex-Post Versus Ex-Ante Medians for Event Firms and Non-Repurchase Firms
In this table, we calculate medians for event firms (R1) and for non-repurchase matched-pairs control firms (R0) for all variables except ACQUIS, DIVEST, DIVREP and CHDIV, for which we calculate means. Ex-ante means that variable calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). Ex-post means that calculations are based on three-year averages subsequent to the initial repurchase event (years 0 to +2). A t-test on differences in means is performed for ACQUIS, DIVEST, DIVREP and CHDIV. A non-parametric Mann/Whitney ranksum test on differences in medians between these two types of firms is conducted for all other variables. The sign *** denotes significance at 1%-level, ** indicates significance at 5%-level and * denotes significance at 10%-level. See Table 2 for variable definitions and text for details.

Variables	Event Firms (R1)			Non-Repurchase Firms (R0)		
	Ex-Ante	Ex-Post	Difference	Ex-Ante	Ex-Post	Difference
MARKET-TO-BOOK	2.498	2.137	-0.361***	2.054	1.890	-0.164
LEVERAGE	0.124	0.144	0.020	0.148	0.177	0.029
CASH	0.167	0.121	-0.056**	0.124	0.106	-0.018
GROWTH	0.115	0.108	-0.007*	0.120	0.102	-0.018***
OPRISK	0.035	0.035	0.000	0.039	0.046	0.007*
EXTITEMS	0.018	0.021	0.030	0.030	0.046	0.016**
OPCF	0.100	0.092	-0.008	0.071	0.070	-0.001
CHDEBT	0.000	0.002	0.002**	0.004	0.001	-0.003
CHEXTEQ	0.047	0.010	-0.037***	0.039	0.012	-0.027***
AFINCF	0.076	0.033	-0.042***	0.091	0.037	-0.054***
CAPEX	0.073	0.069	-0.004	0.076	0.066	-0.010
ACQUIS	0.037	0.032	-0.050	0.034	0.028	-0.006
DIVEST	0.034	0.054	0.020*	0.020	0.041	0.021***
INVCF	0.096	0.089	-0.007*	0.098	0.082	-0.016***
TCF	0.189	0.138	-0.061***	0.174	0.113	-0.061***
DIVREP	0.019	0.037	0.016***	0.015	0.013	-0.002
CHDIV	0.006	0.002	-0.004***	0.006	0.003	-0.003**

Table 3-Panels 1 (Dividend Payers) and 2 (Non-Dividend Payers): Ex-Post Versus Ex-Ante Medians for Event Firms and Non-Repurchase Firms

In this table, we calculate medians for event firms (R1) and for non-repurchase matched-pairs control firms (R0) for all variables except ACQUIS, DIVEST, DIVREP and CHDIV, for which we calculate means. Ex-ante means that variable calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). Ex-post means that calculations are based on three-year averages subsequent to the initial repurchase event (years 0 to +2). A t-test on differences in means is performed for ACQUIS, DIVEST, DIVREP and CHDIV. A non-parametric Mann/Whitney ranksum test on differences in medians between these two types of firms is conducted for all other variables. The sign *** denotes significance at 1%-level, ** indicates significance at 5%-level and * denotes significance at 10%-level. See Table 2 for variable definitions and text for details.

Panel 1: Dividend Payers

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	2.312	1.872	***	2.137	1.899	**	
OPERATING RISK	0.024	0.030	**	0.027	0.039	***	
GROWTH	0.094	0.092		0.085	0.088		
LEVERAGE	0.139	0.182	**	0.173	0.221	***	
CASH	0.097	0.094		0.058	0.090		*
OPCF	0.110	0.076	***	0.096	0.078	***	
EXTITEMS	0.011	0.022		0.015	0.037	**	
CHDEBT	0.003	0.010	*	0.006	0.004		
CHEXTEQ	0.025	0.035		0.005	0.007		***
AFINCF	0.055	0.086		0.020	0.024		***
CAPEX	0.079	0.063	*	0.061	0.063		
ACQUIS	0.036	0.044		0.028	0.039		
DIVEST	0.029	0.020		0.043	0.023		
INVCF	0.104	0.096		0.082	0.086		**
TCF	0.173	0.154		0.131	0.113	***	***
DIVREP	0.035	0.012	***	0.046	0.013	***	*
CHDIV	0.017	0.004	***	0.005	0.003	**	***

Panel 2: Non-Dividend Payers

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	2.598	2.145	***	2.137	1.882	***	***
OPERATING RISK	0.043	0.044		0.041	0.048	***	
GROWTH	0.129	0.132		0.123	0.109		
LEVERAGE	0.113	0.137	**	0.129	0.163	**	
CASH	0.223	0.142	**	0.179	0.122	*	**
OPCF	0.094	0.069	***	0.087	0.066	***	
EXTITEMS	0.022	0.033		0.025	0.051	***	
CHDEBT	0.000	0.002		0.000	0.000		**
CHEXTEQ	0.063	0.045		0.015	0.014		***
AFINCF	0.096	0.094		0.037	0.042		***
CAPEX	0.067	0.080		0.073	0.070		
ACQUIS	0.037	0.029	*	0.034	0.023	***	
DIVEST	0.037	0.020	**	0.060	0.049		*
INVCF	0.091	0.099		0.092	0.080	*	
TCF	0.199	0.186		0.140	0.112	***	***
DIVREP	0.011	0.016		0.033	0.013	***	***
CHDIV	0.000	0.007	***	0.000	0.003	***	

Table 3-Panels 3 (Non-Acquisitions Sample) and 2 (Acquisitions Sample): Ex-Post Versus Ex-Ante Medians for Event Firms and Non-Repurchase Firms

In this table, we calculate medians for event firms (R1) and for non-repurchase matched-pairs control firms (R0) for all variables except ACQUIS, DIVEST, DIVREP and CHDIV, for which we calculate means. Ex-ante means that variable calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). Ex-post means that calculations are based on three-year averages subsequent to the initial repurchase event (years 0 to +2). A t-test on differences in means is performed for ACQUIS, DIVEST, DIVREP and CHDIV. A non-parametric Mann/Whitney ranksum test on differences in medians between these two types of firms is conducted for all other variables. The sign *** denotes significance at 1%-level, ** indicates significance at 5%-level and * denotes significance at 10%-level. See Table 2 for variable definitions and text for details.

Panel 3: Non-Acquisitions Sample

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	2.550	2.128	***	2.432	1.697	***	
OPERATING RISK	0.037	0.039		0.037	0.051	***	
GROWTH	0.132	0.125		0.131	0.111	*	
LEVERAGE	0.104	0.156	***	0.091	0.183	***	
CASH	0.218	0.122	***	0.189	0.114	***	
OPCF	0.108	0.068	***	0.101	0.073	***	
EXTITEMS	0.018	0.017		0.015	0.008	*	
CHDEBT	-0.002	0.022	***	0.000	0.000		***
CHEXTEQ	0.030	0.027		0.011	0.009		***
AFINCF	0.055	0.080	**	0.031	0.025		**
CAPEX	0.079	0.080		0.080	0.062	**	
ACQUIS	0.000	0.028	***	0.017	0.020		***
DIVEST	0.040	0.015	**	0.063	0.036		
INVCF	0.070	0.097	***	0.084	0.077		*
TCF	0.172	0.165		0.146	0.112	***	***
DIVREP	0.019	0.014		0.042	0.015	***	***
CHDIV	0.006	0.005		0.002	0.003		***

Panel 4: Acquisitions Sample

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	2.482	2.039	***	1.983	1.975		***
OPERATING RISK	0.033	0.040	***	0.031	0.041	***	
GROWTH	0.093	0.117	**	0.090	0.098		*
LEVERAGE	0.146	0.130		0.183	0.172		
CASH	0.136	0.130		0.080	0.098	*	***
OPCF	0.094	0.073	***	0.085	0.065	***	
EXTITEMS	0.005	0.006		0.008	0.011		***
CHDEBT	0.002	0.006	***	0.004	0.001		
CHEXTEQ	0.057	0.047		0.009	0.013		***
AFINCF	0.094	0.099		0.036	0.047		***
CAPEX	0.064	0.072		0.060	0.071	*	
ACQUIS	0.067	0.039	***	0.044	0.035	*	***
DIVEST	0.030	0.024		0.047	0.044		
INVCF	0.119	0.099	**	0.092	0.085		***
TCF	0.197	0.185		0.130	0.116	**	***
DIVREP	0.018	0.015		0.033	0.012	***	***
CHDIV	0.005	0.006		0.002	0.003	**	**

Table 3-Panels 5 (Negative External Financing) and 6 (Positive External Financing): Ex-Post Versus Ex-Ante Medians for Event Firms and Non-Repurchase Firms

In this table, we calculate medians for event firms (R1) and for non-repurchase matched-pairs control firms (R0) for all variables except ACQUIS, DIVEST, DIVREP and CHDIV, for which we calculate means. Ex-ante means that variable calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). Ex-post means that calculations are based on three-year averages subsequent to the initial repurchase event (years 0 to +2). A t-test on differences in means is performed for ACQUIS, DIVEST, DIVREP and CHDIV. A non-parametric Mann/Whitney ranksum test on differences in medians between these two types of firms is conducted for all other variables. The sign *** denotes significance at 1%-level, ** indicates significance at 5%-level and * denotes significance at 10%-level. See Table 2 for variable definitions and text for details.

Panel 5: Negative External Financing

| | Ex-Ante | | | Ex-Post | | | Ex-Post Minus |
	R1	R0	Change	R1	R0	Change	Ex-Ante
MARKET-TO-BOOK	1.759	1.690		1.967	1.692		**
OPERATING RISK	0.029	0.038	*	0.029	0.040	**	
GROWTH	0.091	0.108	*	0.086	0.100		
LEVERAGE	0132	0.195	***	0.123	0.224	***	
CASH	0.073	0.087		0.081	0.086		
OPCF	0.123	0.076	***	0.108	0.084	***	
EXTITEMS	0.007	0.004		0.005	0.008		
CHDEBT	-0.069	0.015	***	-0.000	0.011	**	***
CHEXTEQ	0.003	0.023	***	0.004	0.005		
AFINCF	-0.029	0.070	***	0.015	0.029	**	***
CAPEX	0.071	0.077		0.067	0.073		
ACQUIS	0.014	0.025	*	0.026	0.025		*
DIVEST	0.027	0.018		0.016	0.038	*	
INVCF	0.076	0.083	*	0.089	0.090		*
TCF	0.085	0.157	***	0.141	0.116		***
DIVREP	0.016	0.017		0.044	0.019	***	***
CHDIV	0.007	0.007		0.003	0.006		*

Panel 6: Positive External Financing

| | Ex-Ante | | | Ex-Post | | | Ex-Post Minus |
	R1	R0	Change	R1	R0	Change	Ex-Ante
MARKET-TO-BOOK	2.700	2.141	***	2.162	1.899	***	***
OPERATING RISK	0.037	0.040	**	0.036	0.047	***	
GROWTH	0.122	0.122		0.112	0.103		**
LEVERAGE	0.123	0.141	***	0.150	0.172	**	*
CASH	0.210	0.131	**	0.147	0.113		***
OPCF	0.094	0.069	***	0.089	0.068	***	
EXTITEMS	0.005	0.005		0.007	0.010		***
CHDEBT	0.007	0.003		0.003	0.000	*	
CHEXTEQ	0.071	0.043	***	0.013	0.013		***
AFINCF	0.101	0.096		0.036	0.039		***
CAPEX	0.073	0.077		0.070	0.066		
ACQUIS	0.041	0.036		0.033	0.029		**
DIVEST	0.036	0.020	**	0.062	0.041		*
INVCF	0.102	0.099		0.089	0.081		***
TCF	0.211	0.182	***	0.135	0.113	***	***
DIVREP	0.019	0.014		0.036	0.012	***	***
CHDIV	0.005	0.006		0.002	0.003	**	***

Table 3-Panels 7 (Cash Financed Repurchases), 8 (Debt Financed Repurchases) and 9 (Other Than Debt and Cash Financed Repurchases): Ex-Post Versus Ex-Ante Medians for Event Firms and Non-Repurchase Firms

In this table, we calculate medians for event firms (R1) and for non-repurchase matched-pairs control firms (R0) for all variables except ACQUIS, DIVEST, DIVREP and CHDIV, for which we calculate means. Ex-ante means that variable calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). Ex-post means that calculations are based on three-year averages subsequent to the initial repurchase event (years 0 to +2). A t-test on differences in means is performed for ACQUIS, DIVEST, DIVREP and CHDIV. A non-parametric Mann/Whitney ranksum test on differences in medians between these two types of firms is conducted for all other variables. The sign *** denotes significance at 1%-level, ** indicates significance at 5%-level and * denotes significance at 10%-level. See Table 2 for variable definitions and text for details.

Panel 7: Cash Financed Repurchases

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	2.477	1.940	*	2.010	1.954		**
OPERATING RISK	0.034	0.042	**	0.028	0.044	***	
GROWTH	0.109	0.108		0.116	0.095		
LEVERAGE	0.165	0.150		0.076	0.171	***	***
CASH	0.194	0.120	*	0.084	0.104		***
OPCF	0.088	0.066	***	0.085	0.072	*	
EXTITEMS	0.006	0.006		0.006	0.009		
CHDEBT	-0.003	0.000	**	-0.000	0.000	*	
CHEXTEQ	0.068	0.034	*	0.007	0.012		***
AFINCF	0.062	0.071		0.016	0.030	***	***
CAPEX	0.066	0.071		0.063	0.061		
ACQUIS	0.038	0.030		0.029	0.023		
DIVEST	0.034	0.017	*	0.064	0.049		
INVCF	0.083	0.096		0.078	0.078		
TCF	0.175	0.156		0.106	0.120		***
DIVREP	0.013	0.016		0.032	0.013	***	***
CHDIV	0.004	0.006		0.001	0.003	**	**

Panel 8: Debt Financed Repurchases

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	1.956	2.156		2.129	1.948		
OPERATING RISK	0.031	0.036		0.038	0.048		
GROWTH	0.122	0.127		0.113	0.110		
LEVERAGE	0.142	0.141		0.269	0.167	***	***
CASH	0.054	0.090	***	0.104	0.112		***
OPCF	0.073	0.056	*	0.083	0.070		
EXTITEMS	0.005	0.006		0.005	0.008		
CHDEBT	0.024	0.017		0.049	0.000	***	**
CHEXTEQ	0.025	0.051	**	0.009	0.013		*
AFINCF	0.081	0.123	**	0.078	0.043		
CAPEX	0.078	0.082		0.062	0074		
ACQUIS	0.039	0.040		0.036	0.024		
DIVEST	0.022	0.030		0.050	0.045		
INVCF	0.104	0.125		0.089	0.087		
TCF	0.179	0.192		0.159	0.117	***	
DIVREP	0.014	0.024		0.030	0.011	***	**
CHDIV	0.008	0.007		0.001	0.002		**

Panel 9: Non-Debt or Cash Financed Repurchases

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	2.655	2.059	***	2.214	1.771	***	***
OPERATING RISK	0.036	0.038		0.037	0.045	***	
GROWTH	0.116	0.124		0.103	0.103		
LEVERAGE	0.112	0.152	***	0.143	0.183	***	*
CASH	0.199	0.136	**	0.135	0.103		***
OPCF	0.106	0.075	***	0.098	0.069	***	
EXTITEMS	0.004	0.004		0.008	0.010		
CHDEBT	0.000	0.005		0.001	0.001		
CHEXTEQ	0.048	0.039		0.012	0.011		***
AFINCF	0.080	0.093		0.035	0.040		***
CAPEX	0.074	0.075		0.071	0.065		
ACQUIS	0.036	0.035		0.032	0.031		
DIVEST	0.037	0.019	**	0.051	0.036		
INVCF	0.099	0.096		0.095	0.082		
TCF	0.200	0.177	**	0.147	0.108	***	***
DIVREP	0.022	0.012	**	0.041	0.014	***	***
CHDIV	0.006	0.005		0.002	0.003		**

Table 3-Panels 10 (Non-Significant Divesting Firms - less than 5pp) and 11 (Significant Divesting Firms - more than 5pp): Ex-Post Versus Ex-Ante Medians for Event Firms and Non-Repurchase Firms

In this table, we calculate medians for event firms (R1) and for non-repurchase matched-pairs control firms (R0) for all variables except ACQUIS, DIVEST, DIVREP and CHDIV, for which we calculate means. Ex-ante means that variable calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). Ex-post means that calculations are based on three-year averages subsequent to the initial repurchase event (years 0 to +2). A t-test on differences in means is performed for ACQUIS, DIVEST, DIVREP and CHDIV. A non-parametric Mann/Whitney ranksum test on differences in medians between these two types of firms is conducted for all other variables. The sign *** denotes significance at 1%-level, ** indicates significance at 5%-level and * denotes significance at 10%-level. See Table 2 for variable definitions and text for details.

Panel 10: Non-Significant Divesting Firms (less than 5pp)

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	2.526	2.128	***	2.109	1.950	*	***
OPERATING RISK	0.035	0.040	**	0.034	0.048	***	
GROWTH	0.104	0.117	*	0.101	0098		
LEVERAGE	0.121	0.140	**	0.131	0.170	**	
CASH	0.153	0.131		0.110	0.123		*
OPCF	0.097	0.066	***	0.091	0.062	***	
EXTITEMS	0.004	0.004		0.007	0.009		***
CHDEBT	0.000	0.004	**	0.003	0.006		***
CHEXTEQ	0.056	0.044		0.010	0.013		***
AFINCF	0.078	0.091	*	0.034	0.040		***
CAPEX	0.058	0.068	***	0.058	0.060	*	
ACQUIS	0.041	0.033	*	0.035	0.027	**	
DIVEST	0.001	0.019	***	0.016	0.038	***	***
INVCF	0.091	0.091		0.085	0.078		
TCF	0.187	0.170	**	0.135	0.110	***	***
DIVREP	0.019	0.012	**	0.037	0.011	***	***
CHDIV	0.006	0.004		0.002	0.003		***

Panel 11: Significant Divesting Firms (more than 5pp)

	Ex-Ante			Ex-Post			Ex-Post Minus Ex-Ante
	R1	R0	Change	R1	R0	Change	
MARKET-TO-BOOK	2.443	1.892	***	2.169	1.710	***	
OPERATING RISK	0.035	0.039		0.036	0.041	*	
GROWTH	0.132	0.132		0.115	0.111		
LEVERAGE	0.132	0.165	**	0.158	0.203	**	
CASH	0.184	0.101	***	0.151	0.086	*	
OPCF	0.109	0.076	***	0.094	0.085		
EXTITEMS	0.007	0.006		0.006	0.010	**	
CHDEBT	0.003	0.007		0.002	0.001		
CHEXTEQ	0.041	0.032		0.010	0.012		***
AFINCF	0.073	0.091		0.030	0.032		***
CAPEX	0.123	0.091	***	0.104	0.077	***	
ACQUIS	0.028	0.037		0.027	0.030		
DIVEST	0.097	0.021	***	0.125	0.044	***	
INVCF	0.105	0.113		0.094	0.095		
TCF	0.192	0.190		0.141	0.122		***
DIVREP	0.017	0.020		0.038	0.018	***	*
CHDIV	0.004	0.009	**	0.002	0.004	**	**

Table 4-Panel 1: Logistic Regressions of Initial Repurchase Firms and Non-Repurchase Firms - All Observations

This table presents coefficient estimates from logistic regressions predicting initial repurchasing likelihood for a sample of initial repurchase firms and a matched-pairs control sample of non-repurchase firms. The first model uses absolute values for all variables, except equilibrium equations from cash flow statements. The second model employs the same absolute values for all variables and changes (ex-post values less ex-ante values) in some variables to allow empirical testing for selected hypotheses. Definitions of the variables employed here are provided in Table 1.

Variables	Model 1			Model 2		
	Coef.	p-value	Signif.	Coef.	p-value	Signif.
MARKET-TO-BOOK	-0.000	0.968		-0.053	0.064	*
OPERATING RISK	-1.188	0.079	*	-3.197	0.001	***
GROWTH	-1.732	0.026	**	-0.933	0.290	
LEVERAGE	-1.342	0.000	***	-1.171	0.001	***
CASH	-0.110	0.109		-0.175	0.181	
OPCF	3.430	0.000	***	2.121	0.072	*
EXTITEMS	0.607	0.489		0.194	0.818	
CHDEBT	0.502	0.523		1.469	0.079	*
CHEXTEQ	0.855	0.185		1.008	0.158	
CAPEX	-0.664	0.342		-0.395	0.690	
ACQUIS	0.366	0.726		1.312	0.339	
DIVEST	2.437	0.011	**	2.250	0.071	*
DIVREP	1.407	0.245		49.46	0.000	***
CHDIV	-6.540	0.150		-149.4	0.000	***
CHMARKET-TO-BOOK				-0.064	0.018	**
CHOPERATING RISK				-1.433	0.049	**
CHGROWTH				0.428	0.698	
CHLEVERAGE				-1.170	0.008	***
CHCASH				-0.019	0.926	
CHOPCF				0.248	0.768	
CHCAPEX				0.631	0.503	
CHACQUIS				1.412	0.197	
CHDIVEST				-0.611	0.610	
CHDIVREP				49.97	0.000	***
CHCHDIV				-146.5	0.000	***
McFadden R-squared		4.82%				20.24%

Table 4-Panel 2: Logistic Regressions of Initial Repurchase Firms and Non-Repurchase Firms - Dividend Payers and Non-Dividend Payers

This table presents coefficient estimates from logistic regressions predicting initial repurchasing likelihood from a sample of initial repurchase firms and a matched-pairs control sample of non-repurchase firms. The model employs the same absolute values for all variables and changes (ex-post values less ex-ante values) in some variables to allow empirical testing for selected hypotheses. Definitions of the variables employed here are provided in Table 1.

Variables	Dividend Payers			Non-Dividend Payers		
	Coef.	p-value	Signif.	Coef.	p-value	Signif.
MARKET-TO-BOOK	-0.059	0.445		-0.083	0.021	**
OPERATING RISK	-4.665	0.014	**	-3.224	0.000	***
GROWTH	-2.205	0.247		-1.552	0.189	
LEVERAGE	-1.775	0.026	**	-1.322	0.006	***
CASH	-0.719	0.250		-0.241	0.258	
OPCF	3.402	0.206		3.096	0.062	*
EXTITEMS	-5.444	0.071	*	1.191	0.218	
CHDEBT	0.646	0.721		2.684	0.048	**
CHEXTEQ	0.003	0.999		1.570	0.146	
CAPEX	1.711	0.350		-1.013	0.421	
ACQUIS	-2.214	0.432		2.631	0.247	
DIVEST	-0.728	0.780		3.560	0.035	**
DIVREP	61.39	0.002	***	59.64	0.000	***
CHDIV	-149.1	0.014	**	-2007	0.000	***
CHMARKET-TO-BOOK	-0.056	0.470		-0.110	0.001	***
CHOPERATING RISK	-1.441	0.530		-1.103	0.056	*
CHGROWTH	1.915	0.522		0.292	0.819	
CHLEVERAGE	-1.106	0.263		-1.277	0.027	**
CHCASH	-0.309	0.622		-0.049	0.874	
CHOPCF	-3.860	0.178		0.327	0.687	
CHCAPEX	0.225	0.910		0.963	0.432	
CHACQUIS	-0.607	0.756		3.954	0.048	**
CHDIVEST	1.049	0.658		-1.627	0.351	
CHDIVREP	56.66	0.003	***	56.80	0.000	***
CHCHDIV	-170.5	0.005	***	-85.58	0.018	**
McFadden R-squared		27.89%			35.93%	

Table 4-Panel 3: Logistic Regressions of Initial Repurchase Firms and Non-Repurchase Firms - Acquisition Firms and Non-Acquisition Firms

This table presents coefficient estimates from logistic regressions predicting initial repurchasing likelihood for a sample of initial repurchase firms and a matched-pairs control sample of non-repurchase firms. The model employs the same absolute values for all variables and changes (ex-post values less ex-ante values) in some variables to allow empirical testing for selected hypotheses. Definitions of the variables employed here are provided in Table 1.

Variables	Acquisition Firms			Non-Acquisition Firms		
	Coef.	p-value	Signif.	Coef.	p-value	Signif.
MARKET-TO-BOOK	-0.097	0.023	**	-0.025	0.601	
OPERATING RISK	-2.425	0.124		-3.229	0.021	**
GROWTH	-1.429	0.288		0.185	0.897	
LEVERAGE	-0.993	0.037	**	-1.561	0.005	***
CASH	-0.103	0.409		-0.034	0.855	
OPCF	2.648	0.083	*	1.663	0.382	
EXTITEMS	-1.871	0.426		1.864	0.154	
CHDEBT	0.455	0.701		0.609	0.662	
CHEXTEQ	-0.393	0.714		1.477	0.213	
CAPEX	-0.335	0.823		0.687	0.687	
ACQUIS	6.529	0.000	***			
DIVEST	2.417	0.231		3.255	0.198	
DIVREP	59.96	0.001	***	41.56	0.002	***
CHDIV	-184.6	0.000	***	-118.8	0.003	***
CHMARKET-TO-BOOK	-0.118	0.001	***	-0.049	0.241	
CHOPERATING RISK	-2.265	0.011	**	-1.366	0.256	
CHGROWTH	0.878	0.468		1.744	0.355	
CHLEVERAGE	-0.209	0.750		-2.679	0.002	***
CHCASH	0.065	0.759		0.087	0.820	
CHOPCF	1.875	0.230		-0.861	0.511	
CHCAPEX	-1.112	0.393		1.548	0.340	
CHACQUIS	1.732	0.157		13.12	0.000	***
CHDIVEST	1.047	0.544		-1.182	0.474	
CHDIVREP	57.04	0.001	***	40.75	0.001	***
CHCHDIV	-178.4	0.000	***	-110.5	0.004	***
McFadden R-squared			25.15%			23.55%

Table 4-Panel 4: Logistic Regressions of Initial Repurchase Firms and Non-Repurchase Firms - Negative and Positive External Financing Firms

This table presents coefficient estimates from logistic regressions predicting initial repurchasing likelihood for a sample of initial repurchase firms and a matched-pairs control sample of non-repurchase firms. The model employs the same absolute values for all variables and changes (ex-post values less ex-ante values) in some variables to allow empirical testing for selected hypotheses. Definitions of the variables employed here are provided in Table 1.

Variables	Negative External Financing Firms			Positive External Financing Firms		
	Coef.	p-value	Signif.	Coef.	p-value	Signif.
MARKET-TO-BOOK	-0.298	0.162		-0.048	0.074	*
OPERATING RISK	-1.263	0.826		-4.049	0.000	***
GROWTH	5.197	0.299		-1.351	0.162	
LEVERAGE	-4.507	0.117		-1.492	0.000	***
CASH	-0.075	0.965		-0.311	0.059	*
OPCF	13.08	0.144		2.825	0.029	**
EXTITEMS	0.164	0.983		0.438	0.618	
CHDEBT	-26.75	0.105		4.221	0.000	***
CHEXTEQ	-22.56	0.072	*	2.254	0.006	***
CAPEX	-6.068	0.450		-0.920	0.407	
ACQUIS	10.30	0.175		-0.330	0.824	
DIVEST	9.264	0.356		2.631	0.058	
DIVREP	14.24	0.338		48.86	0.000	***
CHDIV	-100.1	0.020	**	-145.6	0.000	***
CHMARKET-TO-BOOK	-0.428	0.047	**	-0.057	0.021	**
CHOPERATING RISK	-1.149	0.779		-1.692	0.032	**
CHGROWTH	9.319	0.128		-0.102	0.935	
CHLEVERAGE	-8.312	0.000	***	-0.638	0.192	
CHCASH	0.172	0.854		-0.164	0.444	
CHOPCF	2.470	0.660		0.680	0.444	
CHCAPEX	-2.817	0.606		0.964	0.376	
CHACQUIS	9.023	0.014	**	1.020	0.378	
CHDIVEST	-3.016	0.674		-0.696	0.607	
CHDIVREP	65.35	0.000	***	49.15	0.000	***
CHCHDIV	-126.9	0.013	**	-142.1	0.000	***
McFadden R-squared			57.82%			20.81%

Table 4-Panel 5: Logistic Regressions of Initial Repurchase Firms and Non-Repurchase Firms - Cash Financed and Debt Financed Initial Repurchase Firms

This table presents coefficient estimates from logistic regressions predicting initial repurchasing likelihood for a sample of initial repurchase firms and a matched-pairs control sample of non-repurchase firms. The model employs the same absolute values for all variables and changes (ex-post values less ex-ante values) in some variables to allow empirical testing for selected hypotheses. Definitions of the variables employed here are provided in Table 1.

Variables	Cash Financed			Debt Financed		
	Coef.	p-value	Signif.	Coef.	p-value	Signif.
MARKET-TO-BOOK	-0.158	0.076	*	0.105	0.442	
OPERATING RISK	-3.291	0.385		-2.967	0.549	
GROWTH	8.666	0.030	**	0.755	0.857	
LEVERAGE	-3.576	0.014	**	0.920	0.524	
CASH	-2.222	0.001	***	-2.522	0.011	**
OPCF	13.67	0.008	***	-4.037	0.418	
EXTITEMS	-8.913	0.014	**	1.809	0.322	
CHDEBT	11.72	0.004	***	1.969	0.637	
CHEXTEQ	12.44	0.001	***	-0.608	0.874	
CAPEX	-18.08	0.001	***	-2.198	0.667	
ACQUIS	9.278	0.080	*	-3.373	0.543	
DIVEST	14.92	0.001	***	-3.188	0.696	
DIVREP	17.45	0.264		73.10	0.044	**
CHDIV	-114.6	0.007	***	-240.3	0.060	*
CHMARKET-TO-BOOK	-0.294	0.001	***	0.070	0.564	
CHOPERATING RISK	-7.154	0.008	***	-6.188	0.057	*
CHGROWTH	12.52	0.102		12.57	0.033	**
CHLEVERAGE	-16.08	0.000	***	7.644	0.004	***
CHCASH	-2.561	0.001	***	3.204	0.010	***
CHOPCF	-3.708	0.325		-8.421	0.116	
CHCAPEX	-24.17	0.000	***	-10.55	0.046	**
CHACQUIS	5.820	0.200		2.397	0.610	
CHDIVEST	23.45	0.000	***	13.21	0.025	**
CHDIVREP	30.94	0.006	***	104.4	0.001	***
CHCHDIV	-126.2	0.001	***	-283.9	0.013	**
McFadden R-squared		64.25%			43.01%	

Table 4-Panel 6: Logistic Regressions of Initial Repurchase Firms and Non-Repurchase Firms - Significant and Non-Significant Divesting Firms

This table presents coefficient estimates from logistic regressions predicting initial repurchasing likelihood for a sample of initial repurchase firms and a matched-pairs control sample of non-repurchase firms. The model employs the same absolute values for all variables and changes (ex-post values less ex-ante values) in some variables to allow empirical testing for selected hypotheses. Definitions of the variables employed here are provided in Table 1.

Variables	Significant Divesting Firms			Non-Significant Divesting Firms		
	Coef.	p-value	Signif.	Coef.	p-value	Signif.
MARKET-TO-BOOK	-0.019	0.770		-0.087	0.017	**
OPERATING RISK	-3.908	0.021	**	-4.118	0.021	**
GROWTH	-0.188	0.913		-2.161	0.073	*
LEVERAGE	-1.374	0.034	**	-1.000	0.051	*
CASH	-0.329	0.385		-0.430	0.169	
OPCF	0.806	0.738		3.438	0.025	**
EXTITEMS	2.043	0.057	*	2.728	0.091	*
CHDEBT	1.703	0.284		2.257	0.038	**
CHEXTEQ	-0.134	0.940		1.677	0.078	*
CAPEX	0.394	0.814		-0.028	0.985	
ACQUIS	-1.208	0.594		2.111	0.292	
DIVEST	8.860	0.004	***	-244.7	0.000	***
DIVREP	30.57	0.043	**	73.76	0.000	***
CHDIV	-129.6	0.007	***	-170.7	0.000	***
CHMARKET-TO-BOOK	-0.040	0.515		-0.087	0.014	**
CHOPERATING RISK	-0.571	0.537		-1.425	0.386	
CHGROWTH	0.597	0.800		0.347	0.824	
CHLEVERAGE	-1.785	0.017	**	-0.713	0.261	
CHCASH	-0.058	0.880		-0.254	0.559	
CHOPCF	-1.214	0.586		1.381	0.324	
CHCAPEX	1.376	0.444		-0.857	0.581	
CHACQUIS	0.196	0.893		3.072	0.089	*
CHDIVEST	-1.321	0.559		1.152	0.570	
CHDIVREP	27.44	0.055		77.25	0.000	***
CHCHDIV	-86.97	0.070	**	-175.5	0.000	***
McFadden R-squared		20.82%			38.93%	

Table 4-Panel 7: Logistic Regressions of Initial Repurchase Firms and Non-Repurchase Firms - Size Quartiles

This table presents coefficient estimates from logistic regressions predicting initial repurchasing likelihood for a sample of initial repurchase firms and a matched-pairs control sample of non-repurchase firms. The model employs the same absolute values for all variables and changes (ex-post values less ex-ante values) in some variables to allow empirical testing for selected hypotheses. Definitions of the variables employed here are provided in Table 1.

Variables	Size Quartile 1		Size Quartile 2		Size Quartile 3		Size Quartile 4	
	Coeff	Signif.	Coeff	Signif.	Coeff	Signif.	Coeff	Signif.
MARKET-TO-BOOK	-0.11	*	-0.03		-0.00		-0.04	
OPERATING RISK	-1.32		-0.36		-6.66	***	-6.69	**
GROWTH	-1.40		-2.80		-0.17		-0.48	
LEVERAGE	-0.13		-1.06		-2.02	**	-1.04	
CASH	0.06		-0.96		-0.60		-0.18	
OPCF	3.78	**	4.85	**	2.33		-0.77	
EXTITEMS	-2.34		1.97		2.80	*	-1.34	
CHDEBT	2.23		3.29		3.54	*	-4.05	*
CHEXTEQ	3.21	**	2.72		-0.27		-2.69	
CAPEX	1.02		-1.72		1.03		1.04	
ACQUIS	0.61		-0.68		-1.31		0.37	
DIVEST	-0.20		4.66		1.23		3.09	
DIVREP	73.6	***	107	***	50.0	***	21.3	
CHDIV	-160	*	-320	***	-168	***	-78.1	*
CHMARKET-BOOK	-0.09		-0.07		-0.15		-0.08	
CHOPERATING RISK	0.07		-0.76		-5.92	***	-4.03	**
CHGROWTH	-5.02	*	3.37		5.19	*	2.30	
CHLEVERAGE	0.68		-2.56	*	-2.36	**	-1.48	
CHCASH	0.25		-0.65		-0.62		-0.39	
CHOPCF	0.71		1.93		-074		3.76	
CHCAPEX	6.29	**	-3.29		1.46		-1.06	
CHACQUIS	1.66		2.13		1.09		-3.82	
CHDIVEST	-5.51	*	0.23		-6.99	*	5.27	**
CHDIVREP	71.3	**	107	***	50.6	***	26.0	*
CHCHDIV	-137	*	-314	***	-160	***	-94.1	**
McFadden R-squared		17.96%		18.78%		20.95%		22.31%