The Determinants Of Initial Stock Repurchases

Article · January 2009

Source: RePEc

CITATIONS
5

READS
36

2 authors:

Luis Pacheco
Universidade Católica Portuguesa
5 PUBLICATIONS **6** CITATIONS
SEE PROFILE

Clara Raposo
University of Lisbon
25 PUBLICATIONS **299** CITATIONS
SEE PROFILE

THE DETERMINANTS OF INITIAL STOCK REPURCHASES

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

Preliminary Version
September, 2007

THE DETERMINANTS OF INITIAL STOCK REPURCHASES

ABSTRACT

We present univariate and multivariate evidence to show that firms which engage in initial stock repurchases have some specific economic and financial attributes when compared to size-and industry-matched firms. We find that initial repurchase firms are younger, have lower leverage and operating risk, and higher payouts, operating cash flows, profitability and market-to-book than matched non-repurchase firms. Compared to secondary or "seasoned" repurchase matched firms, these initial repurchase firms are also younger and have higher cash, profitability, sales growth and market-to-book, as well as lower payouts, leverage and retained earnings. Therefore, we analyze the determinants and motivations that may explain why firms repurchase their own stock for the first time by studying the theoretical hypotheses found in the financial literature that are most important in explaining initial stock repurchases. The results support the free cash flow and risk reduction signaling hypotheses and the flexibility motivation for conducting stock repurchases. We do not find strong support for any other theoretical explanations of stock repurchases, such as undervaluation signaling, timing, tax effects and options and dilution hypotheses.

JEL classification: G32; G35.

Key words: Stock Repurchases, Initial Stock Repurchases; Payout Policy, Theoretical Hypotheses.

THE DETERMINANTS OF INITIAL STOCK REPURCHASES

1. Introduction

Stock repurchases are an important financial policy instrument that affect multiple corporate decisions, like payout, capital structure, investment and management compensation policies. In addition, stock repurchases are increasingly important transactions in most developed stock markets (Stephens and Weisbach, 1998; Ikenberry *et al*., 2000; Lafer, 2002; Grullon and Michaely, 2002), as several empirical studies document their significant influence on the market valuation of a firm (including seminal works of Brigham, 1964; Elton and Gruber, 1968; Dann, 1981 and Vermaelen, 1981 and, more recently, for example, Grullon and Michaely, 2004). This must be the result of a cost-benefit analysis of all financial decision makers involved, who prefer stock repurchases vis-à-vis alternative mechanisms of financial policy that achieve similar results or effects.

In recent years stock repurchases have become an increasingly important instrument for distributing cash flows to stockholders, as stylized facts clearly show (Stephens and Weisbach, 1998; Fama and French, 2001, Grulon and Michaely, 2002 and 2004, among many others). For instance, Grullon and Michaely (2002) report that in 1998, the total value of open market repurchases exceeded the value of dividends for the first time. Further, it has become relatively common for firms to initiate multiple repurchase programs over a relatively short period of time (Jagannathan and Stephens, 2003). However, compared to the subject of stock repurchases as a whole or to the dividend initiation decision, we know almost nothing about the timing, motives and determinant factors for firms to repurchase their stock for the first time (henceforth, initial repurchases).

Therefore, the purpose of this paper is to study the determinants of initial repurchase transactions and to examine the validity of the several stock repurchases' theoretical hypotheses in explaining those initial transactions. To accomplish that, we use a matched-pairs methodology to develop effective univariate and multivariate cross-sectional comparisons (using logistic regressions) between initial repurchase firms and a contemporaneous size and industry-matched sample of both secondary repurchase firms (firms that have repurchased stock more than once) and firms that have never repurchased their stock before. We argue that matched-pairs analysis enables us to analyze the differences

between initial repurchase firms and each one of their control samples. By doing so, we are able to test whether initial repurchase firms are significantly different from all other firms, repurchase firms or not. For that purpose, our analysis focuses on actual stock repurchases made by US firms that went public over the 1975-2002 period.

We present univariate and multivariate evidence to show that firms which conduct initial stock repurchases have some specific economic and financial attributes in relation to size-and industry-matched firms. Compared to matched non-repurchase firms, we find that initial repurchase firms are younger, have lower leverage and operating risk, and higher payouts, operating cash flows, profitability and market-to-book. In relation to secondary repurchase matched firms, initial repurchase firms are younger, have higher levels of cash, profitability, sales growth and market-to-book, and lower payouts, leverage and retained earnings. Therefore, we analyze the determinants and motivations that may explain why firms repurchase their own stock for the first time by studying the theoretical hypotheses found in the financial literature that are most important in explaining initial stock repurchases. The results support the free cash flow and risk reduction signaling hypotheses and the flexibility motivation for conducting stock repurchases. We do not find strong support for any other theoretical explanations of stock repurchases, such as undervaluation signaling, timing, tax effects and options and dilution hypotheses.

The closest paper to our empirical analysis is from Jagannathan and Stephens (2003). In this paper, the authors analyze the frequency of stock repurchases and investigate why some firms repurchase stock more often than others. Jagannathan and Stephens (2003) argue that it is reasonable to assume that the motivations behind a firm initiating repurchase programs on a frequent basis are different from an isolated, infrequent repurchase. We argue, similarly, that initial repurchases might be motivated by a different rationale from secondary repurchases and that they appear at a particular point in time due to some fundamental economic reasons. As Jagannathan and Stephens (2003), we expect to observe significant differences in motivations and firm characteristics of firms that repurchased stock for the first time versus firms that repurchased for the second time or more (secondary repurchases) and versus firms that have never engaged in repurchase transactions.

However, our analysis is different from theirs at least in three aspects. First, their research question differs from ours. Their question is what determines the frequency of stock repurchases. We are interested in testing the potential dichotomous nature of initial and secondary repurchases, in addition to understanding why firms initiate a stock repurchase at a particular point in time. Second, Jagannathan and Stephens estimate an ordered logit model to investigate the types of repurchases, whereas we use logit models based on a matched-sample

analysis to focus on the differences in firms that repurchase their shares for the first time and both secondary repurchase firms and those firms that never repurchase any stock and not both samples at the same time. Third, we use actual repurchases (of all kinds, not only open-market repurchases), avoiding the common pitfalls of repurchase announcements (mentioned by Stephens and Weisbach, 1998; Dittmar, 2000; among others).[1]

We think that this study contributes to previous empirical studies in corporate finance, since this is the first study we are aware of that attempts to explain the initial repurchase decision. While considerable attention has been devoted in the financial literature to related subjects, such as dividend initiations or stock repurchases in general, perhaps surprisingly little consideration has been given to a firm's decision to first repurchase its own stock. Furthermore, our results add to previous findings in the empirical literature in comparing between dividend payers or increasers or extra-dividend payers to stock repurchase firms or among firms that repurchase frequently, occasionally or rarely.

The remainder of this paper is organized as follows. The next section contains a brief review of the literature on stock repurchases, concluding by focusing on the absent role of initial repurchases in that literature. Section 3 presents our hypotheses and empirical predictions. Section 4 provides information about data and methodology used. Section 5 presents and discusses the empirical results and section 6 presents some final remarks and provides the conclusions.

2. Literature review

2.1. Introduction

Early financial literature on stock repurchases was mainly empirical and focused on event-studies, which documented substantial positive stock price reaction to announcements of stock repurchases (e.g., Stewart, 1976; Dann, 1981; Vermaelen, 1981) and benefits for using a particular method for repurchasing stock (Comment and Jarrell, 1991; Kamma *et al.*, 1992; Lie and McConnell, 1998).

Presumably, the most cited theories of stock repurchases as a whole are the

[1] As Dittmar (2000) pointed out, examination of actual stock repurchasing activity (rather than announcements of repurchase programs) may be preferrable because changes in the announcements of repurchases do not always coincide with changes in actual repurchases (Stephens and Weisbach, 1998 show that, on average, firms repurchase between 74% and 82% of the shares announced as repurchase targets in open market repurchases). Further, Barth and Kasznick (2001) argue that the announcement should be an informative event, but the extent to which the announcement is anticipated by the market varies in time and across firms.

performance signaling (Bhattacharya, 1979; Miller and Rock, 1985, among others) and free cash flow agency costs theories (e.g., Easterbrook, 1984; Jensen, 1986) according to surveys by Stephens and Weisbach (1998) and Dittmar (2000). These theories have been analyzed extensively in the empirical literature on financial decisions, including stock repurchases, because they tend to be consistent with the most pervasive empirical findings. More recently, other theories have been labeled as truly important in explaining stock repurchases, such as the undervaluation theory (e.g., Asquith and Mullins, 1986; Ikenberry *et al*., 1995), the maturity theory (e.g., Grullon *et al*., 2002), the risk signaling theory (e.g., Grullon and Michaely, 2004; Lie, 2005), the dividend substitution hypothesis theory (e.g., Fama and French, 2001; Grullon and Michaely, 2002) and the equity market timing theory (e.g., Baker and Wurgler, 2002). Several empirical studies test the differential tax theory, related to both leverage and payout dimensions of stock repurchases (e.g., Barclay-Smith, 1988; Dittmar, 2000). Finally, the options and earnings dilution hypothesis is put forth here as a more explanation for stock repurchases (e.g., Jolls, 1998; Fenn and Liang, 2001; Kahle, 2002).

These theoretical explanations are consistent with several economic motivations (not mutually exclusive) that are usually found in the financial literature, including the existence of lower than target debt ratios (e.g., Bagwel and Shoven, 1988; Opler and Titman, 1996; Dittmar, 2000), the distribution of excess cash balances (e.g., Guay and Harford, 2000; Jaganathan *et al*., 2000), the flexibility in distributing payouts (e.g., Jagannathan *et al*., 2000; Grullon and Michaely, 2002), a mechanism for takeover defense (e.g., Denis, 1990; Bagwell, 1991) and for inside trading (e.g., Fried, 2001), several market microstructure effects (e.g., Brockman and Chung, 2001; Cook *et al*., 2003), managing earnings per share objectives (e.g., Badrinath *et al*., 2001; Bens *et al*., 2002), among other plausible motivations. In fact, it is quite likely that multiple objectives are contemporaneously driving managers' decisions for repurchasing their own stock due to the fact that stock repurchases influence at the same time the capital and ownership structures, and financial policies related to incentive compensation, investment, financing and stockholder remuneration.

Dittmar (2000) provides a detailed empirical test of these competing explanations and finds support for some of these explanations at different points in time. More recently, Dittmar and Dittmar (2007) argue that the main force that drives the timing of the aggregate value of stock repurchases is the business cycle.

2.2. Review of the Literature On Stock Repurchases

2.2.1. Signaling Hypothesis

One of the most commonly mentioned explanations for the existence of stock repurchase transactions is the signaling hypothesis or the information content of stock repurchases hypothesis. In effect, signaling theoretical models suggest that equity flows, including stock repurchases, may convey management's private information with value relevance from insiders-managers to outsiders-investors about improvements in either the firm's future operating performance (Bhattacharya, 1979; Miller and Rock, 1985; John and Williams, 1985; Hausch and Seward, 1993) or firm's future stock market performance (Ofer and Thakor, 1987).

In relation to the case of stock repurchases as a signal of future performance improvements, the rationale is that repurchases convey information about operating performance (high operating cash flows and operating profitability) and about financial flexibility (i.e., high cash levels or low debt ratios) and operating risk (low volatility of operating cash flows).[2] By using their private information, presumably managers can partially predict these two types of future performance improvements, and consider these predictions when making payout decisions. Therefore, theoretically, those decisions should convey valuable information to investors.

However, the empirical evidence on whether stock repurchases convey information about future performance is mixed and inconclusive. For example, some studies find that stock repurchases convey positive information about future operating profitability (e.g., Bartov, 1991; Jagannathan *et al*., 2000), while others find that they convey negative or no information about future performance (e.g., Bernatzi *et al*., 1997; Lie and McConnell, 1998; Grullon *et al*., 2002). Others argue that signaling models generally predict that payouts convey information about future cash flow, but this information might be related to the stability rather than the average level of such flow (Jagannathan *et al*., 2000; Grullon and Michaely, 2004; Lie, 2005). Of these studies, Jagannathan *et al*., (2000) find that firms that increase regular dividends exhibit lower volatility of operating income than firms that repurchase stock, and both groups of firms have lower volatility than firms that do not

2 As argued by Lie (2003), if stock repurchases convey some information about future performance, it must be about changes in the level or certainty of future operating cash flows because higher cash levels and lower debt ratios are necessary conditions to go through repurchase transactions without having to forego valuable investment opportunities or raise costly external finance.

increase their cash distributions. Grullon and Michaely (2004) and Lie (2005) show that stock repurchases may contain valuable information regarding future operating risk. This evidence that the signal may be related to a decreasing trend in operating risk or financial risk is, really, another kind of theoretical explanation related to a firm's lifecycle. The argument here is that the excess cash distributed by stock repurchases is no longer needed since these firms are now entering a more mature phase of their life cycle and, thus, have either high levels of cash balances, low debt ratios or even the expectation by managers of higher future operating cash flows far in excess of their growth opportunities.

Moreover, empirical evidence also shows that there are differences between dividend increases and stock repurchases as mechanisms for distributing cash to stockholders. For example, Guay and Harford (2000) and Jagannathan *et al*., (2000) find that both firms that increase dividends and firms that repurchase stock exhibit a significant positive cash flow shock and a post-event higher performance, but these results are more permanent for firms that increase dividends.

Finally, the signal could simply be that the firm's stock is currently under-valued without implying necessarily any future operating cash flows improvements in terms of magnitude and volatility (Ofer and Thakor, 1987). Most of the early literature on stock repurchases developed models and found empirical evidence consistent with this signaling of undervaluation, irrespective of the method used for repurchasing stock (Dann, 1981; Vermaelen, 1981; Comment and Jarrell, 1991; Ikenberry *et al*., 1995). More recently, some studies document a decreasing trend in the average abnormal returns related to stock repurchases (Lie, 2000; Jagannathan *et al*., 2000; Grullon and Michaely, 2002; Kahle, 2002) as Weston and Siu, 2002 point out.[3]

2.2.2. Free Cash Flow and other Agency Costs Hypotheses

The agency theoretical models of stock repurchase decisions are largely based on the free cash flow problem (Easterbrook, 1984; Jensen, 1986)[4]. The separation of ownership and control in most large firms may lead to conflicts of interest between managers and

3 Presumably, the use of stock repurchases during the stock crash of October 1987 was also explained by undervaluation. Netter and Mitchell (1989) and D'Mello and Schoff (2000) documented two supporting undervaluation signals: insiders in stock repurchasing firms were strong net buyers of their stock in that period. Therefore, managers had decided not only to repurchase stock, but also they invested in the stock as well.

4 The Easterbrook (1984) arguments, usually labeled as monitoring hypothesis, are somewhat different from those of Jensen (1986), as they include both the dividend signaling and the free cash flow hypothesis points of view. He argues that dividends are an effective mechanism to keep firms dependent of financial markets and, therefore, providing less costly monitoring for the stockholders.

stockholders. When a firm has an excess of free cash flows (the cash flow available after all value creating operating and investment decisions), presumably, managers have the incentive to take value destroying decisions with purposes of entrenchment and extraction of private benefits. In other words, some managers may over-invest, perhaps reflecting managerial "hubris" (Roll, 1986), over-optimism (Heaton, 2002) or a preference for "empire building" or "perquisites" (Jensen, 1986). Alternatively, managers may convey their intentions of minimizing wasteful expenditures by committing themselves to distribute cash out of the firm, for instance in the form of dividends or stock repurchases. As argued by Jensen and Meckling (1976), Grossman and Hart (1982), among many others, paying cash to stockholders, through either regular and extra dividends or stock repurchases, alleviates the manager-owner agency problem by constraining managerial ability to finance activities that are not in the best interests of stockholders. In addition, these cash distributions to stockholders increase the likelihood for managers to face the scrutiny of the stock and corporate control markets ("financial markets' discipline"), the competition in the labor market for managers and the pressure of financial insolvency ("debt discipline"). These effects are particularly noticeable in cases of large cash distributions, as is usually the case of stock repurchases.

However, empirical research about stock repurchases (always combined with regular and special dividends) present mixed evidence in support of the free cash flow hypothesis. For instance, Lang and Litzenberger (1989), Nohel and Tarhan (1998), Lie (2000 and 2005), Allen and Michaely (2002) have found evidence supporting the free cash flow hypothesis. In contrast, Howe *et al*., (1992), Denis *et al*., (1994), Perfect *et al*., (1995), among others, find opposing results, claiming that there may exist a potential negative signal of cash flow distributions associated with the lack of valuable growth options.

But there are other agency costs theoretical models for stock repurchase decisions with explanatory power, related to management entrenchment, like changing stockholder composition and fending off takeovers (e.g., Schleifer and Vishny, 1986; Stultz, 1988; Sinha, 1991; Bagwell, 1991 and 1992), inside trading (e.g., Fried, 2001), external managers monitoring mechanisms (e.g., Allen *et al*., 2000; Jagannathan *et al*., 2000; Grinstein and Michaely, 2005) and expropriation of debt value (Myers, 1977, Dann, 1981; Kalay, 1982).

According to Bagwell (1992), stock repurchases may be used as a takeover defense for two reasons. Firstly, the terms of a stock repurchase plan may be viewed more favorably than the takeover. Secondly, when a firm tenders for a percentage of its stock, the owners who offer their stock for sale are those with the lowest reservation prices. Hence, for a takeover bidder to succeed with the remaining higher reservation price stockholders, the premium

offered will have to be higher. This required higher premium may deter some potential acquirers from making bids. Further, for instance, Stulz (1988) argue that, given the non pro-rata attribute of stock repurchases, these transactions do increase the ownership percentage of the firm for the non-sellers, which may well be the case of managers and other insiders (Lee *et al*., 1992 and D'Mello and Schroff, 2000 find empirical support for this). If the transaction is large enough, specially in the case of tender-offers, the incentives for managers to act like owners of the firm will be strengthened but their potential entrenchment behaviors may also damage the wealth of the remaining stockholders (Berger *et al*., 1996).

Fried (2001) posits that stock repurchases, particularly through tender-offers, may be used for inside trading when the disclosure rules from stock market regulators are not sufficient to prevent value transfers from outsider investors to insiders, which he shows is the case of the US market regulations. In fact, the legal regulations about stock repurchases of all developed markets analyzed by Lasfer (2002) are designed to prevent inside trading.

The question is to know whether the mechanisms to avoid these situations are really effective, as Fried (2001) points out. The role of special stockholders in the resolution of agency problems with strong impact on payout policies is another important issue in explaining stock repurchases. Allen *et al*., (2000) and Jagannathan *et al*., (2000) document that payout policy affects institutional ownership because institutional investors tend to choose firms that are increasing payouts (they avoid non-dividend payers) but they prefer dividend increasers to stock repurchasers. Jagannathan *et al*., (2000) argue that this fact is due to their tax-status (they usually are tax-exempt), while Allen *et al*., (2000) suggest that dividend payments enable institutional investors to increase the market value of their investments by providing monitoring benefits to these firms. Grinstein and Michaely (2005) and Jagannathan and Stephens (2003) show that institutional investors also prefer frequent repurchasers to the other repurchase firms.

Finally, the wealth expropriation from creditors hypothesis related to payout decisions is usually labeled in the financial literature as the "milking-the-property" hypothesis (Galai and Masulis, 1976). This possibility does not find strong empirical support in the literature (Dann, 1981; Handjinicolaou and Kalay, 1984), in spite of Maxwell and Stephens (2003) results consistent with some wealth redistribution effects.

2.2.3. Dividend Substitution Hypothesis

There are a number of non-mutually exclusive factors that potentially influence firms in their choice between dividends and stock repurchases.

The first empirical study we know of on this subject is Vermaelen (1981), that analyzed the potentially different signaling role of stock repurchases and dividends. He argued that stock repurchases are a better mechanism for sending irregular and totally unexpected signals to investors and for distributing larger amounts of cash, in a discretionary and timely manner, especially in situations of perceived strong stock undervaluation by managers. In contrast, cash dividends are an ongoing signaling mechanism that should be used for sending regular and periodic information to investors about expected future performance. In a similar point of view, Asquith and Mullins (1986) argue that stock repurchases and dividends are not perfect substitutes because stock repurchases tend to be larger and used less frequently. However, these studies were made when the repurchasing method most used were fixed price and dutch auction tender-offers, that had been replaced by open-market repurchases since the early nineties (Comment and Jarrell, 1991; Lie and McConnell, 1998; Weston and Siu, 2002).

The second wave of literature about the choice of the mix of payout instruments was related to the trade-off between the tax advantages of stock repurchases (as an increasing leverage and payout instrument) and the potential adverse selection and information costs associated with stock repurchases (Barclay and Smith, 1988; Brennan and Thakor, 1990; Lucas and McDonald, 1998). According to these studies, dividends and stock repurchases are not substitutes and the composition of total payout depends on the degree of asymmetric information between managers and investors (Barclay and Smith, 1988; Brennan and Thakor, 1990)[5] and the magnitude of both the amount distributed and the stock repurchase premium paid to investors (Lucas and McDonald, 1998).

More recently, the arguments related with the option between dividends and stock repurchases turned again to the famous old question of "dividends stickiness" of Lintner (1956). In this context, stock repurchases are considered flexible cash flow distribution mechanisms relative to cash dividends because they do not implicitly commit the firm to future cash distributions. In contrast, cash dividends tend to be "sticky" (Lintner, 1956; Fama and Babiak, 1968; Asquith and Mullins, 1983; Grullon and Michaely, 2002), meaning that they may represent an ongoing commitment to distribute cash flow to stockholders. In his famous paper, Lintner (1956) argued that firms pay dividends out of long-run and sustainable earnings and cash flows and that their managers are very reluctant to cut dividends and therefore to make a dividend increase that will subsequently have to be reversed. On the other hand, stock repurchases involve no such commitment, thus avoiding increases in financial

5 For instance, Allen et al. (2000) argue that large, informed stockholders do not face this problem. They prefer stock repurchases, the least costly payout for them. Since institutions are likely to be more informed, the theory implies that they prefer firms that payout in the form of repurchases rather than in the form of dividends.

risk related with periodic and compulsive distributions of cash flow (Grullon and Michaely, 2002). In addition, firms sometimes announce stock repurchase programs but fail to meet the intended quantity targets of stock to be repurchased (Grullon and Michaely, 1998). In this context, Guay and Harford (2000) and Jagannathan *et al*., (2000), among many others, show that dividends are used to distribute permanent operating cash flows, while stock repurchases are used to distribute non-operating cash flows that are potentially temporary or operating cash flows that are not likely sustainable in the long term. Given all these facts, stock repurchases would be a sensible way for firms to distribute cash flows that have a high likelihood of not being sustainable, which explains why firms in some instances prefer stock repurchases to dividends. Moreover, in their application of Lintner's model, Grullon and Michaely (2002) find that repurchase yields have a negative effect on the dividend forecast errors. Supplied with this and other empirical results, they assume that those results mean that dividends and stock repurchases are substitutes.[6]

On the other hand, Fama and French (2001) and DeAngelo *et al*., (2002) find that a lower propensity to pay dividends is specially motivated by a changing population of publicly traded firms (higher proportion of newer and smaller firms with larger rates of capital and R&D expenditures and zero payouts). They also find that (net) stock repurchases are larger and more prevalent among dividend payers and that the rise in stock repurchases has taken place in firms that have also continued to pay dividends or have the characteristics of non-dividend paying firms. Therefore, they argue that stock repurchases have not substituted for cash dividends nor explain why the propensity to pay dividends has decreased, rather they provide increased flexibility in payouts. Their findings appear to suggest that declining dividends are not being replaced by repurchases and that in fact stock repurchases are often complements to dividends for dividend paying firms, given the fact that the two payout mechanisms perform different roles and business functions.[7]

Finally, Dittmar and Dittmar (2002) argue that stock repurchases are a way of distributing both transitory and permanent cash flows, while cash dividends are a way of

---

6 Grullon and Michaely (2002) suggest that the introduction by the SEC of Rule 10b-18 in 1983 provided a safe harbor protecting repurchasing firms against charges of stock price manipulation. This also reduced the likelihood that the IRS would tax repurchases at ordinary income tax rates like dividends. These, all together, increased the trend into dividends substitution. Weston and Siu (2002) observe, however, that, contemporaneously, the booming economy and financial markets greatly stimulated the use of employee stock options and the anti-dilution motive for stock repurchases, other commonly referred motivations for the increasing use of stock repurchases.

7 Weston-Siu argue that it "was the strong economy and rising stock prices that provided opportunities for the formation of new firms. The strong economy also made possible the growth in earnings in some of the larger, more mature firms. This enabled the traditional dividend paying group to increase payouts from rising earnings. In this environment, the growth of both dividends and share repurchases was stimulated by common factors: a

distributing permanent cash flows. Thus, stock repurchases and dividends are both substitutes and complements. When firms' permanent cash flows increase, they may repurchase stock or increase dividends; thus, the two are substitutes. However, when firms have transitory cash flows, they use them only to repurchase stock. They stress, however, that these results are always consistent with the view that the inherent flexibility of repurchase programs contributes to the dramatic fluctuation in stock repurchase activity.

Even more recently, older arguments, referred to as the dividend clientele hypothesis, have been put forward with some (arbitrage type) changes and a new name ("catering theory"), which suggests that the composition of cash distributions is influenced by stockholder preferences for dividends. There is both empirical (e.g., Bajaj and Vijh, 1990 and Denis *et al*., 1994 for the clientele hypothesis and Baker and Wurgler, 2004 for the catering hypothesis) and theoretical (Allen *et al*., 2000; Baker and Wurgler, 2004) support for these explanations for payout mix choices, although some studies do not support them (e.g., Michaely *et al*., 1995; Hoberg and Prabhala, 2005; Osobov and Denis, 2006).

2.2.4. Differential Tax Rates Hypothesis

The differential tax rate hypothesis is one plausible explanation of stock repurchases. According to Copeland and Weston (1988), this hypothesis is related with two models: the leverage tax shield model and the dividend tax avoidance model. In relation to the former model, if the stock repurchase is financed by issuing debt or even by distributing excess cash, the stock repurchase firms will capture tax savings because the income before taxes will decrease. The latter model points out that although the US tax system treats dividends and stock repurchases in the same way at the corporate level (after 1986), stock repurchases are generally tax-advantaged at the personal level (lower tax rate and flexibility in the timing of the payment of capital gain taxes). The magnitude of this advantage will depend on several specific investors' attributes (e.g., personal costs, marginal tax rates and the timing horizon of the stock investment), which are not generally public information.

However, some authors cast doubts about these theoretical tax explanations. First, one may argue that there are other mechanisms in addition to stock repurchases which enable firms to increase their debt ratios and take advantage of debt tax shields. Old empirical studies like Masulis (1980) and Vermaelen (1981) show that, at best, only a small proportion of the abnormal returns of stock repurchase announcements could be associated with the

---

strong economy associated with favorable performance and optimistic expectations of the future. But dividends and share repurchases perform different economic functions."

increased tax shields of debt. Further, not all classes of stockholders have tax preferences for capital gains and stock repurchases vis-à-vis dividends (e.g. firms and tax exempt investors). As argued by Jagannathan *et al*., (2000), it seems unlikely that taxes explain the more recent increase in repurchase activity, since the tax advantage of repurchases was substantially reduced after 1986, before the beginning of the large repurchase waves of the nineties. Dittmar (2000) also found little support of the dividend tax avoidance model.

2.2.5. Maturity Hypothesis

The maturity hypothesis, first put forward by Grullon *et al*., (2002), is a life cycle based explanation for cash flow distributions to stockholders and their related stock price effects that is an alternative to the performance signaling hypothesis. Grullon *et al*., (2002) find that changes in dividends are significantly negatively related to changes in systematic risk, with a strong component of business risk, growth and operating cash flow. They propose an explanation for these findings, which they refer to as the maturity hypothesis. Further, Grullon and Michaely (2004) document a similar relationship for stock repurchases, which may also signal a decrease in systematic risk.

According to the maturity explanation of equity flows, dividend increases and other cash payouts are a logical result from changes in a firm's life cycle. The key idea is that as firms become more mature, they tend to increase their cash flow distributions to stockholders and reduce their reinvestment rates, in response to lower value creating growth options and investments available and consequent rise in free cash flow and excess cash.

Grullon *et al*., (2002) also argue that the decline in the proportion of total assets market value associated with future growth opportunities or growth options (and increase of the proportion of value related to assets in place) is the main cause for the decreasing trend in business and operating risk. This maturity hypothesis provides some support for the free cash flow hypothesis of Jensen (1986). The mature firms that generate large free cash flows in response to a reduction in investment capital expenditures are more likely to distribute these free cash flows to their stockholders. However, the potential for their management to over-invest is very high (Jensen, 1986). Therefore, stock repurchases may not only convey information about changes in the firms' expected future (low) performance and decline in risk but also about the potential management's commitment not to over-invest. Thus, as argued by Grullon *et al*., (2002), the free cash flow hypothesis becomes a significant element of the maturity hypothesis, as it specifies which firms are likely to generate large free cash flows and face this type of agency conflict.

2.2.6. Timing Hypothesis

In a line of the literature related to capital structure, Baker and Wurgler (2002) propose a market timing theory of capital structure, which can be directly applied to stock repurchase decisions as an instrument of financial policy.[8] They argue that a firm's capital structure is the cumulative result of attempts to time the equity market. This hypothesis posits that the repurchasing firms are capable of detecting when the market undervalues their stock. Baker and Wurgler (2002 and 2004) find supportive evidence by documenting that leverage is significantly related to the market-to-book ratio. They conclude that (low leverage) firms raise capital when market-to-book ratios are high and, conversely, repurchase their stock or issue debt when market-to-book ratios are low. Survey evidence by Graham and Harvey (2001), Baker *et al*., (2003) and Brav *et al* (2005) also strongly suggest that managers try to time the equity market. Of course, this could be the result of those firms' managerial over-optimism (Heaton, 2002). More recently, Dittmar and Dittmar (2007) show that several market timing measures do not explain aggregate stock repurchase activity, which seems to be influenced by changes in the business cycle.

2.2.7. Options and Dilution Hypothesis

Although there is no strong theoretical basis for this fact, recent empirical studies present results that are consistent with the hypothesis that a major motive for firms to repurchase stock has been to offset the dilution effects of the exercise of stock options (Jolls, 1998, Weisbenner, 1998; Kahle, 2002), Bens *et al*., 2002). This motivation is also vehemently stressed in recent surveys to financial managers (Badrinath and Varaya, 2000; Graham and Harvey, 2001; Baker *et al*., 2003; Brav *et al*., 2005). The existence of employee stock options (ESOPs) could influence the composition of cash flow distributions for several reasons. First, they create incentives for stock repurchases (rather than dividend payments) because the value of an option declines when a stock goes ex-dividend (as the stock price decreases) but not when a firms repurchases its stock (as the stock price may even increase). Second, managers prefer to use repurchased stock rather than newly-issued stock for ESOPs to avoid diluting earnings per share (Weisbenner, 1998), in particular when options are more likely to

[8] Since the works about IPOs of Ritter (1991) and Loughran-Ritter (1995, 1997), who used this term, another name commonly used to describe this behavior is "windows of opportunity". However, Baker-Wurgler (2002) argue that, unlike the so-named "windows of opportunity hypothesis", the equity market timing hypothesis does not require the existence of adverse selection costs that tend to vary across firms and time.

be exercised (Kahle, 2002). Furthermore, when the earnings growth targets of firms are threatened, they are more likely to increase stock repurchasing activities (Bens *et al*., 2002), especially firms with high price-to-earnings ratios (Kahle, 2002). Recent empirical work by Jagannathan and Stephens (2003) shows, however, that there are no significant differences in options behavior between stock repurchase firms that repurchase frequently, occasionally or rarely.

2.3. The Financial Literature and Initial Stock Repurchases

The purpose of the next section is to determine the existing theoretical hypotheses that could explain the initial repurchase decision. However, two important issues must be stressed previously.

First, some of the motivations mentioned above, such as correcting stock market mispricing, increasing leverage and distributing excess cash or meeting earnings per share targets, among many other important determinants of payout decisions present in most surveys to financial managers are not sufficient conditions. These financial motivations and objectives may be achieved by other financial transactions. On the contrary, tax, signaling, agency, timing or maturity theoretical explanations could potentially be the right answers. For instance, agency theory predicts that conflicts of interest between insiders and outsiders can result in excess cash being retained and invested without creating value for stockholders, rather than being distributed via dividends or stock repurchases. All else equal, therefore, agency theory predicts that the decision to distribute excess cash by repurchasing stock or by paying cash dividends will be conditional to the magnitude of the agency costs of managerial discretion. It is not likely that firms will repurchase stock without having financial conditions to do so (like available cash or debt capacity far for being exhaust) or when managers perceive their stock as over-valued.

Second, the absence of any theoretical and empirical literature on firms' decisions to first repurchase their stock stands in sharp contrast to the strong flow of empirical literature on stock repurchases, especially since Dann (1981) and Vermaelen (1981). There has also been some of interest in the literature on the timing of dividend initiations (Healy and Palepu, 1988; Michaely *et al*., 1995; Benartzi *et al*., 1997; Bulan *et al*., 2006), in contrast to the little, if any, attention that has been devoted to firms' decision to initiate stock repurchases. The only empirical work we are aware of about initial stock repurchases is an unpublished event study from Gesser *et al*., (2005), with clearly different objectives from this work. They want

to test the wealth effects related to unanticipated stock repurchases. Hence, they define a stock repurchase as an initial repurchase when a firm initiates stock repurchases after four consecutive years with no repurchase transactions, arguing that in these cases the announcement of the stock repurchase should be unanticipated by the market.

3. Hypotheses Development and Empirical Predictions

3.1. Introduction

The purpose of this section is to determine what the existing theories of stock repurchases imply specifically about the likelihood of the initial repurchase decision.

Our primary research objective is to provide insights into why firms repurchase their own stock for the first time at a particular time. We start by examining several alternative theoretical hypotheses and economic motivations that the financial literature has found as being able to explain the stock repurchase decision as an alternative mechanism for distributing cash flow. We must do this, since the literature provides no specific theory to indicate when a firm will initiate stock repurchase transactions for the first time.

In this paper, we will focus on the hypothesisof the likelihood of initial repurchases in the cross section analysis. The purpose here is to examine the differences between firms that repurchase stock for the first time and all other firms with similar size and industry attributes. In fact, hypothesizing that initial repurchases may be distinctly different from other repurchases ("a distinct phenomenon", not simply a particular case of stock repurchases), we attempt to provide some insights into the initial repurchase decision. In order to explain why some firms decide to repurchase their stock for the first time, we must also understand why some do not and why some similar firms are already repurchasing at least for the second time. Thus, we must compare the initial repurchase firms to those similar firms that did not repurchase their stock (non-repurchase firms) and to those that are secondary repurchase firms. Therefore, the overall base case to the hypotheses referred below will be the prediction of the uniqueness of initial repurchases, at least in some financial attributes that could lead us to somewhat different theoretical explanations vis-à-vis both secondary repurchase firms and non-repurchase firms.

3.2. Hypothesis About Determinants of the Likelihood of Initial Repurchases

The several theoretical hypothesis presented in the last section make a number of empirical testable predictions regarding the likelihood of stock repurchases in general and, although they have no such predictions for initial repurchases, we are going to adapt them here to that purpose.

3.2.1. Signaling Hypothesis

The performance signaling theory assigns an informative role to stock repurchases and posits that firms will repurchase their stock when they have good prospects about future operating performance. This theory implies that repurchasers will have higher profitability and larger operating cash flows in the future. There is no strong argument to support different roles for secondary and initial repurchases in this matter, but the two types of firms may present stronger cash flow and profitability improvements than the non-repurchasers control sample.

Also, according to the signaling hypothesis, as stock repurchases convey information to the market, initial repurchasers are expected to have higher levels of asymmetric information than non-repurchasers, even holding size constant. Additionally, being an unexpected transaction, an initial repurchase would be more likely for firms with a higher degree of information asymmetry. Consequently, we expect that these firms would present higher growth and operating income volatility than secondary repurchasers and non-repurchasers.

It is very well documented in the literature that the amount of information available to firms and the degree of accuracy of the market valuation of firms may affect their stock repurchase decisions. However, as Dittmar (2000) points out, information asymmetry is not a sufficient condition for firms to be undervalued and it is not possible to determine with certainty whether a firm's stock is undervalued. One indication of undervaluation is a history of low returns. If the undervaluation signaling hypothesis drives initial stock repurchases, then we expect to find that firms initiate stock repurchases after periods of low returns and that these transactions should be followed by high future returns. The underlying assumption is that low past returns indicate relatively low past valuations and that high future returns represent a market correction of past misvaluation (as investors realize that managers are seeking to repurchase stock to take advantage of this potential undervaluation in the stock price). This should occur for both initial and secondary repurchases. Dittmar (2000) argues that since historical returns are a backward-looking measure of valuation, they may not detect

current undervaluation. Also, Ikenberry *et al* (1995) show that firms with low market-to-book ratios earn abnormal returns in subsequent periods, meaning that market-to-book ratios may indicate undervaluation, especially if growth opportunities are held constant. As this is presumably the case in the matched-pairs analysis, we posit that firms with lower market-to-book ratios should also have a higher likelihood of initiating stock repurchases (and that would also apply to secondary repurchasers).

3.2.2. Free Cash Flow Hypothesis

The free cash flow theory states that low growth firms with limited investment opportunities are more likely to have higher free cash flows and, therefore, incur higher equity agency costs because managers of those firms have the incentive to invest in value-destroying assets and activities. This agency theoretical framework predicts that managers can commit themselves to minimizing those wasteful expenditures by adopting a policy of distributing excess free cash flows, for instance, through stock repurchases. Apparently, the free cash flow theory makes similar predictions for initial and secondary repurchases. In fact, maybe this study of the initial repurchase will offer additional empirical support for the predictions of free cash flow theory of repurchases. This would be the case if the initial repurchase has no specificity in relation to secondary repurchases in this context. The predictions for the likelihood of stock repurchase decisions, both initial and secondary repurchases, are that they are negatively related to the firms' future growth options and discretionary expenditures and positively related to the existing amount of cash (and negatively related to leverage), cash flows and profitability. We argue, however, that this may well be the case for secondary repurchasers but not necessarily for initial repurchases. We should expect that initial repurchasers may be growth firms which are more likely to suffer from information asymmetry due to the uncertainty about future growth, rather than suffer from free cash flow problems. Thus, those firms with larger growth options and greater discretionary expenditures should be more likely to initiate repurchases for the first time.[9]

3.2.3. Dividend Substitution Hypothesis

9 We also note that agency considerations may imply that managers wish to avoid personal costs of financial distress. They have the incentive to avoid paying out dividends, especially if they expect higher cash flow variability in the future. No such prediction seems valid for stock repurchases (both initial and secondary repurchases) in face of their "non-stickiness".

Some literature (e.g., Guay and Harford, 2000 and Jagannathan *et al*., 2000), document that dividends are used to distribute permanent cash flows while stock repurchases are used to distribute transitory cash flows, as is the case of non-operating cash flows. Stock repurchases should play an important restructuring role by enabling management to distribute cash in a timely manner. Therefore, we should expect a positive relation between non-operating income and stock repurchases likelihood. However, we do expect some differences between the initial and secondary repurchasers samples. In fact, we anticipate a weaker relation between non-operating income and stock repurchases in the case of initial repurchases, although we may find a somewhat stronger positive relation than in the case of the non-repurchasers control sample (in particular for the initial repurchases' sub-sample of non-dividend payers), because we predict that distributing transitory cash flows may not be as strongly motivating for initial stock repurchases as it may be, on average, for secondary repurchase firms. This prediction means that this transitory cash flow attribute will decrease the likelihood of the substitution effect between dividends and stock repurchases for initial repurchase firms in relation to secondary repurchasers.

The financial flexibility question that drives most of the dividends-repurchases substitution debate is not only related to the degree of predictability of cash flow but also with the amount of future investment opportunities and the magnitude of operating and financial risk. Firms with higher growth options face not only more profitable investment opportunities, but also greater uncertainty about the level of profitable investment opportunities, and hence they should rely more on stock repurchases rather than dividends to distribute cash to stockholders because in this case firms may require a more flexible payout policy. Also, higher volatility of operating income should reduce dividends and significantly increase the mix of cash flow distributions made through stock repurchases. Again, we hypothesize that these relations will be more pronounced for the initial repurchases sample than for the secondary repurchases sample, in particular for the initial repurchases' sub-sample of non-dividend payers. This prediction means that these higher growth and operating risk attributes will increase the likelihood of the substitution effect between dividends and stock repurchases for initial repurchase firms in relation to secondary repurchasers.

Grullon and Michaely (2002) find a substitution effect between dividends and open market stock repurchases. They do not state that firms have been cutting dividends to replace them with repurchases. They find that large, dividend paying firms have been repurchasing stock rather than increasing dividends and that much of the growth in popularity of stock repurchases is due to those large dividend paying firms. Also, Fama and French (2001) argue that the lower propensity to pay dividends is motivated by younger, smaller firms with higher

rates of capital and R&D expenditures, that do not pay dividends but which may repurchase their stock. Consequently, we should expect that initial repurchasers are likely to be firms as described by Fama and French (2001) and hence different from firms that have traditionally paid significant dividends (which would be more similar to secondary repurchasers). This special role of initial repurchases in the question of dividends substitution may also be tested by analyzing the number of dividend payers and non-dividend payers that initiated stock repurchases for the first time and the proportions of increases and decreases in dividends for both groups and comparing those figures with the ones extracted from the samples of secondary repurchases.

All these expected results should contribute to check whether both types of stock repurchases present distinct roles in the dividends-repurchases substitution question, thus supporting (at least partially) the "uniqueness" of initial stock repurchases in relation to secondary repurchases.

3.2.4. Differential Tax Rates Hypothesis

Stock repurchases may also be preferred over dividends as a mechanism of cash flow distribution due to the personal tax rate advantage of capital gains. If initiating stock repurchases is a tax-efficient alternative to cash dividends distribution, we should expect that stock repurchases should be negatively related to dividend payout ratios. Also, stock repurchases reduce equity and increase debt ratios. These two latter effects reduce the tax burden of repurchase firms. Therefore, we expect that firms are more likely to repurchase stock for the first time if they have lower debt ratios that are increasing over time. In this context, if the motivation for initiating stock repurchase transactions is to benefit from these two stock repurchase tax advantages, then we predict lower and increasing debt ratios and lower payouts for initial repurchase firms in relation to non-repurchase firms. There are no prior arguments to distinguish initial and secondary repurchases in this differential tax rates question.

3.2.5. Maturity Hypothesis

The maturity hypothesis predicts that firms would repurchase their stock upon reaching the mature stage of their life cycle, when they are faced with high cash flows and low investment opportunities. Abstracting from agency conflicts considerations, this hypothesis implies that stock repurchases are associated with subsequent declines in profitability,

operating cash flow, growth, cash balances and operating risk. In this context, our hypothesis about the potential uniqueness of initial stock repurchases may have here a special opportunity to be tested. Indeed, we anticipate that the maturity label associated with stock repurchases is not valid for initial repurchases but only applies to subsequent repurchase transactions. Therefore, we expect that the maturity hypothesis effects may well be confirmed in the sample of secondary repurchase firms but not in the sample of initial repurchase firms. In other words, we do not expect maturity attributes for initial relative to both non- and secondary-repurchasers' samples.

We will also test the lifecycle theory by using the variable used by DeAngelo *et al*., (2005) in analyzing the maturity hypothesis for dividend payers (the mix of earned-contributed capital) to assess whether firms with relatively low retained earnings as a proportion of total assets are more likely to repurchase stock for the first time in opposition to what tends to occur with secondary repurchasers. Obviously, initial repurchasers may choose to repurchase in order to distribute excess cash balances. However, recent empirical studies of corporate cash holdings (Opler *et al*., 1999; Harford, 1999; Custódio *et al*., 2006) find that firms with stronger growth opportunities, riskier cash flows, and more limited access to capital markets hold higher cash balances. These attributes are among the ones that we expect for initial repurchasers. Of course, plausibly, firms with high levels of (excess) cash and operating cash flow may be more likely to initiate stock repurchases, but we do not assume this to be a sign of entering into a more mature phase of life. We expect that the proxies used for cash and cash flow will be weakly related to the decision to initiate stock repurchases, holding growth options constant. We also do not expect significant decreases in profitability, operating cash flow, growth and operating risk. Finally, although one should consider it as a quite natural result, we expect that initial repurchasers will be younger than secondary repurchasers.

3.2.6. Timing Hypothesis

According to this hypothesis managers attempt to time the market when taking financial decisions such as issuing securities and distributing cash flows. Therefore, firms will tend to repurchase stock (increase leverage) when market valuations are at low levels (and to raise equity capital when market valuations are at high levels). In reality, if this market timing theory holds, we should expect that initial stock repurchasers would present low prior stock returns and increases in their market-to-book ratios and debt ratios. We expect that this would also occur for the secondary repurchasers sample.

3.2.7. Options and Dilution Hypothesis

Financial literature observes that managers have incentives to avoid earnings dilution and reporting earnings disappointments and hence take decisions to preserve their firms' reported earnings per share and stock prices. These decisions may help us to explain stock repurchase decisions, specially when these managers hold stock options. Thus, in this context, we expect that firms with a larger proportion of stock options may repurchase more. This should apply to both initial and secondary repurchases. However, since we hypothesize that initial repurchases are generally implemented by growth firms with high operating risk, it is likely that those firms may have a significant number of long term options that should not be exercised in the short run and thus stock repurchases may not be necessary to remove the dilution effects of the exercise of these options. Thus, although stock repurchases may be associated with the use of stock options for incentive compensation, using them to avoid dilution is less likely to occur for firms with high growth of earnings per share, as may be the case for initial repurchasers. In other words, we anticipate that initial repurchasers will have higher operating volatility and earnings per share growth relative to non-repurchasers and secondary repurchase firms and more stock options than non-repurchase firms.

3.2.8. Summary

To summarize, initial repurchases may be undertaken by firms that are more likely to be under-valued and with a potentially high degree of asymmetric information. Therefore, for initial repurchasers, we shouldn't find empirical support for other valid explanations for secondary repurchases such as the free cash flow hypothesis (absence of excess cash flows in relation to growth options), maturity hypothesis (no expected decline in operating risk), the substitution hypothesis (different characteristics between initial repurchasers and cash dividend payers) or option and dilution considerations. In that sense, signaling, timing, options and undervaluation are more likely motives for initial stock repurchases, since it is doubtful that firms could credibly signal that they are undervalued or that their operating performance is going to improve on a frequent basis (Jagannathan *et al*., 2003). This allow us to posit that initial repurchases are driven by different theoretical explanations relative to secondary repurchasers, with prevalence of undervaluation, options, timing and performance signaling considerations at the expense of free cash flow, maturity or other theories. Table 2B

summarizes these hypotheses in terms of expected relations between independent and explanatory variables, which will be described in the next chapter.

4. Data and Methodology

4. 1. Sample Selection and Data Collection

The data for this study came from the Compustat database for the period 1975 through 2004, inclusive (henceforth data item shown in parentheses). We used those datasets to collect all firms' financial statement data, stock returns and industry, as defined by their 4-digit SIC code, and to determine the firms' age at the time of their initial repurchase.

In this study, we analyze the determinants of initial stock repurchases and we empirically examine the extent to which firms formulate that decision according to the most frequently mentioned theoretical models of financial policies and decisions. We focus on actual stock repurchases and track a sample of 1,247 firms which went public after 1975, and that initiated stock repurchases in the period of 1980-2002. Allen and Michaely (2002) and Banyi *et al*., (2005) evaluate various methods for estimating actual figures of stock repurchases and recommend a measure based on the cash flow statement that they name as Compustat purchases of common and preferred stock adjusted for the change in preferred stock, and which they consider as the most accurate (or least biased) measure of the actual dollar amount spent on repurchases, particularly for firms with high stock options.[10] We follow this approach. 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, conversion, and/or redemption of preferred stock, Compustat items #56 and #130) of the net number of preferred stocks outstanding.[11]

Our analysis of initial repurchases is conducted only on those firms listed on NYSE, AMEX and Nasdaq that also conducted an IPO during the period of our investigation. We argue that using only initial repurchasers observations with their IPO date after 1975 as the basis for this study allows us a better understanding of the motives and timing for the initial

10 Also, Grullon-Michaely (2002) compared that measure to the amount of repurchase activity reported by SDC (amount of repurchases announced) and found that the correlation coefficient between these two measures is 0.97 and that the dollar amounts were similar.

11 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

repurchases decision. We classify actual repurchase programs as an "initial repurchase", if this is the first repurchase program the firm has had, being the second or subsequent repurchase program classified as a "secondary repurchase". All firms that didn't purchase any of their stock until the final year under analysis are labeled as "non-repurchasers". We begin by identifying firms on Compustat that repurchased their stock for the first time during the period 1980-2002 (henceforth, initial repurchase firms are "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 year that the firm had a positive stock price on Compustat (as Baker and Wurgler, 2002; Lemmon and Zender, 2003 and Bulan *et al*., 2006). We follow previous literature when we further restrict the sample to initial repurchases valued at more than one million US dollars. Also, in line with previous studies, we truncate all variables at the top and bottom one percentiles. We further excluded financial companies and utilities (SIC codes 4813, 4900-4999 and 6000-6999) from our sample. These criteria identify our sample of 1,247 observations of initial repurchases collected for the period 1980-2002 from the Compustat database. Then, we construct two contemporaneous control samples for using a matched-sample analysis. The first sample includes only secondary repurchasers and the other includes non-repurchasers (firms who have never repurchased their stock since their IPO until the year in question). For all firms, we obtain the annual financial information from Compustat to construct our variables as described in the next section. We follow previous literature in excluding those firms for which several relevant variables from our analysis were missing.

4.2. Variables

To study the determinants of initial stock repurchases, we will perform univariate and multivariate empirical analysis of the initial repurchases' likelihood using a set of variables that the literature has identified as important in explaining any stock repurchase decision. These variables are proxies for several firm characteristics that have been shown to be correlated with stock repurchases. Dittmar (2000), Grullon and Michaely, 2002), Jagannathan and Stephens (2003), among others, document that firms' size, payout, industry, operating risk, leverage, cash balances, cash flow, growth options, earnings and sales growth, profitability, non-operating income, underpricing, stock returns, total retained earnings, amount of stock options and ownership structure, all help explain the probability of a firm

---

some cases Compustat data item #115 corresponds to repurchases net of equity issuance, which *Compustat* indicates with a combined figure code. We treat such observations as missing values.

repurchasing its stock. We use these same variables, with the exception of ownership structure variables because the databases that includes those variables were unavailable to us. In the matched-pairs analysis approach, we control for size (which some literature considers as a proxy for asymmetric information) and industry (thus, holding, at least partially, operating risk and investment opportunities constant).

In using the matched-pairs approach, we use three-year averages for all variables (unless otherwise noted) as in Jagannathan *et al*. (2000), either because it is possible that firms would 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 matched-pairs analysis is limited to the period from 1980 to 2002 to allow for measurement of prior and subsequent variables. All variables' absolute values are scaled by total assets (#6), unless otherwise stated, to control for scale effects and mitigate heteroskedasticity. Table 1A presents a synthesis of the definition and measure of all variables used and table 1B summarizes the last section' hypothesis and expected relations between independent and explaining variables.

4.3. Methodology

The main goal of this study is to identify the determinants that explain initial stock repurchases, by looking for economic characteristics of firms that influence that decision. We achieve this by using a cross-section of initial repurchase firms matched with two control samples (one that includes secondary repurchase firms and the other which includes non-repurchase firms). In addition to univariate analysis, we perform cross section bivariate logit regressions.

From our final sample of firms described before, we construct a matched sample of initial repurchasers with secondary repurchasers and non-repurchasers. Each initial repurchaser-year observation is paired with a secondary repurchaser-year observation and a non-repurchaser-year observation that is closest in terms of size (measured by total assets, 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). We then

estimate several logistic models using the two different matched-samples to relate the probability of an initial stock repurchase to the set of repurchase determinants mentioned before. In particular, we estimate logit models that relate each event-sample with its matched-sample for all observations and for some sub-samples that were built by splitting each sample in some time periods, in market-to-book quartiles and according to the dividend-payers status of the initial repurchase firm.

5. Results

5.1. Univariate Analysis

5.1.1. Introduction

The first step of our empirical analysis is designed to examine the differences between firms that repurchased their own stock for the first time and those firms similar in industry and size that either repurchased for the second time or more (secondary repurchases) or that didn't engage in any stock repurchase transactions before. We assume that, as those firms are similar in terms of size and industry, they would be exposed to similar business and operating risks and growth opportunities. Later, in future work we plan to analyze in depth the effect of operating risk and growth opportunities on the decision to initiate stock repurchases.

Table 2 presents the sub-samples' general information. First, table 2A shows that the final sample consists of 2.016 industrial companies (i.e., excluding utilities and financial firms) listed on the NASDAQ, NYSE and AMEX. 630 initial repurchase firms were matched with 630 non-repurchase firms similar in size (differences lower than 25% of total assets) and industry (four-to-two digits of SIC Codes) out of 782 possible observations. Also, 716 secondary repurchase firms (taken from a total sample of 899 observations) were matched with the same number of initial repurchase firms.

Table 2B shows the temporal distribution of initial repurchase firms (on the total final sample and on the two matched pairs samples). For this purpose, we split all observations in four 5-year periods (except the first group, which has 7 years, from 1980 to 1987, because it has a smaller number of observations).

As expected, the number of initial repurchases always increased from the first period (between 6,2% and 8,4%) to the last period (between 48,6% and 53,2%) in such a way that the last period (1998-2002) includes almost half of the total observations of the three samples.

The trend is fairly stable along the three samples. Therefore, our samples are dominated by firms that initiated stock repurchases after the nineties. This result is in line with all recent empirical findings about stock repurchases (e.g., Fama and French, 2001; Grullon and Michaely, 2002). Also, this trend suggested to us the need to check whether there are any period-to-period fundamental differences between initial repurchases samples and their control matched pairs samples (see table 3C).

Table 2C shows that firms that repurchase their stock for the first time do so on average 5.5 to 5.6 years after the IPO (median of 4 years), without any noticeable differences across samples. Finally, although not included in the tables, we document that 83.5% of those transactions occurred before 10 years following the IPO. Also, we check that the annual number of stock repurchases of the 716 secondary repurchase firms included in the final sample was on average 5.3 times.

Table 2D documents the mean and median age of all sample firms. As expected, the limit in IPO year of our initial repurchase firms implies that those firms are on average younger than both non-repurchase and secondary repurchase firms. However, the initial and non-repurchase firms have the same median age, which is important when considering potential life cycle effects.

Table 2E shows the median value of stock repurchase transactions for initial stock repurchase firms (complete sample and two sub-samples) and secondary repurchase firms. We note that the initial repurchase median values are much smaller than those of secondary repurchases, but this difference disappears ex-post in the subsequent 3 years.

We begin our matched sample analysis by comparing some descriptive statistics of the explanatory variables across the three sub-samples (a sample of event firms relative to their matched two-sample control firms), reported in Tables 3A to 3L. These tables show that there are significant differences between the sample of initial repurchase firms and both control samples. In tables 3A, 3D and 3H, we compare ex-ante descriptive statistics. In order to reduce noise induced by year-to-year variations in many of the variables, these statistics are calculations based on three year averages preceding the initial repurchase event (years -3 to -1). Tables 3B and 3E repeat the same analysis using ex-post values, meaning that calculations are based on three year averages subsequent to the initial repurchase event (years 0 to +2). These time windows follow the work of Jagannathan *et al*., (2000) and Jagannathan and Stephens (2003). In tables 3C and 3F, we compare ex-post values with ex-ante values to preview some evolutionary trends with economic meaning. In table G, we compare the characteristics of the three sub-samples related to cash dividends and in table 3I we compute the correlation matrixes of variables for the two initial repurchase sub-samples. Finally, in

tables J and L, we compare the ex-ante, ex-post and over time changes of medians (and some means) of our variables only to those firms that are included on both the event and control samples (of course, in different years). In fact, 56 firms are included on the initial repurchase sample and on the matched non-repurchase sample and 131 firms are included on the initial repurchase sample and on the matched secondary repurchase sample. With this, we check whether there are any specific results related to these firms.

5.1.2. Results from Univariate Analysis

5.1.2.1. Differences Between Initial Repurchase Firms and Non-Repurchase Firms

First, in relation to non-repurchasers, initial repurchasers have higher dividend payout ratios (and dividend yields), operating cash flows, market-to-book ratios and profitability, both prior to and after the initial repurchase transaction (see tables 3A and 3B). Of those, only payout ratios and dividend yields differences are not statistically significant (in spite of the fact that the average value for initial repurchasers is 75.3% higher ex-ante and about 90% ex-post). Initial repurchases are also made by firms with lower leverage and operating risk, on average, before and after the initial repurchase event. There are no major differences in terms of capital and other discretionary expenses, retained earnings (those variables have lower mean values but higher or similar median values), earnings per share and sales growth in relation to their non-repurchase peers.[12]

Furthermore, initial repurchase firms present ex-ante higher cash balances, options and stock returns and ex-post higher non-operating income and retained earnings. Interestingly enough, in the initial repurchase year, 63% of the initial repurchase firms have higher stock returns than in the average of the three preceding years while only 51% of their non-repurchasing counterparts present similar data.

The ex-post versus ex-ante differences between the two control groups are quite similar (see table 3C). In particular, both samples present increases in leverage and decreases in cash flow, market-to-book ratios, capital and other discretionary expenses, sales growth and profitability. In addition, we notice that the non-repurchase firms' median values remain lower than their initial repurchase counterparts but in almost all variables the net effects are such that they resemble a convergence trend. The only exceptions are leverage and operating

[12] As expected, the matched-pairs analysis tends to neutralize the growth options impact on stock repurchases but the same is not achieved for the operating risk variable.

risk. In both cases, the difference increases for non-repurchase firms. Finally, the stock returns for initial repurchase firms actually decreases, while the opposite occurs for non-repurchase firms.

Overall, these results seem to support the free cash flow, the maturity and the risk reduction signaling theoretical hypotheses and the excess cash distribution financial motivation in explaining initial stock repurchases. We note, however, that the age and retained earnings variables present evidence that contradict the maturity hypothesis. This should be meaningful because these variables are present specifically to measure the impact of life cycle effects. Also, we find a slight support of the options hypothesis. Furthermore, initial repurchases seem to have similar financial characteristics to dividend increasers, as reported by Jagannathan *et al*., (2000) and Grullon and Michaely (2002), among others. The performance signaling and options and dilution hypotheses are mostly ruled out by the data (same result of Jagannathan and Stephens, 2003). Finally, The consistent higher values of market-to-book ratios of initial repurchase firms (and the similar values for previous stock returns) do not provide support for the undervaluation-signaling and the timing theoretical explanations of stock repurchases. These theories are only slightly present in the data since there is a significant positive differential stock return of the initial repurchase year in relation to the 3 preceding years.

5.1.2.2. Differences Between Initial Repurchase Firms and Secondary Repurchase Firms

When comparing the ex-ante and ex-post attributes of these two samples of firms (see tables 3D and 3E) the most basic differences are that our initial repurchase firms have higher cash balances, market-to-book ratios, profitability and sales growth and, on the other hand, secondary repurchase firms have larger payout ratios (and dividend yields), higher debt ratios, operating risk and retained earnings. All of these differences for ex-ante and ex-post values are statistically significant. There seem to be no significant differences of both samples in terms of options and non-operating income. Finally, ex-ante, initial repurchase firms present higher operating cash flows, earnings per share growth and stock returns and higher values ex-post for capital and other discretionary expenses.

Once again, the ex-post versus ex-ante differences between the two control groups are quite similar (see table 3F). In particular, Only the significant trend of decreasing cash and stock returns and increasing retained earnings is specific to initial repurchase firms. Both samples present leverage and payout increases over time, and most other variables display decreasing trend in both samples. In other words, the relation between initial and secondary

repurchase firms for all variables is stable, in spite of a small trend of convergence for most variables, with few exceptions (as is the case of payout ratios and dividend yields). This similar pattern of changes in both samples for most of the variables is not easy to explain. For instance, the trend of decreasing cash, cash flow, market-to-book ratios, profitability, earnings per share and sales growth and stock returns, as a whole, is not consistent with the more frequent theoretical explanations for stock repurchases, like performance-signaling, undervaluation-signaling and agency costs considerations.

In contrast, all facts cited above seem to suggest that risk reduction signaling and maturity-based explanations are very useful in understanding the role of initial and secondary stock repurchases. Plausibly, the secondary repurchase firms are in a more advanced phase of their life cycle than initial repurchase firms: they are older, they distribute more cash flow to their stockholders and they have higher retained earnings (although they have the same operating risk). Also, these results seem to stress the importance of distributing excess cash as strong financial motivation for firms to initiate stock repurchases and to continue repurchasing stock over time.[13]

Finally, these results suggest that repurchase firms are also dividend payers (as documented by Fama and French, 2001; Grullon and Michaely, 2002; Jagannathan and Stephens, 2003, among others) but they are not sufficient to reach strong conclusions about the potential substitution of dividend increases with stock repurchases. This analysis will be provided below.

5.1.2.3. Stock Returns Differences Between the Event and the Control Samples

Stock returns are significantly positive for all samples. However, surprisingly, the initial repurchase firms have much larger median ex-ante stock returns than both control samples. The median stock returns for both initial repurchase samples are 18% and 16%, respectively and the two control samples present only 4% (for the non-repurchase firms group) and 10% return (for secondary repurchase firms group). These results were not anticipated because they simply cast doubt about the undervaluation and market timing as motives for initial and secondary repurchases. Thus, they do not confirm the suspicions of Stephens and Weisbach (1998), Jagannathan *et al*., (2000), among others. The ex-post stock returns don't present a clearer picture. First, the initial repurchasers' median stock returns fall significantly in both

13 Note that the positive correlation between operating volatility and debt ratios for all sub-samples is a somewhat unexpected result. Bradley et al. (1984) and Kim and Sorensen (1986) report a negative relation between operating income volatility and debt levels. The opposite relation between operating risk and financial risk is clearly unsupported by our data.

sub-samples, but remain positive and higher than both their control samples. In these control samples, the stock returns increase (from 4% to 9% in the case of the non-repurchase group) or stabilize near the 10% return. These results don't help us in explaining market performance but they confirm the findings of Ikenberry *et al*., (1995) who show that repurchasing firms outperform a matched sample over a four-year period following the repurchase announcement. Similar results occur in the event year. On average, more than 60% of the initial repurchase firms have a higher stock return in the repurchase year in relation to the average stock returns in the three years prior to the initial repurchase year. Of course, we did not use market adjusted returns and the results for the two control samples show that in a particularly strong way, because they also present an above average performance. However, the difference is significant at 1% level in relation to the non-repurchase firms sample (63% against only 51%), and is positive, but not significantly, in relation to the secondary repurchase firms' sub-sample (60% against 59%). Finally, the median values of market-to-book of firms that initiate stock repurchases also don't seem consistent with the traditional view that firms repurchase stock when managers are most likely to perceive their stock as undervalued. That is the main motivation for repurchases by infrequent repurchase firms, as documented by Jagannathan and Stephens (2003). In addition, if the stock repurchase activity is a mechanism of signaling undervaluation, this signal does not appear to work because tables 3C and 3F show that following an initial repurchase transaction the market-to-book ratio actually decreases (as is also the case for both control samples).

5.1.2.4. Operating Performance Differences Between the Event and the Control Samples

The operating performance of both samples of initial repurchase firms is always higher than their control samples. This result applies to both ex-ante and ex-post data, but the differences in performance are larger for ex-ante median values. This is important because the operating performance of the two event samples decreases over time, while for the two control samples the data shows similar results ex-ante and ex-post. In other words, the data does not support the operating performance signaling argument, in which stock repurchases (initial and subsequent repurchases) signal management's belief that the firm's future operating performance will improve. However, these results are consistent with the findings of Grullon and Michaely (2002), Jagannathan and Stephens (2003), among others, who also find no evidence of operating earnings improvements following repurchase announcements. In face of this kind of results, Jagannathan and Stephens (2003) tried to address the possibility of the earnings signaling hypothesis suggesting "unexpected" earnings improvements instead

of absolute operating performance. They examine changes in analysts' forecasts around the announcement of open-market stock repurchase and, again, they didn't find any support for the signaling hypothesis.

5.1.2.5. Dividend Characteristics Differences Between the Event and the Control Samples

Tables 3G (panels 1, 2 and 3) present information about the characteristics of the several sub-samples related to cash dividends. Up to here, tables 3C and 3F show that the dividend payout ratios for the secondary repurchasers are substantially larger than for the initial repurchasers, and the latter firms have higher payouts than their non-repurchasers counterparts: the median values for payout ratios of the three sub-samples are 21%, 12% and 7%, respectively. This monotonic trend (absent in all other variables) is magnified ex-post because the difference in median values increases even more after the initial repurchase event: 24%, 13% and 7%, respectively. Both initial and secondary repurchases are, of course, used as an alternative mechanism of distributing cash flows to shareholders. The question is now to analyze if both initial and secondary stock repurchases are used to substitute for cash dividends (as found by Grullon and Michaely, 2002) or as a complement of cash dividends (as documented by Fama and French, 2001).

In terms of ex-ante non-operating cash flow distribution, there seem to be no differences between the four samples. Thus, there is no support for the dividends substitution hypothesis based on distribution of non-recurrent cash flows. Both the initial and secondary repurchasers are in many ways similar to dividend paying firms as described by Jagannathan *et al* (2000). That is not true for the non-repurchasers sample, so both types of firms may be substituting either dividends or dividend increases by stock repurchases as suggested by Grullon and Michaely (2000) or complementing them with stock repurchases (as suggested by Fama and French, 2001). In spite of that, tables 3G show some new interesting results. For instance, almost 50% of the secondary repurchasers are dividend payers (against only 30% of initial repurchasers) with relatively high payouts (21%, against only 15% in the case of initial repurchasers), as documented by Fama and French, 2001, Grullon and Michaely, 2002 and Jagannathan and Stephens (2003), and only a small minority of them in the two samples seem to be cutting dividends and replacing them with stock repurchases (as the proportion of the non-dividend payers actually increases). Panels 1, 2 and 3 don't present any substantial differences among the three different samples of initial repurchasers or between the two different samples of no-repurchasers and the two different samples of secondary repurchasers.

In addition, the proportion of non-dividend payers in the initial repurchasers samples is similar to the non repurchasers samples (about 70% of observations), and is much larger than to those of the samples of secondary repurchasers (about 50% of observations), both ex-ante (panel 1) and ex-post (panel 2).

Furthermore, there are no significant differences between ex-post and ex-ante results for both initial repurchasers and non-repurchase firms. Interestingly, for secondary repurchase firms, there is an higher proportion of non-dividend payers in the ex-post samples than in the ex-ante samples. This result suggests a substitution effect between dividends and stock repurchasers for some secondary repurchasers that stop distributing cash dividends, replacing them with stock repurchases. This occurs in spite of a larger median ex-post payout ratio for secondary repurchasers (table 3F). This evidence is consistent with the findings of Fama and French (2001), that there is a lower number of firms paying dividends, although the average payout of these firms is increasing.

Finally, panel 3 shows that more than half of the initial repurchasers and non-repurchase firms don't change the average amount of cash dividends and that the number of dividend increases is significantly larger than the number of dividend decreases. The same trend occurs for the secondary repurchasers samples but the proportion of cases of firms that pay the same average cash dividends is much lower and the proportion of firms that both increase or decrease their cash dividends is higher.

5.1.2.6. Market-to-Book Ratios Differences Between the Event and the Control Samples

So far, based on tables 3C and 3F, initial repurchase firms have market-to-book ratios that are significantly higher than both secondary and non-repurchase firms. These differences are robust because they remain for several years after the initial repurchase event suggesting that the initial repurchase firms are more likely to be overvalued. Ex-ante, the median values for the two initial repurchase firms samples are 2.50 and 2.30, respectively, while the non-repurchase firms sample presents a median market-to-book ratio of only 2.05 and the secondary repurchase firms exhibits only 1.84. Ex-post, there is a systematic downward trend for all cases, but the rankings remain the same: the median values for the two initial repurchase firms samples drop to 2.14 and 2.13 respectively, while the non-repurchase firms market-to-book ratio falls to 1.89 and the secondary repurchase firms value decreases to only 1.75. All these differences are statistically significant at the 1% level.

These results are surprising and cast doubt on the undervaluation signaling hypothesis as the main explanation for initial repurchases. Jagannathan and Stephens (2003) argue that

infrequent repurchase announcements (as may be the case for initial repurchases) are potentially used to signal management's belief that the firm is currently under-valued. They note, however, that this signal does not appear to work because these firms have lower ex-post market-to-book ratios, while the opposite change (a strong increase) occurs for the frequent repurchase firms. Although initial repurchases and infrequent repurchases are not the same kind of event and we are using stock repurchase actual values, instead of stock repurchase announcements, it is worth noting that our results are strikingly different from theirs. One may argue that market-to-book ratios are a poor proxy for undervaluation as they might measure the availability of growth options or the degree of asymmetric information. This is a strong argument, but the matched pairs analysis should be able to eliminate those industry type considerations, with only the valuation effects remaining. Further, in theory, if initial repurchase firms should have potentially high degrees of asymmetric information, then higher market-to-book ratios show that they are more likely to be over than undervalued. However, the market performance analysis is not fully consistent with this idea. In fact, an average of 63.4% and 59.7% of initial repurchase firms, respectively for no-repurchase firms and secondary repurchase firms' samples, have higher stock returns in the event year than in the average of the following three years. This fact shows some undervaluation potential, although only the difference with the non-repurchase firms control sample is statistically significant.

Therefore, we also want to check whether our striking results may primarily be driven by only a small sub-group of firms, according to the market-to-book ratio criteria. So, we split the two samples of initial repurchase firms in quartiles according to market-to-book ratios and we performed the matched-pairs analysis with the other two control samples. Finally, we calculated the ex-ante medians or means for all variables in analysis to each group quartile. The resulting information is presented in tables 2A to 2E (not included here but available upon request). We observe a strong uniformity in the pattern of change of variables like size, leverage, cash, cash flow, profitability, non-operating income, sales growth and dividend yield. For other variables, the pattern of change is just a little bit different, as is the case of growth and the two variables related to stock returns (in those variables, there is a positive relation between market-to-book ratio and growth in the initial repurchase firms samples, but this relation vanishes for both control samples). On the contrary, for variables such as payout, options, earnings per share growth and retained earnings, the pattern of change is totally dissimilar. For example, the relation between market-to-book ratio and payout ratio is an U-shaped type for one initial repurchase sub-sample, is negative for the other initial repurchase firms sub-sample, is also negative for the non-repurchase firms sample and is absent for the secondary repurchase firms sub-sample. As in the case of table H, it seems appropriate to

perform the multivariate analysis by splitting all samples according to market-to-book ratio quartiles.

5.1.2.7. Behavior of the Event Samples in Four Different Time Periods

The whole period of analysis is broken down into four time windows of five years (except the first one that has 7 years of observations, but includes only about 8% of all matched-pairs observations). Therefore, table 3H aims to analyze whether there are any special time trends on the medians (and some means) of initial repurchase firms' variables which could affect the relation between initial repurchases and their potential explanatory variables.

In fact, the results are striking, because in almost all cases, the differences in means and medians are statistically significant. Further, most of the variables either exhibit an irregular behavior (e.g., leverage, market-to-book) or show an U-shaped relation (e.g, cash, options, sales growth). The main exceptions are payouts and operating cash flows, which present a monotonic decreasing behavior, and size and operating risk, that are always growing. As size is not an important variable in the matched-pairs analysis, we checked the pattern of time evolution of the payout, leverage and operating cash flows variables for both control samples. We concluded that the three variables have a similar time evolution for all samples, although a little bit more irregular. That is, for some variables, the relation between initial repurchase firms and both control samples seems to be relatively stable over time. However, as most variables show significant statistical differences, for robustness we conclude that it may be worthwhile to conduct a period-to-period multivariate analysis.

5.1.2.8. Ex-Ante Correlation Matrixes for the Independent Variables

Table 3I (panels 1 and 2) show the correlation coefficients of all explanatory variables for the two samples of initial repurchase firms prior to the event year. Two strong patterns appear in the data. First, the two correlation matrixes show an impressive stability, both in terms of sign and the magnitude of the coefficients. Second, these two tables do not indicate that any of the variables are too highly correlated with each other to cause a problem of multicolinearity. We also computed ex-ante correlation matrixes for both control samples but the results are, again, strikingly similar, therefore we don't present them here.

5.1.2.9. Univariate Analysis of Initial Repurchase Firms Included on Control Samples

In tables 3J and 3L we compare the financial attributes of initial repurchase firms included in the two control sub-samples.

We find a monotonic relation among initial, secondary and non-repurchase firms for only one variable, besides the expected relations for size and age, which is sales growth. In fact, initial repurchase firms are, of course, older and larger than non-repurchase firms and secondary repurchase firms are also older and larger than initial repurchase firms. In addition to this natural result, we find that secondary repurchase firms have lower sales growth than initial repurchase firms, which, in turn, also have lower sales growth than non-repurchase firms. We also find a striking similarity of ex-ante attributes between initial repurchase firms and both control samples, suggesting that there is much more similarity in these sub-samples than in the samples with all observations included. The evidence shows that the only additional difference with statistical significance is the lower options usage for initial repurchases in relation to non-repurchase firms, which is evidence that goes against the options and dilution hypothesis. Finally, the only important difference between initial repurchase firms and both control samples in ex-post attributes is the fact that secondary repurchase firms exhibit lower market-to-book ratios than initial repurchase firms. As we use this variable as a proxy for undervaluation, this may suggest that the timing and undervaluation signaling hypotheses may be stronger explanations for initial rather than for secondary repurchase firms.

5.2. Multivariate Analysis

5.2.1. Introduction

Next, we estimate logistic regressions to investigate the determinants of the initial repurchase decision in a multivariate context. The dependent variable equals one if the firm-year observation is an initial repurchase, and is zero otherwise. We use the matched-pairs approach to explain the initial repurchase decision, whereby each initial repurchase firm-year observation is twinned with two time-industry-size matched firms, one of which is a non-repurchase firm and the other a secondary repurchase firm. We use the same explanatory variables as those in the univariate analysis and, in addition, we use changes (ex-post minus ex-ante values) in some of those variables in order to better test the operating signaling, timing, maturity and free cash flow theories.

The results analysis and discussion are based on table 1B, which presents predicted relations between independent variables and the likelihood of initial stock repurchases, and both tables 5A (for initial and non-repurchases) and 5B (for initial and secondary repurchase firms), which present the main results (coefficients and respective p-values) for all models used. The first model includes only the levels of explanatory variables and the second (extended) model also includes changes in some of those variables, as referred above. Tables 5A and 5B are divided in five panels. Panel 1 presents the two logit models for all observations and panel 2 shows the same models separately for those firms that paid dividends in the three previous years (dividend payers) and those firms that did not (non-dividend payers). Finally, panels 3, 4 and 5 present the extended models by splitting observations in four market-to-book and size quartiles and four time periods. The main implication of most empirical studies is that market-to-book ratios and size may affect initial stock repurchase policy. To test for this relation between stock repurchases and market-to-book ratios, we divide the initial repurchase firms into four market-to-book quartiles. Also, to ensure that our results are not driven by a particular time trend, we perform similar tests for the four sub-periods: 1980-1987, 1988-1992, 1993-1997 and 1998-2002.

For convenience of analysis and reading, we present our multivariate results grouped by theoretical hypothesis. Therefore, as each section is directly related with all tables 5A and 5B.

Next, we discuss the results and present comparisons with current literature about stock repurchases.

5.2.2. Performance Signaling Hypothesis

For the matched samples of initial and non-repurchase firms, we find little support for the signaling role of operating performance variables. If operating performance would have some effect on initial stock repurchase likelihood, we should expect operating performance improvements for initial repurchasing firms relative to non-repurchase firms. We find that firms with higher current sales growth and decreases in market-to-book ratios and operating risk, and, also, lower operating risk and future growth opportunities are significantly more likely to be involved in initial repurchases. Therefore, the coefficients of changes in operating cash flows and profitability are not statistically significant, which enable us to reject the operating profitability improvements hypothesis. Our results are in line with some empirical literature on stock repurchases (e.g., Bernatzi *et al.*, 1997; Lie and McConnell, 1998; Grullon and Michaely, 2002 and 2004), although results on this are not consensual (e.g., Bartov, 1991; Jagannathan *et al.*, 2000 find different results). We note, however, that most of the

supportive data comes from the 1998-2002 period, in which we find increases in operating cash flows and market-to-book ratios and higher sales growth.

Finally, our results are fully consistent with the risk reduction signaling hypothesis, which is also a confirmed result in the literature (e.g., Grullon and Michaely, 2004; Lie, 2005) but, again, not consensual (e.g., Jagannathan *et al*., 2000). This result is mostly driven by the sub-samples of non-dividend payers, larger size-quartile firms and the 1998-2002 period of observations.[14]

In the context of the performance signaling hypothesis, the matched-control analysis with initial and secondary repurchase firms is mostly exploratory. Therefore, any significant differences between the two groups may contribute to the unique role of initial repurchase relative to secondary repurchase firms. In fact, we find that initial repurchasing firms have higher sales growth, lower operating risk and present higher increases in profit relative to secondary repurchase firms, which suggests that the likelihood of using stock repurchases as a signal of future operating performance improvements is slightly stronger for initial repurchase firms (in particular for the dividend payers and firms within the upper quartile of market-to-book ratio and lower quartile of size). All other coefficients that relate to operating performance are, however, insignificant. Finally, risk reduction signaling is somewhat supported as a stronger theoretical explanatory hypothesis for initial repurchase rather than for secondary repurchase firms.

5.2.3. Undervaluation Signaling Hypothesis

Our evidence on UNDERP, CHUNDERP, STOCKRET and CHSTOCKRET variables in the two matched-pairs samples shows that initial repurchases are neither preceded by significantly lower stock returns, nor followed by significant market performance improvements. In relation to secondary repurchase firms, evidence shows that initial repurchase firms have higher ex-ante returns (although this decreases significantly with the inclusion of CHSTOCKRET), which suggests a lower undervaluation signaling role of initial repurchases relative to the other repurchase transactions. However, for all other variables related to undervaluation signaling, we do not find any significant differences between initial repurchase and secondary repurchase firms. Thus, if the stock repurchase decision aims to

[14] In spite of the matching approach, we may also conclude that initial repurchase firms have a lower degree of asymmetric information relative to non-repurchase firms in view of the strong significance of the negative relation between growth and initial repurchase likelihood.

send a signal of undervaluation to the stock market, it clearly fails to do so (confirming Kahle, 2002 for all stock repurchases).

There are three exceptions, however. The first exception comes from the fact that, relative to non-repurchase firms, both initial and secondary repurchase firms present significantly higher stock returns in the initial repurchase year relative to the average of the three previous years. The next exception comes from the sub-sample of non-dividend payers in the initial and non-repurchases analysis, where results show a negative relation between underpricing and initial repurchase likelihood, suggesting that initial repurchases for these firms may have a role in transmitting undervaluation information to financial markets. Finally, as expected, the results are not robust across all time periods. For example, as several studies document a decreasing trend in the average (abnormal) returns related to stock repurchases (Lie, 2000; Jagannathan *et al*., 2000; Grullon and Michaely, 2002; Kahle, 2002), we should expect a different impact of the undervaluation signal role of initial and secondary repurchases over time. We report positive changes in market-to-book ratios for secondary repurchases in the period of 1982-1987 and some contradictory evidence in some other periods. These three pieces of evidence, however, do not contradict the fact that initial repurchase firms do not have a recent history of relative low stock returns. Therefore, we posit that, overall, there is no consistent evidence in support of undervaluation signaling hypothesis in our data.

5.2.4. Free Cash Flow Hypothesis

The crucial predictions of the free cash flow hypothesis are related with the availability of cash flow and lower growth opportunities. In this context, the stock repurchase decision is important to reduce equity agency costs, in particular to firms with lower debt ratios and/or higher cash balances. In fact, our evidence on initial and non-repurchase firms' samples confirms most of these predictions. In other words, our findings support the hypothesis that firms repurchase their stock for the first time in response to potential free cash flow problems, as almost all variables have statistical significance with the proper signs, with the exception of operating cash flows. Similar results for stock repurchase firms have been found in the literature (e.g., Nohel and Tarhan, 1998; Kahle, 2002; Allen and Michaely, 2002). We note that the leverage motivation does not seem to be important because the change in the leverage variable shows that ex-post initial repurchase firms remain under-leveraged relative to non-repurchase firms (specially, larger and lower market-to-book initial repurchase firms). In fact,

the sign of change in leverage is significantly negative for all observations and for the sub-samples of the two lower quartiles of market-to-book ratios and for the higher size quartile.

Evidence in initial and secondary repurchase firms' samples also shows that initial repurchase firms have significantly lower debt ratios but there are no significant differences in cash, cash flow and future growth variables. Initial repurchase firms present, however, higher current and future growth in sales, which goes against the free cash flow hypothesis. We consider those findings as evidence that, like initial repurchases, secondary repurchases are also transactions that aim to distribute excess cash flows to alleviate potential equity agency problems, in spite of the fact that secondary repurchase firms have higher debt ratios and similar cash balances.

5.2.5. Dividends Substitution Hypothesis

In testing the dividends substitution hypothesis for the samples of initial and non repurchase firms, we find that the coefficient related to non-operating income is statistically significant, which is driven by the sub-sample of non-dividend payers. In our interpretation, this finding means that the motivation for distributing transitory cash flows increases the likelihood of initial repurchases, specially for non-dividend payers (and lower market-to-book firms), which confirms the results of Guay and Harford (2000), Jagannathan *et al*., (2000) and Fenn and Liang (2001) for stock repurchase firms. It also indicates that transitory cash flows are more relevant for non-dividend payers, meaning that the argument of the different economic roles of the two payout instruments is only valid when there is no prior cash dividends distribution.[15] For dividend payers, we find that the change in payouts is significantly negative for the larger size quartile, which may suggest that only larger firms substitute dividends by stock repurchases. In addition, for non-dividend payers, it seems that initial repurchases may substitute potential dividend payments as an instrument for distribution of surplus operating cash flows in contexts of decreasing operating volatility and growth opportunities. In fact, the probability of repurchasing stock for the first time increases with higher operating cash flows and lower growth and operating risk (this last result is not valid for dividend payers). This evidence is consistent neither with Grullon and Michaely (2002), who find stock repurchase firms have higher operating volatility, nor with Fama and French (2001), who find that stock repurchase firms present higher growth. Finally, the

[15] We note that for the period of 1982-87, the negative sign in the change payout variable is consistent with the negative sign of change in the profit variable. We suspect that these oldest initial repurchase transactions may have been conducted by firms willing to substitute dividends by stock repurchases in view of expected decreases in operating profitability.

argument of non-substitution held by Fama and French (2001) and DeAngelo *et al*., (2002) that stock repurchases are made by younger firms seems to be valid also for initial repurchases, whether they pay dividends or not.

For the samples of initial and secondary repurchase firms some results are worth mentioning. First, as expected, we find opposite results from the analysis of the non-repurchase firms matched sample in relation to the availability of non-operating cash flows. These transitory cash flows actually decrease the likelihood of initial repurchases, which means that their distribution is a stronger motivation for secondary repurchases rather than for initial repurchases. However, we should note that these results are driven only by the sub-sample of dividend payers. This may be considered as evidence of the complementary role of dividends and secondary repurchases in distributing excess cash flows: dividend payments to distribute operating cash flows and (secondary) repurchases to distribute non-operating income (e.g., Jagannathan *et al*., 2000; Guay and Harford, 2000, among others).

Overall, we find evidence that firms systematically use initial and secondary stock repurchases to distribute non-operating cash flows in order to take advantage of the flexibility of stock repurchases. The other evidence neither supports nor rejects the predictions about the dividends substitution hypothesis, mainly because the assumptions of higher growth and operating risk of initial repurchase firms are rejected by our data. In fact, as documented by the univariate analysis, some firms may replace dividends by stock repurchases, while others may repurchase their stock without decreasing dividend payouts.

5.2.6. Differential Tax Rates Hypothesis

One of the most significant findings of our analysis is the lower debt ratios of initial repurchase firms in relation to both samples of non-and-secondary repurchase firms. Therefore, it is plausible that firms may use initial repurchase to increase leverage. Indeed, one possible explanation for this policy is related to tax considerations, but we can not exclude the effect of alternative explanations in driving this result, as is the case of mitigating free cash flow agency costs. Of course, we may argue that, if interest tax shields is an important explanatory variable we shouldn't expect any differences between the samples of initial and secondary repurchase firms, but they actually exist.

We can, however, easily reject both the leverage and payout tax effects as strong explanations of initial repurchases. Firstly, the change in payout coefficients are only significantly negative for the larger size sub-sample and for the 1982-87 time period, which may indicate that tax reasons were important to explain initial repurchases in this period but

not in later periods. Second, none of the coefficients of changes in the leverage variable have significant positive signs. Finally, as expected, we find no statistical significance for the change in payout variables in the initial and secondary repurchase firms analysis, with the exception of the opposite sign for dividend payers, because the tax effect shouldn't be stronger for any of these two samples of repurchase firms. Overall, our results are similar to those of recent empirical literature on stock repurchases, such as Jagannathan *et al*., (2000) and Dittmar (2000), which conclude that differential tax rates are, at maximum, weak determinants of the stock repurchase behavior of firms.

5.2.7. Maturity Hypothesis

Our results show mixed evidence for the initial and non-repurchase firms analysis in support of the maturity hypothesis. On one hand, our logistic regressions support the maturity hypothesis by documenting significant positive coefficients on cash flow and negative coefficients on growth and operating risk. Those results are shared with the literature on stock repurchases (Jagannathan *et al*, 2000; Grullon and Michaely, 2002, etc). On the other hand, the coefficients of changes in those variables are mostly non significant, with the exception of negative changes in operating risk. Furthermore, we find that the cash and retained earnings variables are also not significant for most regressions (and have contradictory significant signs in some regressions). Finally, some variables present evidence against maturity hypothesis, such as lower cash balances (only for model 1), higher current sales growth (with the exception of dividend payers) and lower age (robust result for all sub-samples).

These latter results, in particular the non significance of retained earnings and the fact that initial repurchase firms are significantly younger firms, cast doubt on the maturity hypothesis (and confirm the results of Fama and French, 2001; Grullon and Michaely, 2002).

The results of initial and secondary repurchase firms samples also show mixed evidence in support of our prediction: the maturity hypothesis of secondary (in relation to initial) repurchase firms. We document that initial repurchase firms present higher current and future growth in sales and the age variable is persistently significantly negative for all sub-samples. However, we find also contradictory evidence, coming from the significance of negative changes in operating cash flows and lower operating risk and, in particular, the non significance of retained earnings (since we expected a negative relation between this variable and the initial repurchase likelihood, relative, of course, to secondary repurchase counterparts).

To summarize, the results do not allow us to either promptly confirm or reject the maturity hypothesis as an explanation for initial and secondary repurchasing activity.

5.2.8. Timing Hypothesis

The results clearly show that both initial and secondary repurchase firms either do not attempt or do not succeed in timing the market. Surprisingly, we find strong evidence of this rejection because, with the exception of the negative relation with leverage (in fact, one of the weakest predictions of the timing hypothesis), all other predictions are not verified (as in Grullon and Michaely, 2002 and Dittmar and Dittmar, 2007). In particular, the stock returns history and changes in underpricing and stock returns are either insignificant or have contradictory signs. In view of the strong importance of these two variables to test the market timing hypothesis, we consider that our results allow us to reject this explanatory hypothesis. We note, however, that the results of the initial and secondary repurchase firms analysis suggest that the rejection of the timing hypothesis is valid for all repurchase firms. Most empirical evidence goes against this result (e.g., Stephens and Weisbach, 1998; Dittmar, 2000; Jagannathan *et al*., 2000; Fama and French, 2001), although Kahle (2002) and Grullon and Michaely (2002) confirm some of our results when they report that stock repurchase firms have higher ex-ante market-to-book ratios. Dittmar and Dittmar (2007) present a possible explanation, documenting that the pro-cyclical nature of aggregate stock repurchase activity is influenced by actual changes in the business cycle and not by market timing decisions.

5.2.9. Options and Dilution Hypothesis

Our evidence does not support the options and dilution hypothesis for both initial and secondary repurchase firms. All variables are either insignificant or have opposite signs from the ones predicted by this hypothesis. Again, there is little similar prior evidence for this result (except Jagannathan and Stephens, 2003). The only result worth mentioning is the fact that initial repurchase firms that pay dividends have significantly lower options than their two matched sample counterparts.

5.2.10. Multivariate Analysis Conclusions

The analysis in this section yields several interesting results, not only regarding initial repurchases but also for stock repurchases in general.

Firstly, consistent with the findings of Nohel and Tarhan (1998), Jagannathan and Stephens (2003), Lie (2005), among others, the free cash flow theory and risk reduction signaling are the only two fully confirmed theoretical hypotheses to initial repurchase firms. We also find strong support for the flexibility motivation in distributing non-operating cash flows. While this conclusion is also true for secondary repurchase firms, we document a somewhat weaker support of the two theoretical hypotheses for these firms and a stronger support for the flexibility motivation for using stock repurchases.

Secondly, there is no consistent evidence about the role of initial repurchases as a financial instrument used to signal operating performance improvements but the evidence suggests that the likelihood of this using stock repurchases as a signal device for that matter is slightly higher for initial repurchase than for secondary repurchase firms.

Thirdly, we find mixed evidence for the maturity and dividend substitution hypotheses. In addition to the strong support for the flexibility motivation, the comparison between initial and non repurchase firms on these two hypotheses is largely inconclusive, although some results indicate that secondary repurchase firms have some stronger maturity attributes than initial repurchase firms. In addition, although the matched-pairs criteria may be an explanation for this, initial repurchase firms are clearly younger firms than both matched samples.

Fourthly, the significant lower leverage of initial repurchase firms relative to non and secondary repurchase firms, both ex-ante and ex-post, is an interesting result, which may be related to the existence of free cash flow problems (already confirmed), other equity agency costs and tax reasons. We show that this latter explanation is not confirmed by our data. Another possible interpretation of this result is that these firms want to manage their capital structure when debt ratios fall below a potential target ratio (Dittmar, 2000). This motivation may be rejected because change in leverage remains negative and significant for initial repurchase firms and insignificant for secondary repurchase firms. An alternative explanation is that concerns over the increased risk of financial problems prevents highly leveraged firms from repurchasing stock for the first time and only the others can do so. Again, this is not confirmed as secondary repurchase firms present higher debt ratios than initial repurchase firms.

Fifthly, there is clear evidence contrary to some theoretical explanations of stock repurchases, such as undervaluation signaling, timing, payout tax effects and options and dilution hypotheses.

In addition, we find some differences over time, across market-to-book and size quartiles and for two classes of dividend payers. The most persistent differences between the results from groups of non-dividend and dividend payers are associated with the stronger empirical support for the flexibility motivation for non-dividend payers. Also, higher values for the options variable clearly decrease the likelihood of initial repurchases for dividend payers only. Very few variables are statistically significant with the same signs for all market-to-book and size quartiles and for the four time periods. However, we do not find situations in which the results of theoretical explanations referred to in these sections would be changed.

Finally, the intercepts should be interpreted as the average likelihood for initial repurchases after all independent variables are considered. They are almost always positive and not significant, suggesting that the models considered are complete in terms of average effects on the initial repurchase likelihood (and that after all those independent variables are considered, firms are, not significantly, more likely to be initial repurchase firms than both non and secondary repurchase firms). Also, the significance test of log likelihood of all models allows us to conclude that there is a significant relationship between the dependent variable and the set of independent variables. In relation to the McFadden R-squared measure, we would characterize the relationships as strong. Of course, not all variables are significant contributors to explaining differences in initial repurchase behavior. This holds for all models.

6. Conclusions

In this paper, we investigate the determinants of initial stock repurchase transactions by studying the validity of the motivations and theoretical explanations commonly mentioned in the literature to explain stock repurchases. First, we find that initial repurchase firms have some specific financial attributes in relation to both non-repurchase and secondary repurchase (size and industry) matched peers. In particular, compared to matched non-repurchase firms, initial repurchase firms are younger, have lower leverage and operating risk, and higher payouts, operating cash flows, profitability and market-to-book. Vis-a-vis matched secondary repurchase firms, initial repurchase firms are also younger, have higher cash, profitability, sales growth and market-to-book and lower payouts, leverage and retained earnings. We perform several univariate and multivariate analyses to conclude that the theoretical hypotheses found in the financial literature that are most important in explaining initial stock repurchases are the free cash flow and risk reduction signaling hypotheses and the flexibility

motivation in distributing cash flows. We do not find strong support for any other theoretical explanations of stock repurchases, such as undervaluation signaling, timing, maturity, tax effects and options and dilution hypotheses and leverage increasing and excess cash distribution motivations. These results confirm some previous evidence about stock repurchases in general but also contradict other empirical results, even in the same studies. (e.g., Dittmar, 2000; Jagannathan *et al*., 2000; Kahle, 2002). However our results are more in line with works such as those of Nohel and Tarhan, 1998; Grullon and Michaely (2002; 2004) and Lie (2005), as they also support the free cash flow and risk reduction signaling hypotheses and the flexibility motivation for stock repurchases.

References

Allen, F.; Bernardo, A.; Welch, I.; (2000); *A Theory of Dividends Based on Tax Clienteles*; Journal of Finance, 55, 2499-536.

Allen, F.; Michaely, R.; (2002); *Literature Survey on Cash Payouts*; Prepared for the North Holland Handbook of Economics.

Asquith, O.; Mullins, D.; (1983); *The Impact of Initiating Dividend Payments On Shareholders' Wealth*; Journal of Business 56, 27-44.

Asquith, O.; Mullins, D.; (1986); *Signaling with Dividends, Stock Repurchases and Equity Issues*; Financial Management 15, (3), Autumn, 27-44.

Bagwell, L.; (1991); *Share Repurchase and Takeover Deterrence*; Rand Journal of Economics, 22, 72-88.

Bagwell, L.; Shoven, J.; (1988); *Share Repurchases and Acquisitions: An Analysis of Which Firms Participate*; In Alan J. Auerbach (ed.) *Corporate Takeovers: Causes and Consequences*, Chicago: University of Chicago Press.

Bagwell, L.; Shoven, J.; (1989); *Cash Distributions to Shareholders*; Journal of Economic Perspectives, 3, 129-40.

Bagwell, L; (1992); *Dutch Auction Repurchases: An Analysis of Shareholder Heterogeneity*; Journal of Finance 47, (1), 71-105.

Badrinath, S.; Varaiya, N.; Ferling, R.; (2001); *Share Repurchase Decision: To Buy or Not To Buy*; Financial Executive, 17, (3), 43-48.

Bajaj, M.; Vijh, A.; (1990); *Dividend Clienteles and the Information Content of Dividend Changes*; Journal of Financial Economics, 26, 193-219.

Baker, K.; Gallagher, P.; Morgan, K.; (1981); *Managements' View of Stock Repurchase Programs*; Journal of Financial Research, 3, Fall, 233-47.

Baker, K.; Powell, G.; Veit, E.; (2003); *Why Companies Use Open-Market Repurchases: A Managerial Perspective*; Quarterly Review of Economics and Finance, 43 (3), 483-504.

Baker, M.; Wurgler, J.; (2002); *Market Timing and Capital Structure*; Journal of Finance, 57, (1), 1-32.

Baker, M.; Wurgler, J.; (2004); *A Catering Theory of Dividends*; Journal of Finance, 59, (3), 1125-65.

Banyi, Monica; Kahle, Kathleen; Dyl, Edward; (2005); *Measuring Share Repurchases*; August. http://ssrn.com/abstract=726284

Barclay, M.; Smith, C.; (1988); *Corporate Payout Policy: Cash Dividends Versus Open Market Repurchases*; Journal of Financial Economics, 22, 61-82.

Bartov, E.; (1991); *Open-Market Stock Repurchases as Signals for Earnings and Risk Changes*; Journal of Accounting and Economics, 14, 275-94.

Benartzi, S.; Michaely, R.; Thaler, R.; (1997); *Do Changes in Dividends Signal the Future Or the Past*; Journal of Finance, 52, 1007-34.

Bens, D.; Nagar, V.; Skinner, D.; Wong, F.; (2002); *Employee Stock Options, EPS Dilution and Stock Repurchases*; University of Chicago Working Paper (February).

Berger, P.; Ofek, E.; Yermack, D.; (1996); *Managerial Entrenchment and Capital Structure*; Journal of Finance, 62, 1411-38.

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

Brav, A.; Graham, J.; Harvey, C.; Michaely, R.; (2005); *Payout Policy in the 21th Century*; Journal of Financial Economics, 77, 483-527.

Brennan, M.; Thakor, A.; (1990); *Shareholder Preferences and Dividend Policy*; Journal of Finance, 45, 992-1018.

Brigham, E.; (1964);*The Profitability of a Firm's Purchase of Its Own Stoc*k; California Management Review, 7, 69-76.

Brockman, P.; Chung, D.; (2001); *Managerial Timing and Corporate Liquidity: Evidence From Actual Share Repurchases*; Journal of Financial Economics, 61, 417-48.

Bulan, L.; Subramanian, N.; Tanlu, L.; (2006); *On the Timing of Dividend Initiations*; October; Financial Management, Forthcoming Available at SSRN: http://ssrn.com/abstract=962109

Campbell, H.; Graham, J.; (2001); *The Theory and Practice of Corporate Finance: Evidence from the Field*; Journal of Financial Economics, 60, 187-243.

Comment, R.; Jarrell, G.; (1991); *The Relative Signaling Power of Dutch-Auction and Fixed-Price Self-Tender Offers and Open-Market Share Repurchases*; Journal of Finance, 46, 1243-71.

Cook, D.; Krigman, L.; Leach, C.; (2003); *An Analysis of SEC Guidelines for Executing Open Market Repurchases*; Journal of Business, 76, (2), 289-315

Copeland, T.; Weston, J.; (1988); *Financial Theory and Corporate Policy*; 3rd ed. Reading, Massachusetts: AddisonWesley Publishing Co.

Custodio, C., Ferreira, M. and Raposo, C., (2006); *Cash Holdings and Business Conditions*; ISCTE Working Paper (March) 2005). Available at SSRN: http://ssrn.com/abstract=608664

D'Mello, R.; Shroff, P.; (2000); *Equity Undervaluation and Decisions to Repurchase Tender Offers: An Empirical Investigation*; Journal of Finance, 55, (5), 2399-2424

Dann, L.; (1981); *Common Stock Repurchases: An Analysis of Returns to Bondholders and Stockholders*; Journal of Financial Economics, 9, 113-38.

DeAngelo, H.; DeAngelo, L.; Skinner, D.; (2002); *Are Dividends Disappearing? Dividend Concentration and the Consolidation of Earnings"* University of Southern California – Marshall School of Business Working Paper No 02-9, September.

DeAngelo, H.; DeAngelo, L.; Stulz, R.; (2005); *Dividend Policy and the Earned/Contributed Capital Mix: A Test of the Lifecycle Theory*; (May); Available at SSRN: http://ssrn.com/abstract=766086.

Denis, J.; Denis, K.; Sarin, A.; (1994); *The Information Content of Dividend Changes: Cash Flow Signaling, Overinvestment and Dividend Clienteles*; Journal of Financial and Quantitative Analysis, 29: 567-87.

Dittmar, A.; (2000); *Why Do Firms Repurchase Stock?*; Journal of Business, 73, (3), 331-55.

Dittmar, A.; Dittmar, R.; (2002); *Stock Repurchase Waves: An Explanation of the Trends in Aggregate Corporate Payout Policy*; SSRN Working Paper, Available at http://ssrn.com/abstract=346548.

Dittmar, A.; Dittmar, R.; (2007); *The Timing of Stock Repurchases*; SSRN Working Paper, Available at http://ssrn.com/abstract=911308.

Easterbrook, F.; (1984); *Two Agency-Cost Explanations of Dividends*; American Economic Review, 74, September: 650-59.

Elton, E.; Gruber, M.; (1968); *The Effect of Share Repurchase on the Value of Firm*; Journal of Finance, 23, 135-49

Fama, E.; Babiak, H.; (1968); *Dividend Policy: An Empirical Analysis*; Journal of The American Statistical Association, 63, 1132-61.

Fama, E.; Keneth, F.; (2001); *Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay*; Journal of Financial Economics, 60, (1), 3-43.

Fenn, G.; Liang, N.; (2001); *Corporate Payout Policy and Managerial Stock Incentives*; Journal of Financial Economics, 60, (1), 45-72

Fried, J.; (2001); *Insider Signaling and Insider Trading With Repurchase Tender Offers*; University of Chicago Law Review, 67, 421-77.

Gesser, R.; Halman, R.; Sarig, O.; (2005); *Measuring the Agency Costs of Dispersed Ownership: The Case of Repurchase Initiations*; (June). Available at SSRN: http://ssrn.com/abstract= 736623.

Grinstein, Y.; Michaely, R.; (2005); *Institutional Holdings and Payout Policy*; Journal of Finance, 60, 1389-426.

Grossman, S.; Hart, O; (1982); *Corporate Financial Structure and Managerial Incentives*; The Economics of Information and Uncertainty, University of Chicago Press.

Grullon, G.; Ikenberry, D.; (2000); *What Do We Know About Stock Repurchases?*; Journal of Applied Corporate Finance, 13, (1), 31-51.

Grullon, G.; Michaely, M.; (2002); *Dividends, Share Repurchases and the Substitution Hypothesis*; Journal of Finance, 57, (4), 1649-84.

Grullon, G.; Michaely, M.; Swaminathan, B.; (2002); *Are Dividend Changes a Sign of Firm Maturity*; Journal of Business, 75, (3), 387-424.

Grullon, Gustavo; Michaely, Rony; (2004); *The Information Content of Share Repurchase Program*; Journal of Finance, 59, 651-80

Guay, W.; Harford, J.; (2000); *The Cash Flow Permanence and Information Content of Dividend Increases Versus Repurchases*; Journal of Financial Economics, 57, (3), 385-415.

Handjinicolaou, G.; Kalay, A.; (1984); *Wealth Redistributions or Changes in Firm Value: An Analysis of Returns to Bondholders and Stockholders Around Dividend Announcements*; Journal of Financial Economics, 13, 35-63.

Harford, Jarrad (1999); *Corporate Cash Reserves and Acquisitions*; Journal of Finance, 54, 1969-1997.

Hausch, D.; Seward, J.; (1993); *Signaling With Dividends And Share Repurchases: A Choice Between Deterministic And Stochastic Cash Disbursements*; Review of Financial Studies, 6, 121-154

Healy, P.; Palepu, K.; (1988); *Earnings Information Conveyed by Dividend Initiations*; Journal of Financial Economics, 21, 149-175.

Heaton, J.; (2002); *Managerial Optimism and Corporate Finance*; Financial Management, Summer, 31, 33-45.

Hoberg, G.; Prabhala, N.; (2005); *Disappearing Dividends: The Importance of Idiosyncratic Risk and the Irrelevance of Catering*; University of Maryland Working Paper.

Hosmer, D.; Lemeshow, S.; (2000); *Applied Logistic Regression*; John Wiley & Sons, Inc, 2nd ed.

Howe, K., He, J.; Kao, W.; (1992); *One Time Cash Flow announcements and Free Cash Flow Theory: Share Repurchases and Special Dividends*; Journal of Finance, 47, 1963-75.

Ikenberry, D.; Lakonishok, J.; Vermaelen, T.; (1995); *Market Underreaction to Open Market Share Repurchases*; Journal of Financial Economics, 39, (2-3), 181-208.

Ikenberry, D.; Lakonishok, J.;Vermaelen, T.; (2000); *Stock Repurchases in Canada: Performance and Strategic Trading or Open Market Stock Repurchase: The Canadian Experience*; Journal of Finance, 55, 2373-97

Jagannathan, M.; Stephens, C.; (2003); *Motives For Multiple Open-Market Repurchase Programs*; Financial Management, 32, (2), Summer.

Jagannathan, M.; Stephens, C.; Weisbach, M.; (2000); *Financial Flexibility and the Choice Between Dividends and Stock Repurchases*; Journal of Financial Economics, 57, (3), 355-384.

Jensen, M.; (1986); *Agency Costs of Free Cash Flow: Corporate Finance and Takeovers*; American Economic Review, 76, 323-29.

Jensen, M.; Meckling, W.; (1976); *Theory of The Firm: Managerial Behavior, Agency Costs and Capital Structure*; Journal of Financial Economics, 3, 305-60.

John, K.; Williams, J.; (1985); *Dividends, Dilution and Taxes: A Signalling Equilibrium*; Journal of Finance, 40, 1053-70

Jolls, C.; (1998); *Stock Repurchases and Incentive Compensation*; NBER Working Paper #6467.

Kahle, K.; (2002); *When a Buyback Isn't a Buyback: Open Market Repurchases and Employee Options*; Journal of Financial Economics, 63, (2), 235-61.

Kalay, A.; (1982); *The Ex-Dividend Behavior of Stock Prices: A Re-Examination of the Clientele Effect*; Journal of Finance, 37, 1059-70.

Kamma, S.; Kanatas, G.; Raymar, S.; (1992); *Dutch Auction Versus Fixed-Price Self-Tender Offers for Common Stock*; Journal of Financial Intermediation, 2, 277-82.

Lang, L.; Lintzenberger, R.; (1989); *Dividend Announcements: Cash Flow Signaling Versus Free Cash Flow Hypothesis*; Journal of Financial Economics, 24, 181-91

Lasfer, A.; (2002); *The Market Valuation of Share Repurchases in Europe*; City University Working Paper.

Lee, S.; Mikkelson, W.; Partch. M.; (1992); *Managers' Trading Around Stock Repurchases;* Journal of Finance, 47, (5), 1947-61.

Lemmon, M. and Zender, J.; (2003); *Debt Capacity and Tests of Capital Structure Theories*; (September), AFA 2003 Washington DC Meetings; Available at SSRN: http://ssrn.com/abstract= 334780.

Lie, E.; (2000); *Excess Funds and Agency Problems: An Empirical Study of Incremental Cash Disbursements*; Review of Financial Studies, 13, (1), 219-48.

Lie, E.; (2005); *Financial Flexibility, Performance and the Corporate Payout Choice*; Journal of Business, 78 (6), 1-23.

Lie, E.; McConnell, J.; (1998); *Earnings Signals in Fixed-Price and Dutch Auction Self-Tender Offers*; Journal of Financial Economics, 49, 161-86.

Lintner, J.; 1956, *Distribution of Incomes of Corporations among Dividends, Retained Earnings, and Taxes*; American Economic Review, 46, 97-113.

Lucas, D.; McDonald, R.; (1998); *Shareholder Heterogeneity, Adverse Selection and Payout Policy*; Journal of Financial and Quantitative Analysis, 33, 233-53.

Masulis, R.; (1980); *Stock Repurchase By Tender offer: An Analysis of the Causes of Common Stock Price Changes*; Journal of Finance, 35, 305-19.

Maxwell, W.; Stephens, C.; (2003); *The Wealth Effects of Repurchases to Bondholders*; Journal of Finance, 58, 895-920.

Michaely, R.; Thaler, R.; Womack, K.; (1995); *Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?*; Journal of Finance 50, 573-608.

Miller, M.; Rock, K.; (1985); *Dividend Policy Under Asymmetric Information*; Journal of Finance, 40, September, 1031-51.

Myers, S.; (1977); *Determinants of Corporate Borrowing*; Journal of Financial Economics, 5, 147-175.

Nohel, T.; Tarhan, V.; (1998); *Share Repurchases and Firm Performance: New Evidence on the Agency Costs of Free cash Flow*; Journal of Financial Economics, 49, (2), 187-222.

Ofer, A.; Thakor, A.; (1987); *A Theory of Stock Price Responses to Alternative Corporate Cash Disbursement Methods: Stock Repurchases and Dividends*; Journal of Finance, 42: 365-94.

Opler, T.; Titman, S.; (1996); *The Debt Equity Choice: An Analysis of Issuing Firms*; Ohio State University Working Paper.

Osobov, I.; Denis, D.; (2006); *Disappearing Dividends, the Earned/Contributed Capital Mix and Catering Incentives: International Evidence on the Determinants of Dividend Policy*; SSRN Working Paper (Available at: http://ssrn.com.abstract=887643).

Perfect, S.; Peterson, D.; Peterson, P.; (1995); *Self-Tender Offers: The Effects of Free Cash Flow, Cash Flow Signaling and the Measurement of Tobin's Q*; Journal of Banking and Finance, 19.

Roll, R.; (1986); *The Hubris Hypothesis of Corporate Takeovers*; Journal of Business, 59 (2), 197-216.

Shleifer, A.; Vishny, R.; (1986); *Large Shareholders and Corporate Control*; Journal of Political Economy, 94, 461-488.

Sinha, S.; (1991); *Share Repurchase as a Takeover Defense*; Journal of Financial and Quantitative Analysis, 26, 233-244.

Stephens, C.; Weisbach, M.; (1998); *Actual Share Reacquisitions in Open Market Repurchase Programs*; Journal of Finance, 53, (1), 313-34.

Stewart, S.; (1976); *Should a Corporation Repurchase Its Own Stock*; Journal of Finance, 31, 911-21.

Stulz, R.; (1988); *Managerial Control of Voting Rights: Financing Policies and the Market for Corporate Control;* Journal of Financial Economics, 20, 25-54.

Vermaelen, T.; (1981); *Common Stock Repurchases and Market Signaling: An Empirical Study*; Journal of Financial Economics, 9, 139-83.

Weisbenner, S.; (1998); *Corporate Share Repurchases In The Mid 1990s: What Role Do Options Play?*; Working Paper, Massachusetts Institute Of Technology.

Weston, F.; Siu, J.; (2002); *Changing Motives for Share Repurchases*; Working Paper.

Table 1A: Definition and Measurement of Variables

List of variables used with definition and Compustat code. Data for firms' characteristics are obtained from the Compustat database (see appendix 1 for more details).

Variables	Definition	Compustat #
SIZE	Natural log of the book value of assets	ln(#6)
PAYOUT	Dividend payout ratio	#21/#18
LEVERAGE	Book value of total debt	(#9+#44)/#6
CASH	Cash balances	#1/(#6-#1)
CASHFLOW	Operating cash flow	(#110+#308)/#6
UNDERP	Equity market-to-book ratio	(#24*#25)/#60
GROWTH	Capex advertising and R&D	(#128+#45+#46)/#6
PROFIT	Return on assets	#18/#6
OPRISK	Operating risk	Stdev(#18/#6)
OPTIONS	Stock reserved for stock options	#215/#6
NONOPINC	Non operating income	#61/#6
EPSGRW	Earnings per share growth	#58(t/t-1)-1
SALESGRW	Sales growth	#12(t/t-1)-1
RETEARN	Total retained earnings	#36/#6
DIVYIELD	Dividend yield	#21/(#24*#25)
STOCKRET	Stock return	(#24*#25)(t/t-1)-1
STOCKRET1	Stock return of initial repurchasers	Dummy variable
AGE	Years since first stock market price	-

Table 1B: Predicted Relations of Independent Variables with the Likelihood of Initial Stock Repurchases

Variables	Performance Signaling		Undervaluation Signaling		Free Cash Flow		Dividends Substitution		Differential Tax Rates		Maturity		Timing		Options and Dilution	
	R0	R2	R0	R2	R0	R2	R0	R2	R0	R2	R0	R2	R0	R2	R0	R2
SIZE																
PAYOUT							?	?	Δ–	=						
LEVERAGE					+ =	+			–; Δ+	=			– ; Δ+	=		
CASH					– = ; Δ+ =	– ; Δ+					– =	–				
CASHFLOW	Δ+	?			– = ; Δ+ =	– ; Δ+	?	–			– = ; Δ+ =	– ; Δ+				
UNDERP	– ; Δ+	?	– ; Δ+	?									– ; Δ+	=		
GROWTH	+	?			+ = ; Δ+ =	+ ; Δ+	?	+			+ =, Δ+ =	+, Δ+ =				
PROFIT	Δ+	?														
OPRISK	Δ–	?					?	+			+ =, Δ+ =	+, Δ+ =			+	+
OPTIONS															+	=
NONOPINC							+	–								
EPSGRW															+	+
SALESGRW	+	?			+ = ; Δ+ =	+ ; Δ+					+ =, Δ+ =	+, Δ+ =				
RETEARN											– =	–				
DIVYIELD							?	?	–	=						
STOCKRET			– ; Δ+	?									– ; Δ+	=		
STOCKRET1			+; Δ+	?												
AGE							?	–			– =	–				

Signs: Positive relation (+); Negative relation (–); no positive relation (– =); no negative relation (+ =); Ex-post increase (Δ+); Ex-post decrease (Δ–).
R0: sample of non-repurchase firms; R2: sample of secondary-repurchase firms.
Note: Predicted relations take into consideration the hypothesis development in section 3.1. and have signs consistent with the differential strength expected for initial repurchase firms and their matched counterparts. Therefore, they may include different signs from conventionally predicted relations in order to account for the overall research question related to the uniqueness of initial repurchases. For example, the prediction for the free cash flow theory and maturity hypothesis is that they may apply to secondary repurchases but not to initial repurchases. Thus the predicted signs of the comparison with the non-repurchase firms are the opposite from the conventional application of this theory.

Table 2A: Frequency Distribution of Observations (1980-2002)

Final samples consist of 2,016 industrial companies (i.e., excluding utilities and financial firms) listed on the NASDAQ, NYSE and AMEX. The initial repurchase firms are those firms that went public between 1975 and 2002 and which repurchased their stock for the first time between 1980 and 2002 (zero observations for 1980 and 1981). Non-repurchase firms are contemporaneous size-and industry-matched firms that never repurchase their stock and secondary repurchase firms are contemporaneous size-and industry-matched firms that have repurchased their stock more than once.

Type of Observation	Number of Observations	Number of Matched Pairs
Non-Repurchases (R0)	782	630
Initial Repurchases (R1)	1,247	630 (R0) - 716 (R2)
Secondary Repurchases (R2)	899	716

Table 2B: Temporal Distribution of Initial Repurchases (1980-2002)

Time Range	Number of Observations	Number of Matched Pairs R0 – R2
1980-1987	77 (6,2%)	53 (8,4%) – 55 (7,7%)
1988-1992	142 (11,4%)	77 (12,2%) – 98 (13,7%)
1993-1997	364 (29,2%)	194 (30,8%) – 214 (29,9%)
1998-2002	664 (53,2%)	306 (48,6%) – 349 (48,7%)
Total	1,247 (100%)	630 (100%) – 716 (100%)

Table 2C: Length of Time Between IPO and Initial Repurchases (in years)

Matched Pairs Analysis	Mean	Median	Standard deviation
R1 – R0 (630 R1)	5.6	4.0	4.4
R1 – R2 (716 R1)	5.5	4.0	4.3
Total R1 observations (1,247 R1)	5.5	4.0	4.3

Table 2D: Age of Sample Firms (in years)

Matched Pairs Analysis	Mean	Median	Standard deviation
Initial Repurchase Firms	5.5	4.0	4.3
Non-Repurchase Firms	7.1	4.0	8.3
Secondary Repurchase Firms	16.9	13.0	13.4

Table 2E: Median Repurchase Values (in USD millions)

Type of Observation	Number of Observations	Median Event Year	Median Ex-post 3 year-period
Initial Repurchases (R1)	1,247	6.0	15.0
Initial Repurchases (R1)	630	5.0	12.2
Initial Repurchases (R1)	716	6.2	15.9
Secondary Repurchases (R2)	716	10.5	13.4

Table 3A: Ex-Ante Descriptive Statistics for Event Firms (R1) and No Repurchases Control Firms (R0)
Summary descriptive statistics for event firms (R1) and for non-repurchases 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 PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET1. A non-parametric Mann/Whitney ranksum test on differences in medians between these two sub-samples 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 in Medians or Means
	Mean	St. Dev.	Median	Mean	St. Dev.	Median	
SIZE	5,230	1,184	4,941	5,150	1,258	4,944	
PAYOUT	0,121	0,648	0,000	0,069	1,387	0,000	
LEVERAGE	0,172	0,179	0,124	0,222	0,238	0,148	***
CASH	0,417	0,677	0,167	0,482	1,174	0,124	*
CASH FLOW	0,097	0,102	0,100	0,054	0,158	0,071	***
UNDERP	3,502	4,421	2,498	3,413	6,268	2,054	***
GROWTH	0,133	0,096	0,115	0,154	0,146	0,120	
PROFIT	0,052	0,137	0,064	0,000	0,222	0,040	***
OPRISK	0,066	0,108	0,035	0,101	0,220	0,039	**
OPTIONS	0,042	0,069	0,007	0,041	0,077	0,000	***
NONOPINC	0,012	0,028	0,009	0,011	0,019	0,008	
EPSGRW	-0,125	7,426	0,010	0,183	9,160	0,023	
SALESGRW	0,663	7,338	0,251	0,964	3,787	0,264	
RETEARN	0,317	2,348	0,338	0,831	1,536	0,292	
DIVYIELD	0,008	0,041	0,000	0,006	0,021	0,000	
STOCKRET	0,681	4,284	0,182	0,426	1,470	0,043	***
STOCKRET1	0,634	0,482	1,000	0,512	0,500	1,000	***

Table 3B: Ex-Post Descriptive Statistics for Event Firms (R1) and Non-Repurchase Control Firms (R0)
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 PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET1. A non-parametric Mann/Whitney ranksum test on differences in medians between these two sub-samples 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 in Medians or Means
	Mean	St. Dev.	Median	Mean	St. Dev.	Median	
SIZE	5,866	1,057	5,617	5,830	1,080	5,622	
PAYOUT	0,127	0,672	0,000	0,067	1,420	0,000	
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	
CASH FLOW	0,096	0,074	0,092	0,061	0,148	0,070	***
UNDERP	2,749	2,358	2,137	2,750	3,639	1,890	***
GROWTH	0,122	0,086	0,108	0,129	0,109	0,102	
PROFIT	0,033	0,109	0,047	-0,034	0,269	0,028	***
OPRISK	0,066	0,113	0,035	0,122	0,284	0,046	***
OPTIONS	0,022	0,044	0,000	0,021	0,051	0,000	
NONOPINC	0,011	0,015	0,008	0,008	0,033	0,006	***
EPSGRW	-0,231	1,273	-0,007	-1,034	12,89	0,000	
SALESGRW	0,137	0,841	0,080	0,123	0,312	0,075	
RETEARN	0,449	5,351	0,397	0,552	2,390	0,303	***
DIVYIELD	0,006	0,020	0,000	0,008	0,030	0,000	
STOCKRET	0,203	0,561	0,101	0,240	0,738	0,091	
STOCKRET1	0,630	0,483	1,000	0,588	0,493	1,000	

Table 3C: Ex-Post Versus Ex-Ante Medians for Event Firms (R1) and Non-Repurchase Firms (R0)
In this table, we calculate medians for event firms (R1) and for non-repurchase matched-pairs control firms (R0) for all variables except for PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET, 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 PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET1. A non-parametric Mann/Whitney ranksum test on differences in medians between these two samples 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
SIZE	4,941	5,617	0,676***	4,944	5,622	0,678***
PAYOUT	0,121	0,127	0,006	0,069	0,067	-0,002
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
CASH FLOW	0,100	0,092	-0,008	0,071	0,070	-0,001
UNDERP	2,498	2,137	-0,361***	2,054	1,890	-0,164
GROWTH	0,115	0,108	-0,007*	0,120	0,102	-0,018***
PROFIT	0,064	0,047	-0,017***	0,040	0,028	-0,012***
OPRISK	0,035	0,035	0,000	0,039	0,046	0,007*
OPTIONS	0,042	0,022	-0,020***	0,041	0,021	-0,020***
NONOPINC	0,009	0,008	-0,001	0,008	0,006	-0,002***
EPSGRW	0,010	-0,007	-0,017	0,023	0,000	-0,023***
SALESGRW	0,251	0,080	-0,171***	0,264	0,075	-0,179***
RETEARN	0,338	0,397	0,059	0,292	0,303	0,011
DIVYIELD	0,008	0,006	-0,003	0,006	0,008	0,001
STOCKRET	0,182	0,101	-0,081***	0,043	0,091	0,048
STOCKRET1	0,634	0,630	-0,004	0,512	0,588	0,076***

Table 3D: Ex-Ante Descriptive Statistics for Event Firms (R1) and Secondary Repurchase Control Firms (R2)

Summary descriptive statistics for initial repurchase firms (R1) and for secondary repurchase matched-pairs control firms (R2). 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 PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET1. A non-parametric Mann/Whitney ranksum test on differences in medians between these two sub-samples 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)			Secondary Repurchase Firms (R2)			Difference in Medians or Means
	Mean	St. Dev.	Median	Mean	St. Dev.	Median	
SIZE	5,710	1,405	5,404	5,989	1,314	5,675	
PAYOUT	0,152	0,742	0,000	0,213	0,777	0,000	**
LEVERAGE	0,196	0,184	0,165	0,246	0,238	0,191	***
CASH	0,330	0,551	0,111	0,226	0,431	0,075	***
CASH FLOW	0,098	0,088	0,098	0,092	0,088	0,090	*
UNDERP	3,281	4,074	2,302	2,696	4,361	1,839	***
GROWTH	0,126	0,098	0,104	0,119	0,093	0,100	
PROFIT	0,050	0,126	0,058	0,029	0,138	0,041	***
OPRISK	0,060	0,110	0,029	0,065	0,129	0,031	*
OPTIONS	0,039	0,067	0,000	0,040	0,07	0,010	
NONOPINC	0,010	0,015	0,007	0,012	0,021	0,008	
EPSGRW	0,319	1,005	0,055	-0,044	6,545	0,000	**
SALESGRW	3,089	68,92	0,227	0,241	0,933	0,101	***
RETEARN	0,218	1,234	0,327	0,143	10,28	0,530	***
DIVYIELD	0,008	0,032	0,000	0,012	0,029	0,000	**
STOCKRET	1,144	15,58	0,163	0,208	0,598	0,101	***
STOCKRET1	0,597	0,491	1,000	0,585	0,493	1,000	

Table 3E: Ex-Post Descriptive Statistics for Event Firms (R1) and Secondary Repurchase Firms (R2)

Summary descriptive statistics for event firms (R1) and for secondary repurchase matched-pairs control firms (R2). 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 PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET1. A non-parametric Mann/Whitney ranksum test on differences in medians between these two samples 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)			Secondary Repurchase Firms (R2)			Difference in Medians or Means
	Mean	St. Dev.	Median	Mean	St. Dev.	Median	
SIZE	6,271	1,311	5,916	6,237	1,317	5,910	
PAYOUT	0,148	0,666	0,000	0,243	1,551	0,000	**
LEVERAGE	0,208	0,181	0,188	0,247	0,230	0,206	***
CASH	0,268	0,439	0,084	0,234	0,536	0,073	**
CASH FLOW	0,097	0,071	0,093	0,089	0,092	0,090	
UNDERP	2,671	2,711	2,129	2,263	3,691	1,755	***
GROWTH	0,115	0,086	0,098	0,107	0,087	0,088	**
PROFIT	0,037	0,094	0,047	0,012	0,141	0,036	***
OPRISK	0,057	0,086	0,030	0,075	0,146	0,033	**
OPTIONS	0,022	0,045	0,000	0,024	0,057	0,000	
NONOPINC	0,009	0,016	0,006	0,009	0,020	0,006	
EPSGRW	-0,742	13,18	-0,007	-0,428	7,452	0,000	
SALESGRW	0,113	0,357	0,074	0,057	0,151	0,044	***
RETEARN	0,189	4,233	0,402	0,535	5,556	0,564	***
DIVYIELD	0,008	0,022	0,000	0,013	0,049	0,000	**
STOCKRET	0,240	1,222	0,123	0,304	1,723	0,086	
STOCKRET1	0,662	0,473	1,000	0,620	0,486	1,000	*

Table 3F: Ex-Post Versus Ex-Ante Medians for Event Firms (R1) and Secondary Repurchase Firms (R2)
In this table, we calculate medians for event firms (R1) and for secondary repurchase matched-pairs control firms (R2) for all variables except for PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET, 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 PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET1. A non-parametric Mann/Whitney ranksum test on differences in medians between these two samples 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)**			**Secondary Repurchase Firms (R2)**		
	Ex-Ante	Ex-Post	Difference	Ex-Ante	Ex-Post	Difference
SIZE	5,404	5,916	0,512***	5,675	5,910	0,235**
PAYOUT	0,152	0,148	-0,004	0,213	0,243	0,030
LEVERAGE	0,165	0,188	0,025	0,191	0,206	0,015
CASH	0,111	0,084	-0,027***	0,075	0,073	-0,002
CASH FLOW	0,098	0,093	-0,005	0,090	0,090	0,000
UNDERP	2,310	2,129	-0,171*	1,839	1,755	-0,084***
GROWTH	0,104	0,098	-0,004*	0,100	0,088	-0,012**
PROFIT	0,058	0,047	-0,009***	0,041	0,036	-0,005***
OPRISK	0,029	0,030	0,001	0,033	0,031	0,002
OPTIONS	0,039	0,022	-0,017***	0,040	0,024	-0,016***
NONOPINC	0,007	0,006	-0,001	0,008	0,006	-0,002***
EPSGRW	0,055	-0,007	-0,062***	0,000	0,000	0,000
SALESGRW	0,227	0,074	-0,153***	0,101	0,044	-0,057***
RETEARN	0,327	0,402	0,075***	0,530	0,564	0,034
DIVYIELD	0,008	0,008	0,000	0,012	0,013	0,001
STOCKRET	0,163	0,123	-0,040***	0,101	0,086	-0,015
STOCKRET1	0,597	0,662	0,065**	0,585	0,620	0,035

Table 3G: Dividend Characteristics of Event Firms (R1) and Both Control Samples' Firms (R0 and R2)
Summary dividend characteristics for event firms (R1) and for both matched-pairs control firms (R0 and R2). See text for details.

Panel 1: Ex-Ante Cash Dividends Characteristics

	Event Firms (R1)			Non-Repurchase Firms (R0)		Secondary Repurchase Firms (R2)	
	n = 1247	**n = 630**	**n = 716**	**n = 782**	**n = 630**	**n = 899**	**n = 716**
Non-Dividend Payers	878 (70,4%)	463 (73,5%)	481 (67,2%)	539 (68,9%)	443 (70,3%)	448 (49,8%)	370 (51,7%)
Dividend Payers	369 (29,6%)	167 (26,5%)	235 (32,8%)	243 (31,1%)	187 (29,7%)	452 (50,2%)	346 (48,3%)

Panel 2: Ex-Post Cash Dividends Characteristics

	Event Firms (R1)			Non-Repurchase Firms (R0)		Secondary Repurchase Firms (R2)	
	n = 1247	**n = 630**	**n = 716**	**n = 782**	**n = 630**	**n = 899**	**n = 716**
Non-Dividend Payers	871 (69,8%)	472 (74,9%)	465 (65,0%)	555 (71,0%)	471 (74,8%)	473 (52,6%)	394 (55,0%)
Dividend Payers	376 (30,2%)	158 (25,1%)	251 (35,0%)	227 (29,0%)	159 (25,2%)	426 (47,4%)	322 (45,0%)

Panel 3: Changes in Cash Dividends

	Event Firms (R1)			Non-Repurchase Firms (R0)		Secondary Repurchase Firms (R2)	
	n = 1247	**n = 630**	**n = 716**	**n = 782**	**n = 630**	**n = 899**	**n = 716**
Increases	328 (26,3%)	144 (22,9%)	229 (32,0%)	181 (23,1%)	139 (22,1%)	319 (35,5%)	236 (33,0%)
No Changes	728 (58,4%)	392 (62,2%)	384 (53,6%)	483 (61,8%)	399 (63,3%)	392 (43,6%)	328 (45,8%)
Decreases	191 (15,3%)	94 (14,9%)	103 (14,4%)	118 (15,1%)	92 (14,6%)	188 (20,9%)	152 (21,2%)

Table 3H: Ex-Ante Medians for Event Firms (R1) in Different Time Windows
Summary descriptive statistics for all event firms (R1) sample in different time periods (1,247 observations in each period). For PAYOUT, OPTIONS, DIVYIELD and the dummy variable STOCKRET1, we use the mean value instead of the median. Ex-ante means that calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). An Anova F Statistic and a non-parametric Chi-Square ranksum test on differences in means and medians, respectively, between these two sub-samples of firms are conducted, where *** 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	1980-1987	1988-1992	1993-1997	1998-2002	Differences
SIZE	4,728	5,036	5,239	5,386	***
PAYOUT	0,391	0,174	0,145	0,072	***
LEVERAGE	0,204	0,190	0,159	0,135	**
CASH	0,159	0,129	0,105	0,198	
CASH FLOW	0,119	0,103	0,102	0,085	***
UNDERP	2,250	2,059	2,348	2,539	*
GROWTH	0,150	0,102	0,102	0,100	
PROFIT	0,074	0,065	0,062	0,053	**
OPRISK	0,025	0,027	0,028	0,031	
OPTIONS	0,034	0,069	0,075	0,078	***
NONOPINC	0,014	0,011	0,007	0,007	***
EPSGRW	0,000	0,037	0,046	0,005	
SALESGRW	0,254	0,211	0,199	0,284	***
RETEARN	0,518	0,400	0,342	0,235	***
DIVYIELD	0,013	0,012	0,009	0,004	***
STOCKRET	0,146	0,189	0,174	0,172	
STOCKRET1	0,662	0,584	0,547	0,649	***

Table 3I: Correlations Matrix for the Explanatory Variables

Correlation statistics for ex-ante event firms (R1) observations used with the non-repurchase matched pairs control firms (R0) and with the secondary repurchase matched pairs control firms (R2). Ex-ante means that calculations are based on three-year averages preceding the initial repurchase event (years -3 to -1). See Table 2 for variable definitions and text for details.

Panel 1: Correlation Matrix for the Non-Repurchase Sample

R1 (R0 SAMPLE)	SIZE	PAYOUT	LEVER AGE	CASH	CASH FLOW	UNDERP	GROWTH	PROFIT	OPTIONS	NON OPINC	EPSGW	SALES GW	RET EARN	DIV YIELD	STRET	STRET R1	OPRISK
SIZE	1,000	0,169	0,114	-0,151	0,042	-0,051	-0,185	-0,014	-0,161	-0,034	-0,100	0,020	-0,046	0,124	-0,027	-0,043	-0,136
PAYOUT		1,000	0,029	-0,080	0,095	-0,031	-0,037	0,031	-0,048	-0,028	-0,056	-0,009	-0,002	0,722	-0,024	-0,106	-0,053
LEVERAGE			1,000	-0,367	-0,122	-0,221	-0,130	-0,138	-0,057	-0,035	-0,019	0,084	0,042	-0,000	0,063	-0,108	0,013
CASH				1,000	-0,098	0,417	0,140	-0,154	0,013	0,182	-0,024	-0,012	-0,017	-0,087	0,004	0,081	0,231
CASHFLOW					1,000	0,095	0,111	0,620	0,048	-0,073	0,016	-0,096	0,045	0,066	0,018	0,119	-0,244
UNDERP						1,000	0,184	-0,004	-0,049	0,046	-0,003	-0,010	-0,029	-0,051	0,018	0,135	0,116
GROWTH							1,000	-0,117	0,093	0,003	-0,009	0,137	0,042	-0,080	-0,020	-0,005	0,106
PROFIT								1,000	0,085	0,114	0,024	-0,048	0,012	0,036	0,011	0,111	-0,422
OPTIONS									1,000	0,016	0,078	-0,026	0,076	-0,048	0,168	0,036	-0,057
NONOPINC										1,000	-0,003	0,007	-0,006	-0,028	-0,009	0,056	0,282
EPSGW											1,000	-0,004	0,040	-0,017	0,007	0,016	-0,058
SALESGW												1,000	-0,007	-0,009	-0,006	0,029	-0,000
RETEARN													1,000	-0,016	0,012	0,039	0,064
DIVYIELD														1,000	-0,024	-0,078	-0,054
STRET															1,000	0,120	0,014
STRETR1																1,000	0,016
OPRISK																	1,000

Panel 2: Correlation Matrix for the Secondary-Repurchase Sample

R1 (R2 SAMPLE)	SIZE	PAYOUT	LEVER AGE	CASH	CASH FLOW	UNDERP	GROWTH	PROFIT	OPTIONS	NON OPINC	EPSGW	SALES GW	RET EARN	DIV YIELD	STRET	STRETR1	OPRISK
SIZE	1,000	0,096	0,156	-0,230	-0,031	-0,101	-0,175	-0,043	-0,208	-0,032	-0,127	0,006	0,003	0,146	0,006	-0,090	-0,174
PAYOUT		1,000	0,048	-0,074	0,063	-0,012	-0,029	0,020	-0,056	-0,011	-0,028	-0,009	0,003	0,579	-0,012	-0,077	-0,041
LEVERAGE			1,000	-0,411	-0,161	-0,191	-0,176	-0,145	-0,058	-0,234	-0,025	0,070	0,008	0,002	0,034	-0,111	-0,088
CASH				1,000	-0,072	0,371	0,190	-0,164	0,061	0,352	-0,016	-0,010	-0,071	-0,091	-0,018	0,075	0,351
CASHFLOW					1,000	0,147	0,164	0,611	0,043	0,043	0,005	-0,080	0,231	0,077	0,014	0,129	-0,308
UNDERP						1,000	0,123	0,055	-0,019	0,063	0,003	-0,013	-0,092	-0,044	-0,025	0,152	0,206
GROWTH							1,000	-0,062	0,113	0,087	-0,002	0,117	-0,026	-0,050	-0,012	0,041	0,181
PROFIT								1,000	0,079	0,053	0,023	-0,030	0,266	0,031	-0,085	0,094	-0,565
OPTIONS									1,000	0,038	0,047	-0,022	0,034	-0,053	0,022	0,016	-0,058
NONOPINC										1,000	-0,108	0,011	0,128	0,013	-0,028	0,087	0,004
EPSGW											1,000	-0,004	-0,033	0,002	-0,001	0,050	0,023
SALESGW												1,000	-0,018	-0,011	-0,002	0,031	-0,003
RETEARN													1,000	0,023	0,058	0,007	-0,258
DIVYIELD														1,000	-0,013	-0,054	-0,039
STRET															1,000	0,060	0,056
STRETR1																1,000	0,055
OPRISK																	1,000

Table 3J: Ex-Ante, Ex-Post and Changes in Medians for Firms Included in Both the Event Sample (R1) and the Non-Repurchases Sample (R0)

In this table, we calculate ex-ante, ex-post and changes over time in means or medians for the 56 firms that are included in both the event sample (R1) and the non-repurchase matched-pairs control sample (R0). We compute medians for all variables except for PAYOUT, OPTIONS, DIVYIELD and the dummy variable STRETR1, to 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 PAYOUT, OPTIONS, DIVYIELD and the dummy variable STRETR1. A non-parametric Mann/Whitney ranksum test on differences in medians between these two 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.

	Ex-Ante			Ex-Post			Ex-Post Minus
	R1	**R0**	**Change**	**R1**	**R0**	**Change**	**Ex-Ante**
SIZE	5,443	4,580	***	5,932	5,464	***	***
PAYOUT	0,069	0,108		0,151	0,153		
LEVERAGE	0,168	0,115		0,176	0,178		
CASH	0,104	0,101		0,110	0,131		
CASH FLOW	0,117	0,110		0,104	0,104		
UNDERP	2,847	2,613		2,370	2,720		
GROWTH	0,130	0,118		0,124	0,128		
PROFIT	0,056	0,062		0,043	0,040		*
OPRISK	0,035	0,036					
OPTIONS	0,030	0,068	***	0,009	0,030	**	***
NONOPINC	0,008	0,009		0,008	0,010		
EPSGRW	0,041	0,151		0,163	0,086		
SALESGRW	0,247	0,330	*	0,084	0,138		***
RETEARN	0,283	0,278		0,403	0,294		*
DIVYIELD	0,004	0,005		0,010	0,006		
STOCKRET	0,194	0,237		0,162	0,161		
STOCKRET1	0,643	0,589		0,679	0,696		
AGE	7,804	4,696	***				

Table 3L: Ex-Ante, Ex-Post and Changes in Medians for Firms Included in Both the Event Sample (R1) and the Secondary Repurchases Sample (R2)

In this table, we calculate ex-ante, ex-post and changes over time in means or medians for the 131 firms that are included in both the event sample (R1) and the secondary repurchase matched-pairs control sample (R2). We compute medians for all variables except for PAYOUT, OPTIONS, DIVYIELD and the dummy variable STRETR1, to 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 PAYOUT, OPTIONS, DIVYIELD and the dummy variable STRETR1. A non-parametric Mann/Whitney ranksum test on differences in medians between these two 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.

	Ex-Ante			Ex-Post			Ex-Post Minus
	R1	**R2**	**Change**	**R1**	**R2**	**Change**	**Ex-Ante**
SIZE	4,862	5,381	***	5,522	5,745	*	***
PAYOUT	0,182	0,158		0,095	0,085		
LEVERAGE	0,128	0,154		0,164	0,159		
CASH	0,109	0,111		0,093	0,092		
CASH FLOW	0,104	0,095		0,098	0,095		
UNDERP	2,464	2,194		2,135	1,855	*	
GROWTH	0,105	0,103		0,107	0,094		
PROFIT	0,068	0,053		0,049	0,038		**
OPRISK	0,027	0,032		0,040	0,031		**
OPTIONS	0,051	0,055		0,032	0,019	**	***
NONOPINC	0,009	0,009		0,008	0,006	**	
EPSGRW	0,077	0,007		0,008	0,012		
SALESGRW	0,245	0,168	***	0,073	0,075		***
RETEARN	0,418	0,438		0,462	0,468		*
DIVYIELD	0,006	0,007		0,008	0,008		
STOCKRET	0,239	0,138		0,144	0,128		**
STOCKRET1	0,611	0,611		0,649	0,664		
AGE	5,718	8,527	***				

Table 5.A:Logistic Regressions of Initial Repurchase Firms (R1) and Non-Repurchase Firms (R0)

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 first model uses absolute values for all variables. The second model employs the same absolute values for all variables and additional changes (ex-post values less ex-ante values) in some of the variables to allow empirical testing for some hypotheses. Definitions of the variables employed here are provided in section 4. 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: All Observations

Variables	All observations			
	Model 1		Model 2	
	Coefficient	p-value	Coefficient	p-value
SIZE	0,075	0,168	0,043	0,444
PAYOUT	0,034	0,455	0,044	0,479
LEVERAGE	-1,341	0,000***	-1,518	0,000***
CASH	-0,133	0,061*	-0,142	0,120
CASH FLOW	3,541	0,000***	3,952	0,001***
UNDERP	-0,008	0,539	-0,045	0,080*
GROWTH	-2,184	0,000***	-1,646	0,035**
PROFIT	-0,788	0,281	-0,128	0,902
OPRISK	-1,348	0,065*	-2,329	0,009***
OPTIONS	-0,068	0,935	-0,414	0,630
NONOPINC	3,477	0,180	4,510	0,080*
EPSGRW	-0,005	0,473	-0,006	0,429
SALESGRW	0,038	0,213	0,085	0,098
RETEARN	-0,005	0,580	-0,003	0,615
DIVYIELD	-0,255	0,820	-0,250	0,873
STOCKRET	0,033	0,262	0,086	0,487
STOCKRET1	0,481	0,000***	0,691	0,001***
AGE	-0,062	0,000***	-0,067	0,000***
CHPAYOUT			-0,007	0,874
CHLEVERAGE			-0,849	0,064*
CHCASH			-0,043	0,780
CHCASH FLOW			1,212	0,278
CHUNDERP			-0,058	0,020**
CHGROWTH			1,048	0,276
CHPROFIT			1,202	0,160
CHOPRISK			-1,108	0,084*
CHSALESGRW			0,036	0,437
CHSTOCKRET			0,050	0,675
CHSTOCKRET1			0,152	0,320
McFadden R-squared		**8,44%**		**10,66%**

Panel 2: Dividend Payers and Non-Dividend Payers

Variables	Dividend Payers				Non-Dividend Payers			
	Model 1		Model 2		Model 1		Model 2	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
SIZE	0,035	0,700	-0,039	0,698	0,042	0,576	0,009	0,911
PAYOUT	0,198	0,326	-0,181	0,548				
LEVERAGE	-1,743	0,010**	-1,565	0,040**	-1,027	0,006***	-1,316	0,001***
CASH	-0,737	0,002***	-0,500	0,244	-0,060	0,406	-0,085	0,426
CASH FLOW	7,266	0,001***	6,077	0,019**	2,732	0,002***	3,592	0,013**
UNDERP	-0,025	0,274	-0,019	0,701	-0,002	0,892	-0,072	0,026**
GROWTH	-3,117	0,015**	-1,370	0,416	-2,217	0,002***	-1,719	0,069*
PROFIT	2,274	0,295	2,3040	0,388	-0,949	0,220	-0,229	0,840
OPRISK	1,491	0,587	-1,759	0,605	-1,582	0,037**	-2,574	0,006***
OPTIONS	-3,210	0,077*	-3,187	0,076*	1,226	0,262	0,879	0,445
NONOPINC	-2,217	0,767	-5,594	0,444	3,950	0,143	5,298	0,034**
EPSGRW	-0,001	0,924	-0,010	0,314	-0,009	0,322	-0,011	0,325
SALESGRW	-0,167	0,183	-1,646	0,076*	0,041	0,081*	0,117	0,012**
RETEARN	-0,064	0,616	-0,042	0,780	-0,004	0,468	-0,002	0,638
DIVYIELD	16,63	0,152	21,49	0,186				
STOCKRET	0,048	0,812	-0,419	0,335	0,067	0,334	0,288	0,067*
STOCKRET1	0,647	0,011**	0,994	0,031**	0,399	0,011**	0,597	0,019**
AGE	-0,082	0,000***	-0,089	0,000***	-0,050	0,000***	-0,058	0,000***
CHPAYOUT			0,019	0,880			-0,030	0,416
CHLEVERAGE			-0,826	0,380			-0,824	0,141
CHCASH			0,135	0,780			-0,093	0,571
CHCASH FLOW			-0,683	0,797			1,604	0,274
CHUNDERP			-0,012	0,799			-0,105	0,002***
CHGROWTH			3,116	0,166			0,820	0,469
CHPROFIT			1,603	0,426			1,062	0,255
CHOPRISK			-2,377	0,315			-0,966	0,102
CHSALESGRW			-1,541	0,097*			0,059	0,143
CHSTOCKRET			-0,529	0,169			0,220	0,122
CHSTOCKRET1			0,384	0,255			0,143	0,444
McFadden R-squared		**19,72%**		**23,88%**		**6,59%**		**9,72%**

Panel 3: Market-to-Book Quartiles (Model 2)

Variables	M-B Quartile 1		M-B Quartile 2		M-B Quartile 3		M-B Quartile 4	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
SIZE	0,056	0,666	0,018	0,869	0,067	0,651	0,004	0,979
PAYOUT	-0,612	0,139	-0,116	0,725	-1,082	0,124	-0,516	0,370
LEVERAGE	-1,746	0,042**	-0,833	0,306	-3,467	0,000***	-2,869	0,002***
CASH	-0,692	0,033**	-0,011	0,987	-0,431	0,170	0,070	0,759
CASH FLOW	1,731	0,532	7,648	0,007***	0,375	0,860	9,593	0,002***
UNDERP	-0,689	0,005***	-0,342	0,001***	-0,080	0,143	0,172	0,040**
GROWTH	3,056	0,130	-4,089	0,027**	-2,730	0,0793*	-1,922	0,313
PROFIT	1,248	0,645	-6,037	0,069*	4,935	0,066*	0,431	0,840
OPRISK	-1,628	0,536	-7,232	0,005***	-0,535	0,819	-5,397	0,010**
OPTIONS	0,893	0,731	-0,071	0,968	1,152	0,507	-3,342	0,173
NONOPINC	22,01	0,024**	1,273	0,905	-8,167	0,342	-6,589	0,567
EPSGRW	0,002	0,878	-0,002	0,925	-0,008	0,577	-0,085	0,185
SALESGRW	0,178	0,082*	-0,545	0,545	-1,455	0,173	0,052	0,942
RETEARN	-0,0390	0,587	0,080	0,162	-0,001	0,997	-0,172	0,045**
DIVYIELD	6,030	0,104	-13,36	0,113	8,898	0,513	19,22	0,141
STOCKRET	0,347	0,121	0,450	0,225	0,051	0,891	-0,233	0,546
STOCKRET1	0,353	0,489	1,260	0,007***	1,043	0,051*	0,481	0,306
AGE	-0,109	0,000***	-0,068	0,000***	-0,061	0,003***	-0,026	0,216
CHPAYOUT	-0,272	0,359	-0,078	0,171	-0,282	0,464	0,247	0,359
CHLEVERAGE	-1,829	0,087*	-2,158	0,053*	-0,009	0,993	0,568	0,666
CHCASH	-0,510	0,193	0,190	0,828	-0,566	0,340	-0,080	0,817
CHCASH FLOW	-0,745	0,776	3,239	0,118	0,543	0,748	1,369	0,641
CHUNDERP	-0,055	0,668	-0,302	0,001***	-0,012	0,820	-0,052	0,406
CHGROWTH	3,437	0,200	2,156	0,412	-1,688	0,501	2,609	0,215
CHPROFIT	3,727	0,127	-4,571	0,086*	1,758	0,423	3,229	0,129
CHOPRISK	-1,745	0,398	-4,758	0,032**	0,493	0,768	-1,324	0,303
CHSALESGRW	0,150	0,119	-0,696	0,435	-1,051	0,332	-0,067	0,927
CHSTOCKRET	0,313	0,157	0,458	0,148	-0,381	0,245	-0,235	0,504
CHSTOCKRET1	-0,013	0,971	0,373	0,272	0,344	0,320	0,189	0,616
McFadden R-squared		**25,60%**		**17,69%**		**20,70%**		**32,28%**

Panel 4: Size Quartiles (Model 2)

Variables	Size Quartile 1		Size Quartile 2		Size Quartile 3		Size Quartile 4	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
SIZE	-0,871	0,001***	0,266	0,403	0,9315	0,005***	0,268	0,053*
PAYOUT	-4,130	0,019**	-0,027	0,966	-0,492	0,207	-0,499	0,102
LEVERAGE	-0,060	0,949	-1,891	0,014**	-1,696	0,039**	-2,398	0,002***
CASH	0,003	0,990	-0,402	0,266	-0,691	0,027**	1,130	0,004***
CASH FLOW	2,947	0,193	7,067	0,003***	3,463	0,161	7,310	0,043**
UNDERP	-0,089	0,178	-0,027	0,663	-0,015	0,875	-0,041	0,484
GROWTH	-2,180	0,193	-3,399	0,043**	-0,689	0,670	-2,681	0,227
PROFIT	3,862	0,120	-1,323	0,354	2,078	0,304	-5,365	0,144
OPRISK	-0,776	0,683	-1,979	0,638	-3,852	0,113	-9,421	0,010**
OPTIONS	-0,530	0,732	0,336	0,850	0,509	0,797	0,853	0,730
NONOPINC	-6,473	0,532	7,122	0,103	24,73	0,080*	-3,351	0,616
EPSGRW	-0,055	0,131	-0,073	0,047**	0,018	0,210	-0,026	0,099*
SALESGRW	-0,108	0,918	-0,302	0,719	-1,306	0,128	0,164	0,048**
RETEARN	0,075	0,361	0,106	0,029**	-0,089	0,356	-0,655	0,0021***
DIVYIELD	4,480	0,760	-9,456	0,111	1,634	0,794	10,55	0,131
STOCKRET	0,702	0,052*	0,013	0,969	0,530	0,088*	-0,112	0,715
STOCKRET1	-0,710	0,138	0,860	0,094*	1,486	0,004**	1,739	0,000***
AGE	-0,066	0,003***	-0,1067	0,000***	-0,044	0,042**	-0,077	0,000***
CHPAYOUT	-0,599	0,214	-0,041	0,397	-0,108	0,542	-0,099	0,083*
CHLEVERAGE	1,023	0,236	-1,455	0,158	0,021	0,985	-2,419	0,009***
CHCASH	-0,052	0,883	-0,076	0,868	-0,506	0,275	0,789	0,159
CHCASH FLOW	1,177	0,507	1,904	0,298	0,577	0,831	1,316	0,684
CHUNDERP	-0,057	0,395	-0,076	0,115	-0,170	0,110	0,003	0,956
CHGROWTH	-2,179	0,360	2,255	0,268	4,045	0,045**	2,288	0,423
CHPROFIT	0,909	0,654	0,602	0,698	4,264	0,039**	-0,444	0,826
CHOPRISK	-0,294	0,838	-1,275	0,112	-3,356	0,123	-4,149	0,140
CHSALESGRW	-0,188	0,858	-0,220	0,798	-1,292	0,131	0,159	0,054*
CHSTOCKRET	0,344	0,254	-0,089	0,732	0,505	0,102	0,006	0,984
CHSTOCKRET1	-0,771	0,026**	0,405	0,247	0,441	0,222	0,688	0,033**
McFadden R-squared		**17,97%**		**19,15%**		**21,45%**		**22,95%**

Panel 5: Four Time Period Windows (Model 2)

Variables	1982-1987		1988-1992		1993-1997		1998-2002	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
SIZE	2,604	0,005***	0,146	0,568	0,095	0,433	-0,002	0,978
PAYOUT	-5,312	0,027**	0,003	0,991	-0,354	0,246	0,149	0,099*
LEVERAGE	2,323	0,437	-2,397	0,046**	-1,716	0,018**	-1,7851	0,000***
CASH	17,63	0,166	-0,056	0,957	-0,506	0,152	-0,067	0,486
CASH FLOW	-5,180	0,714	-0,370	0,921	4,468	0,026**	6,012	0,000***
UNDERP	0,153	0,798	-0,282	0,068*	-0,015	0,783	-0,045	0,203
GROWTH	2,780	0,797	1,536	0,546	-1,891	0,223	-2,407	0,048**
PROFIT	-1,604	0,944	3,619	0,407	3,316	0,156	-1,882	0,156
OPRISK	-36,52	0,178	-1,350	0,820	0,568	0,804	-4,445	0,000***
OPTIONS	-30,67	0,023**	2,132	0,651	0,789	0,649	3,696	0,236
NONOPINC	-7,637	0,838	-6,295	0,662	5,169	0,248	4,110	0,488
EPSGRW	0,326	0,359	-0,161	0,183	0,005	0,720	-0,009	0,392
SALESGRW	-0,354	0,945	-1,063	0,624	-0,172	0,834	0,131	0,014**
RETEARN	3,105	0,061*	0,272	0,136	-0,002	0,632	-0,067	0,169
DIVYIELD	79,09	0,170	-2,745	0,675	3,353	0,432	-1,078	0,693
STOCKRET	6,185	0,145	-2,219	0,096*	0,247	0,443	0,107	0,502
STOCKRET1	2,527	0,343	2,770	0,008***	0,460	0,291	0,341	0,243
AGE	-0,799	0,000***	-0,182	0,000***	-0,071	0,000***	-0,023	0,074*
CHPAYOUT	-2,729	0,054**	-0,132	0,579	-0,050	0,713	0,089	0,195
CHLEVERAGE	7,331	0,314	-2,854	0,074*	-0,738	0,410	-1,551	0,023**
CHCASH	15,77	0,207	0,361	0,791	-0,545	0,211	0,055	0,739
CHCASH FLOW	13,69	0,292	-3,189	0,254	2,762	0,174	2,706	0,084*
CHUNDERP	-1,138	0,175	-0,206	0,162	0,014	0,786	-0,082	0,021**
CHGROWTH	-18,38	0,162	4,538	0,329	0,658	0,713	1,809	0,277
CHPROFIT	-16,57	0,048**	1,077	0,811	4,069	0,058*	0,281	0,787
CHOPRISK	-15,46	0,261	2,151	0,570	0,428	0,815	-1,872	0,033**
CHSALESGRW	-1,214	0,811	-0,986	0,650	-0,175	0,831	0,057	0,236
CHSTOCKRET	6,239	0,138	-1,942	0,089*	0,120	0,686	0,137	0,353
CHSTOCKRET1	-0,990	0,652	1,506	0,032**	0,138	0,646	-0,247	0,265
McFadden R-squared		**71,75%**		**26,07%**		**13,25%**		**13,41%**

Table 5.B:Logistic Regressions of Initial Repurchase Firms (R1) and Secondary Repurchase Firms (R2)

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 secondary repurchase firms. The first model uses absolute values for all variables. The second model employs the same absolute values for all variables and additional changes (ex-post values less ex-ante values) in some of the variables to allow empirical testing for some hypotheses. Definitions of the variables employed here are provided in section 4. 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: All Observations

Variables	All observations			
	Model 1		Model 2	
	Coefficient	p-value	Coefficient	p-value
SIZE	0,092	0,093*	0,082	0,144
PAYOUT	0,067	0,493	0,104	0,320
LEVERAGE	-1,472	0,000***	-1,332	0,001***
CASH	0,041	0,812	0,027	0,880
CASH FLOW	-0,368	0,720	-1,910	0,151
UNDERP	-0,007	0,628	-0,002	0,962
GROWTH	-0,273	0,700	0,270	0,761
PROFIT	1,259	0,214	3,276	0,025**
OPRISK	-0,891	0,241	-1,969	0,095*
OPTIONS	0,171	0,876	-0,429	0,708
NONOPINC	-7,073	0,075*	-7,359	0,087*
EPSGRW	0,002	0,789	0,001	0,783
SALESGRW	0,062	0,398	1,013	0,031**
RETEARN	0,003	0,961	0,002	0,921
DIVYIELD	-4,205	0,086*	-4,266	0,101
STOCKRET	0,447	0,003***	0,227	0,235
STOCKRET1	-0,082	0,583	0,162	0,498
AGE	-0,169	0,000***	-0,171	0,000***
CHPAYOUT			0,055	0,193
CHLEVERAGE			0,520	0,366
CHCASH			-0,321	0,148
CHCASH FLOW			-0,796	0,521
CHUNDERP			0,013	0,698
CHGROWTH			0,295	0,829
CHPROFIT			2,658	0,039**
CHOPRISK			-1,055	0,286
CHSALESGRW			0,854	0,061*
CHSTOCKRET			-0,170	0,228
CHSTOCKRET1			0,166	0,302
McFadden R-squared		**28,20%**		**30,46%**

Panel 2: Dividend Payers and Non-Dividend Payers

Variables	Dividend Payers				Non-Dividend Payers			
	Model 1		Model 2		Model 1		Model 2	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
SIZE	0,051	0,554	0,005	0,956	0,053	0,502	0,060	0,472
PAYOUT	0,279	0,049**	0,356	0,015**				
LEVERAGE	-1,649	0,014**	-1,871	0,018**	-1,403	0,001***	-0,957	0,039**
CASH	-0,574	0,120	-0,823	0,064*	0,061	0,776	0,315	0,166
CASH FLOW	0,484	0,827	-2,968	0,269	-0,659	0,547	-1,951	0,245
UNDERP	0,008	0,838	0,006	0,913	-0,009	0,598	0,020	0,538
GROWTH	-0,999	0,398	-0,514	0,742	-0,493	0,574	0,306	0,777
PROFIT	3,835	0,242	7,575	0,016**	1,662	0,071*	3,459	0,041**
OPRISK	-4,544	0,311	-5,083	0,136	-0,427	0,592	-0,729	0,603
OPTIONS	-5,639	0,018**	-5,801	0,0213**	1,529	0,265	1,182	0,382
NONOPINC	-9,012	0,299	-15,08	0,090*	-8,874	0,123	-8,921	0,103
EPSGRW	-0,054	0,009***	-0,063	0,001***	0,020	0,267	0,013	0,271
SALESGRW	-0,105	0,624	-0,200	0,835	0,276	0,107	1,866	0,006***
RETEARN	-0,194	0,605	-0,339	0,417	0,001	0,858	0,002	0,813
DIVYIELD	7,728	0,329	7,183	0,346				
STOCKRET	0,636	0,010**	0,727	0,073*	0,395	0,028**	0,131	0,563
STOCKRET1	-0,243	0,368	-0,325	0,477	-0,110	0,562	0,407	0,164
AGE	-0,174	0,000***	-0,184	0,000***	-0,143	0,000***	-0,161	0,000***
CHPAYOUT			0,088	0,087*			-0,104	0,343
CHLEVERAGE			0,905	0,456			0,240	0,733
CHCASH			-1,942	0,000***			0,062	0,885
CHCASH FLOW			-5,385	0,032**			0,734	0,632
CHUNDERP			-0,029	0,3298			0,040	0,198
CHGROWTH			1,073	0,693			0,259	0,868
CHPROFIT			7,412	0,005***			1,911	0,200
CHOPRISK			-0,850	0,723			-0,577	0,641
CHSALESGRW			-0,366	0,690			1,577	0,015**
CHSTOCKRET			0,075	0,776			-0,150	0,3393
CHSTOCKRET1			-0,032	0,913			0,232	0,258
McFadden R-squared		**37,74%**		**41,74%**		**31,82%**		**38,68%**

Panel 3: Market-to-Book Quartiles (Model 2)

Variables	M-B Quartile 1		M-B Quartile 2		M-B Quartile 3		M-B Quartile 4	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
SIZE	0,110	0,418	0,006	0,959	0,121	0,373	0,013	0,930
PAYOUT	0,249	0,550	0,798	0,001***	-0,226	0,218	0,409	0,035**
LEVERAGE	-3,316	0,007***	-2,149	0,040**	-2,064	0,006***	-0,861	0,331
CASH	-0,746	0,345	-0,808	0,302	-0,740	0,042**	0,524	0,207
CASH FLOW	-4,900	0,201	-4,314	0,245	-2,802	0,393	-3,534	0,235
UNDERP	-0,717	0,167	-0,299	0,016**	-0,066	0,398	0,448	0,000***
GROWTH	-0,233	0,880	-1216	0,573	0,150	0,936	2,482	0,112
PROFIT	0,805	0,855	2,383	0,510	4,740	0,196	4,702	0,122
OPRISK	-3,758	0,292	-3,196	0,201	4,618	0,263	-6,041	0,087*
OPTIONS	-1,882	0,590	-0,879	0,681	-0,150	0,946	0,706	0,783
NONOPINC	8,634	0,516	-18,50	0,038**	10,81	0,190	-18,56	0,044**
EPSGRW	0,008	0,698	0,010	0,467	0,004	0,884	-0,018	0,551
SALESGRW	1,983	0,105	3,058	0,016**	0,707	0,507	-0,029	0,970
RETEARN	-0,097	0,642	0,003	0,533	-0,032	0,801	0,032	0,390
DIVYIELD	0,436	0,920	-5,569	0,475	-13,32	0,012**	-10,25	0,040**
STOCKRET	0,091	0,538	-0,425	-0,436	0,719	0,131	-0,329	0,577
STOCKRET1	-0,501	0,384	0,184	0,182	0,549	0,290	0,492	0,385
AGE	-0,216	0,000***	-0,200	0,000***	-0,148	0,000***	-0,152	0,000***
CHPAYOUT	0,282	0,103	0,251	0,164	-0,011	0,895	0,172	0,186
CHLEVERAGE	-0,357	0,875	0,118	0,939	1,953	0,082*	3,121	0,069*
CHCASH	0,233	0,836	-0,370	0,679	-0,393	0,277	-0,168	0,681
CHCASH FLOW	-1,526	0,615	-1,225	0,724	-3,720	0,103	-1,184	0,681
CHUNDERP	-0,085	0,064*	-0,095	0313	0,011	0,834	0,170	0,001***
CHGROWTH	3,146	0,367	-3,453	0,179	3,665	0,245	-0,653	0,833
CHPROFIT	1,506	0,692	2,171	0,509	3,846	0,140	3,895	0,223
CHOPRISK	-2,341	0,496	-1,505	0,461	2,433	0,324	-4,622	0,134
CHSALESGRW	1,426	0,244	2,692	0,028**	0,671	0,515	-0,077	0,922
CHSTOCKRET	0,079	0,593	-1,132	0,006***	-0,300	0,317	-0,763	0,174
CHSTOCKRET1	0,249	0,566	0,372	0,328	0,504	0,173	0,350	0,419
McFadden R-squared		**49,93%**		**39,93%**		**30,39%**		**44,61%**

Panel 4: Size Quartiles (Model 2)

Variables	Size Quartile 1		Size Quartile 2		Size Quartile 3		Size Quartile 4	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
SIZE	-6,288	0,000***	-1,779	0,000***	-0,326	0,371	0,142	0,448
PAYOUT	0,430	0,154	-0,122	0,480	-0,128	0,646	0,359	0,361
LEVERAGE	-2,277	0,082*	0,291	0,735	-2,401	0,002***	-2,799	0,019**
CASH	-0,011	0,983	0,907	0,072*	0,430	0,322	-0,430	0,636
CASH FLOW	2,359	0,544	-1,606	0,546	1,032	0,763	-4,162	0,338
UNDERP	-0,093	0,218	-0,043	0,550	0,010	0,837	0,004	0,962
GROWTH	0,967	0,691	-1,765	0,295	-0,099	0,968	0,789	0,753
PROFIT	3,263	0,504	2,665	0,323	-0552	0,876	-0,247	0,955
OPRISK	-7,617	0,043**	-1,202	0,660	-6,020	0,031**	-3,093	0,478
OPTIONS	2,027	0,442	-0,412	0,861	1,175	0,720	-2,981	0,426
NONOPINC	-22,54	0,105	-7,641	0,491	-3,292	0,610	-6,948	0,566
EPSGRW	-0,006	0,548	0,050	0,002***	0,028	0,571	-0,126	0,109
SALESGRW	-0,006	0,997	0,257	0,841	1,797	0,157	1,444	0,415
RETEARN	-0,001	0,811	0,045	0,151	-0,146	0,082*	-0,441	0,279
DIVYIELD	-40,42	0,000***	-9,061	0,465	1,082	0,733	5,140	0,638
STOCKRET	0,267	0,586	-0,590	0,121	-0,025	0,907	0,477	0,324
STOCKRET1	-0,804	0,262	1,005	0,050**	0,145	0,775	0,802	0,215
AGE	-0,225	0,000***	-0,153	0,000***	-0,167	0,000***	-0,196	0,000***
CHPAYOUT	0,361	0,006***	0,025	0,622	0,346	0,066*	0,226	0,156
CHLEVERAGE	4,243	0,055*	2,107	0,147	-1,848	0,137	-1,191	0,485
CHCASH	-0,924	0,118	0,128	0,866	1,202	0,044**	-1,316	0,233
CHCASH FLOW	-5,229	0,094*	-3,105	0,138	1,201	0,697	6,294	0,089*
CHUNDERP	-0,054	0,272	-0,027	0,713	0,061	0,185	-0,040	0,470
CHGROWTH	-1,667	0,533	1,582	0,583	3,216	0,419	1,988	0,625
CHPROFIT	9,740	0,002***	2,134	0,359	-5,020	0,134	0,868	0,784
CHOPRISK	-3,065	0,254	-2,078	0,314	-7,289	0,014**	1,605	0,608
CHSALESGRW	-0,140	0,946	0,085	0,943	1,558	0,216	1,775	0,292
CHSTOCKRET	-0,637	0,141	-0,873	0,021**	-0,042	0,836	-0,097	0,508
CHSTOCKRET1	-0,265	0,602	0,863	0,020**	-0,084	0,815	0,716	0,063*
McFadden R-squared		**62,81%**		**31,42%**		**32,12%**		**49,05%**

Panel 5: Four Time Period Windows (Model 2)

Variables	1982-1987		1988-1992		1993-1997		1998-2002	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
SIZE	4,110	0,117	0,470	0,212	0,164	0,135	0,110	0,135
PAYOUT	0,164	0,756	0,130	0,728	0,832	0,077*	-0,201	0,392
LEVERAGE	-7,101	0,444	-7,408	0,012**	-0,350	0,676	-1,519	0,002***
CASH	-0,728	0,893	-0,074	0,923	-0,467	0,318	0,353	0,117
CASH FLOW	-5,888	0,557	-11,79	0,104	-5,000	0,095*	-1,115	0,487
UNDERP	-0,060	0,779	0,024	0,868	-0,014	0,868	-0,018	0,569
GROWTH	11,36	0,065*	5,028	0,167	1,906	0,347	-0,219	0,845
PROFIT	32,07	0,111	10,80	0,184	6,821	0,032**	3,567	0,034**
OPRISK	31,05	0,642	-5,033	0,398	-3,448	0,268	-1,423	0,274
OPTIONS	21,17	0,277	-11,78	0,041**	-0,060	0,975	1,441	0,759
NONOPINC	116,9	0,108	-36,45	0,203	14,63	0,222	-16,65	0,007***
EPSGRW	0,160	0,806	-0,047	0,295	0,021	0,080*	-0,012	0,502
SALESGRW	-3,887	0,153	-1,090	0,705	1,158	0,480	1,389	0,082*
RETEARN	-5,827	0,277	0,613	0,018**	-0,552	0,022**	0,017	0,264
DIVYIELD	-38,81	0,115	-22,81	0,010**	-5,500	0,336	-0,323	0,942
STOCKRET	2,563	0,467	-0,7842	0,253	0,900	0,065*	0,153	0,444
STOCKRET1	1,967	0,057*	-1,739	0,243	0,209	0,684	0,212	0,523
AGE	-2,003	0,048**	-0,547	0,000***	-0,195	0,000***	-0,120	0,000***
CHPAYOUT	-0,123	0,319	0,663	0,003***	0,686	0,049**	0,003	0,975
CHLEVERAGE	1,652	0,441	0,336	0,878	0,111	0,921	0,403	0,607
CHCASH	0,413	0,736	-0,991	0,346	-1,245	0,097*	-0,101	0,690
CHCASH FLOW	-5,885	0,130	-21,66	0,011**	-0,857	0,781	1,100	0,454
CHUNDERP	-0,243	0,036**	0,185	0,047**	0,110	0,089*	-0,020	0,479
CHGROWTH	-3,104	0,496	-0,376	0,933	0,271	0,921	0,048	0,980
CHPROFIT	-0,825	0,864	15,31	0,079*	1,831	0,533	2,664	0,078*
CHOPRISK	-27,14	0,189	-2,483	0,711	-5,573	0,067*	-0,677	0,540
CHSALESGRW	23,93	0,236	-1,226	0,657	-0,089	0,917	1,245	0,119
CHSTOCKRET	1,284	0,099*	-3,077	0,044**	0,034	0,891	-0,103	0,494
CHSTOCKRET1	-0,066	0,871	-0,156	0,877	0,451	0,178	0,119	0,594
McFadden R-squared		**87,91%**		**64,45%**		**40,75%**		**22,59%**