Do Accelerated Stock Repurchases Deter Takeovers? An Empirical Analysis

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Abstract

The primary purpose of this study is to examine the motive(s) that influence the choice between ASR and OMR as a repurchase mechanism and whether this choice influences the likelihood of receiving a takeover offer. Using a sample of 112 ASRs (and matched OMRs) from 2004 to 2006, we empirically test our predictions. Our results indicate that ASR firms have lower Market-to-Book ratio and Tobin's *q* when compared with OMR firms. ASR firms also exhibit lower industry-adjusted ROA and higher industry-adjusted leverage relative to OMR firms. The choice of ASR over OMR is also marginally influenced by the proportion of CEOs whose bonuses are explicitly conditioned on reported EPS. We also find that *ex post* ASR firms are significantly more likely to receive a takeover offer, suggesting that the repurchase does little to diminish the probable gains from a disciplinary takeover.

Key words: Stock Repurchase, Takeovers, Firm Performance, Signaling.

1. Introduction

In recent years, U.S. companies have spent record amounts repurchasing their shares from the market. Share repurchases have been typically classified as one of three types – open market repurchases, fixed price tender offers, and Dutch auctions – with open market repurchases (OMR hereafter) being the most prevalent of the three.[1] However, another repurchase method – namely the Accelerated Share Repurchase (ASR hereafter) – has been rapidly growing in popularity. For instance in 2006, S&P 500 companies spent an overall $431.8 billion buying back their own shares and paid $224.2 billion in dividends.[2] During the same period the aggregate ASR proceeds reached $30.7 billion, equivalent to 7.11 percent of the total repurchase amount and 13.69 percent of the total dividend payment by S&P 500 firms. In addition, as of July 15, 2007, overall ASR proceeds had already surpassed $53 billion with 53 announced ASRs, thanks largely to IBM's ASR for $12.5 billion, announced on May 30, 2007.

The current popularity of ASRs has been attributed to several aspects in which they differ from traditional OMRs. An ASR consists of the company buying back its stock form an investment bank at a set price. The investment bank, in turn, borrows the stock from large shareholders. However, the company must compensate the bank if the price rises while the bank is buying stock from the market to cover its short positions; and conversely, if the price falls, the bank must return the difference to the firm. Perhaps the most important (and visible) effect of implementing an ASR is that the number of outstanding shares decreases immediately. Consequently, an ASR can result in significant and immediate change to earnings per share, although the full cost of the buyback is not known until later.[3] A

[1] Jagannathan, Stephens, and Weisbach (2000) report that from 1985 to 1996, there were a total of 660 fixed price tender offers for $67 billion worth of stock, 120 Dutch auctions for $27 billion, and 4,753 open market announcements for $471 billion.

[2] "S&P 500 4th Quarter Buybacks Remain Strong at $105 billion," *Standard & Poor's Press Release*, March 15, 2007.

[3] The case of an EPS dilutive ASR undertaken by TXU is discussed in Mark Maremont and Serena Ng, "Moving the Market – Tracking the Numbers / Outside Audit: Buybacks via Loophole Can Have Hidden Cost", WSJ, 31 January 2006, C1.

traditional OMR, which is executed over time, allows the firm flexibility – if the circumstances change, the firm can either stop the buyback or alter the terms of the outstanding offer. There is ample evidence that OMRs have been used to manage EPS to meet analysts' forecasts and for earnings management (Hribar, Jenkins, and Johnson (2006), Gong, Louis, and Sun (*2008*)).

The primary purpose of this study is to examine the motive(s) that influence the choice between ASR and OMR as a repurchase mechanism and whether this choice influences the likelihood of receiving a takeover offer.[4] We posit that to the extent that share repurchases deter takeover bids, we expect ASR firms to be subjected to with fewer bids *ex* post when compared with bids made for OMR firms. By construction, ASRs achieve several of the objectives typically associated with traditional OMRs. Both mechanisms allow distribution of cash to shareholders, enable the firm to signal undervaluation, change its capital structure, boost earnings per share, and offset any dilution due to exercise of stock options. However, ASRs are completed quickly and as announced, and may result in a large and immediate boost in EPS. Compared with OMR firms, ASR firms achieve all of their purported objectives quickly. In as much as disgorging cash to shareholders, increasing leverage, and boosting EPS are takeover deterrents, these outcomes immediately decrease their attractiveness as potential targets. We therefore reason that firms' choice of repurchase mechanism affects the incidence of takeover bids received after such choice has been made.

Using a sample of 112 ASRs (and matched OMRs) from 2004 to 2006, we empirically test our predictions. We begin by examining the factors that influence the choice of ASR over OMR. We control for the signaling, undervaluation, and underperformance explanations, as well as for other variables that have been shown to explain repurchase decisions. Our results indicate that ASR firms have lower Market-to-Book ratio and Tobin's *q* when compared with OMR firms. ASR firms also exhibit lower industry-adjusted ROA and higher industry-adjusted leverage relative to OMR firms. However, the choice between ASR

[4] A fixed price tender offer is usually used defensively in presence of a hostile takeover, whereas a Dutch auction tender offer allows the market to determine the shares tendered. As our focus is on ASR and on the traditional OMR, we do not study these alternative repurchase mechanisms.

and OMR is not affected by the governance and entrenchment indices or by institutional ownership. Finally, the choice of ASR over OMR is also marginally influenced by the proportion of CEOs whose bonuses are explicitly conditioned on reported EPS.

Our results further show that ASR firms experience positive and statistically significant abnormal returns around the repurchase announcement. On the other hand, comparable sample of OMR firms' abnormal returns is statistically insignificant, suggesting that ASRs provide stronger signals to the capital market. Subsequently, we examine the likelihood of firms' receiving a takeover offer within twelve months after announcing the repurchase program. We control for industry-adjusted firm performance and leverage, firm size, and growth opportunities. Contrary to expectations, we find that *ex post* ASR firms are significantly more likely to receive a takeover offer. Our results are robust to the exclusion of multiple repurchase announcements made by firms and suggest that ASR firms are more than twice as likely to receive a takeover offer when compared with matched OMR firms.[5] These results indicate that if ASRs are chosen over OMRs with a view to deter future takeovers, this objective remains unmet. They also suggest that taken overall, ASRs do not sufficiently reduce potential gains that may accrue from a disciplinary takeover, making these firms attractive targets immediately after the share repurchase.

This paper contributes to the literature in several ways. We first extend the repurchase literature by analyzing the recent phenomenon of ASRs and comparing it with more conventional and established open market repurchases. We provide new results that suggest that ASRs may be driven by both firm undervaluation and underperformance. Additionally, our analysis suggests that one of the traditional rationales for repurchases – takeover deterrence – does not explain the use of ASRs. We also contribute to the literature that links executive compensation and repurchases as a means to meet the expected EPS (Bens, Nagar, Skinner, and Wong, 2003). Our results indicate that the choice of ASRs over OMRs is not driven by the resultant change in EPS. Finally, our study also complements the

[5] By comparison, the likelihood of receiving takeover bids *before* the repurchase announcement is identical for both ASR and OMR sample firms. We discuss this result in more detail later in the paper.

growing literature on *unconventional* stock repurchases (e.g., Lie (2002); Peyer and Vermaelen (2005), Louis and White (2007), and Gibson, Povel, and Singh (working paper)).

The remainder of the study is organized as follows. Section 2 briefly explains accounting regulations related to ASRs, illustrates how ASRs work, and discusses controversies surrounding ASRs. Section 3 reviews previous literature and Section 4 describes the data collection and presents the results of the study. Finally in Section 5, we further discuss our results and conclude the study.

2. Accelerated Stock Repurchases

According to the Emerging Issues Task Force (EITF) Abstracts: Issue No. 99-7, an accelerated stock repurchase (ASR) is defined as an immediate repurchase of target number of shares with the final transaction price to be determined by a volume weighted average market price for a fixed period of time.[6] An ASR is a combination of *Treasury Stock Purchase* and *Forward Contract*. The first component of ASR, "Treasury Stock Purchase," is straightforward in that issuers acquire their own shares from investment banks. The second component is considered as forward sales contract because ASR firms take a short position in ASR transactions, which is similar to short positions in futures transactions with slight different nuance. Thus, if stock prices increase, ASR firms have to pay the difference between original price and settlement price of volume weighted average price. There are a couple of differences between futures contracts and forward component of ASRs. First, while most futures traders get out of their positions by taking offsetting positions, ASR participants do not have a choice but to settle at the end of the contract. Second, with ASRs, issuers with a short position have settlement options. It is this inflexibility that ensures that the final cost of ASRs is not determined until the forward contract is settled, typically within 30 to 360 days of the repurchase announcement. As a result, the net final effect of the repurchase on EPS

[6] EITF Issue No. 99-7 Title: Accounting for an Accelerated Share Repurchase Program

(whether it is accretive or dilutive) may also remain unclear until the settlement date.[7] As noted previously, in May 2005 TXU Corporation paid Citigroup an additional $523 million because its stock price increased by more than $12 after the repurchase announcement in November 2004.

A recent variation of inflexible (*plain-vanilla)* ASRs is the use of collared ASRs that contain caps and floors. To illustrate such a transaction, we include a copy of Form 8-K filed on June 29, 2006 for Computer Sciences Corporation (CSC) in Appendix A. The form consists of three parts: Item 8.01 Other Events; Item 9.01 Financial Statement and Exhibits; and Exhibit No. 99. Item 8.01 and Exhibit No. 99 describes an event, where CSC's Board of Directors authorized $2 billion stock repurchase program with Goldman Sachs & Co. ("Goldman Sachs") on June 29, 2006. The repurchase program has two major parts. $1 billion of the overall repurchase would be made through open markets, and the other $1 billion will be made through ASRs. There are two components in ASRs. $500 million of $1 billion ASR would be made pursuant to traditional ASRs – Value Weighted Average Price (VWAP) Agreement – but the remainder of $1 billion involves collared ASRs ("Collared Agreement"). Besides, the $1 billion repurchase through open market will follow a trading plan, called Rule "10b5-1 Purchase Agreement". Stock repurchase programs similar to CSC's are not extraordinary, rather they have become quite normal as more than one method of repurchases are adopted into repurchases.

According to the Collared Agreement, CSC will pay $500 million to Goldman Sachs for a number of shares determined by VWAP during the contract term. Basically, the collar provision in the agreement specifies a minimum and maximum number of shares to be delivered from Goldman Sachs to CSC. If VWAP is greater (*lower*) than a beginning price, CSC will receive less *(more)* number of shares than originally planned. Although collared ASR agreements may provide more protection for the firm (and its shareholders), the inherent

[7] An illustrative example is provided in Donald Pagach and Bruce Branson, "Accounting for Accelerated Share Repurchase Programs," available at http://www.nysscpa.org/printversions/cpaj/2007/807/p36.htm

flexibility to change the terms of repurchase offer that is present in OMRs is absent from typical ASR agreements.

3. Related Literature

Firms may undertake share purchases for several reasons. Among the most prevalent motives forwarded and tested by academics are distributing excess cash flow, signaling undervaluation, altering capital structure, and managing earnings and EPS, and to deter takeovers.[8] Dittmar (2000) tests for the relationship between repurchases and the purported rationales and finds empirical support for undervaluation and for distribution of excess cash to shareholders. She also finds selective support for the notion that firms undertake repurchases to alter their capital structure, to deter takeovers, and to counter the dilutive effects of stock options.

The use of share repurchases to deter unwanted takeovers has been studied extensively both theoretical and empirically in the literature. Repurchases may alter the relationship between the firm (insiders) and outsiders, thus affecting the likelihood of takeovers. If the supply curve for shares is upward-sloping, a firm can increase the cost of an acquisition significantly by repurchasing stock (Brown and Ryngaert (1992), Bagwell (1992), Hodrick (1996)). Bagwell (1991) suggests that tendering shareholders are the ones with lowest reservation prices, and hence a repurchase increases the lowest price at which an acquirer may be able to buy shares to engineer a takeover. There may be other reasons why a repurchase deters potential takeovers. Distributing excess cash to shareholders may alleviate agency problems, reducing gains from a takeover. If insiders do not participate in the repurchase, their increased ownership of the firm may reduce agency problems even further. In a model presented by Hirshleifer and Thakor (1992), managers of poorly performing firms act to deter takeovers by increasing leverage during periods of high takeover activity. For debt-financed repurchases, increased leverage may provide an additional deterrent to the would-be acquirer. In Bagnoli and Lipman (1989), stock repurchases serve as a defense against takeover by signaling

[8] See Dittmar (2000) and references therein for related literature.

management's private information about firm value. Recent work by Billet and Xue (2007) provides strong empirical support for the notion that takeover probability influences open market repurchases, while also documenting results supporting several other motivations that may underlie the repurchase decisions.

The use of stock repurchases as an earnings management device has also been studied extensively. According to Brav, Graham, Harvey, and Michaely (2005), more than three quarters of financial executives surveyed identify "Increasing earnings per share" as an important determinant of their decisions on stock repurchases. Academic studies seem to concur with the survey respondents. Bens et al., (2003) study the relation between corporate executives' incentives and diluted earnings per share, and find that executives are likely to increase stock repurchases when they worry about the possibility of missing the *desired* diluted EPS, not the basic EPS. Hribar, Jenkins, and Johnson (2006) examine whether firms repurchase their own shares in order not to miss analyst EPS forecasts. They find firms that would have missed market expectations on earnings forecast are more likely to engage in accretive stock repurchases, but find that the market appears to react accordingly. Besides, Gong, Louis, and Sun (2008) provide evidence that the improvements in firms' operating performance after stock repurchases are driven by pre-repurchase "downward earnings management"

Although OMRs are still the dominant repurchase method, there is a growing literature that studies other repurchase methods. Peyer and Vermaelen (2005) examine 737 privately negotiated, or targeted, stock repurchases from 1984 to 2001, and find various aspects of targeted repurchases. They break up the sample into four categories: greenmail transactions, non-greenmail with a premium payment, zero-premium repurchases, and repurchases at a discount. They find that only premium non-greenmail transactions increase shareholder wealth, while other transactions merely transfer wealth between company and shareholders, and that the degree of wealth transfer is determined by the bargaining power between selling stockholders and buying companies. Louis and White (2007) investigate whether managers use tender-offer repurchases on purpose as a signaling device. Although

they do not find support for signaling via Dutch-auction tender offers, they report that Dutch-auction tender offer firms try to "deflate" their earnings prior to repurchases.

Finally, Gibson, Povel, and Singh (working paper) look put warrant issuance and stock repurchase programs, and find evidence consistent with the hypothesis. Lie (2002) investigates potential wealth transfer from bondholders to shareholders in self-tender offers and finds that more bond ratings experience downgrades following both defensive and non-defensive self-tender offers. Maxwell and Stephens (2003) also investigate whether the possibility of wealth transfer from bondholders to shareholders would have any impact of firms' bond ratings, and find that downgrades outnumber upgrades more than twice from repurchasing firms. They also report positive abnormal stock returns but find negative bond returns around repurchase announcements.

The objectives of this study are to examine the factors that may affect the choice between ASRs and OMRs. Given that ASRs are completed quickly, instantaneously reduce the number of outstanding shares and alter the EPS, we hypothesize as follows. We expect that firms with more immediate free cash flows are more likely to choose ASRs over OMRs. We also expect that firms with higher degree of underperformance (prior to stock repurchases) are more likely to opt for ASRs in order to signal undervaluation to the market. The fact that ASRs *immediately* reduce issuers' number of shares outstanding suggests that managers may adopt ASRs purely to boost upcoming earnings per share. This choice may be further bolstered if managerial compensation is tied to EPS. We therefore hypothesize that the likelihood of choosing ASR will increase with the link between managerial compensation and EPS. With ASRs, firms can repurchase large number of shares quickly, enabling them to nullify the impact of imminent stock option exercises.[9] In as much as managers wish to avoid dilution, we expect a positive relation between the decision to adopt ASRs and immediate stock option exercises.

[9] O'Brien, Chris, "Insider Trading: Franklin insiders sell before buyback," San Jose Mercury News, June 25, 2007.

Finally, we hypothesize that to the extent that share repurchases deter takeover bids, we expect ASR firms to be subjected to with fewer bids *ex* post when compared with bids made for OMR firms. Compared with OMR firms, ASR firms achieve all of their purported objectives immediately. Distributing cash to shareholders, increasing leverage, signaling undervaluation, and boosting EPS serve to collectively reduce the attractiveness of firms as potential targets. We therefore reason that firms' choice of repurchase mechanism affects the incidence of takeover bids received after such choice has been made.

4. Data and Results

Our study has greatly benefited from the SEC's recent amendments to Rule 10b-18 (effective December 17, 2003) and our sample is based on stock repurchase programs announced by U.S. firms between 2004 and 2006. As per the amendments, SEC now requires every public company to fully disclose its buyback activities in Forms 10-K and 10-Q under Regulation S-K Item 703. According to "Instruction to paragraph (b)(1) of Item 703," issuers must disclose, by footnote to the table "*Issuer Purchases of Equity Securities*," every repurchase transaction regardless of the nature of purchases. Such purchases include open market repurchases, privately negotiated repurchases, tender offers, put options/warrants, and other transactions, and ASRs should be disclosed by footnote.

As we are not aware of a publicly available database for ASRs, we hand-collect the data from appropriate filings. We begin by using LIVEDGAR Global Search in order to search Forms 10-Ks and 10-Qs. Our search words include "accelerated stock repurchase(s)," "accelerated share repurchase(s)," "accelerated stock buyback(s)," "accelerated share buyback(s)," and "accelerated buyback(s)." We also look through Form 8-Ks as a means to detect any missing transaction and to find detailed information about the transactions. We also search for ASR announcements on the internet through Lexis-Nexis, Factiva.com, and Google.com. We carry out similar searches for key words "overnight stock repurchase (OSR)" or "overnight stock buyback" as such repurchases are virtually identical to ASRs. We obtain a total of 132 ASRs after eliminating REITs. In our analysis, we treat multiple ASRs in

given calendar year by the same firm as a single announcement. Doing this reduces the sample size to 112 ASRs between 2004 and 2006.

In order to compare ASR firms with open market repurchase (OMR) firms, we obtain the list of all OMRs from 2004 to 2006 from the Securities Data Corporation (SDC) Platinum Mergers & Acquisition database. We find a total of 1,489 OMRs as reported in SDC. Several OMR announcements are repeated over time – for instance for a given OMR SDC typically records the initial announcement, alteration of terms, and/or the completion of the buyback separately. We then eliminate the following: multiple announcements, firms without identifiers, duplicate announcements, announcements by foreign firms, closed-end funds, REITs, and ADRs . We further drop OMRs that also involve privately negotiated repurchases and OMRs with at least one ASR during the sample period. The end result is a set of 456 OMRs announced by U.S. public firms between 2004 and 2006. Finally, we construct the matching OMR sample by matching each ASR firm with an OMR firm based on 3-digit SIC code and firm size. If we do not find matches, we repeat the matching process with 2-digit SIC code and finally single digit SIC code. The final result is a matched sample of 112 unique ASRs matched with the same number of OMRs. Restricting the sample to only the first announced ASR per firm further reduces the sample to 91 firms. In subsequent analyses we use this sample of 91 ASR and matched OSR firms.

Table 1 provides the sample break down for ASR and matched OMR firms by year. The number of ASRs has almost tripled from 23 to 67 between 2004 and 2006, reflecting their current popularity as a buyback mechanism. By contrast, our matching process generates OMRs that are evenly distributed over the sample period. In table 2, we provide an industry break down of ASR firms. The highest proportions of ASRs have been undertaken by Manufacturing (30%) and Finance, Insurance & Real Estate (29%). Services and Transport industries both account for 14% of all ASRs each, followed by Utilities and Retail Trade. An interesting observation from Table 2 is that ASRs are not restricted to a small subset of industries but are prevalent in all sectors of the economy.

Table 3 presents descriptive statistics for ASR and OMR firms and provides univariate comparison across financial, performance, governance, and remuneration variables. We obtain firms' financial data from Compustat for the fiscal year immediately preceding the repurchase announcement. Institutional ownership data is obtained from 13f filings and data for exercisable options and bonus provisions are collected from firms' proxy and 10K statements. Governance and Entrenchment Index data are available from Investor Responsibility and Research Center (IRRC) database. Market value of equity is the product of fiscal year ending stock price (Item #199) and the number of shares outstanding at quarter-end (Item #25). As we match our sample based on market capitalization, we find little difference in market cap between ASR firms and OMR firms. Although OMR firms have higher mean market-to-book (measured as market value of equity divided by total assets) ratio, the difference is only marginally significant. OMR firms have significantly higher Tobin's q suggesting that they have more growth opportunities which are valued in the capital market.

Industry adjusted leverage is defined as the ratio of total debt (Item #9 + #34)) to total assets (Item #6) minus median leverage for the same 2-digit industry. Univariate comparison suggests that ASR firms are over-leveraged compares to industry peers, whereas OMR firms are under-leveraged. If leverage provides takeover protection (all else equal), this suggests that ASR firms are more immune from takeovers before repurchase decisions are made.

Several comparisons in Table 3 indicate that ASR firms underperform comparable OMR firms just prior to the repurchase decision. Annual Excess Return (measured over eleven months up to one month prior to the repurchase and adjusted for return on the CRSP value-weighted index) for ASR firms is negative, whereas corresponding return for OMR firms is positive, and the difference is statistically significant at 5 percent level. On an industry-adjusted basis, ASR firms also perform poorly when compared with OMR firms on Return on Assets (ROA). They also have lower free cash flow (as proportion of total assets) when compared with OMR firms. Finally, average sales growth for ASR firms is 8.7% as compared with mean growth of 12.4% for OMR firms. The two sub-sets of firms do not exhibit significant differences in their Cash balance, Capital Expenditures, and Net PP&E.

Collectively, these comparisons suggest that in the year preceding repurchase decision, ASR firms underperform both their industry peers and OMR firms. In light of demonstrated underperformance, perhaps it is not surprising that they are also valued lower by the market, as indicated by market-to-book and Tobin's q ratios.

Finally, both sets of firms exhibit similar mean value for the Governance Index, Entrenchment Index, and the level of Institutional Ownership. The average value for total exercisable options as well as executive exercisable options is also similar for ASR and OMR firms. Similar to Marquardt, Tan, and Young (2007), we define a dummy variable called bonus that captures whether the CEO's annual bonus is tied to the EPS. As indicated in Table 3, about 75% of ASR firms' CEOs' compensation is linked to EPS compared to 64% of CEOs of OMR firms. Although this suggests EPS manipulation as a motive for undertaking ASRs, the difference is not statistically significant. Note that as we are using an industry- and size-matched sample of ASRs and OMRs, it is reasonable to expect similar compensation policies and provisions (on average) in the CEO contracts.

In Panel B we compare the provisions that pertain to the actual ASR and OMR announcements. Although ASR firms offer to repurchase a significantly lower proportion of shares compared with OMR firms (4.6% versus 7.4%), it must be noted that OMRs are typically executed over a long period, whereas the reduction in outstanding shares under ASR is immediate. Similarly, the mean repurchase amount for ASR firms ($400 million) represents cash that is returned to the shareholders quickly, whereas the $800 million being spent by OMR firms may be returned in several installments spread out over time. Contrary to our predication that doing an ASR reduces the takeover probability, Panel B indicates that about ten-percent of ASR firms become takeover targets after the repurchase compared with only one-percent for OMR firms.

We perform an event study analysis in Table 4 around the repurchase announcements. In Panel A, we use the equally-weighted CRSP index and value-weighted CRSP index in Panel B as the market index. First, we look at the cumulative abnormal return during the twenty-day period prior to the repurchase announcement for both ASR and OMR firms. We

observe positive abnormal returns for ASR firms and negative abnormal returns for OMR firms in both panels. The difference between abnormal returns for the first window is statistically significant in both panels. We also look at the two-day window around the announcement day and find that ASR firms on average experience more positive returns than OMR firms. This finding suggests that the firm signal sent by ASR firms to the market is well understood.

In Table 5, we run several matched-pairs logistic regressions to determine what factors affect the choice of repurchase type. Our dependent variable is a dummy variable that takes on a value of one for ASR firms and zero for OMR firms. We use several financial variables, excess return, governance variables, and the bonus variable describes previously as independent variables. There are six models with slightly different independent variables. In all models, we find that industry adjusted ROA and leverage are statistically significant. Industry adjusted ROA has a negative relationship with the repurchase choice suggesting underperforming firms tend to choose ASRs over OMRs.[10] The results also indicate that firms with higher leverage tend to choose ASRS. These findings confirm univariate analysis in Table 3 and suggest underperformance is playing a role in choosing the repurchase type.

We also find that Tobin's *q* is statically significant in two regressions suggesting that lower *q* firms tend to choose ASRs as their repurchasing method. Cash to total assets ratio has a positive sign and is significant in three regressions. We also control for the percentage of total options exercisable and percentage of executive options exercisable. However, as the table shows, options exercisable do not explain the repurchase type. We find that Bonus variable is marginally significant in three regressions. This suggests that firms where the CEO bonus is directly tied to EPS tend to choose ASRs over OMRs. The results in Table 5 generally confirm the univariate results in Table 3 as we find that underperformance and undervaluation combined with the CEO's bonus being tied to EPS are related to the choice of ASRs.

[10] In an unreported regression, we have also controlled for the institutional ownership percentage. The *p*-value for the institutional ownership is 0.98.

We examine the relation between the repurchase type and subsequent takeover activity in Table 6. The dependent variable is a dummy variable that takes on a value of one if the firm becomes a takeover target during the twelve-month period after the repurchase announcement and zero otherwise. There are nine such ASR firms and only one such OMR firm. The independent variables are those that were found to be affecting takeover probability (for example, see Billet and Xue, 2007).[11] We have two logistic regressions in Table 6: one for the full sample (multiple ASR occurrences are included) and one for the reduced sample (only first ASRs are included in the reduced sample). The results show that along with the market value of equity, the ratio of net plant and property to total assets is also statistically significant. We also find that the repurchase choice is significantly related to the takeover bid and the coefficient for the repurchase choice is significant at the five-percent level. The results indicate that *ex post*, the likelihood of receiving a takeover bid is higher for ASR firms as compared with OMR firms. This suggests that the choice of ASR (and the positive signals it sends to the market, which are also captured in positive announcement returns) is not sufficient to decrease the attractiveness of these firms. Choosing ASRs may indicate a last-ditch effort by the management to signal firm quality and to "temporarily" boost the share price, as the firm may have exhausted all other avenues. It would seem though that the market participants (namely acquirers) see through this maneuver and still assess potential gains from undertaking takeovers. In summary, the ASR signal is incomplete, and although allows firms to return cash to shareholders much faster than OMRs, its ability to deter takeovers remains questionable.

5. Conclusion

ASRs have been around since late 1990s, but they have become popular complements for open market stock repurchase programs. While ASRs have gained much interest among corporations, the number of ASRs is still relatively small comparing to open market repurchases and dividend payments. However, if we consider the aggregate amount of ASR

[11] We have also included an industry takeover dummy and year dummies in unreported regressions. However, those variables do not have any statistical power.

proceeds, ASRs are by no means a trivial corporate event. For example, in 2006, S&P 500 companies spent overall $431.8 billion buying back their own shares and paid $224.2 billion in dividends,[12] while the aggregate ASR proceeds reached $30.7 billion, equivalent to 7.11 percent of the total repurchase amount and 13.69 percent of the total dividend payment by S&P 500 firms. Moreover, as of July 15, 2007, the overall ASR proceeds in 2007 already surpass $53 billion with 53 ASRs thanks largely to IBM's ASR of $12.5 billion, announced on May 30, 2007.

We examine several hypotheses that might explain decision to use ASRs over OMRs. We control for the signaling, undervaluation, and underperformance explanations, as well as for other variables that have been shown to explain repurchase decisions. We find that underperformance is related the types of repurchase decision, as ASR firms are usually underperforming prior to the repurchase. In our regression analysis, we also find a weak support for the hypothesis that the choice of ASR over OMR is also influenced by firms where CEOs bonuses are explicitly conditioned on reported EPS.

We examine the abnormal returns around the repurchase announcement dates and find positive and statistically significant abnormal returns for ASR firms, suggesting that ASRs provide stronger signals to the markets. Finally, we examine the probability that firms receive a takeover offer within twelve months after announcing the repurchase program. Contrary to our expectations, we find that ASR firms are significantly more likely to receive a takeover offer after the repurchase.

Our results should be interpreted with some caution as the ASR sample is small and restricted to the recent past. Additionally, terms of ASR contracts are evolving, with increased use of floors and ceilings, and these advances may alter ASRs ability to deter takeovers in the future. Nonetheless, the current results provide insights into both the factors that may influence the selection of ASRs a repurchase mechanism, and into the consequences of such choices.

[12] "S&P 500 4th Quarter Buybacks Remain Strong at $105 billion," *Standard & Poor's Press Release*, March 15, 2007.

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Appendix A

EXHIBIT 99

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CSC TO REPURCHASE UP TO $2 BILLION IN STOCK

EL SEGUNDO, Calif., June 29 -- Computer Sciences Corporation (NYSE: CSC) today announced that its Board of Directors has authorized the repurchase of up to $2 billion of its common stock, which represents approximately 19 percent of CSC's outstanding stock based on the current stock price. The decision to repurchase stock concludes the Board's process to explore strategic alternatives, including a potential sale of the company, announced on April 4, 2006.

The repurchases will be made pursuant to an aggregate of $1 billion in accelerated share repurchase ("ASR") transactions and the remainder through open market repurchase transactions. All transactions will be effected under three agreements between the company and Goldman, Sachs & Co. to be executed later today.

The ASR transactions are covered by two agreements. Under the first agreement, the company will repurchase approximately nine million shares from Goldman Sachs today for an initial price of $500 million. Goldman Sachs will purchase an equivalent number of shares in the open market over the next nine to twelve months. At the end of this period, CSC's initial price will be adjusted up or down based on the volume-weighted average price of the stock (the "VWAP") during this period. The price adjustment may be settled, at CSC's option, in cash or shares of its stock.

Under the second agreement, the company will repurchase from Goldman Sachs, for $500 million, a number of shares determined by the VWAP during a six- to twelve-month period beginning approximately one month after the agreement is executed, subject to collar provisions establishing minimum and maximum numbers of shares. Goldman Sachs will initially deliver approximately seven million shares to CSC on July 5, 2006, and may deliver additional shares subject to the collar provisions.

The third agreement, which covers the balance of the $2 billion repurchase authorization, is a twelve-month, open-market repurchase program under Rule 10b5-1 that will commence repurchases immediately following the final settlement of the ASR transactions.

The company will finance the ASR transactions initially with cash on hand and short-term borrowings. All repurchased shares will be held in treasury.

The share repurchases announced today underscore the Board's confidence in CSC's prospects as an independent company. The repurchase program will improve the efficiency of CSC's capital structure, lower the cost of capital and increase earnings per share. The Board believes that these repurchases, together with the workforce restructuring announced on April 4, will increase shareholder value and help make CSC a stronger and more competitive company. The resulting capital structure and improved cash flow will also position the company well for future growth initiatives.

"We are very optimistic about the company's prospects and excited by the opportunities we see for continued growth," said CSC Chairman and Chief Executive Officer Van B. Honeycutt. "New technologies, new markets and new market demands are reshaping the information technology industry, and we're confident that CSC will remain a leading player in this space."

About CSC

Founded in 1959, Computer Sciences Corporation is a leading global information technology (IT) services company. CSC's mission is to provide customers in industry and government with solutions crafted to meet their specific challenges and enable them to profit from the advanced use of technology.

With approximately 79,000 employees, CSC provides innovative solutions for customers around the world by applying leading technologies and CSC's own advanced capabilities. These include systems design and integration; IT and business process outsourcing; applications software development; Web and application hosting; and management consulting. Headquartered in El Segundo, Calif., CSC reported revenue of $14.6 billion for the 12 months ended March 31, 2006. For more information, visit the company's Web site at www.csc.com.

Cautionary Note Regarding Forward-looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including statements regarding the restructuring program and potential transactions involving the company. These forward-looking statements are based on limited information available to the company at this time, and future developments and results may differ materially from the expectations reflected in the forward-looking statements. Factors that might cause material differences from the forward-looking statements include the Risk Factors described in the company's most recent Annual Report on Form 10-K and the future business and financial performance of the company. The company undertakes no obligation to revise or update any forward-looking statements.

Table 1

Repurchase Announcements by Year

This table presents the number of accelerated (ASR) and open market (OMR) repurchase announcing firms by years. Second column shows number of ASRs for each year. Firms might have more than one ASR in a given year and a firm might have multiple ASRs during the sample period. Third column provides number of distinct firms for each year. The last column provides the number of OMRs in our sample by years. The Last row only counts number of distinct firms announcing ASRs between 2004 and 2006.

Year	ASRs	Unique Firms	OMRs
2004	23	21	40
2005	42	37	35
2006	67	54	37
Total	132	112	112
2004-2006		91	112

Table 2

Industry Break-Down of ASR Firms

This table presents industry break-down of 91 accelerated share repurchase (ASR) announcing firms by two-digit SIC codes. N is the number of firms in a given industry. % of Sample is the number of ASR firms in a given industry divided by the total number of ASR firms.

Industry Name	2-Digit SIC	N	% of Sample
Manufacturing		**27**	**29.67**
Food And Kindred Products	20	4	4.40
Lumber And Wood Products	24	1	1.10
Paper And Allied Products	26	1	1.10
Printing, Publishing, And Allied Industries	27	3	3.30
Chemicals And Allied Products	28	4	4.40
Rubber And Plastics Products	30	1	1.10
Fabricated Metal Products	34	2	2.20
Industrial And Commercial Machinery	35	4	4.40
Electronic And Other Electrical Equipment	36	1	1.10
Transportation Equipment	37	2	2.20
Medical and Photo Equipment	38	4	4.40
Transportation, Communications, and Utilities		**13**	**14.29**
Water Transportation	44	1	1.10
Communications	48	2	2.20
Electric, Gas, And Sanitary Services	49	10	**10.99**
Wholesale Trade		**3**	3.30
Wholesale Trade-durable Goods	50	1	1.10
Wholesale Trade-non-durable Goods	51	2	2.20
Retail Trade		**9**	**9.89**
Building Materials and Hardware	52	1	1.10
General Merchandise Stores	53	2	2.20
Apparel And Accessory Stores	56	2	2.20
Home Furniture and Furnishings Stores	57	1	1.10
Eating And Drinking Places	58	2	2.20
Miscellaneous Retail	59	1	1.10
Finance, Insurance, And Real Estate		**26**	**28.57**
Depository Institutions	60	12	13.19
Non-depository Credit Institutions	61	2	2.20
Brokers, Dealers, and Exchanges	62	2	2.20
Insurance Carriers	63	10	10.99
Services		**13**	**14.29**
Business Services	73	6	6.59
Automotive Repair, Services, And Parking	75	1	1.10
Amusement And Recreation Services	79	1	1.10
Health Services	80	3	3.30
Accounting, Research, and Mgmt. Services	87	2	2.20

Total	91

Table 3

Descriptive Statistics

This table presents descriptive statistics for 91 ASR announcing firms and 91 matched OMR announcing firms. All variables are measured at the end of the fiscal year prior to the repurchase announcement unless noted otherwise. Panel A presents variables that prior to the repurchase announcements. Panel B reports the variables that are related to the repurchase decision or observed after the repurchase decision. Percentage sought is the ratio of the announced number of shares to be repurchased to the number of shares outstanding. Repurchase amount is the dollar value of announced repurchase. Market value of equity is measured as the fiscal year-end stock price (Data 199) multiplied by the number of outstanding shares (Data 25). Market-to-book ratio is the market value of equity divided by total assets (Data 6). Tobin's Q is the market value of assets divided by the book value of total assets. Market value of assets is calculated as the book value of assets (Data6) plus the market value of equity less the book value of common equity (Data60) and deferred taxes (Data74). Abnormal return is the eleven-month cumulative stock return up to one month prior to the repurchase announcement minus either the equally- or value-weighted CRSP index return for the same period. Industry adjusted ROA is the return on assets (Data 13 / Data 6) minus the median ROA for the same two-digit industry. Industry adjusted leverage is the total debt ratio ((Data 9 + 34) / Data 6) minus the median debt ratio for the same two-digit industry. Sales growth is the percentage change in sales (Data 12) between year t-1 and t-2, where t is the repurchase fiscal year. The free cash flow is calculated as net operating cash flow (Data13) minus capital expenditures (Data128). NNPE is net plant, property, and equipment (Data8). CAPEX is capital expenditures (Data128). Capital expenditures is set to zero if missing or not reported. Dividend yield is common dividends (Data21) over the fiscal year-end stock price (Data199). Dividend yield is set to zero for non-dividend paying companies. Industry takeover dummy takes a value of one if there was at least one takeover in the same two-digit SIC industry in the previous year and zero otherwise. Target dummy is one if there was an actual bid for the repurchasing firm within twelve-month period after the repurchase announcement and zero otherwise. Governance index is the GIM governance index and obtained from the IRRC. Entrenchment index is the Bebchuk et al. (2004) index. Total options exercisable is the ratio of the number of shares to be issued upon the exercise of stock options to the shares outstanding. Executive options exercisable is the ratio of the number of shares to be issued upon the exercise of executive stock options to the shares outstanding. The option figures are mainly obtained from the proxy statements and in some cases from 10-K filings around the repurchase announcements. Bonus is a dummy variable that takes a value of one is the proxy statement states that the CEO's annual bonus is tied to the earnings per share and zero otherwise. Paired t-test and Wilcoxon signrank test are used to test the differences among means and medians. P-values are in parentheses.

	ASR Firms		**OMR Firms**		**Difference**	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
Panel A: Financial Performance						
Market Value of Equity (million $)	12,623	5,396	11,442	4,655	(0.62)	(0.57)
Market-to-Book	2.996	2.138	3.970	2.675	(0.10)*	(0.09)*
Tobin's Q	1.740	1.288	2.316	1.749	(0.01)***	(0.03)**
Annual Excess Return (EW)	-0.062	-0.069	0.004	-0.040	(0.10)*	(0.15)
Annual Excess Return (VW)	-0.001	-0.004	0.088	0.031	(0.02)**	(0.03)**
Industry Adjusted ROA	0.052	0.024	0.099	0.060	(0.02)**	(0.01)***
Industry Adjusted Leverage	0.037	0.038	-0.013	-0.004	(0.05)**	(0.08)*
Sales Growth	0.087	0.070	0.124	0.097	(0.06)*	(0.01)***
Cash / Assets	0.121	0.051	0.135	0.057	(0.60)	(0.74)
Free Cash Flow / Assets	0.084	0.080	0.113	0.097	(0.03)**	(0.08)*
NPPE / Assets	0.226	0.162	0.247	0.178	(0.55)	(0.52)
CAPEX / Assets	0.038	0.029	0.039	0.029	(0.84)	(0.66)
Dividend Yield	0.014	0.011	0.011	0.007	(0.17)	(0.13)
Governance Index	9.886	10.000	9.388	9.000	(0.23)	(0.21)

Entrenchment Index	2.455	2.000	2.388	2.000	(0.77)	(0.97)
Institutional Ownership	0.721	0.747	0.725	0.749	(0.90)	(0.86)
Total Options Exercisable (%)	0.085	0.080	0.078	0.072	(0.31)	(0.42)
Executive Options Exercisable (%)	0.015	0.010	0.013	0.008	(0.45)	(0.47)
Bonus	0.747	1.000	0.637	1.000	(0.11)	(0.10)*
Panel B: Repurchase						
Percentage Sought	0.046	0.032	0.074	0.057	(0.00)***	(0.00)***
Repurchase Amount (million $)	403	237	800	300	(0.00)***	(0.00)***
Target Dummy	0.099	0.000	0.011	0.000	(0.01)***	(0.01)***

*, **, and *** denote statistical significance at the 10-, 5- and 1-percent levels.

Table 4

Abnormal Returns

This table reports cumulative abnormal returns for 91 ASR and OMR announcing firms. There are event windows: first one is (-20, -1) and the second one is (-1, 1) around the announcement date. The market index is the equally-weighted CRSP index in Panel A and the value-weighted CRSP market index in Panel B. Means and medians are tested against zero for statistical significance. P-values are provided in the last column and paired t-test and Wilcoxon signrank test are used to test the differences among means and medians.

Event Window	ASR Firms		OMR Firms		Difference	
	Mean	Median	Mean	Median	Mean	Median
Panel A: Equally-Weighted						
(-20, -1)	0.007	0.006	-0.013	-0.017**	(0.07)*	(0.02)**
(-1, 1)	0.009***	0.006***	0.004	0.010**	(0.34)	(0.42)
Panel B: Value-Weighted						
(-20, -1)	0.011**	0.010**	-0.011	-0.010	(0.04)**	(0.01)***
(-1, 1)	0.011***	0.007***	0.004	0.009**	(0.25)	(0.27)

*, **, and *** denote statistical significance at the 10-, 5- and 1-percent levels.

Table 5

Matched-Pairs Logistic Regressions for Repurchase Method

This table presents matched-pairs logistic regressions of repurchase method. The dependent variable is one if a firm employs the accelerated share repurchases method and zero if the firm uses solely open market repurchases. All variables are measured at the end of the fiscal year prior to the repurchase announcement unless noted otherwise. Market value of equity is measured as the fiscal year-end stock price (Data 199) multiplied by the number of outstanding shares (Data 25). Market-to-book ratio is the market value of equity divided by total assets (Data 6). Tobin's Q is the market value of assets divided by the book value of total assets. Market value of assets is calculated as the book value of assets (Data6) plus the market value of equity less the book value of common equity (Data60) and deferred taxes (Data74). Excess return is the eleven-month cumulative stock return up to one month prior to the repurchase announcement minus either the equally- or value-weighted CRSP index return for the same period. Industry adjusted ROA is the return on assets (Data 13 / Data 6) minus the median ROA for the same two-digit industry. Industry adjusted leverage is the total debt ratio ((Data 9 + 34) / Data 6) minus the median debt ratio for the same two-digit industry. Sales growth is the percentage change in sales (Data 12) between year t-1 and t-2, where t is the repurchase fiscal year. Cash is the cash and cash equivalents (Data1). NNPE is net plant, property, and equipment (Data8). Dividend yield is common dividends (Data21) over the fiscal year-end stock price (Data199). Dividend yield is set to zero for non-dividend paying companies. Bonus is a dummy variable that takes a value of one is the proxy statement states that the CEO's annual bonus is tied to the earnings per share and zero otherwise. Governance index is the GIM governance index and obtained from the IRRC. Entrenchment index is the Bebchuk et al. (2004) index. Institutional ownership percentages are from Thomson Financial's 13F filings database. Total options exercisable is the ratio of the number of shares to be issued upon the exercise of stock options to the shares outstanding. Executive options exercisable is the ratio of the number of shares to be issued upon the exercise of executive stock options to the shares outstanding. The option figures are mainly obtained from the proxy statements and in some cases from 10-K filings around the repurchase announcements. N is the number of firms with complete data. P-values are provided in parentheses.

	1	2	3	4	5	6
Market Value of Equity (Ln)	0.765	0.853	1.085	0.875	0.481	0.468
	(0.29)	(0.21)	(0.12)	(0.21)	(0.58)	(0.59)
Market-to-Book	-0.056					
	(0.34)					
Tobin's Q		-0.399	-0.524	-0.473	-0.409	-0.434
		(0.12)	(0.06)*	(0.10)*	(0.17)	(0.15)
Excess Return (EW)			-0.865			
			(0.31)			
Excess Return (VW)	-1.905	-1.668		-1.547	-1.646	-1.596
	(0.04)**	(0.08)*		(0.11)	(0.12)	(0.12)
Industry Adjusted ROA	-6.038	-5.343	-4.954	-5.615	-4.665	-4.825
	(0.02)**	(0.04)**	(0.04)**	(0.03)**	(0.07)*	(0.07)*
Industry Adjusted Leverage	3.409	2.636	3.155	3.453	2.989	2.972
	(0.03)**	(0.09)*	(0.05)**	(0.04)**	(0.09)*	(0.08)*
Sales Growth	-1.203	-1.427	-1.563	-1.558	-1.938	-2.140
	(0.43)	(0.40)	(0.38)	(0.37)	(0.34)	(0.33)
Cash / Assets	1.537	2.934	3.412	3.440	3.291	3.097
	(0.28)	(0.10)*	(0.06)*	(0.07)*	(0.12)	(0.13)
NPPE / Assets	0.329	0.394	0.268	0.435	0.185	0.356
	(0.75)	(0.72)	(0.81)	(0.70)	(0.86)	(0.75)
Dividend Yield	13.574	12.070	17.197	13.967	14.180	12.018

	(0.47)	(0.49)	(0.32)	(0.43)	(0.34)	(0.47)
Bonus	0.697	0.724	0.600	0.678	0.806	0.718
	(0.09)*	(0.08)*	(0.16)	(0.11)	(0.07)*	(0.11)
Governance Index					0.110	
					(0.22)	
Entrenchment Index						0.062
						(0.71)
Total Options Exercisable	1.738	1.545				
	(0.68)	(0.74)				
Executive Options Exercisable			23.533	20.120	16.777	20.142
			(0.11)	(0.17)	(0.26)	(0.18)
Log likelihood	-48.10	-47.23	-46.97	-46.51	-43.20	-44.02
LR chi2	24.27***	20.97**	21.16**	19.56**	19.91*	20.71**
Pseudo R-squared	0.23	0.24	0.24	0.25	0.25	0.23
N	180	180	180	180	166	166

***, **, and * represent significance level at the 10, 5, and 1-percent level.

Table 6

Takeover Probability

This table presents the results of two logistic regressions to predict takeover probability. The dependent variable is a dummy variable that takes on a value of one if the repurchasing firm receives a takeover bid during the year after the repurchase. Repurchase method is dummy variable and takes on a value of one for ASR firms and zero for OMR firms. All variables are measured at the end of the fiscal year prior to the repurchase announcement unless noted otherwise. Industry adjusted ROA is the return on assets (Data 13 / Data 6) minus the median ROA for the same two-digit industry. Industry adjusted leverage is the total debt ratio ((Data 9 + 34) / Data 6) minus the median debt ratio for the same two-digit industry. Market value of equity is measured as the fiscal year-end stock price (Data 199) multiplied by the number of outstanding shares (Data 25). Market-to-book ratio is the market value of equity divided by total assets (Data 6). Sales growth is the percentage change in sales (Data 12) between year t-1 and t-2, where t is the repurchase fiscal year. NNPE is net plant, property, and equipment (Data8). P-values are provided in parentheses.

	Full Sample	**Reduced Sample**
Constant	0.859	-1.013
	(0.75)	(0.73)
Repurchase Method	2.413	2.358
	(0.03)**	(0.03)**
Industry Adjusted ROA	0.515	1.976
	(0.88)	(0.56)
Industry Adjusted Leverage	0.979	2.543
	(0.71)	(0.38)
Market Value of Equity (Ln)	-0.738	-0.584
	(0.02)**	(0.09)*
Market-to-Book	0.006	0.003
	(0.95)	(0.98)
Sales Growth	-0.524	0.247
	(0.86)	(0.93)
NPPE / Assets	1.974	3.153
	(0.15)	(0.04)**
Log likelihood	-34.724	-28.431
LR Chi-Square	17.170**	14.710**
Pseudo R-squared	0.198	0.206
N	213	181

***, **, and * represent significance level at the 10, 5, and 1-percent level.