

WHAT DO WE KNOW ABOUT STOCK REPURCHASES?

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The modern corporation has a colorful history spanning centuries. Yet it has only been within the last two decades that public corporations have seized upon a previously little used mechanism for returning capital to their shareholders—the share repurchase. Although companies have long been permitted to buy back their stock, it was not until the early 1980s that U.S. corporations began adopting share repurchase programs in large numbers. This surge in activity was fueled by an explosion in the use of open market repurchase programs. In the 1990s, this movement went global as countries like Canada and the U.K., with repurchase laws already in place, also saw an increase in repurchase activity. In addition, a host of countries that formerly prohibited stock repurchases, such as Germany, Taiwan, Hong Kong, and Japan, adopted provisions allowing resident firms to repurchase equity in the open market for the first time.

The magnitude of this shift in corporate policy has been significant. Consider that, in the five-year period between 1995 and 1999, U.S. corporations announced intentions to repurchase roughly \$750 billion worth of stock. Moreover, in 1998—and for the first time in history—U.S. corporations distributed more cash to investors through share repurchases than through cash dividends.¹ Only time will tell whether companies will continue to repurchase stock at the same pace as witnessed recently. Yet what does seem clear is that given today's regulatory, tax, and economic climate, stock buybacks are likely to remain a dominant transaction going forward. Repurchase activity can also be expected to

grow globally as more countries adopt enabling regulations.

Just as share repurchases have grown in popularity and importance, research about how and why firms buy back stock continues to evolve. In this paper, we provide a comprehensive review of this literature and, in so doing, shed light on economists' collective understanding of how and why stock repurchases affect stock prices. The rest of the paper unfolds as follows: In the second section, we provide an overview of the three dominant methods that companies use to repurchase stock: fixed-price tender offers, Dutch-auction tender offers, and open market repurchases. Because open market programs are by far the most popular choice, we focus heavily on various aspects of this mechanism. In the third section, we examine how share repurchase activity in the U.S. has evolved over the last 20 years. In the fourth section, we review the primary reasons offered for why companies repurchase stock and consider the extent to which such reasons are consistent with the empirical evidence on how repurchases affect shareholder wealth. In the fifth section, we discuss various aspects of open market programs, including liquidity effects, financial flexibility and completion rates, and the regulatory environment. Finally, we present a number of policy recommendations for both executives who set corporate financial policy and for regulators charged with monitoring corporate dealings with investors. (In the Appendix, we discuss execution strategies for buying back stock, including several innovative strategies involving the use of equity derivatives such as puts and calls.)

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1. For a comprehensive review of dividends compared to repurchases, see Gustavo Grullon and Roni Michaely (2000), "Dividends, Share Repurchases, and the Substitution Hypothesis," Rice University and Cornell University working paper.

TYPES OF SHARE REPURCHASES

There are essentially three ways that companies repurchase shares in the U.S.: (1) the fixed-price tender offer, (2) the Dutch-auction tender offer, and (3) the open market repurchase program. Although the use of share repurchases became widespread only after the mid-1980s, both tender-offer and open market repurchases have been available to U.S. corporations for many decades.² The Dutch-auction mechanism, by contrast, is a relatively recent transaction in the U.S.

As the name suggests, fixed-price tender offers involve the firm offering a single price to all shareholders for a specific number of shares. This offer is typically valid for a limited period of time and may or may not be contingent on a minimum threshold of shares being tendered. If the offer is oversubscribed, management has the option to increase the size of the repurchase. When managers do not make such extensions and the offer is oversubscribed, each shareholder receives a pro-rated amount of cash and the balance of their tender is returned in stock.³

The Dutch-auction repurchase is also a fixed-price deal. In this transaction, managers solicit information from shareholders that allows them to form a final price. This price is revealed toward the end of the process as opposed to being set initially by management under the traditional approach. The process starts with managers announcing a range of prices at which they will accept offers from shareholders. Shareholders choosing to participate in the offer then tell the firm the price at which they are willing to part with their shares and the number of shares they are tendering. At the close of the offer period, management collects the individual offers and sorts them by price. The precise price level at which the repurchase is completed is determined by adding the number of shares offered starting at the lowest end of management's price range. The price stops at that point at which the cumulative number of shares equals the size of the repurchase program. All shareholders who tender at or below that specified level are included in the repurchase program,

and all receive the same price per share. All investors who tendered at prices above the clearing price are excluded from the deal, and their shares are returned to them.

These two approaches, fixed-price tender offers and Dutch-auctions, allow management to achieve a variety of goals. First, these programs tend to be an efficient way to retire a large block of shares in a relatively short period of time. Several studies have reported that the typical tender-offer involves about 15% of the outstanding shares. For this reason, tender offers may be an ideal mechanism for companies intent on making dramatic (and rapid) changes in capital structure. Because of their large size and relative speed, tender offers have also been suggested as an effective way for managers to convey information about future profitability or to signal to the market their belief that the firm is undervalued. This signaling motive is thought to be particularly important in the case of fixed-price tender offers, where management offers investors a significant "premium" (about 16%, on average) for their shares.⁴ By contrast, in Dutch-auction programs, where managers are culling information from the market and thus revealing less about their own views, the premiums are smaller (about 12.5%) and the signal is said to be weaker. In sum, Dutch-auctions are likely to be preferred over tender offers by companies who want to buy lots of stock and distribute large amounts of capital in a short period of time, but also want to pay less of a premium.

Yet among the three approaches firms use to repurchase stock, fixed-price methods are relatively uncommon. Clearly, the preferred technique for buying back stock is the open market repurchase program. In such cases companies either directly or through intermediaries buy their own stock on the open market. In the U.S., the legal framework surrounding open market repurchase programs is relatively ambiguous, particularly when compared to the legal structure (both for the process and the disclosure) of a country like Canada. In the U.S., open market repurchases are treated as material events. They are approved by company boards and, because of their materiality, are formally announced

2. For example, it was in 1942 that a stock repurchase executed under rather questionable circumstances lead the SEC to adopt Rule 10b-5, a rather sweeping rule governing all aspects of company disclosure.

3. In some cases, managers may deviate slightly from precise pro-rata repurchases to buy out odd-lot shareholders in order to reduce future servicing costs.

4. For example, a 1991 study by Robert Comment and Gregg Jarrell of repurchase tender offers in the early 1980s reported that the median premium was 16.0% measured relative to three days prior to the repurchase announcement. Robert Comment and Gregg Jarrell, "The Relative Signaling Power of Dutch-Auction and Fixed-Price Self-Tender Offers and Open-Market Share Repurchases," *Journal of Finance*, 46 (1991).

TABLE 1
NUMBER AND VALUE OF
SHARE REPURCHASE
ANNOUNCEMENTS*

Year	Dutch Auctions		Tender Offers		Open Market	
	Cases	Dollars (millions)	Cases	Dollars (millions)	Cases	Dollars (millions)
1980	—	—	1	5	86	1,429
1981	—	—	44	1,329	95	3,013
1982	—	—	40	1,164	129	3,112
1983	—	—	40	1,352	53	2,278
1984	1	9	67	10,517	236	14,910
1985	6	1,123	36	13,352	159	22,786
1986	11	2,332	20	5,492	219	28,417
1987 ^a	9	1,502	42	4,764	132	34,787
1988	21	7,695	32	3,826	276	33,150
1989	22	5,044	49	1,939	499	62,873
1990	10	1,933	41	3,463	778	39,733
1991	4	739	51	4,715	282	16,139
1992	7	1,638	37	1,488	447	32,635
1993	5	1,291	51	1,094	461	35,000
1994	10	925	52	2,796	824	71,036
1995	8	969	40	542	851	81,591
1996	22	2,774	37	2,562	1,111	157,917
1997	30	5,442	35	2,552	967	163,688
1998	20	2,640	13	4,364	1,537	215,012
1999	19	3,817	21	1,790	1,212	137,015

*This table provides a breakdown by year of the number announcements and the total dollar value of the three repurchase mechanisms in the U.S. over the period 1980 to 1999. This data is obtained by merging information from Securities Data and from the dataset of Ikenberry, Lakonishok and Vermaelen (1995) and includes announcements only for firms trading on the NYSE, ASE or Nasdaq. This table does not distinguish between new programs and program extensions. Each announcement by a firm is treated as a separate event.

a. Because of an extreme clustering of announcements after the 1987 crash, this table does not include open market program announcements made in the last quarter of 1987.

to the public. Yet apart from this initial announcement, no formal disclosure or registration (aside from what is buried in the standard accounting documents) is required to be filed with either the government or any stock market or exchange. There is no limit on program size or duration (although several studies have found that the typical open market program is for roughly 5% of the share base).⁵ Wall Street practitioners generally characterize open market programs as lasting two to three years, and this generalization has been confirmed by a recent study reporting that companies take roughly three years on average to complete their open market repurchase programs.⁶

RECENT TRENDS IN SHARE REPURCHASES

The level of repurchase activity, both in the U.S. and abroad, has changed remarkably in the past 20 years. Table 1 reports both the number and total dollar value for U.S. repurchase announcements for each of the three major repurchase methods over the period 1980 to 1999.⁷ For convenience, we also plot in Figure 1 the combined dollar volume of repurchase announcements. A few points are readily apparent. First, open market programs are the dominant mechanism by which U.S. firms repurchase stock. Over the 20-year period reported here, we find that open market programs comprised roughly

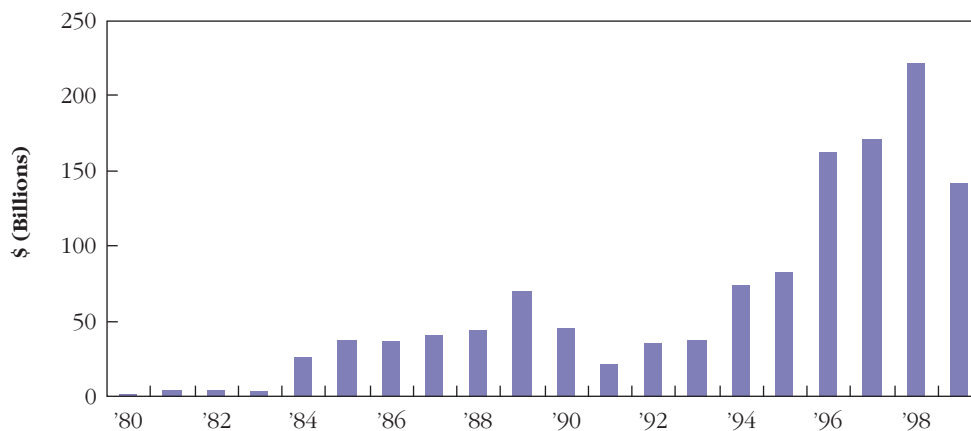
5. As an extreme example of the limitless flexibility of open market repurchases, Continental Airlines announced in late 1999 that the board authorized an indefinite open market program limited each year to half the firm's cash flows.

6. Clifford Stephens and Michael Weisbach, "Actual Share Repurchases in Open-Market Repurchase Programs," *Journal of Finance* 53 (1998).

7. The data for open market programs was obtained by merging information from Securities Data Company (SDC) with the dataset of David Ikenberry, Josef

Lakonishok and Theo Vermaelen, "Market Underreaction to Open Market Share Repurchases," *Journal of Financial Economics* 39 (1995). This table does not distinguish between new programs and program extensions. Some firms announce a program and, after fulfilling most of it, announce a program extension. For clarity, we treat each announcement as a separate event. For the two fixed-price methods, we obtained all of our information from SDC. For all three methods, the sample is limited to firms trading on the NYSE, ASE or Nasdaq.

FIGURE 1
MARKET VALUE OF SHARE
REPURCHASE
ANNOUNCEMENTS*



*This figure depicts the market value of share repurchase announcements (for tender offers, Dutch-auctions, and open market programs combined) in the U.S. over the period 1980 to 1999. This data is obtained by merging information from Securities Data and from the datasets of Ikenberry, Lakonishok and Vermaelen (1995) and only includes announcements for firms trading on the NYSE, ASE or Nasdaq. This table does not distinguish between new programs and program extensions. All announcements are treated as a separate event.

91% of the total value of all repurchase announcements. In the last five years of our sample period, this market share increased further, varying from 95% in 1997 to 98% in 1999. A second trend clearly evident is the abrupt increase in repurchase activity starting in the mid-1980s, an increase due almost entirely to the sharp rise in open market programs. The surge of open market buybacks in the '80s was followed by another wave of open market programs in the mid-1990s. Since 1996, open market share repurchase announcements have remained above the \$100 billion mark.⁸

In sum, share repurchase activity in the U.S. has experienced a profound transformation in the last 15 years. Before the mid-1980s, stock repurchases in the U.S. (from all three methods) were relatively uncommon. The rising importance of stock repurchases can perhaps best be summed up by looking at changes in a single ratio. As reported in a recent study (co-authored by one of the present writers), total corporate payouts in share repurchase programs during the period 1972-1983 amounted to less than 4.5% of total earnings. Over the period 1984 to 1998, this same ratio exceeded 25%.⁹

To what can we attribute this surge in repurchase activity? Several factors have been at work. An important one was a major change in the regulatory environment. Prior to 1982, the regulatory environ-

ment relating to repurchase programs was ambiguous and structured only by ill-defined case law. This regulatory ambiguity and the associated litigation risk were substantially reduced in late 1982 when the SEC adopted rule 10b-18. Beyond this, two other factors affecting repurchase program activity relate to the level of market prices and the underlying condition of the economy. While research suggests that the actual dollar payouts associated with repurchase programs are not closely associated with market movements, there is evidence that program announcements are inversely related to broader moves in the market; that is, when stock prices fall, announcements of repurchases rise. For example, although evidence from the 1987 crash is excluded from the data reported in Table 1, several hundred firms announced repurchases in the weeks following that market break. Similar fluctuations occurred in October 1989 and later in the summer of 1998 after the market disturbance stemming from trouble in global bond markets. In 1990 and 1991, the U.S. economy entered into and pulled out of recession and then rallied into one of the most sustained periods of peace-time economic expansion. There is evidence that some portion of the corporate cash flows generated during this expansion that might have been used to increase dividends was instead channeled into share repurchases.

8. The dominance of open market programs in the 1980s and 1990s reported here is similar to that reported elsewhere including Murali Jagannathan, Clifford Stephens, and Michael Weisbach, "Financial Flexibility and the Choice between

Dividends and Stock Repurchases," *Journal of Financial Economics*, forthcoming (2000) and Grullon and Michaely (2000), cited earlier.

9. Grullon and Michaely (2000), cited earlier.

Total corporate payouts in share repurchase programs during the period 1972-1983 amounted to less than 4.5% of total earnings. But, over the period 1984 to 1998, this same ratio exceeded 25%. Moreover, in 1998—and for the first time in history—U.S. corporations distributed more cash to investors through share repurchases than through cash dividends.

WHY DO COMPANIES BUY BACK THEIR STOCK?

Those who study markets tend to search for the one explanation, or the single primary factor, that describes some trend or activity. But it is clear that there is no single dominant motive for corporations to repurchase stock. In fact, in any given company, managers may find several factors encouraging them to buy back their stock. In this section, we discuss the more common explanations and the economic factors that drive them. We start with the explanation that is most commonly provided by managers and corporate practitioners generally—namely, that stock repurchases can be used to boost earnings per share. After showing the fallacy of that argument, we turn to the corporate motives that are taken seriously by finance scholars.

The explanation most widely discussed by financial economists is that corporate managers use repurchases to “signal” their optimism about the firm’s prospects to the market. Although this point is often overlooked even in academic discussions, there are two different versions of this “signaling” story. One says that repurchases are intended to convey management’s expectation of future increases in the firm’s earnings and cash flow—a view that is not shared by the market. The second version holds that managers are not attempting to convey new information to the market, but are instead expressing their disagreement with how the market is pricing their current performance. In either case, the firm’s management views the stock as undervalued. The disagreement between the two stories is over the cause of the discrepancy between price and fair value. In the first case, it is the company’s inability (without the repurchase) to communicate its prospects convincingly to the market; in the second, it is the market’s failure to reflect publicly available information in the current price, a market “inefficiency” if you will.

The Earnings Bump

In both executive surveys and company press releases that accompany buyback programs, manag-

ers often say that they are repurchasing stock in order to increase earnings per share.¹⁰ Investment bankers and stock analysts often cite this “EPS bump” as a major, if not the primary, benefit of stock buybacks. It is true that, as long as earnings fall by less (in percentage terms) than the percentage of shares outstanding, then EPS will indeed go up. And, if we assume that the market sets prices by mechanically capitalizing reported EPS at industry-wide multiples, then stock prices will also go up.

But there is a fundamental flaw—or at least a hidden assumption—in this logic. It effectively assumes that the firm has idle or unproductive assets; and that, by getting rid of such assets, as opposed to some magical EPS effect, the firm’s productivity (e.g., its EVA or return on capital) increases. For example, take the case where the firm is simply using excess cash (as opposed to raising new debt) to buy back its shares. In such a case, the firm is effectively choosing to shrink its asset base.¹¹ Theory suggests that shrinking the size of the firm adds value only if the firm is failing to earn its cost of capital on its marginal investments (and holding excess cash is generally viewed as a negative-NPV investment). If this is the case, then the real source of the gain is not some kind of market alchemy, but (as we discuss below) a reallocation of capital to higher-valued uses. But what about the case where the repurchase is funded with new debt? Although earnings may also increase, such an increase comes at the cost of higher financial risk, thus calling into question whether the market would use a constant multiple to price the shares.

Cash Flow Signaling

We typically think of a firm’s management as being better informed about the company’s true value than outside shareholders. This informational “asymmetry” can lead to occasions where managers have good news about future profitability, yet prevailing stock prices cannot reflect this because investors have access only to public information. Consequently, the stock can be priced below its intrinsic value. Of course, managers could try to eliminate the pricing discrepancy by simply telling

10. A recent press account (*Wall Street Journal*, March 6, 2000, page c. 17) for example reads “The appeal behind a share repurchases is ... fairly straightforward. A company buys a portion of its shares outstanding which gives a boost to its earnings-per share figures.”

11. See Larry Y. Dann, 1983, “Is Your Common Stock Really Worth Buying Back?,” *Directors & Boards* 7, no. 4, 23-29.

investors whatever good news they have. Yet, economists argue that such simple announcements are likely to lack credibility.¹²

What can managers do to convey their private information in a credible way? There is a well-developed literature that argues that managers provide credible signals of their optimism about future earnings by engaging in actions, like stock repurchase programs, that impose constraints on managers' flexibility. For example, Merton Miller and Kevin Rock argue that managers anticipating better-than-expected earnings are more likely to distribute cash in advance to their shareholders, whether through dividends or share repurchases.¹³ According to this explanation, managers are willing to commit themselves to making these cash outflows today because they expect that future capital needs can be financed with anticipated increases in future earnings. Companies that foresee a decrease in earnings are less likely to take the same action because significant distributions to stockholders could not only force them to forgo profitable investment opportunities, but might also push them into financial distress.¹⁴

The implications for the first version of the signaling story thus seem clear: repurchasing firms should, on average, experience increases in future earnings and cash flows. But the empirical evidence is not so clear. Early studies generally found some evidence of earnings improvement after repurchase announcements.¹⁵ However, these studies focused mainly on fixed-price repurchases. Significant increases in operating performance and cash flow are clearly to be expected in such cases, where the stronger commitment to distribute cash and the willingness to pay a fixed premium make a more powerful statement to the market.

But these situations differ from the far more typical case where managers are quietly buying

shares on the open market. Here, the evidence that such transactions anticipate increases in future profits is less supportive. Early papers found modest evidence of earnings growth.¹⁶ However, a recent study by one of the present writers (cited hereafter as Grullon (2000)), takes a more thorough and comprehensive look at the evidence and comes to a different conclusion.¹⁷ Looking at all open market share repurchase programs announced between 1980 and 1994, this study finds a significant *decline* in operating income as a percentage of total assets. The study also finds that investment analysts' forecasts of future earnings tend to go *down* after repurchase announcements.

In sum, the results of Grullon (2000) contradict the hypothesis that managers announcing stock repurchase programs are signaling good news about future cash flow or earnings. Instead, the evidence points to a reduction in earnings and profitability. But it's important to keep in mind that since many open market programs are funded with cash rather than new debt, they often have the effect of shrinking the firm's asset and capital base. For many companies in mature or declining industries, the decision to shrink the firm by repurchasing stock may turn out to be an important, if not a critical, value-increasing strategy for reasons we discuss later.

Market Undervaluation

If there is little evidence to support the first signaling story, what about the second possibility—that managers are signaling their disagreement with how the market is pricing existing public information? With their fundamental understanding of the firm and its industry, a firm's managers are perhaps best positioned to recognize when market prices diverge from their true value. This explanation is

12. If the costs of producing misleading forecasts is low, all managers, not just those with good news, have an incentive to tell the market about "bright" expectations for future earnings. In such an environment, investors cannot rely on any of the announcements they hear since they cannot distinguish between under- and overvalued firms. The finance literature refers to this phenomenon as a pooling equilibrium. In such a market, news about earnings is incorporated into stock prices only when the actual results are published.

13. Merton Miller and Kevin Rock, "Dividend Policy Under Asymmetric Information," *Journal of Finance* 40 (1985).

14. Using a similar argument, Sudipto Bhattacharya shows that the cost of raising new capital to finance future investment opportunities prevents overvalued firms from repurchasing shares or paying dividends. See Sudipto Bhattacharya, "Imperfect Information, Dividend Policy, and 'the Bird in the Hand' Fallacy," *Bell Journal of Economics* 10 (1979).

15. See for example, Larry Dann, 1981, "Common Stock Repurchases: An Analysis of Returns to Bondholders and Stockholders," *Journal of Financial*

Economics 9 (1981); Theo Vermaelen, "Common Stock Repurchases and Market Signaling," *Journal of Financial Economics* 9 (1981); Larry Dann, Ronald Masulis and David Mayers, "Repurchase Tender Offers and Earning Information," *Journal of Accounting and Economics* 14 (1991); Michael Hertz and Prem Jain, "Earning and Risk Changes Around Stock Repurchase Tender Offers," *Journal of Accounting and Economics* 14 (1991); Erik Lie and John McConnell, "Earnings Signals in Fixed-Price and Dutch Auction Self-Tender Offers," *Journal of Financial Economics* 49 (1998); Tom Nohel and Vefa Tarhan, "Share Repurchases and Firm Performance: New Evidence on the Agency Costs of Free Cash Flow," *Journal of Financial Economics* 49 (1998).

16. Vermaelen (1981), cited earlier, and Eli Bartov, 1991, "Open-Market Stock Repurchase as Signals for Earnings and Risk Changes," *Journal of Accounting and Economics* 14 (1991), find weak evidence that there are positive unexpected earnings after the announcement of these programs.

17. Gustavo Grullon (2000), "The Information Content of Share Repurchase Programs," Rice University working paper.

For many companies in mature or declining industries, the decision to shrink the firm by repurchasing stock may turn out to be an important, if not a critical, value-increasing strategy.

TABLE 2
LONG-RUN STOCK RETURNS FOLLOWING OPEN MARKET SHARE REPURCHASE ANNOUNCEMENTS*

	n	Year 1	Year 2	Year 3	Year 4
PANEL A: COMPOUNDED RETURN DIFFERENCES OVERALL					
All Firms	1,208	2.04% (.064)	5.16% (.011)	12.60% (.000)	12.14% (.012)
PANEL B: COMPOUNDED RETURN DIFFERENCES BY BOOK-TO-MARKET RATIO					
Quintile 1 (Glamour stocks)	201	-1.11% (.687)	0.18% (.526)	-1.98% (.397)	-4.31% (.358)
Quintile 2	260	2.16% (.206)	-0.81% (.625)	5.96% (.220)	0.08% (.498)
Quintile 3	276	3.03% (.087)	4.63% (.174)	11.32% (.058)	7.54% (.308)
Quintile 4	225	0.59% (.374)	3.66% (.197)	12.47% (.058)	16.27% (.144)
Quintile 5 (Value stocks)	241	4.66% (.054)	16.36% (.003)	34.29% (.000)	45.29% (.000)

*This table summarizes long-horizon evidence for 1,208 U.S. open market stock repurchase programs announced between 1980 and 1990 as reported in Ikenberry, Lakonishok and Vermaelen (1995). Here, annual returns for repurchase are calculated beginning in the month following the announcement. Equal-weighted portfolios are formed in event-time and are rebalanced each year. These returns are compared to a benchmark portfolio formed on the basis of size and book-to-market. The compounded difference in returns between the repurchase sample portfolio and the benchmark portfolio is reported below for a four-year period following the repurchase announcement. Significance is determined using a randomized-bootstrap methodology. The p-values from these tests are reported in parenthesis.

consistent with the statements managers often make when announcing buyback programs such as their stock is “undervalued” or “a good buy” or “prices don’t reflect the underlying value of the firm.”

But, as we discuss later, companies that announce open market programs don’t always carry them out. And talk, of course, is cheap. Moreover, the initial market reaction to announcements of open market programs is generally only about 4% (as compared to about 15% for fixed-price offers), a result that seems small if stocks are indeed such a bargain. Either many companies announcing buybacks are not so undervalued or the market is skeptical of management’s claims and thus underreacts to the initial announcement.

To examine this question of whether managers are responding to what they perceive as undervaluation, a 1995 study by Josef Lakonishok, Theo Vermaelen, and one of the present writers (henceforth ILV (1995)) investigated stock returns for a four-year period following repurchase announcements for over 1,200 open market programs announced by U.S. firms and reported in the *Wall Street Journal*

between 1980 and 1990.¹⁸ As reported in Table 2, ILV (1995) found excess returns of 12.14% over the four-year period for their entire sample of firms. This finding is, of course, consistent with the possibility that such firms are undervalued at the time they announced a repurchase.

But, in an attempt to focus more carefully on mispricing as opposed to other reasons, ILV (1995) also considered the book-to-market ratio of the companies when they announced their repurchase programs. Companies with high book-to-market ratios are often viewed as “value” stocks; and, in such cases, perceived undervaluation is likely to be a primary factor in the decision to repurchase. For growth stocks at the other extreme, undervaluation seems less likely to be the dominant motivating factor.

As shown in Panel B of Table 2, the sample of repurchasing stocks in ILV (1995) is *not* overly tilted to value stocks. In fact, the distribution is relatively even between the growth and value stocks. Thus, to the extent a high book-to-market ratio correctly identifies undervaluation as a primary factor, the

18. Ikenberry, Lakonishok and Vermaelen (1995), cited earlier.

evidence would seem to suggest that companies buy back stock for reasons other than just market mispricing.

Also worth noting in Panel B of Table 2 is that, for those firms in the highest book-to-market quintile at the time of the buyback announcement, the compounded excess return was extremely high, on average, increasing from 4.7% in the first year to 45.3% in the fourth year. On an annualized basis, this excess performance translates into roughly 10% per year, a level roughly *double* the risk premium most would consider typical of common stocks during this time period. But, as we move toward lower book-to-market quintiles, where undervaluation seems less likely to be a driving factor, we see little evidence of undervaluation. As a group, these firms appeared to be fairly priced at the time of the announcement, a result consistent with the idea that these firms are repurchasing stock for reasons other than undervaluation.

At least in some cases, then, managers seem to be indicating that their firm is undervalued. Interestingly, the evidence also suggests that the market seems to underreact to these signals. If managers are deliberating trying to send a message, the market appears to be reacting with skepticism. This apparent contradiction with efficiency has led some to question the robustness of these findings. Two recent papers shed light on this issue. In a recent study of 1,060 Canadian stock repurchases, Ikenberry, Lakonishok, and Vermaelen (ILV (2000)) re-examine the question of undervaluation.¹⁹ Using data from a different country and from a more recent time-period (1989 to 1997), they report similar evidence of positive long-term returns. Over a three-year window following the repurchase announcement, ILV (2000) found excess returns in Canada to be 0.587% per month, or roughly 7% per year. Like their 1995 study of the U.S. market, this study divided the Canadian firms into two parts according to whether the book-to-market ratio at the time of the announcement was above or below average for Canadian firms overall. For the growth firms, they found excess returns of roughly 3.3% per year ($t=2.13$) over the three-year period following the announcement. And, remarkably similar to the U.S. value firms, Canadian

value firms announcing repurchases earned excess annual returns of 9.1% ($t=3.77$).

In another recent study, Chan, Ikenberry and Lee (CIL (2000)) examined long-horizon returns for a sample of over 4,000 open market programs announced by U.S. firms from 1980 to 1996.²⁰ Like ILV (1995), but using six years of post-1990 data, CIL (2000) also reported evidence of abnormal stock returns. In addition, the study found some evidence of excess performance by growth stocks, a result similar to the evidence from the Canadian market in the 1990s. In attempting to explain the long-term returns, CIL (2000) also looked at two additional factors: (1) whether insiders were trading around the time of the repurchase announcement, and (2) whether the firms actually bought shares in the market. The results for insider trading were inconclusive; that is, there was no evidence that managers trade sympathetically with the share repurchase program. However, the authors do find evidence of higher long-run abnormal returns when companies actually buy back stock in the first year of the program, particularly for value stocks.

Agency Costs of Free Cash Flows

As agents of the shareholders, we would like to think that managers work to increase shareholder wealth by always making decisions that increase the market value of the firm. But this view ignores one of the important consequences of the separation of ownership and control in the large, modern corporation, a concern that dates from at least as early as the 1930s.²¹ As shareholders lose control, managers have the ability to put their own interests ahead of their shareholders'. Of critical concern is the extent to which managers allocate capital into unprofitable activities, pursuing growth and size at the expense of profitability and value. For some managers in some circumstances, the perks of managing a larger, more influential organization are likely to outweigh the benefits of having satisfied shareholders. The costs that arise from this conflict between growth and value maximization are known in finance theory as agency costs—or, more specifically, as the agency costs of “free cash flow.”²²

19. David Ikenberry, Josef Lakonishok and Theo Vermaelen, “Stock Repurchases in Canada: Performance and Strategic Trading,” *Journal of Finance*, forthcoming (2000).

20. Konan Chan, David Ikenberry and Inmoo Lee (2000), “Do managers knowingly repurchase stock on the open market?,” Rice University working paper.

21. See Adolf Berle and Gardiner Means, 1932, *The Modern Corporation and Private Property*, New York: Macmillan.

22. See Michael Jensen and William Meckling, “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure,” *Journal of Financial Economics*, 3 (1976).

For those firms in the highest book-to-market quintile at the time of the buyback announcement, the compounded excess return was extremely high, on average, increasing from 4.7% in the first year to 45.3% in the fourth-year. On an annualized basis, this excess performance translates into roughly 10% per year.

Companies at risk for overinvesting, or investing in non-productive activities, are those with large amounts of excess capital—particularly liquid capital like cash—for which the firm has no (foreseeable) positive-NPV projects. In two seminal papers, Frank Easterbrook and Michael Jensen argued that one way to at least mitigate such potential free cash flow problems is for firms to return cash back to shareholders in the form of higher dividends, particularly in cases of companies with excess or surplus capital.²³ Like dividends, stock repurchases are an effective tool for addressing this problem. The free cash flow hypothesis suggests that repurchase announcements are likely to be good news for the simple reason that they reduce management's ability to divert capital to uses that are not in the best interest of shareholders. By reducing financial slack in the firm, managers who repurchase stock have fewer opportunities to adopt value-reducing projects. In sum, any repurchase can be a good repurchase, provided it doesn't jeopardize the firm's ability to fund promising investment opportunities that might arise in the future.

Several studies have examined this issue of whether share repurchases are at least partly motivated by the agency problems of free cash flow. In their 1993 study of leveraged recaps, David and Diane Denis provided evidence of the role of heavy debt in adding value by reducing excessive capital investment.²⁴ Other early studies focused on whether the market reaction to announcements of fixed-price tender offers was stronger for firms with low Tobin's Q than for those with high Tobin's Q.²⁵ (Tobin's Q is the market value of the firm relative to the replacement value of the firm and, as such, can be similar to the market-to-book ratio.) The rationale for this test is that if the market is responding to concerns over agency problems, the reaction to tender offer announcements should be more positive for those companies most likely to overinvest. Conceivably, these might be cases where the market did not foresee future growth opportunities, thus implying lower Q ratios. Although the findings of one early study did not support this prediction,²⁶ several more

recent studies report evidence consistent with the agency cost story. For example, Lie (2000) finds that firms that announce repurchase tender offers have higher levels of cash than their industry peers, and that the market reaction to such announcements is positively related to the amount of excess cash in the announcing firm.²⁷

In the case of open market share repurchases, Grullon (2000) finds that the market reaction to these events is negatively correlated with the firm's operating return on investment. In other words, the market reacts favorably to buyback programs announced by companies whose investment opportunities appear to have declined. This evidence is also consistent with the next corporate motive we consider, the idea that companies use stock repurchases as a means of re-allocating capital from less productive to more productive areas in our economy.

Capital Market Allocation

A central function of financial markets is to allocate capital among competing investment opportunities. Ideally, all projects that add value should receive new capital in order to maximize the wealth of an economy. Sometimes, however, this efficient allocation cannot be achieved due to market "imperfections" (other than the misalignment of incentives between managers and stockholders just discussed). One important imperfection in this context is the information "asymmetries" between managers and outside investors that we discussed earlier.

Consider an economy where all the funds available for investment projects are given to a single firm, Firm Y, at a specific point in time. Suppose that in the following year Firm Y is generating cash flows, but it has no new profitable investment opportunities. And there is a new Firm X that has positive NPV projects. Clearly, if Firm Y does not distribute the excess capital it has amassed, the welfare of this economy suffers.

A central premise of how capital is allocated in a free economy is that corporations should con-

23. Frank Easterbrook, "Two Agency-Cost Explanations of Dividends," *American Economic Review*, 74, (1984); Michael Jensen, "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers," *American Economic Review*, 76 (1986).

24. David J. Denis and Diane K. Denis, 1993, "Managerial Discretion, Organizational Structure, and Corporate Finance: A Study of Leverage Recapitalizations," *Journal of Accounting and Economics* 16, 209-236.

25. For a detailed discussion of this test, see Larry Lang and Robert Litztenberger, "Dividend Announcements: Cash Flow Signaling vs. Free Cash Flow Hypothesis," *Journal of Financial Economics*, 24 (1989).

26. Keith Howe, Jia He, and G. Wenchi Kao, "One-Time Cash Flow Announcements and Free Cash-Flow Theory: Share Repurchases and Special Dividends," *Journal of Finance*, 47 (1992).

27. Erik Lie, "Excess Funds and Agency Problems: An Empirical Study of Incremental Cash Disbursements," *Review of Financial Studies*, 13 (2000).

sider returning capital to shareholders when they have run out of value-adding investment opportunities. Shareholders are then free to reallocate this capital to other more productive uses. Although the capital market allocation hypothesis is similar in spirit to the free cash flow hypothesis, this hypothesis asserts that even without agency problems shareholders are better off with a share repurchase program. The reason for this is that shareholders can allocate funds more effectively than corporate managers, if only because they have a broader view of economy-wide opportunities.

If this capital market allocation hypothesis is correct, then firms announcing share repurchase programs should experience a reduction in their investment opportunities. What empirical evidence we have seems consistent with this explanation. In the case of repurchase tender offers, a 1998 study by Nohel and Tarhan found that, on average, companies shrink their asset bases after the transactions. In the case of open market programs, Grullon (2000) finds that firms that make such announcements also show a subsequent reduction in their capital expenditures.

In short, one important reason for share repurchases has to do with the natural birth and death process of companies in a capitalist system.²⁸ Although corporate managers appear to use stock repurchases simply to address their own perceived undervaluation problems, the financial markets at large effectively use repurchases as a principal means of liberating capital from a moribund economic sector so that it can be channeled into more promising ones. Viewed in this light, although repurchases may have the effect of shrinking the size of an organization, they are certainly not undesirable or unhealthy, nor should they be viewed as a sign of managerial failure or lack of imagination.²⁹ They are essential to any dynamic economy that hopes to have voluntary reallocations of capital from the “old” to the “new” economy.

Dividend Substitution

Before stock repurchases became popular in the 1980s, cash dividends were the principal means of returning excess capital to shareholders. For companies that are fairly priced, the two approaches are economic equivalents, with one important difference—the tax treatment of investors’ income. In a share repurchase, investors who choose to sell to the firm incur capital gains taxes. Non-selling shareholders receive a pro-rata increase in their ownership in the firm, but pay no immediate tax bill. Although the benefit of long-term capital gains over ordinary income tax rates has varied over time, there is generally a clear preference.³⁰ This differential is even larger if we consider that investors typically have the option to postpone the realization of capital gains taxes.³¹

Thus, it is possible that the surge in repurchase activity in recent years may reflect, in part, a broad tax-motivated substitution of repurchases for dividends.³² There has been some recent debate as to the extent to which such substitution is occurring. Special dividends, those occasional payments that companies typically tell their investors not to expect again, have almost vanished from the marketplace.³³ On the other hand, their decline was apparent well before the recent surge in buyback activity. It is not clear that repurchases are responsible for the absence of special dividends today, although the logic for why special dividends might no longer exist is certainly clear.

Special dividends are often thought of as distributions to investors of large, non-recurring cash inflows, as opposed to regular cash dividends, which tend to be funded with recurring earnings and so are generally expected to be paid in a stable fashion over time. But stock repurchases, because of their flexibility, might offer firms another means of distributing their “lumpy,” non-recurring cash flows. In support of this possibility, a recent study by Jagannathan,

28. For an important study that discusses the economic role of leverage, dividends, stock repurchases, and takeovers, see Michael C. Jensen, “The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems,” *Journal of Finance* 48, 1993, 831-880.

29. This reallocation function of share repurchases has, in the past, been held with some suspicion. Consider the headlines in The Washington Post, February 23, 1995: “A Debate Over Disinvestment: Is Buying Back Stock Such a Capital Idea For Companies?” The central thesis of this article suggested that share repurchases somehow reduce the productive capital base and thus are destructive to the economy.

30. In 1999, for example, the top marginal rate on dividend income was 39.6%, while the top marginal rate on capital gains was roughly half this amount, only 20%.

31. For example, previous research has estimated the present value of the capital gains tax liability to be about 7% of the realized gain. See Aris Protopapadakis, “Some Indirect Evidence on Effective Capital Gains Tax Rates,” *Journal of Business*, 56 (1983).

32. Grullon and Michaely (2000), cited earlier, and Erik Lie and Heidi Lie, “The Role of Personal Taxes in Corporate Decisions: An Empirical Analysis of Share Repurchases and Dividends,” *Journal of Financial and Quantitative Analysis* 34 (1999) show that aggregate expenditures on share repurchases are positively correlated with the relative tax benefit of capital gains.

33. Harry DeAngelo, Linda DeAngelo, and Douglas Skinner, “Special Dividends and the Evolution of Dividend Signaling,” *Journal of Financial Economics*, forthcoming (2000).

Although repurchases may have the effect of shrinking the size of an organization, they are certainly not undesirable or unhealthy, nor should they be viewed as a sign of managerial failure or lack of imagination. They are essential to any dynamic economy that hopes to have voluntary reallocations of capital from the “old” to the “new” economy.

Stephens, and Weisbach (2000) finds that repurchasing firms have more volatile earnings than dividend-paying firms.³⁴

Although this result suggests that repurchases and dividends overlap only to a limited extent, more compelling evidence for the dividend substitution hypothesis is provided by another recent study. Grullon and Michaely (2000) report that while the dividend payout ratio of U.S. companies has been declining since the mid-1980s, the total payout ratio has remained more or less constant (at around 26-28%), suggesting that corporations have been substituting repurchases for dividends. That study shows the average dividend payout ratio fell from 22.3% in 1974 to 13.8% in 1998,³⁵ while the average repurchase payout ratio increased from 3.7% to 13.6% during the same period.

Grullon and Michaely also find that companies initiating capital distributions today prefer repurchases over dividends. The frequency of firms initiating a distribution through a repurchase (as opposed to a dividend) increased from 27% in 1973 to 81% in 1998. In addition, they find that established companies dramatically increased their repurchase activity, while their cash dividends have not increased at nearly the same rate. With the aid of regression analysis, moreover, they provide evidence that expenditures on share repurchases by established firms have been financed in large part with what would otherwise have been increases in dividends.

Grullon and Michaely also provide some evidence that the stock market recognizes, and takes a favorable view of, this shift from dividends to stock repurchases. They find that the market reaction to a dividend cut, which tends to be sharply negative for most firms, is *not* statistically different from zero if the corporation has repurchased shares in the recent past. Furthermore, the study shows that the market reaction to a repurchase announcement is stronger when the expected tax benefits for dividend substitution are higher.

Capital Structure Adjustments

Another reason often suggested as to why corporations repurchase their own stock is to adjust

their debt-to-equity ratios. In the case of tender offers, this is clearly an important motive since corporations typically retire a large fraction of stock in such transactions, and thus their leverage ratios increase. For open market programs, however, this motive is less compelling. Open market share repurchase programs are typically smaller in scope—several studies report that the typical program is for 5% of the share base. Moreover, corporations often take several years to complete a program. Given the predominance of open market programs over other forms of corporate stock repurchase, dramatic adjustments in capital would not appear to be a primary motive.

Although open market repurchases have only a small effect on the capital structure in the short run, it is possible that corporations repurchase shares in the open market to avoid having to make larger adjustments in their leverage ratios. That is, companies may use small open market programs as a way to fine-tune their leverage over time. For example, in some press releases that accompany open market programs, managers have commented on the need to obtain shares for their ESOPs (employee stock ownership plans) or DRIPs (dividend reinvestment plans). Perhaps more important, firms will announce that they are buying shares to offset “dilution” from employee and executive stock options incentive plans. A number of recent studies (including Chan, Ikenberry, and Lee (2000), cited earlier) have shown that repurchase announcements often occur around the time of the exercise of executive stock options.

This need of companies to issue additional shares comes from a variety of sources and is more or less continuous. To the extent that companies do not repurchase stock, each of these activities has the effect of a small equity offering. The impact on capital structure of these issuance commitments can be substantial. Left unchecked, the firm is effectively decreasing its leverage over time.

With respect to executive stock options, there is an interesting side-issue to consider. When managers receive stock options, the strike price in most of these contracts is not “dividend-protected”—that is, reduced to reflect increases in the payout. Consequently, managers who hold a significant number of options have an incentive to avoid increases in

34. Jagannathan, Stephens and Weisbach (2000), cited earlier.

35. The decline in the use of dividends among U.S. firms has also been documented in a recent paper by Eugene Fama and Kenneth French, “Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay,” The Center for Research Securities Prices working paper (2000).

dividends and instead re-channel those funds into repurchases. In fact, Christine Jolls finds that the increasing use of executive stock options is a major factor in the general increase in repurchase activity in the 1990s.³⁶ But, of course, managers intent on maximizing the value of their options might be tempted to eliminate dividends entirely—and we rarely see companies take such an extreme step. Nevertheless, if the corporation is compelled to pay out capital to shareholders for whatever reason, managers who are heavily compensated through options may feel more inclined to choose a share repurchase over a cash dividend.

OTHER CONSIDERATIONS IN OPEN MARKET SHARE REPURCHASES

Our focus up to this point has been on understanding why companies repurchase stock. We now discuss a number of other issues that arise in planning repurchase programs, particularly as they relate to open market programs. We begin with the possible impact of stock repurchases on liquidity. Open market programs are, by design, flexible in terms of when and how managers buy back stock. Thus we devote some discussion to this flexibility and the issue of completion rates. The last part of this section reviews some of the disclosure and other regulatory aspects of open market programs in the U.S.

Share Repurchases and Stock Liquidity

When companies retire stock, particularly a large block, it is often assumed that liquidity must fall because of the reduction in float and in the number of investors capable of trading the stock. Yet a reduction in liquidity may not be an inevitable outcome for several reasons. For one thing, as we mentioned earlier, companies are often issuing shares on a continuous basis for a variety of reasons. Second, and more important, is the possibility that the company's trades during the buyback may actually have a beneficial impact on liquidity.

Several theoretical and empirical studies have considered the likely effect of stock repurchases on "market microstructure." Some finance theorists have argued that open market repurchase programs should be detrimental to market dynamics because the firm's presence in the market increases the fraction of "informed" traders—traders with an informational advantage over other investors. The larger presence of informed traders is in turn thought to give rise to an "adverse selection" problem. The problem is this: When a better-informed trader (such as the firm itself) enters a market, market-makers respond by widening their bid-ask spreads, thereby increasing transaction costs for all investors and so reducing liquidity. And there is some evidence to support this argument: A 1988 study by Michael Barclay and Clifford Smith found that bid-ask spreads widened after the announcement of an open market repurchase program.³⁷

But there is also a reasonable counterargument—namely, that share repurchases may actually improve liquidity by increasing depth on the sell-side of the market. Here companies can be thought of as supporting their market-maker(s) and adding downside liquidity in falling stock markets. Furthermore, the presence of a large buyer in a falling market may give confidence to market participants and reduce the number of sellers in the market. For example, many market observers have maintained that the large number of share repurchase programs announced during and after the market crash of October 1987 was partly motivated by the desire to increase liquidity.

More recent evidence supports this idea that share repurchase programs can be used to increase liquidity. Using a different sample and methodological procedure than that used by Barclay and Smith, a 1995 study by James Miller and John McConnell found no evidence of an increase in bid-ask spreads after buyback announcements.³⁸ And a number of other studies have produced evidence that bid-ask spreads actually decline when repurchase programs are announced.³⁹ Perhaps most interesting is a recent study by Jaemin Kim that

36. See Christine Jolls, "The Role of Incentive Compensation in Explaining the Stock-Repurchase Puzzle," Harvard University working paper (1996).

37. Michael Barclay and Clifford Smith, Jr., "Corporate Payout Policy: Cash Dividends versus Open-Market Repurchases," *Journal of Financial Economics*, 22(1988).

38. James Miller and John McConnell, "Open-Market Share Repurchase Programs and Bid-Ask Spreads on the NYSE: Implications for Corporate Payout Policy," *Journal of Financial and Quantitative Analysis*, 30 (1995).

39. See, for example, James Wiggins, "Open Market Stock Repurchase Programs and Liquidity," *Journal of Financial Research*, 17 (1994); Ajai Singh, Mir Zaman and Chandrasekhar Krishnamurti, "Liquidity Changes Associated with Open Market Repurchases," *Financial Management*, 23 (1994); Diana Franz, Ramesh Rao, Niranjana Tripathy, "Informed Trading Risk and Bid-Ask Spread Changes around Open Market Stock Repurchases in the NASDAQ Market," *Journal of Financial Research*, 18 (1995); J. Chris Leach, Douglas Cook, and Laurie Krigman, "Corporate Repurchase Programs: Evidence on the Competing-Market-Maker Hypothesis," University of Colorado at Boulder working paper (1995).

While the dividend payout ratio of U.S. companies has been declining since the mid-1980s, the total payout ratio has remained more or less constant, suggesting that corporations have been substituting repurchases for dividends. Moreover, the percentage of companies initiating shareholder distributions through repurchases (as opposed to dividends) increased from 27% in 1973 to 81% in 1998.

examines this issue using high-frequency, intra-day data.⁴⁰ Although this study does not report sample-wide increases in liquidity after share repurchase announcements, it does provide evidence of reduced volatility after share repurchase announcements as well as a decrease in bid-ask spreads among smaller, less illiquid stocks. This finding seems consistent with the liquidity-enhancement argument, since illiquid stocks would be most likely to benefit from the company's deep pockets.

Does the market reward companies for adding liquidity in this manner? The early evidence suggests that the answer is no—at least at the time of the announcement. Grullon (2000) examines the relation between the short-term market reaction to share repurchase announcements and the level of liquidity of the stock. Using stock turnover as a proxy for liquidity, this study finds that illiquid stocks experience essentially the same market reaction when announcing repurchase programs as do more liquid firms. This result can be interpreted in one of two ways: either shareholders do not place much value on the added liquidity or the benefits of added liquidity are priced into the stock only gradually over time as investors become aware of them.

One final important question that remains is whether companies are indeed a useful source of liquidity during market downturns. If this contention is true, then the stock returns of firms that are actively repurchasing their shares should be less sensitive to market-wide movements in a declining or bearish market. To examine this hypothesis, we perform a simple econometric analysis using the ILV (1995) dataset of all corporate repurchases announced between 1980 and 1990 in the *Wall Street Journal* as well as the open market programs recorded by SDC over the period 1991 to 1996. Our analysis involves estimating the following regression equation:

$$r_{it} = \beta_0 + \beta_1 r_{mt} + \beta_2 r_{mt} \times \text{DUMNEG}_t + \beta_3 r_{mt} \times \text{DUMREPO}_t + \varepsilon_{it}$$

where r_{it} is the daily return for repurchase firm i , r_{mt} is the daily value-weighted market return, DUMNEG is a dummy variable equal to 1 if the market return is negative, zero otherwise, and DUMREPO is a dummy variable equal to 1 if the observation falls in a quarter where the corporation repurchased shares,

zero otherwise. Information on actual repurchases was gathered from COMPUSTAT files.

The interaction variable $r_{mt} \times \text{DUMNEG}_t \times \text{DUMREPO}_t$, β_3 , captures the impact we are looking for. It measures the market sensitivity of the firm's returns on days when the market is declining and the company is also buying stock. This term can be thought of as the change in market beta for repurchasing companies when markets are bearish. If firms trade in a way that is designed to support their stocks, this coefficient should be negative—in other words, their beta risk should be decreasing. Consistent with this prediction, Table 3 shows that the average estimated value of β_3 for all the firms in our sample was negative (-0.042) and statistically significantly different from zero (at the 1 percent level). We also found that β_3 becomes more negative as the repurchase activity of the firm increases. The average β_3 for firms with low repurchase yields (Quintile 1) is essentially zero. At the other extreme, the average β_3 for firms with high repurchase yields (Quintile 5) is negative (-0.075) and highly significant.

Although the “economic” magnitude of this change in beta may seem fairly small, repurchases do appear to provide at least some support in a declining market. Moreover, a few things are working against us in this analysis. First, our data is “noisy” since we did not have access to daily data on company repurchase activity and so could only approximate such activity using quarterly numbers. More important, many repurchase programs are not explicitly managed to provide liquidity benefits. For example, as discussed in the Appendix, many companies implement VWAP, or volume weighted average price, contracts with their brokers. Such contracts motivate brokers to trade with volume as opposed to supporting downside liquidity. In sum, our inability to find more striking reductions in betas during open market programs is complicated by limitations of the data. Moreover, this result is likely compounded by the fact that some companies may unwittingly be forgoing liquidity benefits by the way they manage their programs.

Financial Flexibility and Completion Rates

By design, open market repurchase programs allow managers flexibility as to when or even if they

40. Jaemin Kim, “Open Market Share Repurchase Announcements: Their Impact on Liquidity,” University of Washington working paper (2000).

TABLE 3
THE EFFECT OF SHARE
REPURCHASES ON STOCK
RETURNS*

	Average Regression Coefficient				N
	β_0	β_1	β_2	β_3	
Entire Sample	0.0009 ^a	0.7196 ^a	0.2116 ^a	-0.0418 ^a	1,913
SORTED BY REPURCHASE YIELD:					
Quintile 1 (Low)	0.0012 ^a	0.7138 ^a	0.2486 ^a	-0.0002	386
Quintile 2	0.0010 ^a	0.7103 ^a	0.2834 ^a	-0.0381 ^c	382
Quintile 3	0.0007 ^a	0.7880 ^a	0.1318 ^a	-0.0353	381
Quintile 4	0.0008 ^a	0.6747 ^a	0.2071 ^a	-0.0611 ^a	382
Quintile 5 (High)	0.0008 ^a	0.7115 ^a	0.1863 ^a	-0.0749 ^a	382

*This table reports the average estimated coefficients of the regression shown in the text. The regression coefficients are estimated over a period of four years surrounding the share repurchase announcement. The sample consists of firms that announced open market share repurchases over the period 1980-1990. Information on actual repurchases is gathered from the quarterly COMPUSTAT files. a, b, and c denote significantly different from zero at the 1%, 5%, and 10% level, respectively.

buy stock. Moreover, tracking actual repurchase trades is not always straightforward. For example, in the U.S. there are no disclosure requirements like those mandated for insider trades. Most U.S. firms do not provide details of their repurchases on a periodic basis in the same way they publicize, for example, their earnings and dividend payouts.

This dearth of disclosure has led regulators and institutional investors to express concern over completion rates and whether firms are making good-faith efforts to buy the shares they authorize for repurchase. For example, Canadian stock exchanges such as the Toronto Stock Exchange oversee the approval of share repurchase programs.⁴¹ Canadian regulators are said to be less inclined to authorize new repurchase programs if the company has a poor track record in completing previous programs. A primary concern of both regulators and investors is that, because of the flexibility and modest disclosure requirements associated with open market repurchase programs (particularly in the U.S.), there is some potential for companies to mislead investors by announcing repurchase programs while having no intention of buying stock. While such opportunistic behavior is always a possibility, it is not clear that the lack of full completion rates can or should be construed as deliberate deception on the part of corporate managers. Just as firms repurchase for a variety of reasons, their propensity to buy all the stock they authorize for repurchase will also vary as well.

First, what is the track record on completion rates? In the U.S., this simple question is difficult to answer because mandatory disclosure about actual repurchases is limited to a few pieces of information scattered throughout the firm's financial statements. Typically, for U.S. firms this disclosure is limited to line items in the cash flow statements published in the 10-Q and 10-K reports. Other parts of the financial statements, including the management discussion and analysis section, may provide information on the number of shares repurchased. This information is not always straightforward to follow and, of course, it is published well after the trades are executed. The difficulty in tracking actual repurchase activity in the U.S. is further complicated by the fact that the duration of open market programs is typically not defined; programs often run many years.

A 1998 study by Stephens and Weisbach has produced what is probably the most reliable estimate of completion rates for U.S. stocks. This study takes a variety of approaches that range from measuring expenditures from the cash flow statement to examining changes in shares outstanding. Experience suggests that this last approach is inadequate because of the significant "leakage" of share issuances for executive stock options, ESOP obligations or DRIPs—all of which can increase shares outstanding while the firm is buying back stock. In the case of Microsoft, for example, this leakage is so great that the balance of outstanding shares actually increases over time even though the firm is actively buying

41. To be more precise, open market programs in Canada are referred to as normal course issuer bids. We thank Timothy Baikie, Special Counsel Market

Regulation for the Toronto Stock Exchange, for sharing with us some of the practices Canadian firms follow when repurchasing stock.

A recent study using high-frequency, intra-day data provides evidence of reduced volatility after share repurchase announcements as well as a decrease in bid-ask spreads among smaller, less illiquid stocks.

TABLE 4
LONG RUN STOCK
RETURNS FOR CANADIAN
FIRMS ACCORDING TO
BUYBACK COMPLETION
RATES*

	Year 1	Years 2 and 3
No shares	11.5%	0.6%
Up to 30%	9.1%	11.3%
More than 30%	2.6%	6.8%

*This table summarizes (annualized) abnormal returns reported by Ikenberry, Lakonishok and Vermaelen (2000). They examine 1,060 Canadian repurchase programs announced between 1989 and 1997. They examine performance beginning in the month following the announcement. They separate performance into two periods, the first year following the announcement and then the two subsequent years. Performance is estimated by forming calendar-time portfolios and applying the Fama-French (1993) three-factor model. Completion rates are reported by all Canadian firms and are split into cases where no shares were bought, where at least some shares but less than 30% of the initial authorization were bought, and finally cases where firms bought at least 30% of their initial authorization.

back stock. Focusing on cash expenditures, Stephens and Weisbach report that during the period 1981 to 1990, U.S. firms completed roughly 75% of their authorized shares during the period three years from the initial announcement.

In Canada, disclosure of actual repurchase activity is far more extensive and meaningful. There the exchanges gather and publish each month the previous month's trading activity for all authorized programs. Thus, it is easy to find the exact level of repurchase activity at any point in time, the number of shares still authorized for repurchase, and the program's termination date. In examining this data, ILV (2000) find that, for their sample of 1,060 Canadian repurchases announced between 1989 and 1997, the average completion rate after 12 months was 28.6% and rising throughout their sample period. Only one-third of the sample bought at least half of their initial authorization. Less than one in ten firms completed 90% or more of their authorization. Direct comparison of Canadian completion rates to U.S. rates is not very meaningful because Canadian law limits all programs to 12 months or less. Nevertheless, taking this into account, Canadian completion rates appear to be slightly lower than those for U.S. firms.

Besides variable completion rates, ILV (2000) also find other indications of strategic trading by management. For example, completion rates were higher, on average, for value stocks than for growth stocks. The study also finds that companies buy more shares in a declining market—consistent with both the liquidity support and signaling hypotheses we discussed earlier—and buy fewer shares when prices are rising.⁴²

Is it possible that some firms in Canada are intentionally misleading the market? ILV consider this question by looking at how long-horizon stock returns vary with differences in completion rates. The study divides their sample into three groups: those cases where no shares were bought; those where at least some shares but less than 30% of the initial authorization were bought; and those cases where firms bought at least 30% of their initial authorization. Of particular interest here are those cases where firms did not purchase a single share during the program. If management was trying to mislead investors, one would expect to find either no evidence of excess performance or perhaps even a decline. However, as reported in Table 4, this is not the case. In fact, we see the opposite: the highest levels of abnormal performance in year 1 are those cases where no shares were bought. Moreover, if we look at years 2 and 3, there is no evidence of abnormal performance. As for cases where the managers bought more than 30% of the stock, Table 4 shows the opposite pattern: comparatively low stock returns (2.6%) in year 1 and higher returns (6.8%) in years 2 and 3. Thus, while it is always possible that managers in some cases may consider using repurchases to mislead investors, the evidence does not show this to be prevalent. A more plausible interpretation would appear to be that managers simply choose not to buy their stock when prices rise and the undervaluation problems that may have prompted the share repurchase authorization in the first place are resolved. In cases where the market is slower to react, managers appear to be more aggressive in buying back stock.

42. This result may also be affected by trading limits like Rule 10b-18. Canada has similar rules that discourage firms from executing trades in a rising market.

Because of trade limits on "up-ticks," it is easier for firms to collect shares in declining markets.

TABLE 5
OPEN MARKET SHARE
REPURCHASE PROGRAMS
ANNOUNCED BY LARGE
FIRMS*

Within the Last:	S&P 500	S&P 100
One Year	25.0%	26.0%
Two Years	46.4%	50.0%
Three Years	58.2%	62.0%
Four Years	66.8%	74.0%
Five Years	70.2%	80.0%

*This table reports the percentage of firms included in the S&P 500 and S&P 100 indices as of January 1, 2000 that had authorized an open market repurchase program within the past one to five years. This information was obtained from Securities Data Corporation and Standard & Poor's.

This provides at least some explanation for why completion rates, after the fact, are not always 100%. However, is it even reasonable to think that managers fully anticipate buying all the shares they authorize for repurchase? A 1996 study by Ikenberry and Vermaelen suggests not.⁴³ After noting that open market programs are not firm commitments and that companies frequently state that “shares may be purchased from time to time depending on market conditions,” this study views the flexibility that open market programs provide managers as an *exchange option*. The basic idea is that authorization of an open market program effectively gives managers an option to repurchase stock whenever they feel their stock price falls below fair value. Consistent with their model, the study finds that the market reaction is more positive in cases where the implied option value is higher—for example, when the stock’s (non-market-related) volatility is relatively high.

An interesting further ramification of this exchange option model is that one should expect open market repurchase authorizations to be quite common precisely *because* of this flexibility. Given that these programs are not too costly to establish, that companies bear little or no penalty for not buying stock, and that the option to buy stock quietly in the market at various times is valuable; one would expect to see *most* firms at least authorize a repurchase program even if they view themselves as fairly valued. To investigate this prediction, we examined the percentage of S&P 100 and 500 companies that authorized open market programs from January 1, 1995 through January 1, 2000. As shown in Table 5, in 1999 alone roughly one out of every four companies in both the S&P 100 and 500 announced a

repurchase program. Moreover, during the period from 1997 through the end of 1999, a three-year period often considered typical for open market programs, the authorization rate was 58% for the S&P 500 and 62% for the S&P 100. Going back five years, fully 70% of S&P 500 firms and 80% S&P 100 firms have at one point or another authorized a program. Such high authorization rates are consistent with this idea that open market programs give managers a valuable, and relatively inexpensive, option to repurchase stock. And, given the flexibility provided by such options, we should not be surprised to see completion rates well below 100%.

Regulatory Issues

Although U.S. companies have been repurchasing stock on the open market for decades, the practice was limited until 1982. Before then, there was no regulatory road map to guide corporate buybacks. Because of the firm’s market power, concerns over potential accusations of price manipulation undoubtedly kept many companies out of the market.⁴⁴ Then, in November 1982, after a long debate over various proposals, the SEC adopted rule 10b-18, the first and only rule that provides any legal structure and protection to the buyback process. Although this rule is not statutory law, it sufficiently reduced litigation uncertainty to allow the surge in share repurchase activity in the ’80s and ’90s.

The rule narrowly applies to trading activities and does not address any other associated aspects of buybacks, including the disclosure of actual trades. However, a critical point about rule 10b-18 is that it provides no limitations as to what companies can

43. David Ikenberry and Theo Vermaelen, “The Option to Repurchase Stock,” *Financial Management*, 25 no. 4 (1996).

44. For example, when rule 10b-18 was adopted, SEC chairman John Shad is quoted as saying “without the change, companies are inhibited from making big open-market buys.”

Besides variable completion rates, ILV (2000) also find other indications of strategic trading by management. Completion rates were higher, on average, for value stocks than for growth stocks, and companies buy more shares in a declining market and fewer shares when prices are rising.

and cannot do. Instead the rule is a “safe-harbor” and provides legal protection against accusations of price manipulation as long as four trading limits are followed. Issuers and their affiliates are deemed not to violate the anti-manipulative provisions of other SEC rules (section 9a2 and rule 10b-5) if the company’s transactions on any given day:

- (1) are made through only one broker or dealer;
- (2) are not executed at the opening or during the last half hour of trading;
- (3) are not done at a price exceeding the highest current independent bid price or the last independent sale price, whichever is higher; and
- (4) if the total repurchase volume does not exceed 25% of average daily trading volume (excluding block-trades) calculated over the preceding four calendar-weeks.

The framework for these four guidelines came from a widely publicized court case in the 1960s where price manipulation was indeed the central issue.⁴⁵ The rule does not apply to trades executed for an employee stock ownership plan nor does it apply to prices or volumes set for self-tenders or negotiated trades done off-market.

The four basic limits achieve different objectives. The first limit is intended to place some responsibility on the broker/dealer for following the rules and also limits the firm from appearing to hide its trades. The limit of one broker/dealer is applied on a day-to-day basis, not for the entire program. Thus firms have considerable freedom to move their brokerage business around (though it is not clear that many behave this way). The second provision, which relates to time of day limits the firm from affecting prices at either the opening or close, two times at which the firm’s last traded price can be an important benchmark value for establishing exchange ratios in takeovers or determining payouts from compensation reward plans.

The last two items of the safe-harbor are intended to reduce the price impact of the firm’s own trading. The third provision essentially serves as an “up-tick” limit and keeps the company from forcing its share price to trade at a higher price tick. A side effect of this provision, however, is that it also keeps

the company from trading aggressively when the market is rising. Instead, this rule encourages companies to be suppliers of liquidity on the lower side of the market and to execute trades when the market is falling. At times, including the crash of 1987, the SEC has lifted various aspects of the rule, including these last two items, thus encouraging companies to trade more aggressively on extreme occasions. In fact, the SEC recently eased some of the 10b-18 restrictions during “market-wide breaks” with the aim of encouraging companies to be more aggressive in supporting their stock.

As mentioned, Rule 10b-18 is a safe-harbor rule, meaning that firms can rely on this rule for protection against litigation for price manipulation if they comply with the trading limits. Yet the rule poses no mandatory limit on the firm’s ability to trade. For smaller companies whose trading volume or liquidity may be restricted, the lack of any statutory limit may be an important factor. Even for more widely traded stocks, companies are not required to, nor do they always obey, the specific limits outlined in the rule. A 1999 study by Cook, Krigman, and Leach, after carefully collecting data on 64 repurchase programs done between March 1993 and March 1994, found that less than 10% of the programs followed the absolute letter of each provision in rule 10b-18.⁴⁶ Roughly a third of the programs violated daily volume limits at one time or another. The up-tick rule is perhaps most limiting. Here, the study reported that more than 85% of the companies violated this aspect of the rule at some time during their program. In fact, about 10% of all the NYSE repurchase trades were done at prices above the safe-harbor limit. For NASDAQ stocks, a majority of the trades were not compliant, a result not entirely unexpected given the comparatively smaller and less liquid companies that trade in that market.

Generally speaking, companies appear to be at least sensitive to the spirit of 10b-18. In the past, many companies announcing repurchase programs have stated their intent to follow rule 10b-18. And, while the rule does not apply to ERISA trades, companies still often instruct their brokers to execute these trades according to 10b-18 limitations. But

45. In the early- and mid-1960s, Georgia Pacific was acquiring companies through stock transactions. The exchange ratio in these acquisitions was set as a function of Georgia Pacific’s stock price at certain points in time. At the same time, the company was repurchasing shares on the open market which it claimed were for employee bonuses. The SEC claimed that the repurchases were intentionally timed to affect the last traded price on the NYSE and thus lower the effective

exchange ratio in its acquisitions. As a result, the court issued an injunction, the four elements of which closely resemble what is now Rule 10b-18.

46. J. Chris Leach, Laurie Krigman, and Douglas Cook, “Safe Harbor or Smoke Screen? Compliance and Disclosure under SEC Rule 10b-18,” University of Colorado at Boulder working paper (1997).

despite such possible good intentions, the evidence suggests that firms either cannot or choose not to follow the rule's limits for each trade they execute.

Apart from Rule 10b-18, there is a surprising lack of regulatory structure. In Canada, for example, while its trading limits are similar to those in the U.S., there is considerably more regulatory structure governing the entire buyback process.⁴⁷ Open market repurchase programs in Canada are mandated to last no more than one year and cannot be for more than the higher of 5% of the share base or 10% of the public float. Companies wishing to purchase shares in subsequent years must have their programs renewed again by the board and must also reapply for approval from the stock exchange their shares trade on. For U.S. companies, by contrast, there are no regulatory limits other than the mandated initial disclosures to the market.

Perhaps the most troubling regulatory gap in the U.S. relates to disclosure of actual repurchase trades. Besides the minimal summary information provided in the quarterly and annual financial statements, companies have no obligation to disclose any aspect of their trades on a periodic basis or otherwise. This contrasts markedly, for example, with the disclosure required for insider trading activity. Although firms repurchasing stock are not required to disclose any of their trades, if management makes the same decision on a personal account, details about the trades must be promptly disclosed to the SEC and then made public in short order. In Canada, by contrast, the exchanges publish each month a comprehensive table showing repurchase activity (as well as the absence of such activity) for all authorized programs. Although specific trade details such as price are not reported, overall volume is clearly reported and available on a timely basis.

A final regulatory inconsistency regarding share repurchases concerns the practice of "black-out dates," rules that companies impose on their insiders limiting when they can buy or sell company stock. Typically, these self-imposed rules limit trading around the time of material events, such as earnings announcements. And such limitations are pervasive. A recent study by Carr Bettis, Jeffrey Coles, and Michael Lemmon finds that over 90% of a sample of U.S. firms restrict insider trading and nearly 80% have

explicit black-out dates where managers are prohibited from trading.⁴⁸ Although there is no specific regulatory statute that applies any such limits to repurchases, some corporate legal departments nevertheless extend the same limits on insider trading to corporate repurchase activity as well.

SOME POLICY RECOMMENDATIONS FOR COMPANIES AND REGULATORS

Stock repurchases by U.S. companies, particularly those done on the open market, experienced a remarkable increase in popularity in the 1980s and '90s. In 1998, for the first time ever, the total value of all stock repurchased by U.S. companies exceeded the total amount paid in dividends. And the U.S. repurchase movement has gone global in the past few years, spreading not only to other "market-based" economies like Canada and the U.K., but also to countries like Japan and Germany, where such transactions were prohibited until recently.

Why are companies buying back their stock in such numbers? The most common reason cited by corporate executives and stock analysts is that stock repurchases boost reported earnings per share. But, as we point out, this argument is nothing more than accounting sleight of hand. Although repurchases do increase EPS in many cases, it has this effect only when the assets used to buy back the shares have no productive use inside the firm. And if the assets have no productive internal use, then managers will increase the firm's overall productivity and thus add value simply by distributing them to their shareholders. Thus, like dividend payments, repurchases are a means for companies to get rid of their excess capital, a process that has two main benefits. First, it helps prevent companies from "overinvesting"—that is, pursuing corporate size and growth at the expense of profitability and value. Second, by returning capital to investors, repurchases (and dividends) play the critically important economic function of allowing investors to channel their investment from mature or declining sectors of the economy to more promising sectors.

But if stock repurchases and dividends serve the same basic economic function, why have repurchases gained popularity in the U.S. only in the past

47. A key distinction however is that the Canadian equivalent of rule 10b-18 was not enacted as a safe-harbor guideline, but instead as statutory limits.

48. J. Carr Bettis, Jeffrey L. Coles and Michael L. Lemmon, 2000, Corporate Policies Restricting Trading by Insiders, forthcoming *Journal of Financial Economics*.

Repurchases give managers more flexibility than dividends—flexibility to make small adjustments in capital structure, to exploit perceived undervaluation of the shares, and even perhaps to increase the liquidity of the stock (which may be particularly valuable in bear markets).

two decades? A primary factor was the SEC's adoption of rule 10b-18 in 1982, which had the effect of reducing the regulatory ambiguity that had previously surrounded repurchases. With at least some shield against litigation risk over price manipulation, companies had the ability to take advantage of some of the important differences between repurchases and dividends. For example, because repurchases are taxed as capital gains and dividends as ordinary income, repurchases have been a more tax-efficient way of returning capital to shareholders than dividends (particularly with the widening of the gap between ordinary income and capital gains tax rates in the '90s). In addition, repurchases give managers more flexibility than dividends—flexibility to make small adjustments in capital structure, to exploit perceived undervaluation of the shares, and even perhaps to increase the liquidity of the stock (which may be particularly valuable in bear markets).

Of course, dividends and stock repurchases have both been held up as means of raising stock prices by “signaling” management's confidence in the firm's prospects to investors. But, as discussed in this paper, there are two distinct versions of the signaling story with respect to repurchases. One says that repurchases signal future unexpected increases in corporate cash flows and profitability; but the evidence is supportive only in the case of fixed-price offers, but not in open market programs, the dominant means by which companies buy back stock. The second version says that management is simply signaling its disagreement with the current market price; and, in this case, there is persuasive evidence that companies announcing open market repurchase programs provide superior long-term returns to their stockholders. Moreover, this performance is much more evident for value stocks (those with high book-to-market ratios) than for growth stocks, suggesting that buybacks are in part a response to perceived undervaluation.

What policy issues should industry and regulators consider with respect to buybacks, particularly those on the open market? First, companies should consider the value of the flexibility that open market

programs provide them in responding to changing market conditions (and, as discussed in the Appendix, they should also take into account how some repurchase execution strategies can reduce this flexibility). In some cases, it may be more important to express management's firm commitment to buy back shares by means of a tender offer or Dutch auction. But, in the vast majority of cases, preserving the flexibility of managers to buy (or not to buy) stock is likely to be an important consideration. Indeed, many companies may be using open market programs primarily to “support” their stock prices and supply liquidity during a downturn.

For U.S. regulators, the growth in stock buybacks poses a variety of interesting issues, most of which revolve around helping to define both the disclosure and the structure of the repurchase process. In the case of open market programs, companies are not required to (and rarely do) furnish their investors with details about a given program's structure, execution method, or even its duration. Interestingly, disclosure requirements for activities such as insider trading are far more comprehensive than for buybacks—which, after all, are strikingly similar transactions made on behalf of the firm where the economic threat to market credibility is seemingly far greater. The regulatory guidelines for shelf-offerings in the U.S. also differ greatly from the ill-defined structure of open market programs.

The evidence suggests that U.S. markets were well served when SEC rule 10b-18 was adopted in 1982. Yet, because this rule is narrow in scope and purpose, policy regulators and corporate leaders should consider some of the benefits provided by other systems, notably Canada's, which provide greater transparency and more guidelines for the repurchase process. In the absence of such an organized framework and disclosure environment, it is puzzling why some U.S. companies have not adopted some voluntary reporting standard, particularly given investors' enthusiasm about corporate repurchase activity. One possibility may relate to the costs of choosing to disclose in some periods, while preferring not to disclose in other periods because of a lack of activity.

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APPENDIX: OPEN MARKET EXECUTION STRATEGIES

Open market programs offer managers considerable flexibility in choosing when to buy stock or even whether to buy any stock at all. Companies are not required to provide, and most managers do not volunteer, details about the timing, price, or volumes of their stock repurchases. Compared to other corporate activities, one might characterize open market repurchase programs as obscure.

An equally obscure aspect concerns the process by which firms actually acquire stock in the open market. There are essentially two basic approaches. The first might be considered a traditional “cash-based” strategy. This is the approach envisioned when the SEC crafted rule 10b-18. Here managers trade just as investors might, buying stock and delivering cash. The degree of managerial attention this approach requires varies and is at the discretion of management. In some cases, managers prefer to have close control and essentially execute the program “in-house.” In other cases, management only oversees the process and delegates most of the execution details. Here managers will often provide their agent with a target amount of stock they would like executed over some period of time ranging from a day, week, month, quarter, or even longer.

While there are variations of the cash approach (one of which we will mention later), the second basic class of strategies is the “synthetic repurchase.” This approach has numerous variations that involve the firm either purchasing call options and/or selling put options on their own stock. The purchase of call options allows managers to lock-in a maximum price for repurchasing a given quantity of stock. If the price settles below the strike at expiration, the option expires worthless; but this also means that market prices have not moved against the firm, thus allowing it to collect shares in the open market at what it may view as attractive prices. If the market moves up and prices close above the strike at expiration, the firm can take delivery of its shares while paying only the lower strike price. This application of a synthetic strategy has an insurance element to it. For firms worried about their ability to repurchase sufficient quantities of stock at a given price, such an approach

might be helpful. Yet insurance is never free and this approach comes, of course, with a price.

A second reason for this kind of synthetic strategy concerns the trading volume and price limits suggested in SEC rule 10b-18. Shares that are acquired through option contracts are considered negotiated trades and are not subject to open market trading limitations. In fact, by using long call options, firms can regulate to some extent just how many shares they wish to accumulate, thus bypassing 10b-18, simply by adjusting the strike price. As the strike is lowered into the money, the probability that management will take delivery also increases. A quick approach to determining this probability is simply to observe the option’s “delta.”

A second well-known synthetic approach is for the firm to sell put options. In this case, managers collect an up-front premium⁴⁹ and, in effect, “promise” to buy stock should market prices fall below a specific point. This approach has been characterized by some as an efficient way for firms to collect a large number of shares at “bargain prices” while again avoiding some of the SEC’s trading limitations. Some companies with bullish expectations have been known to sell out-of-the-money puts as a means of collecting premiums on what they view as overvalued puts.

If one sells a put and simultaneously applies those proceeds to the purchase of a call with the same parameters, they have created a synthetic forward contract at the strike. Under this arrangement, regardless of whether prices move up or down, managers have a pre-set price and will be assured of taking delivery once the options reach maturity.⁵⁰ If managers pull the strike prices apart by setting the call’s strike price higher and the put’s lower, they essentially create a repurchase collar. This way the company accomplishes its goals for repurchasing stock, but has synthetically transferred all of their trading activity into the option market. Although these synthetic products are widely discussed in practice, determining the actual extent of their use is difficult because most firms disclose little about their use of such contracts to investors.⁵¹

49. In the U.S., this premium is non-taxable and falls straight to the bottom line.

50. Given the costs involved, it is not entirely clear why a firm would do this. One possibility is that management might believe that such an approach would allow them to obtain a larger number of shares in a shorter period of time than

would be possible in the open market. Thus this approach might be lower in cost to say a fixed-price tender offer which are much more visible and where the firm typically pays a premium.

51. See for example, “More Firms Use Options to Gamble on Their Own Stock,” *Wall Street Journal*, May 22, 1997.

APPENDIX: OPEN MARKET EXECUTION STRATEGIES (Continued)

Do these synthetic approaches add value? They clearly add value for investment bankers; the mark-up on such products dominates the revenue they typically receive as broker-agents in basic cash-based strategies. For companies, however, the answer is not so clear. These synthetic approaches may be cost-effective in allowing the firm to gather shares in an orderly manner that it might otherwise have problems replicating in the cash market. As mentioned earlier, these transactions fall outside the domain of rule 10b-18. But, in other cases, these plans could cause problems. For example, the short-put strategy is appealing if one is convinced that bargain prices arise only as a result of noisy markets. But low prices can also result from unexpectedly bad operating performance. A short put may amplify the effect of whatever bad news is affecting the stock price since this strategy pre-commits the firm to spending capital to purchase shares. The firm will, ex-post, be buying shares at prices above the prevailing market at times when its fundamental cash flow may be reduced. Clearly, both management and the board should appreciate this exposure. One way around this dilemma is for the firm to have other options in place that “undo” a portion of their commitment should prices drop to extreme levels, thus giving relief when doomsday-like situations arise. Other variations of this basic theme also exist.

In short, managers should be aware of the possible consequences of synthetic repurchase strategies, particularly those that *obligate* the firm to certain actions. For example, when firms sell puts on their own stock, they forgo the inherent flexibility that explicitly motivates open market programs. A similar caveat applies to a popular variation of the basic cash-based repurchase strategy, known generically as “accelerated repurchase programs.” Here investment bankers go into the market and borrow company stock from other investors. The bank then shorts these shares to the firm in one negotiated trade. The investment bank then settles their short position by buying stock in the market over some set period of time. Typically, the bank purchases a fixed number of shares each day during the repurchase window. In many accelerated programs, the company agrees to reimburse the bank the difference between the initial negotiated price and the VWAP,

or volume-weighted average price. This price is determined from all trades that occurred that day. Thus, the company is assured in advance that on any given day, it pays only the average market price and is not exposed to any trading risk from the banker.

One alleged advantage of this strategy is the mythical “EPS bump” that we discussed earlier. An accelerated repurchase immediately reduces the average number of shares, thus increasing reported earnings more than would otherwise occur if the same transactions spanned a longer period of time. But, as discussed earlier, it is important to remember that this earnings gain arises only to the extent that the firm has an inefficient allocation of assets, as opposed to any accounting sorcery or hand-waving.

Yet, like synthetic repurchase strategies, accelerated repurchase programs also remove some of the financial flexibility that open market programs provide. In cases where firms feel committed to disgorge cash and are not overly price sensitive (such as in cases involving dividend substitution), entering in an accelerated repurchase may indeed be appropriate. Unfortunately, a VWAP contract does not allow the firm to take full advantage of the opportunity it has to increase downside liquidity. By design, the VWAP contract gives the banker a strict incentive to trade with volume. This is good for the firm if markets are falling on high volume. On such occasions, the investment banker’s buy-oriented trades provide a source of downside liquidity. However if a stock has naturally weak volume and the same decline is experienced, the banker is exposed should he or she choose to provide liquidity in this falling market. Moreover, the same incentive contract forces the investment banker to trade and compete aggressively for buy-side liquidity when markets are increasing on heavy volume. Both of these actions are opposite from what managers might otherwise prefer.

Companies choosing to preserve some liquidity benefit from repurchasing stock might consider instituting a series of revolving downside limit orders. In bearish markets, the firm collects shares and provides downside liquidity. But, on days where markets are rising, the company can choose to save its resources and not compete against other traders in the market.