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Stock Repurchase by Tender Offer: An Analysis of the Causes of Common Stock Price Changes

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I. Introduction

THIS study analyzes the effects of a repurchase of stock by tender offer, a firm action often compared to a cash dividend, because both actions involve a cash flow from the firm to its common stockholders. Firms can repurchase common stock through: (1) privately negotiated purchases, (2) purchases in the secondary market, or (3) tender offers. Of the three methods, tender offers generally involve the largest repurchases of stock and as a consequence are the most promising form of stock repurchase for empirical study. While an issuer tender offer for common stock is similar to a cash dividend, the analogy clearly is not complete, since:

(1) A stock repurchase is generally taxed as a capital gain (or loss) while a dividend is taxed as ordinary income in its entirety.

(2) A stock repurchase requires an associated decrease in total shares outstanding while a dividend does not.

(3) A stock repurchase is a voluntary transaction by individual shareholders which generally alters relative shareholdings, while a dividend is involuntary and has no effect on relative shareholdings.

(4) A right to tender is nontransferable and its value can only be realized by tendering shares or selling shares in the secondary market prior to offer expiration, while a dividend is received by all shareholders.

Stock repurchases by tender offer can cause major adjustments in firms' capital structures by increasing leverage and significantly modify stockholders' personal tax liabilities and relative share ownership. Yet, there is little evidence in the literature concerning the price impacts on the firm's securities of the announcement and expiration of tender offers. In the process of bridging this gap, we hope to be able to gain some insights into the effects of capital structure and dividend policy changes.

Hypothesized Economic Effects of Tender Offers

A number of theories predict that a capital structure change or a dividend change will result in security price changes. We have chosen to study a subset of

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these theories which have clearly testable predictions concerning the relationships between security price changes and changes in firm related variables which occur when tender offers are undertaken. Categorizing these theories in terms of their underlying economic effects, we have:

H1: Personal tax savings of stock repurchases over cash dividends.
H2: Corporate tax shield increases from debt financing of stock repurchases.
H3: Wealth transfers across security classes due to leverage changes.
H4: Wealth transfers between tendering and nontendering stockholders.

A description of each theory represented above and its testable implications follows. Personal tax benefits are derived from firms repurchasing stock rather than paying cash dividends (which for a fixed investment policy are the alternative means of compensating stockholders)[1] because, at a minimum, this action halves the personal tax rate applicable. Furthermore, under this action, part of all of the cash flow can be shielded from capital gains taxation (a capital loss can actually be produced). Further, high tax bracket investors can implicitly choose to take nontaxable *stock* dividends by not tendering, rather than receive cash by tendering since these investors' shareholdings are fixed while the number of shares outstanding is decreased.[2] Unless the marginal stockholders have already shielded this potential income from personal taxation, there should be a positive price impact on the common stock of a lower personal tax liability, which is a positive function of the percentage of outstanding shares to be repurchased; at the same time, there are no predicted valuation impacts on the firm's other securities.[3]

An increase in a firm's corporate tax shield occurs when debt is used to finance the stock repurchase. Under the assumption that the firm is increasing debt because it is below its optimal leverage, H2 predicts that this should increase the after-tax value of the firm and, as a result, increase the values of all the firm's risky securities at the announcement date of the offer.[4]

Inter-security class wealth transfers require the existence of outstanding debt and preferred stock, particularly nonconvertible securities. H3 predicts that the leverage change and the common stock price change will be in the same direction and the nonconvertible preferred stock and debt price changes will be in the opposite direction.[5] Furthermore, note that the size of the leverage change in a stock repurchase is larger if debt is used to finance the repurchase.

Wealth transfers between tendering and nontendering stockholders occur when there are differential constraints and/or costs across stockholders to tendering shares and the tender offer price exceeds the stock's market price so that a tender offer premium (defined as the percentage by which the offer price exceeds the

[1] Ultimately, even when asset structure change is allowed, there must be payments to stockholders in the form of future stock repurchases, cash dividends or liquidating dividends.

[2] This is similar to a situation studied by Long [9].

[3] An early formulation of this hypothesis can be found in Bierman-West [2]. A more recent restatement of this hypothesis is found in Tandy Corporation's 1977 Annual Report.

[4] See Modigliani-Miller [10] and DeAngelo-Masulis [5] for models of the valuation impact of debt under corporate taxation and under corporate and personal taxation, respectively.

[5] See Galai-Masulis [6] and Masulis [8] for more extensive discussions of intersecurity class wealth distributions.

pre-offer announcement market price) exists. Given that the right to tender is nontransferable unless the stock is sold, it follows that the tendering shareholders capture the entire offer premium at the expense of nontendering shareholders.[6] This hypothesis predicts that: (1) there should be a price increase on the initial announcement of a tender offer which is a positive function of the offer premium and the percentage of shares outstanding not tendering; (2) the stock price will fall below the pre-announcement price at the expiration of the offer (assuming no other effects are present); (3) tender offers made at premiums above the market price will not induce all shares to be tendered (even though this would maximize each stockholder's pro rata share of the stock repurchased); further, some of these offers can be undersubscribed while offer premiums exist. In these cases, stockholders not tendering represent those having the highest costs to tendering and/or the greatest constraints. A formal development of the stockholder wealth transfer predictions is given in the Appendix.

Since more than one of these predictions may be valid, the observed price changes can represent a combination of two or more of these predicted effects. It should also be noted that if the firm chooses to repurchase more shares than the number being sought, a second round of predicted effects (due to H1–H3) should occur at the expiration date of the offer which can mitigate the negative expiration date effect predicted by H4, the stockholder wealth transfer hypothesis. Of course, it is always possible that the observed price changes can be due to other economic effects not considered here. However it is proved in the Appendix that a tender offer premium will not by itself cause an announcement price effect.

Tender Offer Sample

All stock repurchases by tender offer for NYSE and ASE listed common stock over the period 1963–1978 were initially sought. Eliminated from the final sample were (1) offers for only odd lot shares, (2) noncash offers, (3) offers where the common stock was delisted prior to or within one trading day following the final expiration date of the offer, (4) cancelled offers, (5) offers where the initial announcement of a stock repurchase of a given number of shares was separated from the announcement of a tender offer.[7] The resulting sample consisted of 199 separate offers (not including the few cases where offer revisions occurred). In this sample, the initial announcement of the tender offer precedes the commencement of the offer on average by five business days while the offer remains outstanding on average for 20 business days.[8] For a quarter of the sample, the offer period is extended, on average for 14 business days. The sources for these dates were tender offer letters to stockholders, 8-K reports, *The Wall Street Journal* and *The Wall Street Journal Index*, and *Moody's News Reports*. Data

[6] This is in addition to remaining convertible debt, convertible preferred stock and warrant holders.

[7] The number of offers disqualified by the sample criteria were: 36, 7, 10, 3 and 1, respectively. It should be further noted that the final sample included two offers where a minimum number of tendered shares was required before any shares would be repurchased by the firm.

[8] Note that the offer periods for this sample have right skewed distributions so that the mean values overstate the lengths of the typical offer periods.

on firm capital structure was obtained from the above sources as well as from *Moody's Manuals*, 10-K reports, and annual reports.

Offer Subscription Patterns

In our sample, firms sought an average of 16 percent of the outstanding shares. The tender offer premium is on average 23 percent.[9] Given the magnitude of this premium and the fact that the tender offer price almost always exceeds the stock's market price over the life of the offer, heavy over-subscription of offers would be expected unless significant and differential costs and/or constraints to tendering exist. This follows since the premium is realizable only by having the firm repurchase the stock and further when the offer is oversubscribed only a pro rata share of tendered stock (total shares to be purchased divided by total shares tendered) is repurchased. However, differential shareholder costs of tendering will be induced by differential capital gains liablities unless sufficient personal tax shields exist to eliminate personal taxes.[10] Large holders can also be constrained by the potential application of Section 302 of the U.S. Tax Code, which can treat a stock repurchase as equivalent to a cash dividend if the tendering stockholders owns 80 percent or more of his pre-offer shareholdings or voting rights after the repurchase.[11] In addition, management and their families are frequently excluded from the offer (although they can always sell their shares in the secondary market). For all of these reasons, we should expect to find that less than all outstanding shares are being tendered in these offers.

In analyzing the tender offer sample, we found 84 under and fully subscribed offers[12] and 117 oversubscribed offers; moreover, only a small portion of these latter offers were heavily oversubscribed. In fact, of the overall sample of over-subscribed offers, there were 60 offers where all shares tendered were repurchased and 57 offers where only a percentage of the shares tendered were repurchased on a pro rata basis. This lack of heavy oversubscription of offers is consistent with the existence of differential costs and constraints to tendering.

A Methodology For Assessing Security Price Impacts

To assess the price effects of tender offers, stock rates of return were analyzed around the offer initial announcement date and expiration date. Common stock rates of return were obtained from CRSP Daily Rate of Return tape. "Portfolio" returns comprised of stocks experiencing tender offers were formed by averaging stock returns across common event dates, where an event date is the number of

[9] The post-announcement offer premium (defined as the offer price minus the commencement date price all divided by the commencement date price) is, on average, 9 percent.

[10] As is argued in Miller-Scholes [9], or unless the marginal investor is in a zero tax bracket (e.g., pension funds, foreign investors, etc.).

[11] A more thorough discussion of section 302 and the U.S. Tax Code in general can be found in Bittker-Eustice [1].

[12] Only seven offers were just fully subscribed. Further, on average, two-thirds of shares sought were tendered in under-subscribed offers.

trading days before or after the particular date under study (defined as day 0).[13] The announcement period is defined to include day 0 and, in addition, day +1. The day +1 return was included to capture the effects of announcements made after the close of trading on day 0.

In analyzing the impact of tender offers on common stock rates of return (unadjusted for contemporaneous market effects), we first took a time series of stock returns prior to and/or after the offer date under study, defining these returns as the "comparison period" returns (excluding the event period under study, day 0 and day 1). The mean daily return of this time series represents the security's "normal" return assuming the return process is stationary and that the time series is representative of the security's return distribution. Forming a portfolio of these daily returns in event time allows us to invoke the Central Limit Theorem (given that these returns are from noncontemporaneous calendar time and therefore are independent in event time), to justify a t test of the significance of the difference between the portfolio's announcement period mean daily return and comparison period mean daily return. If there is a significant announcement effect on the stock price, the null hypothesis of equal means should be rejected in favor of the alternative hypothesis of a larger "announcement period" return. A more detailed description of the Comparison Period Return methodology is found in Masulis [8]. Comparing the power of this methodology and standard market model approaches, Brown-Warner [3] concluded that, for the case of noncontemporaneous announcement dates, the Comparison Period Returns methodology is at least as powerful and often more powerful than standard market model approaches which use *market adjusted* returns.

Evidence from Common Stock Rates of Return

Examining the portfolio's rates of return surrounding the initial announcement of a tender offer yields the results shown in Table 1. This portfolio's two day announcement period return, representing the stocks of firms making tender offers, is 17 percent. Of the 199 stocks in the portfolio, 97 percent had strictly positive announcement period returns, evidence supportive of both semi-strong form market efficiency and qualitatively identical price impacts across the sample of stocks.[14] This announcement effect is consistent with hypotheses H1–H4. Upon further scrutiny, we observe a distinct pattern of positive returns on the four days prior to the initial announcement date of the tender offers. While this pattern is to a minor extent caused by the three percent of the stocks which do not have a strictly positive announcement period return, it primarily appears to be a manifestation of limited insider trading. If a leakage of insider information did occur, it may cause the 17 percent announcement period return to be understated by as

[13] Stock *announcement period* returns have been adjusted for trading halts by moving the announcement date to the first trading day following the trading halt. Six announcement period returns were so adjusted.

[14] The low percentage of stock daily returns strictly positive reflects the fact that a significant percentage of stocks have no daily price change, implying a zero rate of return.

Table 1

Common Stock Rates of Return on Initial Announcement of a Tender Offer
There are 199 offers in this sample

Event Day	Portfolio Daily Return (%)	Percentage of Stock Returns > 0	Event Day	Portfolio Daily Return (%)	Percentage of Stock Returns > 0
−40	−0.10	35.	0	11.31	86.
−39	0.22	38.	1	5.04	61.
−38	−0.09	31.	2	0.27	35.
−37	0.01	38.	3	0.39	33.
−36	0.17	32.	4	0.23	38.
−35	0.36	36.	5	0.35	33.
−34	−0.03	32.	6	0.02	26.
−33	−0.06	36.	7	−0.01	28.
−32	−0.18	33.	8	0.04	28.
−31	−0.38	31.	9	0.01	30.
−30	−0.13	30.	10	0.12	33.
−29	0.14	36.	11	−0.03	30.
−28	−0.22	28.	12	0.25	31.
−27	−0.52	34.	13	0.25	37.
−26	0.20	38.	14	−0.01	34.
−25	−0.04	32.	15	0.18	35.
−24	0.08	30.	16	−0.50	29.
−23	−0.05	37.	17	0.07	34.
−22	−0.36	30.	18	−0.13	28.
−21	0.11	40.	19	0.13	33.
−20	−0.38	33.	20	−0.07	30.
−19	−0.01	34.	21	−0.10	31.
−18	−0.15	31.	22	−0.21	33.
−17	−0.16	30.	23	−0.13	33.
−16	−0.06	33.	24	0.10	31.
−15	0.20	38.	25	−0.34	34.
−14	−0.05	36.	26	−0.29	30.
−13	−0.20	31.	27	−0.34	35.
−12	0.11	31.	28	0.20	38.
−11	−0.02	35.	29	−0.15	33.
−10	−0.65	32.	30	−0.04	30.
−9	0.04	37.	31	−0.40	29.
−8	−0.15	35.	32	−0.27	32.
−7	0.20	38.	33	0.10	34.
−6	0.38	40.	34	−0.08	38.
−5	−0.00	37.	35	−0.25	31.
−4	0.18	35.	36	0.03	33.
−3	0.76	42.	37	0.21	37.
−2	0.42	41.	38	0.01	35.
−1	0.55	42.	39	0.13	32.
			40	−0.06	33.

Comparison Period: Portfolio Mean Daily Return	=	.00% (.24%)	Mean Percentage of Stock Daily Returns > 0 =		33.64% (3.52%)
Pre-Announcement Period: Portfolio Mean Daily Return	=	−.00% (.28%)	Post-Announcement Period: Portfolio Mean Daily Return	=	−.01% (.21%)

NOTE: Standard deviations are in parenthesis.

much as 1.9 percent, the four day pre-announcement return for days −4 through day −1.[15]

Using a comparison period of 40 business days before and after the initial offer announcement, the two announcement period daily returns are, respectively, over 45 and 20 standard deviations from the comparison period mean daily return of 0. Furthermore, the t statistic for the difference between the announcement period and the comparison period mean daily returns is 36.75, which leads to a rejection of the null hypothesis of equal means at any conventional level of significance.

Personal and Corporate Tax Shield Hypotheses

To test the prediction the personal tax shield hypothesis, we separated the sample into offers seeking to purchase more than the average ratio of shares sought to shares outstanding, and those offers seeking less. As predicted by H1, the announcement period return of 23.5 percent for the 79 offers seeking to purchase an *above average* percentage of outstanding shares exceeded the announcement period return of 12 percent for the 120 offers seeking to purchase a below average percentage of outstanding shares.[16] To test the prediction of the corporate tax shield hypothesis H2, we separated the 138 offers where the type of financing was disclosed into those offers with more than 50 percent debt financing and those offers with at most 50 percent debt financing. As predicted by H2, there was a larger announcement period return of 21.9 percent for the 45 offers with more than 50 percent debt financing while the announcement period return for the 93 offers having less debt financing was 17.1 percent.[17]

Further separating the two corporate tax effect samples into offers predicted to have large and small personal tax effects produced four portfolios representing offers experiencing: (1) both large corporate tax and large personal tax effects, (2) a large personal tax effect, (3) a large corporate tax effect, and (4) neither large effect. H1 and H2 jointly predict that the first portfolio will have a higher return that the second or third portfolios, and all three of which will have a higher return than the fourth portfolio. The resulting announcement period portfolio returns of 27.2 percent, 24.1 percent, 17.1 percent, and 12.2 percent, respectively, are consistent with these joint predictions.[18]

[15] Note that many firms making tender offers have first made a number of open market purchases of stock in the years just preceding the tender offer. Consequently, the market's assessment of the probability of a tender offer by such a firm prior to its initial announcement can be significantly greater than zero.

[16] While the average offer premium of the former sample of offers is 28 percent, for the latter sample of offers, it is 20 percent. While this may explain a part of the difference in the above announcement returns, it appears too small to be the sole explanation. This conclusion is reinforced if we weight these mean returns by the probability of share repurchase as approximated by the fractions of shares sought to shares eligible which for the two samples are 32 percent and 12 percent, respectively. More importantly, we prove in the Appendix that an offer premium alone does not cause an announcement price effect.

[17] The average offer premiums for these two samples were 27 percent and 23 percent, respectively. Again these premiums are not large enough to explain the difference in announcement returns.

[18] Portfolios were composed of 22, 39, 23, and 54 offers respectively. Average offer premiums for these portfolios were 30 percent, 28 percent, 25 percent, and 20 percent respectively.

Inter-Security Class Wealth Transfer Hypothesis

To analyze the announcement period rate of return of the firms' NYSE and ASE listed and actively traded preferred stock and long-term debt, first separate these issues into convertible and nonconvertible securities.[19] Following this procedure Dann [4] finds for his sample that firms' convertible preferred stock and convertible debt, on average, exhibit positive returns of 3.7 percent and 3.2 percent, respectively, while the firms' nonconvertible preferred stock and nonconvertible debt, on average, exhibit relatively small returns of .9 percent and 0 percent, respectively.[20] However, if we extend the announcement period to encompass days −4 and through −1, which show evidence of insider trading, the previous results are altered somewhat. The firms' convertible preferred stock and convertible debt have average returns of 5.2 percent and 3.0 percent, respectively, while the nonconvertible preferred stock and nonconvertible debt have average returns of −1.5 percent and −.9 percent respectively.[21] This is consistent with earlier findings for a similar leverage change announcement reported in Masulis [8]. Given the magnitude of the stock price increase which is in part due to an increase in firm value, (based on the evidence supportive of H2), it follows that there should be a positive impact on the firm's risky securities, including its nonconvertible debt and preferred stock. Consequently, even the observation of no price impacts on these nonconvertible securities as found by Dann would be consistent with H3's prediction of a negative inter-security class wealth transfer impact on the nonconvertible securities which is being offset by a positive price impact due to a rise in firm value.

Stockholder Wealth Transfer Hypothesis

In the offer's final expiration period (the two days following the expiration of the offer), there is a negative two day mean return of −1.36 percent for the common stocks as predicted by H4. However, given that undersubscribed offers have low or negative post-announcement offer premiums, H4 would predict a

[19] Preferred stock prices and bid-ask quotes were taken from the *S&P, NYSE and ASE Stock Price Records* as well as from *The Wall Street Journal.* Transaction prices for NYSE and ASE listed bonds were also taken from *The Wall Street Journal.*

[20] Each security return is weighted by the reciprocal of the number of security issues per offer represented in the portfolio, so that each offer has equal weight in the portfolio. Dann's results are for the years 1963–1976 and are based on 41 nonconvertible debt issues representing 20 offers, 34 convertible debt issues representing 28 offers, seven nonconvertible preferred stock issues representing eight offers and 38 convertible preferred stock issues representing 25 offers. All securities must have at least one price in the ten trading days prior to the announcement date and in 10 trading days following the announcement date. The announcement period returns are adjusted for nontrading on days −1 or +1 by using the first available transaction price before or after the announcement date respectively, so as to be able to calculate the security's announcement period return in these cases.

[21] These latter results are computed without interest accrual. For our offer sample, there are 37 and 9 actively traded nonconvertible debt and preferred stock issues representing 24 and 9 offers respectively. While there are 39 and 39 actively traded convertible preferred stock and debt issues, representing 29 and 31 offers respectively. All securities must have at least one price in the trading period −10 to −5 and at least one price in the trading period +1 to +10.

much smaller negative expiration period return for these stocks.[22] After separating these expiration period returns by type of offer, we found an insignificant two day return of .24 percent for the stocks of under- or fully subscribed issues, while we found a negative return of 2.54 percent for the stocks of oversubscribed offers, as shown in Table 2. Further, in about half the cases of oversubscription, firms purchased all shares tendered even though they had committed themselves to purchase considerably fewer shares. As a result, there is a positive secondary announcement effect predicted by H1–H3 for this sample of returns which should offset at least part of the negative effect predicted by H4. Separating expiration period returns into these two samples, as shown in columns two and three, we observe that only the offers oversubscribed with pro rata purchase experience a negative 6.5 percent mean rate of return. The *t* statistic for the significance of the difference between the expiration period mean return and the post offer 39-day comparison period mean daily return is 8.61, which is consistent with the prediction of the stockholder wealth transfer hypothesis.[23] The expiration period return for the oversubscribed offers with full acceptance of shares is 1.1 percent, which is consistent with a positive secondary announcement effect. The *t* statistic for the difference between mean daily returns of the expiration and comparison periods of 1.81 is significant at the five percent level. Note that there is a run of negative returns prior to the final expiration date for both samples of oversubscribed offers. Hypothesis H4 predicts that, with the repurchase of shares, the percentage of shares being sought will fall while simultaneously an "ex-dividend" effect should be experienced by the nontendering shareholders. This negative effect for nontendering stockholders is spread over the extension period (defined as the period between the initial and final expiration dates), the period over which shares can continually be repurchased. The extension period return for the offers oversubscribed with pro rata repurchase is negative and equal to −2.4 percent as predicted by H4.[24]

Additional Evidence on Hypotheses H1–H4

Examining offer period returns (defined as the last business day preceding the initial offer announcement to the first business day following the final expiration), we find that over one third of these *offer period* returns of the sample of oversubscribed offers with pro rata repurchase are zero or negative as predicted

[22] Note that when there is not full subscription, the positive corporate tax, personal tax and inter-security class wealth transfer effects on the stock will be smaller. In the case of very low subscriptions, these effects should be negligible. Furthermore, no negative stockholder wealth transfers occur without a tender offer premium.

[23] Since the 40 business days preceding the expiration date contain the large positive offer announcement effects, use of these daily returns in the comparison period will induce a substantial upward bias to the "normal" daily return represented by the comparison period mean daily return. Therefore, only the 40 days following the offer expiration period were included in this comparison period.

[24] For the oversubscribed offers with full acceptance, the predicted negative effect can be offset by a positive secondary announcement effect which can occur at the end of the extension period. Not surprisingly, the extension period return for this sample is a positive 2.5 percent. One puzzling result is the run of negative returns following the final expiration date for both oversubscribed offer samples.

Table 2

Common Stock Rates of Return on Offer Expiration

	All Under and Fully Subscribed Offers		Over Subscribed Offers All Shares Purchased		Over Subscribed Offers Pro Rata Repurchase	
	Sample Size = 82		Sample Size = 60		Sample Size = 57	
Event Day	Portfolio Daily Returns (%)	Percentage of Stock Returns > 0	Portfolio Daily Returns (%)	Percentage of Stock Returns > 0	Portfolio Daily Returns (%)	Percentage of Stock Returns > 0
−20	2.21	43.	1.36	37.	0.65	32.
−19	0.85	43.	0.36	32.	0.05	35.
−18	2.11	41.	0.70	32.	0.52	35.
−17	0.80	39.	1.62	48.	0.98	48.
−16	0.22	26.	1.20	35.	1.90	41.
−15	0.64	37.	1.69	42.	0.70	40.
−14	0.21	34.	1.24	46.	0.94	40.
−13	0.08	26.	0.58	36.	0.25	35.
−12	0.62	33.	2.49	47.	0.47	39.
−11	0.56	32.	1.10	37.	0.37	39.
−10	0.18	26.	0.68	42.	0.17	33.
−9	0.29	33.	−0.08	25.	0.25	38.
−8	0.46	43.	−0.09	27.	−0.80	25.
−7	−0.10	30.	0.63	35.	0.21	33.
−6	0.49	46.	−0.31	22.	−0.16	33.
−5	−0.24	26.	−0.33	20.	−0.72	19.
−4	0.07	27.	−0.29	27.	−0.26	39.
−3	0.17	38.	−1.10	28.	0.29	35.
−2	0.03	32.	0.08	23.	−0.34	34.
−1	−0.06	27.	0.22	45.	−0.28	28.
0	−0.26	37.	0.37	40.	−5.48	13.
1	0.50	44.	0.69	40.	−0.82	25.

2	−0.06	27.	−0.42	33.	−0.80	32.
3	0.03	40.	−0.30	37.	0.01	40.
4	−0.77	31.	−0.20	37.	−0.26	32.
5	−0.39	34.	−0.67	23.	−0.16	37.
6	0.16	36.	−0.79	27.	0.10	40.
7	−0.41	27.	0.48	36.	0.08	30.
8	−0.46	30.	0.00	27.	−0.44	21.
9	−0.22	28.	0.34	31.	−0.46	39.
10	−0.28	34.	−0.30	34.	0.27	40.
11	−0.05	33.	0.11	31.	−0.34	37.
12	0.16	28.	0.45	50.	0.28	44.
13	0.42	39.	−0.40	38.	0.02	33.
14	−0.41	27.	0.94	43.	0.11	37.
15	−0.05	37.	0.12	26.	−0.05	30.
16	0.49	41.	0.34	34.	0.42	49.
17	−0.65	26.	0.42	43.	−0.04	40.
18	−0.05	42.	0.57	40.	0.13	37.
19	−0.67	28.	0.27	28.	0.09	35.
20	−0.15	24.	−0.39	34.	0.44	44.

Comparison Period: Portfolio Mean Daily Return	= .18% (.56%)	Comparison Period: Portfolio Mean Daily Return	= .33% (.70%)	Comparison Period: Portfolio Mean Daily Return	= .17% (.47%)
Mean Percentage of Stock Daily Returns > 0	= 34.14% (6.03%)	Mean Percentage of Stock Daily Returns > 0	= 34.33% (7.03%)	Mean Percentage of Stock Daily Returns > 0	= 36.45% (6.06%)
Pre-Expiration Period: Portfolio Mean Daily Return	= .44% (.64%)	Pre-Expiration Period: Portfolio Mean Daily Return	= .66% (.78%)	Pre-Expiration Period: Portfolio Mean Daily Return	= .32% (.57%)
Post-Expiration Period: Portfolio Mean Daily Return	= −.08% (.30%)	Post-Expiration Period: Portfolio Mean Daily Return	= −.01% (.42%)	Post-Expiration Period: Portfolio Mean Daily Return	= .03% (.32%)

NOTE: Standard deviations are in parenthesis. Also only ± 20 trading days are shown of the sample of ± 40 trading days. The extended table can be obtained from the author.

by H4 but none of the other hypotheses.[25] Significantly, the market rates of return in these offer periods are either not negative or not large enough to be a likely explanation for most of the observed negative offer period returns. If the negative impact of H4 is to be empirically observable for some offers, the predicted positive effects of hypotheses H1–H3 should, on average, be small for this sample. As a partial test of this prediction, we compared the average size of the predictive variables for hypotheses H1–H3 for this sample and for the overall sample of 199 offers. Beginning with the personal tax effect, the nonpositive offer period return sample exhibited a relatively low percentage of shares sought to shares outstanding of 10 percent, compared to 16 percent for the overall sample as predicted by H1. Looking at debt financing, the oversubscribed offers with nonpositive offer period returns exhibit a relatively low 27 percent of offers having at least some debt financing in comparison to the overall sample's 37 percent as predicted by H2. Comparing the face value of long-term nonconvertible debt and involuntary liquidation value of the nonconvertible preferred stock to firm market value ratios of the two samples, we find that the nonpositive offer period return sample has only a .157 value, while the overall sample has a larger value of .223, which is consistent with H3. This evidence indicates that while most tender offers in our sample experienced significant positive personal tax, corporate tax and inter-security class wealth transfer effects, for the nonpositive offer period sample these positive effects are small and not likely to fully offset the negative price impact of hypothesis H4.[26]

Summary

Several findings are particularly noteworthy. On average, announcements of tender offers are associated with a dramatic 17 percent two day return for common stocks. Second, while the firms' convertible securities also mirror the stocks' price rise, the nonconvertible debt and preferred stock either experience price declines or are unaffected. Third, at offer expiration only stocks of oversubscribed offers with pro rata repurchase, on average, decline in price. Further, of this group, over one third exhibit a post-offer price lower than the pre-announce-

[25] It should be noted that with two exceptions, all the other offers in the overall sample exhibited positive offer period returns, where we can interpret a positive offer period return as a permanent price increase associated with a tender offer.

[26] The sample of undersubscribed offers deserves further mention because of an interesting finding which was uncovered. While 21 percent of the undersubscribed offers exhibited market prices which were always below the tender offer prices, at the same time these stocks experienced significant and sustained secondary market trading over the period. How is selling stock at the lower secondary market price consistent with rational behavior? One explanation which is consistent with rationality and the stockholder wealth transfer hypothesis is that these secondary market sales are by shareholders who are excluded from the offer or fear that they may fall under Section 302 of the U.S. Tax Code if they tender their shares to the firm. For these stockholders, the tender offer price is not really attainable, but the secondary market price is attainable. Given that almost no tender offers found were cancelled and only 25 percent of tendered shares are repurchased pro rata, it is implausible to conclude that this phenomenon can alternatively be explained by investors not expecting to be able to sell their shares at the tender offer price.

ment price. These findings appear to be, in part, caused by (1) marginal personal tax advantages of converting dividends into gains, (2) corporate tax benefits of financing stock repurchases with debt, (3) inter-security class wealth transfers and (4) wealth transfers between tendering and nontendering stockholders.

APPENDIX

Stockholder Wealth Transfer Hypothesis

Definitions:

N_O = pre-offer of number of shares outstanding
N_A = number of shares sought in offer
N_T = number of shares tendered
N_E = number of shares purchased
$\hat{\alpha} = N_A/N_O$
P_O = pre-announcement stock price
P_A = post-announcement stock price
P_T = tender offer price
P_E = post-offer expiration stock price

Generally, for a tender offer to be successful, there must be a tender offer premium:

$$P_T > P_O \tag{1}$$

When a stockholder tenders shares, he expects to receive $\alpha N_T P_T$ in cash from the firm for the α percent of shares tendered which are purchased pro rata plus $(1 - \alpha) N_T P_E$, which is the post-offer market value of the shares not repurchased. Consequently, for secondary market trading to exist in the offer period, potential sellers of stock must be indifferent between selling all these shares at the current (post-announcement) market price and tendering their shares to the firm and then, at the expiration of the offer, selling unpurchased shares in the secondary market at the post-offer market value. (Assuming a perfect capital market with unlimited short selling, riskless arbitrage will insure this indifference condition.) Consequently, we obtain the relationship

$$P_A = \alpha P_T + (1 - \alpha) P_E \tag{2}$$

where, for simplicity, we assume that there is no lag between tendering and repurchase. This equation states that the post-announcement price is a weighted average of the tender offer price and the post-offer market price.

Assuming a pure equity firm where no corporate or personal taxes exist (so that the positive price impacts of H1–H3 are predicted to be zero) and assuming no release of new information about the value of the firm at the time of the tender offer (no signalling effect), then at the expiration of the offer, there should be a cash outflow from the firm of $P_T N_E$, so that the post-offer value of the firm, and thus the post-offer market value of the stock, is

$$P_E(N_O - N_E) = P_O N_O - P_T N_E$$

Rearranging this equation yields

$$P_E = P_O - (P_T - P_O)\left(\frac{\tilde{\alpha}}{1-\tilde{\alpha}}\right) < P_O \quad \text{where} \quad \tilde{\alpha} = N_E/N_O \tag{3}$$

which states that the stock's post-offer market price will be below its pre-announcement market price by the per share cash payment to stockholders (based on the post-offer number of shares). Using (3) to substitute for P_E in (2), we obtain

$$P_A = \alpha P_T + (1-\alpha)\left[P_O - (P_T - P_O)\left(\frac{\tilde{\alpha}}{1-\tilde{\alpha}}\right)\right]$$

which, on combining like terms yields,

$$P_A = \left[1 - \left(\frac{1-\alpha}{1-\tilde{\alpha}}\right)\right] P_T + \left(\frac{1-\alpha}{1-\tilde{\alpha}}\right) P_O \tag{4}$$

which states that the post-announcement stock price is a weighted average of the tender offer price and the *pre-announcement* stock price.

If a tender offer premium exists and all stockholders have homogeneous opportunities and expectations, then all shares should be tendered and each stockholder should be able to sell $\hat{\alpha}$ of his shares to the firm in a pro rata repurchase. In this case, the expected percentage of shares tendered which will be repurchased is $\alpha = \hat{\alpha}$. If the firm does not alter the number of shares purchased in the oversubscribed offer, then $N_P = N_A$, which implies that $\hat{\alpha} = \tilde{\alpha}$. Combining the above two results, we find that $\frac{1-\alpha}{1-\tilde{\alpha}}$ equals 1, so that $P_A = P_O$. This result implies that there will be no announcement date price effect on stock simply due to a tender offer premium since the post-offer price decline will be enough to exactly offset the gains realized in the repurchase. This is analogous to proofs of dividend irrelevance. It should be noted that without any tax, wealth transfer or signalling effects, a post-offer price drop is predicted, just as in the case of a cash dividend.[27]

When all stockholders do not tender their shares (which is almost always the case), the number of tendered shares which are repurchased rises above α.[28] Consequently,

$$\left(\frac{1-\alpha}{1-\tilde{\alpha}}\right) < 1$$

which from (4) implies that $P_A > P_O$ provided that a tender offer premium exists. As a result, there can be a tender offer announcement price effect due to stockholder wealth transfers from nontendering stockholders bearing the "ex-dividend" effect to tendering stockholders who are capturing the premium. This

[27] The dividend in this case is equal to the per share *premium*; without a premium, no price decline would be predicted.

[28] One atypical offsetting effect is the exercise of a relatively large number of convertibles or warrants with an immediate tendering of these newly issued shares.

result is similar to the effects on stockholders from a rights offering with no resale of rights, since the right to tender is nontransferable. Given that stockholders know the consequences of not tendering, why does it occur? Presumably, it occurs because under heterogeneous beliefs and/or opportunities such as differential personal tax treatment, it is rational for the stockholders with more optimistic beliefs or with higher costs or constraints, not to tender.

It could be argued that the development of this hypothesis ignores the fact that offers can be cancelled, and consequently the probability of having ones tendered shares repurchased is less than α, as is assumed in eq (2). However, the probability of an offer being cancelled is negligible given that only three of the 256 offers found were cancelled, as detailed in footnote 7. This point is further supported by the fact that of the final sample of 199 offers, only two were found to state that a minimum number of tendered shares was a prerequisite for the offer to be consummated.

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DISCUSSION

DAVID DOWNES*: The ideal discussant is one who is currently doing research on the same topic as the author of the paper to be discussed. I am not in that situation but I have benefitted from the working paper and comments of Theo Vermaelan at the University of British Columbia.

Professor Masulis' paper differs from the other two presented in this session in a very significant way. It is an empirical study of a corporate financial policy—the decision by a firm's management to tender for its own shares. We need more

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