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THE TEMPORAL BEHAVIOR OF RISK AND REQUIRED RETURN FOLLOWING ANNOUNCEMENTS OF LEVERAGE-CHANGING SECURITY TRANSACTIONS

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Abstract

Brown, Harlow and Tinic (BHT [8]) examine the relationship between risk and expected returns of common stock in the aftermath of large price movements. They find support for the hypothesis that when temporary changes in uncertainty follow seemingly major financial events, subsequent stock returns are positively correlated with the shift in return volatility. The also find support for the notion that ex ante stock returns incorporate a premium for increases in parameter (i.e. beta) uncertainty associated with these events. The price changes considered in the BHT study were determined by spikes exceeding 2.5% in the market-model residual series. The specific information events causing these spikes were unknown. This research extends that of BHT by examining the risk-return relationship following known information events: common stock sales, debt sales, and repurchases of common stock and debt. The results suggest that common stock sales, debt sales, and common stock repurchases are typically followed by a reduction in common stock return variability and that at least a part of this risk reduction is persistent. There is some evidence that the post-announcement cumulative prediction errors are positively related to changes in systematic risk and that the precision with which systematic risk is estimated is also priced by the market.

INTRODUCTION

The wealth effects of the announcement of security issues and repurchases are well known.[1] The stock price effects documented in the literature have been primarily associated with information conveyed to financial markets by the announcement of financing decisions by the firm. Recent research attempts to distinguish the nature of the information imparted by such announcements. Healy and Palepu [20], for example, provide evidence that seasoned equity offerings impart information about the future risk of the firm, rather than future earnings. Herzel and Jain [21] and Bartov [3] document decreases in stock betas following stock repurchases, again suggesting that part of the information conveyed by announcements may be related to risk.

Stock offerings and repurchases affect a firm's leverage. Given the relationship between leverage and systematic risk provided by Hamada [18], events affecting capital structure can be expected to induce risk changes. However, the impact of information events on risk is not limited to capital structure changes. Dividend and stock split announcements have also been associated with event-induced changes in variance.[2] Kale and Noe [23], Bar-Yosef and Huffman [4], and Eades [14] argue that dividend announcements may convey information regarding the riskiness of the firm's cash flows resulting in a valuation effect. As of yet, no generally accepted explanation has been provided for the announcement effects of stock splits and reverse splits.[3]

Several studies explore the relationship between event-induced variance and subsequent security returns. Brown, Harlow, and Tinic (BHT [7]), for example, find evidence of increased variance in returns following both favorable and unfavorable information surprises. The authors show that failure to account for changing risk can produce predictably biased patterns of returns following the event. BHT [8] extend their analysis by also exploring events leading to reduced return volatility, acknowledging that not all information events increase investor uncertainty. It is possible that certain information events actually reduce uncertainty by imparting "high quality" information to the market. In an efficient market dominated by risk-averse investors, such events would be met by a decline in both risk and expected return. Their results suggest that post-event abnormal returns can be explained by changes in

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systematic risk and the uncertainty associated with the level of systematic risk. The BHT [8] study of the influence of event-induced variance on post-event returns considers major stock price changes of unknown origin rather than known information announcements. As a result, it is unclear for what types of informational exchanges changes in risk are likely to occur, and how the returns following such announcements may be influenced by the change in return volatility.

The purpose of this study is to explore risk and return following announcements of financing and repurchase decisions using the methodology of BHT [8]. Two leverage-increasing events (debt issues and common stock repurchases) and two leverage-decreasing events (common stock issues and debt repurchases) are considered. Hamada (1972) shows that equity betas are positively related to leverage, and thus provides a theoretical basis for expecting systematic risk changes when securities are issued or repurchased. However, the volatility of stock returns may also be affected by announcements of such decisions. The results of this research will provide evidence of event-induced risk changes for capital structure decisions and guidance for the choice of methodology in estimating the wealth effect of such events.

DEFINITION OF EVENTS AND DATA

The initial population of firms considered for this study is the group of firms with return records in the Center for Research on Security Prices (CRSP) NYSE/AMEX Daily Return File or the CRSP NASD Daily Return File for the ten-year period January 1, 1979 through December 31, 1988. From this initial population, 500 firms were randomly selected. The resultant initial group consists of 199 OTC firms and 301 firms listed on the American Stock Exchange or the New York Stock Exchange.

For each firm in the initial sample, dates for the announcement of common stock and debt issues and repurchases were obtained from the *Wall Street Journal Index*. For a firm to be retained in the sample, the following restrictions apply:

1. Public announcements made by the firm must appear in the *Wall Street Journal* and a definitive announcement date must be ascertained.
2. A firm must have sufficient return data surrounding the events under consideration. Specifically, the firm's stock must have traded for 201 (trading) days immediately prior to and 260 days immediately following the event under study.
3. To isolate event-induced changes in volatility, the sample was further restricted by eliminating those announcements which were followed by other firm-specific announcements on the interval (1,60).

To ensure that the price effect of a particular announcement is captured, the event period for a given announcement is defined as the date the announcement appears in the *Wall Street Journal* and the preceding day. The sample consists of the announcements of 204 common stock sales, 176 common stock repurchases, 302 debt sales, and 54 debt repurchases.

To provide results for security issues and repurchases that can be compared to the events examined by BHT [8], their methodology is adopted here with some modification. BHT define their event days as those on which they find an abnormal return in the market-model residual series exceeding 2.5%. The actual event, if any, generating the spike in the return series is unknown. In this study the the sign of the abnormal return generated by the leverage-changing announcement is used as the indicator for an event and no restriction is placed on the size of the abnormal return.

The magnitude of the wealth effect in previous studies of the four leverage-changing events considered in this study has varied considerably.[4] Debt issue announcements in particular have been associated with very small stock price effects. Since the event causing the observed abnormal returns is known and *a priori* is expected to have an impact on stock price, the methodology deviates from that of BHT [8] by keeping those events which generate non-zero abnormal returns. The event-induced abnormal returns for firm j on day t (the u_{jt}) are defined by:

Equation 1

$$u_{jt} = R_{jt} - (a_j + b_j R_{mt})$$

for t=-1,0, where (R_{jt}, and R_{mt}) are respectively the day t returns on security j and the CRSP equally-weighted index,

and (a_j, b_j) are estimates of the market model parameters. The event-period abnormal return for firm j, U_j, is defined as:

Equation 2

$$U_j = u_{j,-1} + u_{j,0}$$

The abnormal returns in Equation 1 were calculated by estimating the vector of regression coefficients over the 200-day interval immediately preceding the two-day event period. The prediction errors for days -1 and 0 were then summed to determine the event-period abnormal defined in Equation 2. Events are defined as either being "positive" or "negative" according the sign of U_j. The final sample of announcements consists of 408 positive and 328 negative events.

DEFINITION OF POST-EVENT RISK CHANGES

The positive and negative announcements defined by the sign of the U_j in (2) are further categorized as risk-increasing, risk-decreasing, or risk-neutral based on the ratio of a post-event return variance to pre-event return variance. Variance is used as the measure of risk because it captures both changes in systematic risk and changes in parameter uncertainty regarding systematic risk.[5] The variance ratio for firm j is calculated as:

Equation 3

$$VR_j = \frac{\sigma^2_{j,+t}}{\sigma^2_{j,-t}}$$

where +t refers to the sixty-days immediately following the event period (days +1 to +60), and -t refers to the sixty-days immediately preceding the event period (days -60 to -1). If VR_j is greater than 1.05, the event is designated a variance increase and if VR_j is less than .95 the event is designated a variance decrease; if $0.95<VR_j<1.05$, the event is termed risk neutral.[6] Of the total 736 leverage changing announcements, 27% are designated as risk increases and 73% are designated risk decreases; none were risk neutral. By contrast, the BHT [8] sample consisted of 54% risk-increasing events, 38% risk-decreasing events, and 8% risk neutral. This sample of leverage-changing announcements thus exhibits a considerably greater incidence of risk reduction.

TABLE 1
Distribution of Events by Type and Variance Change

	Positive Events		Negative Events		
	Risk Increase	**Risk Decrease**	**Risk Increase**	**Risk Decrease**	**Total**
Stock Sale	14	64	24	102	204
Stock Repurchase	24	100	12	40	176
Debt Sale	94	86	28	94	302
Debt Repurchase	4	22	2	26	54
Total	136	272	66	262	736

Table 1 provides the distribution of events by type of event, sign, and risk group. Consistent with previous studies, the majority of the leverage-reducing announcements (stock sales and debt repurchases) are negative events, while the majority of the leverage-increasing announcements (stock repurchases and debt sales) are positive events. With the exception of debt sales which generated a positive abnormal return, all subcategories of announcements result in more risk-decreasing than risk-increasing events.

Further analysis of post-event changes in risk compares the cross-sectional variances for the risk-increasing and risk-decreasing groups within the sub-samples of positive and negative events. The cross-sectional return variance is calculated as:

Equation 4

$$\sigma_t^2 = \frac{\sum_j (R_{jsrt} - E(R_{srt}))^2}{N}$$

The subscript s and r denote the sign and risk-change groups, respectively, and N is the number of events in each subgroup. The estimation periods for these variances are isolated from the event period by using returns from the intervals (-60,-5) and (+5,+60).

Table 2 reports the pre-event and post-event cross-sectional variances. For stock sales and repurchases (shown in panels A and B), the variances of the pre- and post-event returns differ significantly for the risk-increase and the risk-decrease groups at the five-percent level of significance. For debt sales (shown in panel C), a significant difference in the pre- and post-event variance is found for all but the positive, risk-decreasing events. Debt repurchases do not appear to have any significant effect on return variance. However, the small sample sizes may preclude any meaningful interpretation.

TEMPORAL BEHAVIOR OF STOCK RETURNS

To examine whether risk changes following financing and repurchase announcements attenuate to pre-event levels, risk changes are examined for two post-event periods: +t1 (now defined as days +1 to +30) and period +t2 (now defined as days +31 to +60). To investigate the temporal behavior of changes in post-event return variance, two variance ratios are calculated as follows:

Equation 5

$$VR1_j = \frac{\sigma_{j,+t1}^2}{\sigma_{j,-t}^2} \quad \text{and} \quad VR2_j \frac{\sigma_{j,+t2}^2}{\sigma_{j,+t1}^2}$$

The period denoted -t refers as before to the interval (-60,-1). $VR1_j$ is a measure of the *immediate* change in return variance of return following the jth event, and is calculated as the ratio of the return variance over the first 30-day post-event period to the original pre-event variance. *Subsequent* changes in risk during the post-event period are measured by $VR2_j$ which compares the return variances over the intervals (+1,+30) and (+31,+60). The values of $VR2_j$ are classified as increases ($VR2_j$>1) or decreases ($VR2_j$<1). Following BHT, these variance ratios allow us to categorize events as those where risk steadily increased ($VR1_j$ >1.05, $VR2_j$ >1); steadily decreased ($VR1_j$<0.95, $VR2_j$<1); increased initially, then decreased ($VR1_j$>1.05, $VR2_j$<1); and decreased initially, then increased ($VR1_j$<0.95, $VR2_j$>1). For stock sales, this classification scheme produced subgroups of 22, 44, 54, and 84 observations, respectively. For stock repurchases, the subgroups contained 38, 32, 42, and 64 observations, respectively. For debt sales, the corresponding groups included 32, 38, 74, and 92 observations. The final groups, those for debt repurchases, contained respectively 14, 18, 2, and 20. For each announcement type, the variance pattern of a decline in return variance followed by an increase in return variance occurred more often than the other patterns.

To examine whether post-event variance reverts to the pre-event levels, the following regression was estimated:

Equation 6

$$VR2_j \times VR1_j = a_0 + a_1 VR1_j + e_j$$

If the change in variance attenuates, the intercept and slope coefficient are expected to be positive and significantly different from zero, but less than one.

TABLE 2
Changes in Mean Cross Sectional Variance
Pre-event vs. Post-event

Panel A: Stock Sale

	Type of Event			
	Positive		Negative	
	Risk Increase (N=14)	Risk Decrease (N=64)	Risk Increase (N=24)	Risk Decrease (N=102)
Pre-event[a]	0.000333	0.000456	0.000422	0.000606
Post-event[b]	0.000668	0.000294	0.001210	0.000490
p-value[c]	0.032	0.006	0.049	0.045

Panel B: Stock Repurchase

	Type of Event			
	Positive		Negative	
	Risk Increase (N=24)	Risk Decrease (N=100)	Risk Increase (N=12)	Risk Decrease (N=40)
Pre-event	0.00034	0.00059	0.000517	0.000390
Post-event	0.00102	0.000414	0.001090	0.000260
p-value	0.0001	0.0001	0.049	0.025

Panel C: Debt Sale

	Type of Event			
	Positive		Negative	
	Risk Increase (N=28)	Risk Decrease (N=86)	Risk Increase (N=28)	Risk Decrease (N=94)
Pre-event[a]	0.000259	0.000529	0.000296	0.000543
Post-event[b]	0.000606	0.000413	0.000635	0.000349
p-value[c]	0.015	0.243	0.008	0.002

Panel D: Debt Repurchase

	Type of Event			
	Positive		Negative	
	Risk Increase (N=4)	Risk Decrease (N=22)	Risk Increase (N=2)	Risk Decrease (N=26)
Pre-event	0.000273	0.000531	0.000411	0.000368
Post-event	0.000516	0.000357	0.000991	0.000304
p-value	0.132	0.132	N/A	0.556

a. The number refers to the mean cross-sectional variance in the pre-event period (-60,-5).
b. The number refers to the mean cross-sectional variance in the post-event period (5,60).
c. The p-value corresponds to the T-statistic for the difference in the mean cross-sectional variance for the pre-event and post-event periods.

TABLE 3
Regression Results
Dependent Variable: $VR2_j$*$VR1_j$

	Independent Variables		
Sample	**Intercept**	**VR1**	**Adj. R^2**
Stock Sale (N=202)	0.6645[a] (7.209)	0.3596[a] (6.995)	0.1951
Stock Repurchase (N=175)	0.7081[a] (3.577)	0.5593[a] (4.800)	0.1169
Debt Sale (N=235)	0.9239[a] (10.509)	0.1796[a] (6.995)	0.7266
Debt Repurchase (N=53)	0.9421[a] (5.357)	0.5593 (1.360)	0.1796

T-statistics appear in parentheses.
a. Denotes significance at the 0.01 percent level.

Table 3 provides the results of the regression analysis. The adjusted R^2 ranges from 0.1169 to 0.7266 for the four regressions. The regression coefficients are statistically positive, and less than one for stock sales, stock repurchases, and debt repurchases, indicating that the risk in the post event period (+31,+60) reverts *towards* its level in the pre-event period (-60,-1), though some part of the risk change is maintained. This suggests part of the change in risk following a leverage change announcement contains both transitory and permanent components.

The risk changes for the two post-event periods are examined further by comparing the change in variance for each of the post-event periods relative to the pre-event level. Table 4 provides the estimates of the mean change in variance for the two post-event intervals. With the exception of stock repurchases that have a negative price effect, the two post-event estimation periods are not statistically different from one another. This result implies that the volatility shift that occurs just after the event (+1,+30) remains in the period after the event (+31,+60), and the change in volatility is not a temporary one. It is interesting to note that the negative sign group for stock sales has a different sign for the variance change for the two sub-periods, although the difference is not statistically significant.

PRICING OF RISK CHANGES

The information above suggests that risk changes following announcements of security sales or repurchases. The change in variance may reflect changes in diversifiable risk that are not priced by financial markets. The impact of changes in systematic risk and uncertainty about the *level* of systematic risk on expected returns following security issuance and repurchase announcements is examined in this section.

Returns following the announcement are captured by the cumulative prediction error (CPE) for the three intervals ((+1,+30),(+31,+60), and (+1,+60)). The cumulative prediction error for firm j is calculated as:

Equation 7

$$CPE_j = \sum_{t-1 \text{ or } 31}^{30 \text{ or } 60} U_{jt}$$

To examine the influence of changes in systematic risk and uncertainty about the level of systematic risk, the following regression model is estimated on each of the three intervals:

Equation 8

$$CPE_j = \theta_0 + \theta_1 D_j + \theta_2 \Delta\beta_j + \theta_3 \Delta SE(\beta_j) + \theta_4 (D_j \times \Delta\beta_j) + \theta_5 (D_j \times \Delta SE(\beta_j)) + \varepsilon_j$$

TABLE 4
Temporal Return Volatility During the Post-event Period

Panel A: Stock Sale

Mean of Variance Change for the Estimation Periods:	Type of Event	
	Positive (N=73)	Negative (N=126)
(1,30) to (-60,-1)	-0.0000018	0.0001350
(31,60) to (-60,-1)	-0.0000660	-0.0000290
p-value[a]	0.307	0.154

Panel B: Stock Repurchase

Mean of Variance Change for the Estimation Periods:	Type of Event	
	Positive (N=124)	Negative (N=52)
(1,30) to (-60,-1)	-0.0000249	-0.0001750
(31,60) to (-60,-1)	-0.0000976	0.0000642
p-value	0.363	0.050

Panel C: Debt Sale

Mean of Variance Change for the Estimation Periods:	Type of Event	
	Positive (N=114)	Negative (N=122)
(1,30) to (-60,-1)	-0.0000873	-0.0000776
(31,60) to (-60,-1)	-0.0000865	-0.0000705
p-value[a]	0.9945	0.8942

Panel D: Debt Repurchase

Mean of Variance Change for the Estimation Periods:	Type of Event	
	Positive (N=26)	Negative (N=28)
(1,30) to (-60,-1)	-0.0001046	-0.0000779
(31,60) to (-60,-1)	-0.0002087	-0.0000343
p-value	0.597	0.639

a. The p-value corresponds to the T-statistic for the difference in mean change in variance for the two intervals.

where the change in systematic risk is captured by the difference in market-model regression coefficients between the estimation period (day +61 to day +260) and the interval in question ($\Delta\beta_j$); and the change in the uncertainty of beta is captured by the difference between the standard error of the estimated beta coefficient in the post-event period and that from the estimation period ($\Delta SE(\beta_j)$). For comparison purposes, the estimation-period standard errors are calculated using a period of thirty (+61 to +90) or sixty days (+61 to +120) to correspond to the interval of the CPE. D_j is an indicator variable that takes a value of one for positive events and zero, otherwise. The indicator variable is used to distinguish between favorable and unfavorable events in regards to the influence of risk factors on expected returns.

TABLE 5
The Relationship Between Cumulative Residuals, Risk Changes, and Parameter Uncertainty in the Post-event Period
Dependent Variable: CPE_j

	Independent Variables						
Sample	**Intercept**	D_j	$\Delta\beta_j$	$\Delta SE(\beta_j)$	$D_j \times \Delta\beta_j$	$D_j \times \Delta SE(\beta_j)$	**Adj. R^2**
Panel A: **Stock sale**							
Day +1 to +60	0.009 (0.678)	0.032 (1.448)	0.057[b] (2.578)	0.162[b] (2.254)	-0.062 (-1.632)	-0.213[b] (-1.982)	0.076
Day +1 to +30	0.020[b] (2.001)	0.013 (0.789)	0.003 (0.241)	0.056[b] (2.020)	0.032 (1.430)	-0.138[a] (-2.772)	0.030
Day +31 to +60	-0.020[a] (-2.489)	0.026[b] (1.977)	0.021[b] (2.063)	0.112[a] (4.253)	-0.052[b] (-2.482)	-0.072 (-1.733)	0.147
Panel B: **Stock repurchase**							
Day +1 to +60	0.000 (0.015)	0.025 (1.118)	-0.003 (-0.059)	-0.074 (-0.444)	-0.048 (-0.915)	0.139 (0.778)	0.021
Day +1 to +30	-0.006 (0.462)	0.020 (1.370)	0.071[a] (2.638)	-0.141[a] (-3.209)	-0.077[a] (-2.660)	0.159[a] (2.980)	0.005
Day +31 to 60	0.004 (0.334)	0.001 (0.091)	-0.003 (-0.156)	-0.107 (1.646)	-0.037 (-1.660)	0.071 (1.008)	0.080
Panel C: **Debt sale**							
Day +1 to +60	-0.031[b] (-2.361)	0.078[a] (4.167)	0.081[a] (3.419)	-0.188[a] (-2.626)	-0.019 (-0.519)	0.187 (1.640)	0.125
Day +1 to +30	-0.019[b] (-2.233)	0.023 (1.899)	-0.009 -0.798	-0.044[b] (-2.090)	-0.023 (-1.335)	0.160[a] (4.710)	0.108
Day +31 to +60	-0.006 (-0.657)	0.051[a] (3.773)	0.045[a] (3.753)	-0.090[a] (2.659)	0.037 (1.751)	0.053 (0.997)	0.193
Panel D: **Debt Repurchase**							
Day +1 to +60	0.003 (0.119)	0.003 (0.082)	-0.011 (-0.269)	0.040 (0.466)	0.022 (0.392)	0.279 (1.756)	0.027
Day +1 to +30	0.020 (1.329)	-0.005 (-0.230)	0.077[a] (3.839)	-0.007 (-0.123)	-0.045 (-1.549)	-0.036 (0.610)	0.213
Day +31 to +60	-0.103 (-0.862)	-0.014 (-0.649)	-0.030 (-1.139)	0.148[a] (4.747)	0.010 (0.261)	-0.082 (-1.264)	0.284

a. Denotes significance at the 0.01 percent level.
b. Denotes significance at the 0.05 percent level.

TABLE 5
The Relationship Between Cumulative Residuals, Risk Changes, and Parameter Uncertainty in the Postevent Period (Cont'd)

Sample	Independent Variables			
	Intercept	$\Delta\beta_j$	$\Delta SE(\beta_j)$	Adj. R^2
Panel A: **Stock Sale**				
Day +1 to +60	0.026[b] (2.385)	0.039[b] (2.139)	0.069 (1.259)	0.029
Day +1 to +30	0.027[a] (3.373)	0.013 (1.249)	0.011 (0.488)	0.004
Day +31 to +60	-0.006 (-0.956)	0.010 (1.035)	0.087[a] (4.150)	0.083
Panel B: **Stock Repurchase**				
Day +1 to +60	0.019 (1.930)	-0.046[b] (-2.575)	0.051 (0.857)	0.071
Day +1 to +30	0.009 (1.233)	0.015 (1.191)	-0.040 (-1.591)	0.005
Day +31 to 60	0.006 (0.798)	-0.032[a] (-3.443)	-0.040 (-1.647)	0.081
Panel C: **Debt Sale**				
Day +1 to +60	0.006 (0.630)	0.074[a] (3.925)	-0.127[b] (-2.194)	0.058
Day +1 to +30	-0.007 (-1.170)	-0.023[b] (-2.496)	0.019 (1.116)	0.020
Day +31 to +60	0.019[a] (2.710)	0.060[a] (5.969)	-0.083[a] (-3.104)	0.131
Panel D: **Debt Repurchase**				
Day +1 to +60	-0.005 (-0.328)	-0.000 (-0.010)	0.125 (1.812)	0.024
Day +1 to +30	0.017 (1.579)	0.057[a] (4.067)	0.005 (0.165)	0.216
Day +31 to +60	-0.020 (-1.930)	-0.023 (-1.223)	0.130[a] (4.806)	0.286

a. Denotes significance at the 0.01 percent level.
b. Denotes significance at the 0.05 percent level.

The results for the regression analysis are reported in Table 5. The adjusted R^2's range from 0.005 to 0.284 across the eight transaction groups. Across the four leverage-changing events, the adjusted R^2's are highest for the sub-period (+31,+60). Panel A provides the results for stock sale announcements. Looking at the dummy variable D_j, for the interval (+31, +60) there is a statistically significant difference between CPEs for the positive and negative events. The results suggest that changes in systematic risk (measured by $\Delta\beta_j$) positively influence the CPE for post-event interval (+31,+60), but this relationship is offset for positive events (as indicated by the sign of the coefficient for $D_j \times \Delta SE(\beta_j)$). Thus, for negative market reactions, increases (decreases) in systematic risk are

associated with more favorable (less unfavorable) abnormal returns. Increases in parameter uncertainty regarding beta have a favorable impact on the CPE for all three intervals for negative events, though again the relationship is offset for positive announcements in two of the three post-event intervals.

In the case of stock repurchases (Panel B), the sub-period (+1,+30) provides evidence that increases in systematic risk have a positive impact on the CPE for negative events, while uncertainty regarding the level of systematic risk has a negative impact for these events. As found with stock sales, these relationships are offset for positive events.

Panel C provides the results of the regression analysis for debt sales. For the sub-period (+31,+60) the positive event CPEs are significantly different from those of negative events. In this sub-period there is a positive relationship between the stock price effect of the announcement and the change in beta, and a negative relationship between the stock price effect of the announcement and estimation error for beta. These relationships are not significantly different for positive and negative events. For the sub-period (+1,+30) a change in parameter uncertainty has a negative stock price effect for negative events. During the full period (+1, +60) a significant difference in the CPEs for positive and negative events is detected. A change in parameter uncertainly has an unfavorable effect on the CPE, while a change in systematic risk has a favorable effect for the full post-announcement period.

Debt repurchases are examined in Panel D. There is evidence of a positive relationship between the change in beta and CPE for the period immediately following the announcement (+1,+30). For the later period (+31,+60), changes in parameter uncertainty have a positive effect on the stock price. These relationships are not affected by the sign of the CPE resulting from the announcement.

The results above provide only weak evidence for changes in systematic risk affecting required returns. While theoretical literature suggest that parameter uncertainty may affect security prices (Coles and Lowenstein (1988)), the evidence above suggests that the relationship differs across events. Although the relationship is positive for stock sales and debt repurchases (leverage reducing events), it is negative for debt sales and stock repurchases (leverage increasing events). This evidence implies the effect of parameter uncertainty on security prices varies across different types of wealth-altering announcements.

SUMMARY

In this study the temporal behavior of risk and expected return following leverage changes stemming from stock and debt transactions in financial markets is examined. Consistent with the findings of Brown, Harlow, and Tinic (BHT[8]) who studied market events of unknown origin, the results reported here indicate that announcements of the sale of common stock and debt, and the repurchase of common stock, are typically followed by a reduction in common stock return variability and that this reduction in total risk has both permanent and temporary components. There is also weak evidence that changes in systematic risk following announcements of leverage-altering security transactions affect subsequent required returns. Further, the precision with which systematic risk is measured is priced by the market, and its effect varies depending on the direction of change in leverage.

ENDNOTES

1. See, for example, Asquith and Mullins [1], Eckbo [15], Masulis and Korwar [27], and Mikkelson and Partch [28].

2. Regarding stock splits see Lamoureaux and Poon [24], Brennan and Copeland [5], and Peterson and Peterson [29]. Carroll and Sears [9], Dielman and Oppenheimer [13], and Rozeff [33] examine dividend announcements.

3. See Peterson and Peterson [29] p. 190-191.

4. Mikkelson and Partch [28] report average prediction errors report for common stock issues of -3.56% and for debt of -0.23%. Dann [12] reports abnormal returns of more than 14% for repurchases of common stock.

5. Coles and Lowenstein (1988) and Barry and Brown (1985) suggest that parameter uncertainty may affect security prices.

6. BHT also use this 5% difference is classifying variance changes into risk-increases and risk-decreases.

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