The Effect of Changes in Financial Leverage on the Relation Between Earnings and Stock Returns: Evidence from Korean Firms

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Abstract:

This study examines whether a firm's default risk as measured by its financial leverage affects the relationship between accounting earnings and stock returns, viz., the earnings response coefficient (ERC). From analytical results, we hypothesize that the ERC is a negative function of the firm's default risk. We test this hypothesis by comparing the ERC's between pre-change and post-change period, using a sample of Korean firms that experienced changes in their financial leverages through either the issue of new debt or the retirement of outstanding debt. The empirical results indicate that the ERC's have decreased for the issue of new debt, but increased for the retirement of outstanding debt from pre-change to post-change period. Furthermore, these shifts in the ERC's are statistically significant, even after controlling for the differences in the systematic risk and growth between pre-change and post-change period. Overall, our findings suggest that the default risk is an important factor affecting the ERC for the Korean firms.

1. Introduction:

This study addresses the issue of whether the risk of a firm's debt (default risk) affects the relationship between accounting earnings and stock returns. We investigate this issue by examining the effect of the changes in the firm's financial leverage on the coefficient (hereafter, earnings response coefficient: ERC, in short) relating earnings and stock returns. Specifically, we compare ERC's during the period prior to the financial leverage change (pre-change period) with those during the period subsequent to the change (post-change period). The types of financial leverage changes considered in this study are both the issue of new debt and the retirement of outstanding debt.

The determinant of cross-sectional and/or inter-temporal variations of the ERC has been investigated in quite a few previous studies (see Lee, Jin and Huh (2005) for a list of studies). The determinants of the ERC identified in these studies include the characteristics of the firm's earnings generating process, systematic risk of common stock, firm size, growth opportunity, cost structure, dividend payout ratio, audit opinion, industry, and interest rates (see Holtahusen and Watts 2001; Kothari 2001; Beaver 2002 for literature surveys).

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The purpose of this study is to extend this line of research by focusing on the firm's default risk as a determinant of the ERC. Several studies provide empirical evidence suggesting that the ERC is affected by the existence and the level of debt in the firm's capital structure (Dhaliwal, Lee and Fargher 1991), and the default risk measured by bond ratings (Dhaliwal and Reynolds 1994). Recently, Dimitrov and Jain (2006) provide evidence documenting a negative association between changes in financial leverage and contemporaneous stock returns. In this study, we hypothesize and empirically test a negative association between changes in financial leverage and ERC.

The remainder of this paper is organized as follows. In the next section, we outline the theoretical relationship between the firm's default risk and the ERC within the framework proposed by Dhaliwal and Reynolds (1988). Section three contains our research hypotheses, sample selection procedure, and research methodology. The empirical results are presented in section four. A summary of the results and some suggestions for future research appear in final section.

2. Default Risk and Earnings Response Coefficient:

Studies that have examined the relation between unexpected changes in accounting earnings and stock returns have, implicitly or explicitly, assume an equity valuation model. Two such models are the dividend/earnings capitalization model of Miller and Modigliani (1961) and the information variable model of Garman and Ohlson (1980). Either of these models underlies much of the extant literature on the ERC. Dhaliwal and Reynolds (1988) combine a firm valuation model with the option-pricing model (OPM) to identify the economic determinants of the ERC. Among other things, they demonstrate that the ERC is a negative function of the firm's default risk. In this section, we describe the essential feature of their theoretical results. Our derivation is somewhat different from theirs in terms of assumption about time-series properties of accounting earnings.[1] Howeve r, the implications of the final specification of the ERC are essentially equivalent.

To simplify the analysis, we assume that i) a firm has two types of financing: equity and debt; ii) cash flows to the firm and operating accounting earnings before interest are identical; and iii) expected rate of return for the firm is constant over time. Under these assumptions, the value of the firm at the beginning of the period t (V_{t-1}) is the present value of expected future operating earnings:

$$V_{t-1} = \sum_{s=1}^{\infty} \frac{E_{t-1}(X_{t-1+s})}{(1+K)^s}$$

,where E(.) is an expectation operator, X represents operating earnings, and K denotes the expected rate of return on the firm's total asset. Firm index i was suppressed for notational simplicity. In the context of capital asset pricing model (CAPM), K may be expressed as:

$$K = R_f + \beta_A[E(R_m) - R_f]$$

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[1]) Dhaliwal and Reynolds (1988) assume a random walk model as a process generating earnings, and hence the persistence coefficient (defined later) is omitted in characterizing the ERC. We incorporate the persistenee into their model by assuming a general specification of earnings generating process.

,where β is the systematic risk of the firm's total asset, R_f and R_m are the risk-free interest rate and rate of return on market portfolio, respectively. At the end of period t when actual earnings are realized, an unexpected change in the firm value (ΔV_t) associated with unexpected earnings (ΔX_t) can be expressed as follows:[2]

$$\frac{\Delta V_t}{V_{t-1}} = \frac{1}{V_{t-1}}[\Delta X_t + \sum_{s=1}^{\infty} \frac{\Delta E_t(X_{t+s})}{(1+K)^s}] \qquad (1)$$

,where ΔE_t (X_{t+s}) are the revisions in expected future earnings. We further assume that the firm's earnings generating process is described by a model such that ΔE_t (X_{t+s}) are related to ΔX_t according to

$$\Delta E_t(X_{t+s}) = \Theta \Delta X_t, s \geq 1$$

,where Θ represents the extent to which the current period's unexpected earnings affect the revisions in expectations of future earnings, usually referred to as 'persistence coefficient' or 'revision coefficient'. The sign and value of Θ will depend on the time-series properties of the firm's earnings. Substituting for ΔE_t (X_{t+s}) and K in equation (1) and rewriting, we get:

$$\frac{\Delta V_t}{V_{t-1}} = [1 + \frac{\Theta}{R_f + \beta_A\{E(R_m) - R_f\}}][\frac{\Delta X_t}{V_{t-1}}] \qquad (2)$$

The specification of the ERC in the extant literature may be viewed as special cases of the above equation. First, if the firm has no debt in its capital structure (all-equity firm), equation (2) is the exact relation we can get using an equity valuation model because the firm value in this case is simply the value of equity. Second, the extant studies differ on the characterization of the parameter Θ, depending on the assumptions about time-series process of earnings. For example, Kormendi and Lipe (1987) assume ARIMA (210) process while Easton and Zmijewski (1989) assume ARIMA (100) model.

Given the change in firm value associated with unexpected earnings as in equation (2), allocation of the incremental (or decremental) wealth between stockholders and bondholders will be determined by the risk of the firm's debt. Alternatively stated, unexpected change in earnings is not entirely reflected in the value of equity alone when the firm's debt is risky. To see this, first recognize that the value of equity (S) is the call option written on the value of the levered firm (V). From the OPM literature, it can be shown that (Copeland and Weston 1983, p.413)

$$\frac{\Delta S}{S} = \frac{\partial S}{\partial V}\frac{\Delta V}{V}\frac{V}{S}$$

This equation says that the change in equity value (ΔS) is related to the change in firm value (ΔV) by the weight $\partial S/\partial V$. Alternatively, $\partial S/\partial V$ may be viewed as the mechanism allocating ΔV to stockholders. Using the comparative static result, $\partial S/\partial V = N(Z)$, and substituting (2) into the above equation, we have

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[2]) Miller and Rock (1985) and Watts and Zimmerman (1986) have derived the same relationship by i) using a two-period model, and ii) assuming that earnings are generated by a moving average of order one and a random walk model, respectively.

$$\frac{\Delta S_t}{S_{t-1}} = N(Z)[1 + \frac{\Theta}{R_f + \beta_A\{E(R_m) - R_f\}}]\frac{\Delta X_t}{S_{t-1}} \quad (3)$$

N(.) is the standardized cumulative normal density function, and

$$Z = \frac{\ln(V/D) + (R_f + s^2)T}{\sqrt{s^2 T}}$$

,where D is the face value of debt, T is time to maturity of debt, and s^2 is the instantaneous variance of returns on firm value. It is obvious from equation (3) that the impacts of Θ, β_A, and N(Z) on the ERC (the bracketed term) are, ceteris paribus:

$$\frac{\partial ERC}{\partial \Theta} > 0, \frac{\partial ERC}{\partial \beta_A} < 0, \frac{\partial ERC}{\partial N(Z)} > 0$$

The first two results reveal that other factors being constant, the ERC is positively related to the persistence coefficient (Θ) and negatively to the systematic risk of the firm's total asset (β_A). Kormendi and Lipe (1987), Easton and Zmijewski (1989) and Collins and Kothari (1989), among others, provide empirical evidence consistent with these predictions. Of most interest in this study is the third comparative static result. As stated previously, N(Z) is the portion of the change in firm value being allocated to stockholders. We interpret N(Z) broadly as the probability that the firm will not go bankrupt. Alternatively, 1-N(Z) can be viewed as the firm's default risk. Note that for an all-equity firm, N(Z)=1, viz., it has no default risk. Hence, the third comparative static result indicates that the ERC is a negative function of the firm's default risk.

To see the intuition behind this 'default risk effect' on the ERC, consider a firm that has risky debt in its capital structure.[3] Assume that the risk of debt can be quantified by: N(Z)=0.7. For a $1.00 increase in firm value resulting from positive unexpected earnings, $0.70 will be allocated to stockholders. In case of negative unexpected earnings, stockholders will lose $0.70 while remaining $0.30 of $1.00 loss is born by bondholders. Now suppose the quality of debt has been downgraded such that N(Z) decreases to 0.4.[4] S tockholders will now gain (lose) $0.40 for $1.00 increase (decrease) in firm value from positive (negative) unexpected earnings. Relative to the previous case, a larger portion of the loss ($0.60) will be shared by bondholders. This illustrates that for a given amount of unexpected earnings, the stockholders of high (low) default risk firm will gain or lose less (more) than those of low default risk firm, suggesting a negative relation between the ERC and the default risk.

[3]) The same line of reasoning can be applied to the comparison of the ERC's across firms with different levels of default risk. Our example is to illustrate the impact of the change in default risk on the ERC for a given firm, which is essential feature of our hypothesis testing.

[4]) A number of factors may affect N(Z). These may include leverage, maturity of debt, return variability, and unexpected earnings. In the example illustrated, we are envisioning the situation where N(Z) remains the same for a while before and after its change.

3. Research Design:

3.1 Research Hypotheses

The maintained null hypothesis in this study is that the ERC is independent of the firm's financial leverage. To test this hypothesis, we examine whether there is any significant difference in the ERC's between periods prior to and subsequent to a financial leverage change. To the extent that financial leverage is an appropriate proxy for the default risk, the issue of new debt and the retirement of outstanding debt would have opposite effects on the ERC's. Formally, the following two hypotheses (in alternative form) are tested:

Hypothesis 1: The ERC is *smaller* for the period subsequent to a change in financial leverage than for the period prior to the change, *when new debt is issued.*

Hypothesis 2: The ERC is *larger* for the period subsequent to a change in financial Leverage than for the period prior to the change, *when outstanding debt is retired.*

3.2 Sample Selection

Our sample consists of Korean firms that have experienced changes in their financial leverage, through either the issue of new debt or the retirement of outstanding debt, during ten-year period from 1988 to 1997. To be included in the sample, the firm must satisfy the following criteria: (1) each firm had to experience a change in financial leverage (either the issue of new debt or the retirement of old debt) at least once over the study period; (2) each financial leverage change should not be immediately followed or preceded by another change within three year period; (3) sufficient accounting and market data (returns and stock prices) were available to calculate relevant variables for three year period before and after each financial leverage change; (4) each firm must have the same fiscal year end over the study period. The second requirement was imposed to avoid a potential 'information effect' of the changes in financial leverage on ERC's.[5] It should be noted that our approach is to compare the ERC' s across periods (pre -change ve rsus post -change), excluding the year in which financial leverage changes occurred.

The above selection criteria yielded a sample of 24 firms with financial leverage changes. Table 1 provides distribution of sample firms by calendar year and types of leverage changes. Several points are worth noting from Table 1. First, there is little clustering in particular years, with exceptions in 1988 that accounts for 5 (41.7%) of the retirement of old debt and in 1994 that has no case of leverage changes. Second, average amount for the retirement of outstanding debt is $4.7 million, but $27.1 million for the issue of new debt;

5) Changes in financial leverage can convey information to stockholders (Dimitrove and Jain 2006). Therefore, the ERC's at the years of change may be affected by the 'information effect' as well as the shift in the default risk associated with the financial leverage changes. If one year rather than three year restriction was applied, the number of firms in the sample would be increased by aboutthree times. However, these firms are susceptible to the potential 'information effect'. Considering this trade-off, we opted for the small but clean sample.

Third, the ratio of amount (issue or retirement) to total debt is 9.22% for the debt issue and 7.71% for the debt retirement. It is quite difficult to evaluate whether this ratio is significant enough to change the firm's default risk. If the magnitude of financial leverage changes in our sample were quite small, this would obviously work against finding any significant difference in the ERC's between pre-change and post-change period.

<Insert Table 1>

3.3. Methodology

We hypothesized that the ERC is affected by the firm's default risk as measured by the change in its financial leverage through either the issue of new debt or the retirement of outstanding debt. To test this hypothesis, we estimated the following regression model:[6]

$$RET_{it} = a + bUE_{it} + \varphi D_{it} * UE_{it} + e_{it} \quad (4)$$

where RET_{it} = stock returns for firm i in year t,
UE_{it} = unexpected earnings for firm i in year t,[7]
D_{it} = dummy variable which takes a value of one if year t for firm i is in the post-change period, and zero if year t is in the pre-change period.

Recall that the year t is in terms of event time not calendar time; that is, t=[-3,0,3]. The years in which financial leverage changes occurred (t=0) were excluded from the analysis to avoid potential 'information effect' of the changes on ERC's and to make comparisons symmetrical across periods. Above model was estimated separately for the issue of new debt and the retirement of outstanding debt. Empirical test for any significant difference in the ERC's between pre-change period and post-change period is equivalent to testing the significance of the estimated coefficient φ in the model (4). Thus, our hypotheses can be stated as:

Hypothesis 1: H_0: $\varphi = 0$, H_a: $\varphi < 0$ for i □ Issue of new debt
Hypothesis 2: H_0: $\varphi = 0$, H_a: $\varphi > 0$ for i □ Retirement of outstanding debt

4. Empirical Results:

4.1 Descriptive Statistics

Table 2 presents descriptive statistics for selected variables of interest: systematic risk of common stock (BETA)[8]; growth rate as measured by the ratio of market value to book value of equity (GROWTH); and financial leverage as measured by the ratio of total liabilities to book value of equity (LEVG). Median values of these variables are reported for

6) We also employed CAR (cumulative abnormal returns) as dependent variable. The results are essentially the same as reported except for low R-square. The use of RET is also in spirit of Easton, Harris and Ohlson (1992).
7) Unexpected earnings (UE) were determined by changes in actual earnings per share, and then deflated by stock price at the beginning of the fiscal period. To avoid the problem of extreme values, observations with |UE|>100% were excluded.
8) Systematic risk was estimated from the market model using returns data up to 60 months (at least 24 months) preceding the end of year.

each of the seven-year period beginning three year before the year in which financial leverage changes occurred. Also reported is Wilcoxon Z-statistics that test differences in these variables between pre-change and post-change period. The rational for selecting and comparing these particular variables over time is their association with ERC's. Easton and Zmijewski (1989), Collins and Kothari (1989) and Dhaliwal, Lee and Fargher (1991) provide empirical evidence indicating that BETA, GROWTH and LEVG are important determinants of the variation in ERC's.

Table 2 shows noticeable trends in some of the variables over time for the sample. For the firms of new debt issue, both BETA and LEVG exhibit increasing patterns, while GROWTH is decreasing. On the other hands, the firms of debt retirement appear to experience a decrease in GROWTH and LEVG, but a increase in BETA. However, z-statistics from the Wilcoxon signed-ranks tests indicate that the changes in BETA and LEVG are statistically insignificant, except GROWTH that is significant at less than 0.01 levels for both types of leverage changes.

<Insert Table 2>

4.2 Results of Testing Hypotheses

Table 3 presents the results of testing whether there is any significant shift in the ERC's from pre-change to post-change period when the firm experiences change in its financial leverage. We estimated equation (4) separately for the pre-change and post-change period, as well as for the entire period. The results are reported for two types of financial leverage changes, the issue of new debt (Panel A) and the retirement of outstanding debt (Panel B).

The estimation results are consistent with the theoretical prediction when financial leverage is changed through the issue of new debt. The ERC was 1.441 during the pre-change period, but 0.373 during the post-change period. This decrease in the ERC can be seen in the negative value of the regression coefficient φ, which is statistically significant (at $\alpha<0.10$). This result lends support to Hypothesis 1. For the retirement of outstanding debt, there was an increase in the ERC from pre-change (0.193) to post-change (0.535) period. Hence, the estimated coefficient φ has the expected sign (positive), which is consistent with the theoretical prediction. However, the coefficient is statistically insignificant, suggesting only a directional support to Hypothesis 2. Overall, these results support our maintained hypothesis that the ERC is a negative function of a firm's default risk associated with the financial leverage change.

<Insert Table 3>

4.3 Additional Analysis: Controlling for Risk and Growth

In the preceding two subsections, we find that the issue of new debt and the retirement of outstanding debt result in decrease and increase, respectively, in the ERC's. These results may be due to systematic differences between pre-change and post-change

period in the variables that affect the ERC's. The variables such as the systematic risk and growth have been shown to affect ERC's (e.g., Easton and Zmijewski 1989; Collins and Kothari 1989). In fact, the Wilcoxon tests reported in section four indicate that there is a significant difference in the growth variable between pre-change and post-change period. As an attempt to investigate this possibility, we estimated the following regression model:

$$RET_{it} = b_0 + b_1 UE_{it} + b_2 RISK_{it}*UE_{it} + b_3 GROW_{it}*UE_{it} + \varphi D_{it}*UE_{it} + e_{it}$$

where $RISK_{it}$ = 1 if the systematic risk of common stock (BETA) for firm i in year t is above sample median, and 0 if otherwise,

$GROW_{it}$= 1 if growth rate (GROWTH) for firm i in year t is above sample median, and 0 if otherwise.

The estimates of the above model are reported in Table 4. The estimate of the coefficient φ on D*UE for the issue of new debt is similar to earlier result, with the coefficient being negative and statistically significant ($\alpha<0.10$). However, the coefficient is not only positive, but also statistically significant ($\alpha<0.01$) for the retirement of outstanding debt. Overall, these results lend a weak support to Hypothesis 1, but a strong support to Hypothesis 2.

Several potential arguments may explain relatively weak statistical significance for the new debt issue. First, the relation between the level of financial leverage and the default risk in Korea may be different from that in other countries (e.g., U.S.A.). For example, the relation may be asymmetrical in that the issue of new debt may decrease, rather than increase, the "real" default risk of the firm. Therefore, the issue of new debt may not reflect the change in the default risk for the firms in Korea. Second, financial leverage of typical Korean firms consists of more short-term debt than long-term debt such as corporate bonds. Hence, the issue of long-term debt may have only a small, if any, effect on the default risk.

<Insert Table 4>

5. Conclusion:

This study examines whether a firm's default risk as measured by its financial leverage affects the relation between unexpected changes in accounting earnings and stock returns, viz., the ERC. From analytical results, we develop the hypothesis that the ERC is a negative function of the firm's default risk. Using a sample of Korean firms that experienced changes in their financial leverages through either the issue of new debt or the retirement of outstanding debt during 1988-1997 period, we test this hypothesis by comparing the ERC's between pre-change and post-change period.

The empirical results indicate that the ERC's have decreased for the issue of new debt, but increased for the retirement of outstanding debt from pre-change to post-change period. Furthermore, these shifts in the ERC's are statistically significant, especially for the case of the retirement of outstanding debt. These results hold up even after c ontrolling for the

differences in the systematic risk and growth. Overall, our findings suggest that the default risk is an important determinant of ERC's in Korea.

Several related issues are left for future research. First, additional testing of the 'default risk effects' can be conducted by using the sample of firms that have experienced changes in their bond ratings. To the extent that bond ratings are better proxy for the default risk, the use of bond rating instead of financial leverage will enhance the chance of observing the effect of default risk on the ERC's. Second, we may conduct empirical tests based on increased sample size by including firms with leverage changes that are not followed or preceded by another change within one-year period, rather than three-year period. Third, a straightforward extension of this study would be to examine the effect of default risk on the relation between unexpected earnings and bond returns. The analytical results described in section 2 imply that the default risk is positively related to the ERC's of bond returns.

Table 1

Distribution of Changes in Financial Leverage by Calendar Year and Types of Changes

Year	Issue of New Debt			Retirement of Outstanding Debt		
	N	Average Amount ($Million)	Ratio to Total Liabilities (%)	N	Average Amount ($Million)	Ratio to Total Liabilities (%)
1988	-	-	-	5	2.446	2.84
1989	1	4.000	14.12	-	-	-
1990	1	0.800	3.41	2	6.500	21.94
1991	1	20.000	8.87	-	-	-
1992	3	15.307	5.36	-	-	-
1993	2	21.288	4.36	1	6.921	7.70
1995	2	31.268	12.62	2	5.000	3.05
1996	-	-	-	1	4.632	11.87
1997	2	74.824	17.12	1	10.773	8.71
Total	12	27.124	9.22	12	4.797	7.71

Table 2

Sample Median of Selected Variables

Year Relative to financial leverage change	Issue of New Debt			Retirement of Outstanding Debt		
	BETA [a]	GROWTH [b]	LEVG [c]	BETA	GROWTH	LEVG
-3	0.844	1.713	2.326	0.657	1.510	2.737
-2	0.882	1.128	1.808	0.708	1.862	1.690
-1	0.802	1.286	2.292	0.648	1.413	1.963
0	0.935	0.978	2.766	0.793	1.224	2.159
1	0.879	0.857	2.649	0.901	0.821	1.885
2	0.816	0.662	2.760	0.893	0.848	1.975
3	0.737	0.718	2.546	0.756	0.542	1.244
Wilcoxon Z-value [d]	0.039	-3.306**	0.310	0.997	-2.962**	-1.425

a) Systematic risk of common stock, estimated from market model.
b) Growth as measured by the ratio of market value to book value of equity.
c) Leverage as measured by the ratio of total liabilities to book value of equity.
d) Wilcoxon signed ranks tests statistics on mean difference between the periods before and after the issue of new debt or the retirement of outstanding debt.

ζ= Significant at α=0.10; * = Significant at α=0.05; ** = Significant at α=0.01; two-tailed tests.

Table 3

Effect of Changes in Financial leverage on the Earnings Response Coefficients

$$RET_{it} = a + bUE_{it} + \varphi D_{it}*UE_{it} + e_{it}$$

Panel A: Issue of New Debt				
Independent variables [a]	Expected sign	Pre-change period	Post-change period	Total
Intercept	?	0.210 (1.460)	-0.001 (0.000)	0.098 (1.110)
UE	+	1.441$^{\zeta}$ (1.850)	0.373 (1.440)	1.660** (2.460)
D*UE	-			-1.263$^{\zeta}$ (1.700)
R^2 (%)		9.15	5.74	10.32
F-value		3.42$^{\zeta}$	2.07	3.97*
Panel B: Retirement of Outstanding Debt				
Independent variables	Expected sign	Pre-change period	Post-change period	Total
Intercept	?	0.676** (3.240)	0.143 (1.040)	0.409** (3.200)
UE	+	0.193 (0.840)	0.535** (3.110)	0.166 (0.840)
D*UE	+			0.337 (1.120)
R^2 (%)		2.05	22.13	7.57
F-value		0.71	9.66**	2.83$^{\zeta}$

a) D_{it} is a dummy variable that takes a value of one if the year t for firm i is in the period subsequent to a financial leverage change, and zero if the year t is in the period prior to the fina ncial leverage change.

b) t-values in parentheses.

ζ= Significant at α=0.10; * = Significant at α=0.05; ** = Significant at α=0.01; two-tailed tests.

Table 4

Effect of Change in Financial leverage Changes on the Earnings Response Coefficients: After Controlling for Systematic Risk and Growth

$$RET_{it} = b_0 + b_1UE_{it} + b_2RISK_{it}*UE_{it} + b_3GROW_{it}*UE_{it} + \varphi D_{it}*UE_{it} + e_{it}$$

Independent variables [a]	Issue of New Debt		Retirement of Outstanding Debt	
	Expected sign	Estimates (t-value)	Expected Sign	Estimates (t-value)
Intercept	?	0.080 (0.890)	?	0.295* (2.180)
UE	+	1.592ζ (1.850)	+	-0.263 (0.870)
RISK*UE	-	0.669 (0.890)	-	0.193 (0.620)
GROW*UE	+	-0.223 (0.300)	+	0.754* (2.160)
D*UE	-	-1.403ζ (1.750)	-	0.792* (2.060)
R^2 (%)		12.55		14.48
F-value		2.40ζ		2.84*

$RISK_{it}$ = 1 if the systematic risk of common stock for firm i in year t is above sample median, and 0 otherwise.

$GROW_{it}$= 1 if growth (ratio of market value to book value of equity) for firm i in year t is above sample median, and 0 otherwise.

D_{it} = 1 if the year t for firm i is in the period subsequent to a financial leverage change, and 0 if year t is in the period prior to the financial leverage change.

ζ= Significant at α=0.10; * = Significant at α=0.05; ** = Significant at α=0.01; two-tailed tests.

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