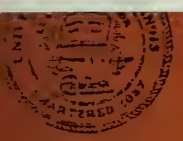

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Abstract

On May 12, 1980, the Financial Accounting Standards Board released Statement Number 36 that mandated publication, in a footnote to the annual report, information on pension plan assets and liabilities including the interest rate assumed in arriving at the cost estimates. An event-time study of the effect of interest rate disclosure demonstrates that securities of firms using a low interest rate assumption outperformed the securities of firms using a high interest rate assumption during the period surrounding the release of FASB No. 36.

Three developments within the last decade have combined to focus attention on a previously neglected aspect of corporate finance, the corporate pension plan. The Employee Retirement Income Security Act of 1974 (ERISA) legislated stringent standards for corporate pension plans including minimum funding requirements. The Financial Accounting Standards Board Statement Number 35 (FASB No. 35) [4] provided uniform standards for pension plan financial reporting. The Financial Accounting Standards Board Statement Number 36 (FASB No. 36) [5] mandated the disclosure by employers in a footnote to financial statements of information on the assets and liabilities of pension plans. As ERISA funding requirements generated rapid growth in the assets of pension plans, and FASB No. 35 and FASB No. 36 required disclosure of assets and liabilities, corporate officers are looking to the assets to finance operations, financial analysts are considering relative values in stock selections, and researchers are including pension values in financial models.

This paper reports on an event-time study of the effects of FASB No. 35 and FASB No. 36 on two samples of firms. Both samples consistent of companies that have large pension liabilities in relation to net worth. One group of firms uses low interest rate assumptions in projecting pension plan costs; the other group uses high interest rate assumptions. The objective of this research is to determine if the release of FASB No. 36 had a differential effect on the share prices of firms depending on the interest rate assumption used in the firm's corporate pension plan.

The paper is organized in the following manner. Section I reviews the history of pension accounting and the literature on pension finance. Section II describes the sources of data and the rationale and procedure for the sample selection. Section III describes the research methodology and test statistics. Section IV explains the results, and Section V interprets the findings and provides conclusions.

I - Pension Accounting and Pension Finance

The Financial Accounting Standards Board has wrestled with the issue of pension accounting and disclosure for two decades, as shown in Table 1. In 1965, Accounting Principles Board No. 8, "Accounting for the Cost of Pension Plans" was promulgated. This statement formally recognized pension issues in firm valuation, but left to the discretion of the firm the determination of a proper methodology for valuing the pension plan and disclosure of pension values. Shortly after Congress passed ERISA, FASB began to work on disclosure requirements issuing a Decision Memorandum in 1975, holding public hearings in 1976, and issuing an Exposure Draft in 1977 with a tentative effective date of December 15, 1977. However, controversy led to the indefinite postponement of the 1977 statement and further work on the proposal. A revised Exposure Draft was issued in 1979 and final promulgation of pension accounting regulations occurred in 1980 with FASB No. 35 issued on March 19, 1980, and FASB No. 36 issued on May 12, 1980. FASB No. 35 addressed financial reporting by the plans themselves; FASB No. 36 addressed disclosure of pension information to investors crediting and employees.

Insert Table 1 Here

FASB No. 35 required that pension plans disclose to participants such information as net assets available to pay benefits and the actuarial present value of accumulated plan benefits. Assets are to be shown at fair value. Benefits are discounted for interest and the probability of payment, considering the likelihood of death, disability, withdrawal, and retirement.

FASB No. 36 required that firms release information on the actual present value of vested and nonvested accumulated plan benefits, the net assets available for benefits, the assumed rate of return in determining the actuarial present values, and the date as of which the benefit information was determined. This information was required to be disclosed with each set of complete financial statements issued for fiscal years beginning after December 15, 1979, and for complete sets of financial statements for interim periods issued after June 30, 1980. For example, any annual reports published for fiscal years ending after December 16, 1980, would indicate pension disclosure.

Pension liabilities, although disclosed in financial statements, are not known values. The true cost of pension liabilities in defined benefit plans cannot be calculated until the last of the current participants ceases to receive a benefit, which is generally more than 60 years in the future. Pension liabilities included in the financial statements are estimated values based on a wide range of assumptions including mortality, employee turnover, disability rates, salary rates, retirement rates, and investment performance. FASB No. 36 singled out

two assumptions for specific consideration. Future salary increases are not included in determining pension liabilities for financial disclosure even if the pension plan bases benefits on an employee's final salary level. Thus, the liability for a pension, for example, for a 45-year-old employee currently earning $20,000 per year who is expected to receive a benefit of 40 percent of final salary (based of past and future benefit accruals) would be $8,000 per year beginning at the expected retirement date, despite the fact that inflation and merit increases are all but certain to increase the employee's salary level prior to retirement, thus increasing the pension.

FASB No. 36 also required firms to disclose the interest rate, or range of interest rates, applied to current assets and future contributions. Pension costs are extremely sensitive to interest rate assumptions, with each one fourth of a percentage point change in interest rates affecting pension costs by between 4 and 7 percent [15, p. 198].

Currently the FASB is considering more stringent disclosure requirements, including consideration of future salary increases and incorporating the pension liabilities on the balance sheet instead of in a footnote disclosure. Such proposals are meeting extensive opposition [10].

Many of the objections to pension fund disclosure are based on concern that the value of the firm will be adversely affected by such disclosure. These fears are not supported by finance literature. In fact, the literature on this topic indicates that pension policy of a firm either does not affect firm value or is already incorporated in share prices. Sharpe [13] determines that the investment policy of a

pension plan does not affect firm value. Feldstein and Seligman [3] conclude that unfunded pension liabilities are already fully reflected in share prices. Ifflander and Martin [8] find that no significant difference in market performance exists for underfunded and overfunded pension plans around the release date of funding information.

Finance theory also indicates funding and investment strategies for pension plans. Black [1] and Tepper [14], considering the tax advantages of pension investments, both show that pension plans should be fully funded and invested in bonds. Harrison and Sharpe [7], considering the limited liability of pension assets, show that investments in either all bonds or all common stocks, are optimal depending on funding level. Langetieg [9] analyses the optimal funding and investment policies under varying funding levels, ratios for firms' sharing in workers' uninsured pension losses, ratios for firms' sharing pension gains with workers, tax rates, risk free rates, and ratios of firms' net worth to pension liabilities. In almost all cases, the optimal funding policy is to invest in either all bonds or all common stocks. Since these investment policies are not followed in practice, a gap between theory and practice exists.

Despite the theoretical and empirical literature on pension funding policy that demonstrates that no significant market effect exists, the value of pension fund disclosure is not settled. Prior literature treats pension liabilities as known or knowable values when in fact they are simply estimates. As such, the funding policy and adequacy of funding depend significantly on the accuracy of these estimates. FASB No. 36 provides for the disclosure of one element of the pension

liability estimate, the interest rate. In most pension plans this value is the most important determinant in calculating pension costs and liabilities. If unfunded pension liabilities are reflected in share prices as proposed by Feldstein and Seligman, then the proper discount should be a normalized, or market expectation, set of actuarial assumptions inherent in pension costing, and not simply the set chosen by the firm's management and actuaries. However prior to FASB No. 36, the public did not have access to pension plan assumptions. As of the day FASB No. 36 was released, all investors or potential investors who knew the firm's assumed interest rate in the pension valuation realized that this information would eventually be made public.

This paper examines differentials in interest rate assumptions by firms in determining pension liabilities. Firms with lower interest rates are more conservative in their forecast and, assuming similar investment policies, are more likely to achieve the assumed rate of return than firms with higher interest rate assumptions. Thus, if pension policy is reflected in market value, then investors either will already have rewarded, or will reward on discovery, firms with lower interest rate assumptions.

The hypothesis tested in this study is that the stock prices of firms with low interest rate assumptions will react more favorably to FASB No. 36 than will the prices of firms with high interest rate assumptions. The null hypothesis is that FASB No. 36 has no effect on either group. If capital markets are efficient, then no significant differences will occur subsequent to the release of FASB No. 36, although anticipation of, and the release itself, could affect the two groups differently.

II - Sample Selection

This paper provides an event-time study for interest rate disclosure in pension plans. The two dates of interest are the days FASB No. 35 (March 19, 1980) and FASB No. 36 (May 12, 1980) were issued. FASB No. 35 established uniform accounting standards for pension plans. FASB No. 36 required future disclosure of interest rate assumptions. The pension information disclosed is compiled in the FASB Statement 36 Data Bank maintained by The Accounting Research Center, Columbia University. This data bank includes pension plan interest rate assumptions for 1113 firms for the year 1980; assumed rates range in value from 2.0 to 13.0 percent.

Two criteria were established to obtain two groups of firms for a comparison of the effect of interest rate assumptions on market performance. First, a large differential in assumed interest rates had to exist between the two groups. Second, pension exposure had to be a significant factor in a firm's financial position. To assure a large interest rate differential, all firms were rank ordered by the assumed interest rate, and cutoff levels established that divided the firms into three approximately equal sized groups. The low interest rate group had an interest rate assumption of less than or equal to 6.1 percent; the high interest rate group had an interest rate assumption of over 8.0 percent. The middle third was excluded. To meet the second criterion, only firms in which accumulated vested benefit plus accumulated nonvested benefits exceeded 30 percent of the firm's net worth were included in the final samples.[1] After requiring complete information on the FASB tape, Standard & Poor's COMPUSTAT Industrial

Tape, and the Center for Research in Security Prices (CRSP) daily return file, and the above criteria, the low interest rate group contained 54 firms and the high interest rate group contained 79 firms. Firm characteristics are shown in Table 2. Daily returns from CRSP for each sample firm were collected for a 156 trading-days period, broken down into three subperiods as shown in Table 3.

Insert Tables 2 & 3 Here

It should be noted that parameter estimates are based only on 100 trading days in the pre-event period. The 45 days immediately preceding the event are excluded from the parameter estimation period. This is a common procedure when it is believed that the market anticipates the event. Using the returns during this time period may introduce noise into the model. We use only 10 days for the post-event analysis. Since stock prices react continuously to new information, it will be extremely difficult to attribute price changes over a long period of time after the event day to a specific source of information, such as FASB No. 36.

III - Methodology

The event-time methodology used to examine security returns during the event period is described at length in the appendix to Dodd and Warner [2] and will be described only briefly here. For each security j the market model is used to calculate an excess return, or prediction error (PE), for event day t within the analysis period as follows:

$$(1) \qquad PE_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j R_{mt})$$

where

R_{jt} = the rate of return on security j for event day t, and

R_{mt} = the rate of return on the CRSP value-weighted index on event day t.

The coefficients $\hat{\alpha}_j$ and $\hat{\beta}_j$ are the ordinary least squares estimates of the intercept and slope respectively, of the market model regression. The estimation period is from t = -145 to t = -46 relative to the event day t = 0. For any event day t, the mean prediction error ($\overline{PE}_t$) across sample firms is:

$$(2) \qquad \overline{PE}_t = \frac{1}{N} \sum_{j=1}^{N} PE_{jt}$$

where N = the number of firms.

These mean prediction errors are cumulated over event time to obtain cumulative daily mean prediction error (CPE):

$$(3) \qquad CPE = \sum_{t=K}^{L} \overline{PE}_t$$

where K and L specify the time period relative to t = 0.

If the market is efficient, $\overline{PE}_t$ and CPE should not be statistically different from zero except upon anticipation or receipt of new information. To determine whether the mean prediction error on a portfolio of N securities is significantly different from zero surrounding the announcements, we use the test statistic, the mean standardized cumulative prediction error (SPE), described by Dodd and Warner [2]. To compute this statistic, the mean prediction error $\overline{PE}_t$ is standardized by its estimated standard deviation s_t,[3]

$$(4) \qquad SPE_t = \overline{PE}_t / s_t .$$

Assuming that the market model residuals are independent and identically distributed, this test statistic is student's t-distributed with 98 degrees of freedom. To test whether the average daily prediction error in the immediate pre-announcement period is significantly different from zero, the following test statistic, Z, is used:

$$(5) \qquad Z = \frac{\sum_{t=K}^{L} SPE_t}{\sqrt{M}} ,$$

where M = L - K + 1, the number of days in the period. This statistic has a student's t-distribution with L-K degrees of freedom, assuming that the average prediction errors are independent and identically distributed.

IV - Empirical Results

The daily mean prediction errors ($\overline{PE}$s) and cumulative mean prediction errors (CPEs) for the low interest rate group and the high interest rate group are reported in Table 4 for day t = -45 through day t = 10. Figure 1 also plots the cumulative daily mean prediction errors for both groups. On March 18, 1980 (day t = -38), both groups experienced significant negative daily mean prediction errors and both CPEs fell below zero. This result occurred the day before FASB No. 35 was promulgated. Since, by construction, both groups represented firms with high pension exposure (accumulated vested and nonvested benefits exceeded 30 percent of the firm's net worth), any information that

adversely affected pension plans would be expected to influence the market price of these firms inordinately. A similar result occurred on April 21, 1980 (t = -15), when an article in Barrons discussed the effect of applying ERISA to multiemployer pension funds [11]. The pending expansion of ERISA was projected to require $4.5 billion in unfunded liabilities from terminated multiemployer plans to be covered by the Pension Benefit Guaranty Corporation (PBGC) in over a ten year period. As the PBGC is funded by a tax on employers with pension plans (currently based on a per employee basis), adverse experience would be expected to affect firms with large pension liabilities negatively. On this day, both groups experienced significant negative daily mean prediction errors.

On day t = 0 (May 12, 1980), the day on which FASB No. 36 was promulgated, both groups exhibited negative daily mean prediction errors which are statistically insignificant. But on day t = -2 the low interest rate group exhibited a positive mean prediction error which is significant at 10 percent level. This might be due to the market's anticipation of the release of FASB No. 36. On day t = 2 the low interest rate group again exhibited a positive mean prediction error which is significant at the 10 percent level. This is the only measurable reaction following release of FASB No. 36.

Insert Table 4 and Figure 1 Here

To further test whether the mean prediction errors in the immediate pre- and post-announcement periods are significantly different from zero, the periods from t = -42 through t = -38, t = -36 through t = -32,

t = -5 through t = -1, and t = 1 through t = 5 are chosen. These periods represent the five trading days prior to and after each FASB release, but the selection of five day periods is admittedly arbitrary. Table 5 reports Z-statistics for the mean prediction errors over these four time periods. The mean prediction errors of both groups are not significantly different from zero for the period from t = -42 through t = -38 (the pre-announcement period of FASB No. 35), even though on day t = -38 both groups experienced significant negative mean prediction errors. Neither are the mean prediction errors of both groups in the immediate post-announcement period of FASB No. 35 significantly different from zero. The market seemed to anticipate the release of FASB No. 35 one day ahead and fully digest the news in a very efficient manner. However, for the period from t = -5 through t = -1 (the pre-announcement period of FASB No. 36), the mean prediction error for the low interest rate group is positive and significantly different from zero at the 5% level (two-tailed test). On average, and adjusted for the overall market change, the price of the low interest rate group stocks rose by about 2.4% during the five trading days prior to the release of FASB No. 36. However, the mean prediction error for the high interest rate group is not significantly different from zero. This may be due to the fact that with the release of FASB No. 36 which mandated future disclosure of the assumed interest rate, firms with lower interest rates are believed to be more likely to achieve the assumed rate of return than firms with high interest rate assumptions. For the post-announcement period of FASB No. 36, both groups exhibited positive mean prediction errors which are not significantly different from zero.

Insert Table 5 Here

Based on the above analysis, the null hypothesis that FASB No. 36 would have no effect on either group is rejected. As expected, the low interest rate group experienced a more favorable reaction to this release than the high interest rate group. Significant positive mean prediction errors on days t = -2 and t = 2 (at the 10 percent level) and for the five days t = -5 through t = -1 (at the 5 percent level) for the low interest rate group, in contrast with no significant prediction errors for the high interest rate group in the period surrounding the release of FASB No. 36, demonstrate that this disclosure standard more favorably affected firms with low interest rate assumptions.

The period of this analysis represented turbulent times for the financial markets. On March 27, 1980 (day t = -31), collapse of the silver market caused the stock market to react strongly. The Dow Jones Industrial Average (DJIA) was down 25 points during the day but recovered late to close down only 2.14 points. On April 8, 1980 (day t = -23), the United States broke diplomatic relations with and imposed economic sanctions on Iran. On April 22, 1980 (t = -14), the DJIA surged 30.92 points as Treasury bill yields declined sharply. No major economic news was announced around the release date of FASB No. 36.

The methodology used in this study calculates a prediction error after the market factor is removed (Equation 1). Thus, the mean prediction errors shown on Table 4 represent excess returns after adjusting for the relative volatility of the securities (β_j) and the total market movement. On day t = -31, both groups experienced significant

negative prediction errors, with significant positive prediction errors the following day. The same pattern occurred on days t = -14 and -13 for the low interest rate group. For these periods of strong market movements, prices of securities in the sample appear to lag the CRSP value-weighted index slightly.[4] As the prediction error for the low interest rate group was significantly positive on day t = -2 and for the five day period t = -5 through -1 (Table 5), after the market movement has been removed, the price movement of the low interest rate group can be attributed to the pending release of FASB No. 36.

It should be borne in mind that the actual market impact of the FASB No. 36 was possibly more pronounced than that revealed by the aforementioned analyses, due to anticipation of FASB No. 36's content by the market. Specifically, if FASB No. 36's content were anticipated before its release, some of the market impact would have been reflected in stock returns several days or even weeks prior to its release. In other words, had FASB No. 36 been anticipated, one would have expected to observe differences in the CPEs' behavior of the low and high interest rate groups during the early announcement period, given the differences in the implications of the FASB No. 36 for the two groups. Since the Financial Accounting Standards Board works publicly, soliciting input and reaction to proposals from parties affected by its rulings, advance knowledge of standards is not surprising. Examination of Figure 1 shows that the CPEs of the low and high interest rate groups moved very closely before t = -27. Since then, the CPE of the high interest rate group was consistently below that of the low interest rate group, and the gap widened when approaching the release of FASB

No. 36. Over the 28 trading days between t = -27 and t = 0, the CPE for the firms with low interest rate assumptions increased from -0.01867 to -0.00329, a gain of 0.01538. In comparison, the CPE for the firms with high interest rate assumptions went from -0.01687 to -0.03092, a loss of 0.01405. Therefore, it appears that FASB No. 36 was anticipated by the market long before it was released, providing strong evidence on capital market efficiency.

V - Conclusion

The objective of this study is to analyze market performance of the securities of firms with differential interest rate assumptions for corporate pension plans around the release date of FASB No. 36, which mandated future disclosure of assumed interest rates. Approximately two months prior to the release of FASB No. 36, FASB No. 35 was promulgated defining guidelines for pension plan reporting. FASB No. 35 had a definite negative effect on all firms with large pension liabilities. However, subsequent to the effect of FASB No. 35, the risk adjusted market performance of firms with low interest rate assumptions for corporate pension plans was superior to that of firms with high interest rate assumptions during the time period surrounding the release of FASB No. 36. These results indicate that pension plan considerations do affect market performance and increased disclosure provides investors with valuable additional information. However, the time frame for this study shows that adjustments in market price occur prior to the time the information was publicly available.

The results of this study provide support for the trend to require additional disclosure of pension plan assumptions. Pension liabilities are not known values but simply estimates of future costs. The accuracy of the estimates vary based on the assumptions made in arriving at the forecasted cost.

This study shows that simply mandating future disclosure of the pension plan interest rate assumptions affects market performance, with firms using low interest rate assumptions outperforming firms with high interest rate assumptions. The fact that the market reacted in this differential manner prior to the release of FASB No. 36 indicates that interest rate assumptions for pension plans are an important financial value. Investors must be assured of access to the assumptions inherent in pension plan costing for market forces to work effectively.

Footnotes

[1]An employee has a nonforfeitable right to vested benefits. Nonvested benefits require continued employment or company action, such as the termination of the pension plan, in order to be assured. In calculating the nonvested benefits, actuaries assume certain levels of terminations so the published values for nonvested benefits represent likely future corporate responsibilities, except for the fact that salary increases are ignored.

[2]As Scholes and Williams [12] have shown, nonsynchronous trading of securities may introduce into the market model a potential econometric problem of errors in variables. Therefore, a diagnostic check of the market model residuals for each security in the sample is required. Inspection of the Durbin-Watson statistics indicates residual autocorrelation is not a problem in this study. For the low interest rate group only 3 securities (of 54) have Durbin-Watson statistics significant at the 1 percent level, whereas for the high interest rate group, only 6 securities (of 79) have Durbin-Watson statistics significant at the 1 percent level.

[3]The value of S_t is given by

$$S_t = \left[S^2\left(1+\frac{1}{D}+\frac{(R_{mt}-\bar{R}_m)^2}{\sum_{\tau=1}^{D}(R_{m\tau}-\bar{R}_m)^2}\right)\right]^{1/2}$$

where S^2 = residual variance for portfolio of N securities from the market model regression,

D = number of observations during the estimation period,

R_{mt} = rate of return on the market index for day t of the event period,

$\bar{R}_m$ = mean rate of return on the market index during the estimation period, and

$R_{m\tau}$ = rate of return on the market index for day τ of the estimation period.

[4]A possible explanation for this slight lag is the lower frequency of trading for the stocks of firms in the samples compared with the large firms that dominate market averages. If a large price change is experienced in the final hour of trading, then the time of the last trade is important. The CRSP file includes closing prices that represent the last trade. The large capitalization firms' stocks will likely have traded close to the bell, but a smaller firm may not have traded for an hour or more. Thus, the closing price for the smaller firms is not as current as for the larger firms. This would introduce the slight lag observable on the days of volatile markets.

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Figure 1. CUMULATIVE PREDICTION ERROR (CPE) by event day.

Table 1

PENSION ACCOUNTING CHRONOLOGY

DATE	EVENT
05/xx/65	APB--Accounting Research Study No. 8: "Accounting for the Cost of Pension Plans"
12/31/66	Effective date of APB No. 8
xx/xx/74	ERISA (Employee Retirement Income Security Act of 1974)
11/xx/74	FASB put a project on accounting and reporting for employee benefit plans on its technical agenda
02/xx/75	10-member task force to counsel FASB in preparation of Discussion Memorandum analyzing issues related
10/06/75	Discussion Memorandum issued
02/04/76 - 02/05/76	Public hearings are held on issue
04/14/77	FASB issued exposure draft: "Accounting and Reporting by Defined Benefit Pension Plans"
09/30/77	FASB announced it would be unable to issue final statement in 1977
12/15/77	Effective date of draft of 04/14/77 if issued
07/09/79	Revised exposure draft issued
09/21/79	Due date for written comments on revised exposure draft
12/15/79	FASB 35 & 36 effective for plan years beginning after this date
03/19/80	FASB 35 issued
05/12/80	FASB 36 issued
06/30/80	Complete interim statements after this date require disclosure (if fiscal year after 12/15/79)
02/xx/81	FASB issued "Discussion Memorandum on Employers' Accounting for Pensions and Other Postemployment Benefits"
02/06/81	FASB Technical Bulletin No. 81-3

Table 1 (continued)

07/xx/81	Public hearings on subject
11/xx/82	FASB issued "Preliminary Views on Employers' Accounting for Pensions and other Postemployment Benefits"
04/19/83	FASB issued "Second Discussion Memorandum on Employers' Accounting for Pensions and other Postemployment Benefits"
01/13/84-01/19/84	Public hearings on subject

Table 2

Characteristics of Sample Firms

	# of Firms	Assumed Interest Rate		Pension Benefit/ Net Worth	
		Min	Max	Min	Max
Low interest rate group	54	2.0	6.1	0.317	12.058
High interest rate group	79	8.0	13.0	0.302	5.310

Table 3

Calendar Dates for Three Subperiods

Subperiod	Dates	No. of Trading Days
1. The "Pre-Announcement" period used for estimating the "Market Model" parameters for each firm.	October 15, 1979-March 6, 1980	100
2. The "Announcement" period	March 7, 1980-May 12, 1980	46
3. The "Post-Announcement" period	May 13, 1980-May 27, 1980	10
	Total	156

Table 4

Daily mean market-adjusted prediction errors ($\overline{PE}$) and cumulative sum of the daily mean prediction error (CPE) from 45 days before through 10 days after the event day.

	Low Interest Rate Group		High Interest Rate Group	
Day	$\overline{PE}$	CPE	$\overline{PE}$	CPE
-45	.00331	.00331	.00335	.00335
-44	-.00658+	-.00327	-.00384	-.00048
-43	-.00258	-.00586	.00015	-.00033
-42	.00263	-.00322	.00049	.00016
-41	.00395	.00073	.00567	.00582
-40	.00214	.00286	.00308	.00890
-39	-.00124	.00163	-.00021	.00870
-38	-.01504**	-.01342	-.01317**	-.00447
-37	.00462	-.00880	-.00075	-.00521
-36	.00315	-.00565	.00328	-.00194
-35	-.00284	-.00850	.00107	-.00086
-34	.00035	-.00815	-.00630	-.00716
-33	-.00193	-.01008	-.00362	-.01078
-32	.00081	-.00927	.00360	-.00718
-31	-.02722**	-.03649	-.02284**	-.03002
-30	.00910*	-.02738	.00825+	-.02176
-29	.00408	-.02330	.00439	-.01737
-28	.00463	-.01867	.00050	-.01687
-27	.00370	-.01497	-.00094	-.01781
-26	.00391	-.01106	-.00076	-.01857
-25	.00229	-.00877	.00059	-.01798
-24	-.00486	-.01364	-.00696+	-.02494
-23	-.00839*	-.02203	-.00968*	-.03462
-22	.00378	-.01825	.00646	-.02815
-21	.00378	-.01447	.00722+	-.02093
-20	-.00122	-.01569	-.00238	-.02331
-19	-.00169	-.01738	-.00481	-.02812
-18	.00218	-.01519	-.00073	-.02885
-17	.00035	-.01484	-.00549	-.03434
-16	.00355	-.01129	-.00016	-.03450
-15	-.00674+	-.01802	-.00679+	-.04129
-14	-.01039*	-.02842	-.00206	-.04334
-13	.00742*	-.02099	.00119	-.04215
-12	-.00146	-.02245	.00243	-.03972
-11	-.00518	-.02763	-.00273	-.04245
-10	.00106	-.02657	.00230	-.04015
- 9	-.00163	-.02820	.00422	-.03593
- 8	-.00259	-.03079	.00144	-.03449
- 7	.00184	-.02894	.00165	-.03283
- 6	.00268	-.02626	.00018	-.03266
- 5	.00555	-.02072	-.00135	-.03400
- 4	.00307	-.01765	-.00128	-.03528

Table 4 (cont.)

	Low Interest Rate Group		High Interest Rate Group	
Day	$\overline{PE}$	CPE	$\overline{PE}$	CPE
- 3	.00336	-.01429	.00116	-.03412
- 2	.00700+	-.00729	.00193	-.03219
- 1	.00508	-.00221	.00322	-.02897
0	-.00108	-.00329	-.00195	-.03092
1	.00169	-.00160	.00199	-.02893
2	.00634+	.00474	.00123	-.02770
3	-.00230	.00244	.00585	-.02185
4	.00117	.00361	.00335	-.01850
5	-.00012	.00349	.00036	-.01815
6	.00246	.00595	.00577	-.01238
7	.00045	.00641	-.00504	-.01743
8	.00232	.00872	.00438	-.01304
9	.00105	.00978	.00135	-.01169
10	-.00194	.00784	-.00142	-.01311

** = Significant at 1% level.
* = Significant at 5% level.
+ = Significant at 10% level.

Table 5

The mean prediction errors in the immediate pre and post-announcement periods

Pre-announcement Period	Low Interest Rate Group	High Interest Rate Group
t = -42 through t = -38	-0.0076 (-0.871)[a]	-0.0041 (-0.439)
t = -5 through t = -1	0.0240 (2.853)*	0.0037 (0.399)
Post-announcement Period		
t = -36 through t = -32	-0.0005 (-0.059)	-0.0020 (-0.178)
t = 1 through t = 5	0.0068 (0.804)	0.0128 (1.401)

a = The Z statistics of equation (5) are in parentheses.

* = Significant at 5% level (two-tailed test).