

The Timing of Option Repricing

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ABSTRACT

We investigate whether executive stock option repricings are systematically timed to coincide with favorable movements in the company's stock price. For a sample of 236 repricing events, we observe sharp increases in stock price in the 20-day period following the repricing date. In addition, repricing dates tend to either precede the release of good news or follow the release of bad news in the quarterly earnings announcements. Since information about stock option repricing is not generally released to the public around the repricing date, these findings suggest that CEOs opportunistically manage the timing of the option repricing date.

IN THIS STUDY, we examine the timing of executive stock option repricings. Options are granted to employees to align their interests with those of shareholders. However, when the firm's stock price falls significantly below the exercise price of the option, the incentive effect of the option is diminished or lost. Repricing is one mechanism used to reinstate this incentive. The decision to reprice options is controversial. Managers maintain that repricing is necessary both to retain valued employees and to restore incentives lost when options are significantly out-of-the-money. Shareholders argue that management should not be selectively shielded from declines in stock price that may be a result of management's own decisions. Shareholders further contend that repricing may undermine the integrity of future option plans.

Several studies investigate the decision to reprice options.¹ We extend the literature by examining whether option repricings are systematically timed to

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¹ Gilson and Vetsuypens (1993), Saly (1994), Acharya, John, and Sundaram (2000), and Grein, Hand, and Klassen (2001) study the optimality of repricing. Corrado et al. (1998), and Brenner, Sundaram, and Yermack (2000) study the valuation of potentially repriceable executive stock options. Brenner et al. (2000), Chance, Kumar, and Todd (2000), Chidambaram and Prabhala (2003), Carter and Lynch (2001), and Pollock, Fischer, and Wade (2003) study characteristics of repricing firms.

coincide with changes in a firm's stock price. Our sample comprises 236 repricing events that occur over the period 1992 through 1997. Consistent with prior research, these repricing firms exhibit negative monthly returns for several months preceding the repricing date, and negative abnormal daily returns in the 5-day window prior to repricing. However, in the 5-day window following repricing, we observe significant positive abnormal daily returns. Although positive abnormal returns following repricing are consistent with investors reacting positively to the repricing event, we find no public announcement of the repricing prior to or immediately following the event. In fact, repricing appears to become public information only after the release of the subsequent proxy filing, often several months after the repricing event.

Since we cannot attribute these abnormal returns to disclosure, we posit that repricing may be timed to occur close to other predictable events. We focus on quarterly earnings announcements, since managers are likely to possess private information about the timing and the content of the announcements. Such information can provide management with opportunities to time repricing to maximize the value of the repriced options. We observe that repricing event dates tend either to precede favorable or to follow unfavorable earnings announcements. Therefore, managers who hold repriced options realize wealth increases from both the act of repricing and the timing of the repricing event. The act of resetting the exercise price to a lower price (usually the market price on the repricing day) increases the Black–Scholes value of the repriced options to executives by an average (median) of \$478,720 (\$241,586). When we measure 5 days following repricing, we find that the positive excess return immediately following the repricing translates into an average (median) wealth increase, due to timing, of \$259,320 (\$32,917). When we measure 20 days following repricing, this wealth increase, due to timing, is an average (median) of \$558,428 (\$94,063). Relative to annual cash or total compensation levels, this benefit is economically significant. In general, we find that the manager's ability to guide the repricing process allows the managers to exploit asymmetric information for personal benefit.

We also investigate the role of corporate governance in both the decision to reprice and the timing of the repricing event. We find that repricing is more likely in firms with weak corporate governance. We also find that repricing is more likely in firms with greater proportions of equity compensation in their compensation package, suggesting a potential downside to increased equity components of total compensation. In contrast, we find no relation between corporate governance and the wealth benefit associated with timing the repricing event.

The paper is organized as follows. Section I discusses prior research. Section II presents institutional background, sample selection criteria, and descriptive data. Section III examines the relation between repricing and stock price movements. Section IV investigates the relation between the repricing date, the earnings announcement date, and the content of the earnings announcement. Section V examines the role of corporate governance in repricing. Section VI concludes.

I. Prior Literature

Several studies examine opportunistic behavior by management in the context of timing equity offerings. Yermack (1997) finds that the stock price generally increases on the day of and immediately following option grants. He also finds that many options are granted either 1 day prior to or on the earnings announcement day. Yermack concludes that option grants are often timed to precede favorable corporate news announcements. He also observes that the CEO's likelihood of receiving a grant at a favorable time is associated with the CEO's level of influence on the compensation committee.

Chauvin and Shenoy (2001) document a period of declining stock price preceding option grants. They conclude that through the release of unfavorable news shortly before the grant date, management attempts to achieve the lowest possible exercise price. Thus, management tends to time option grants to follow unfavorable news announcements.

Using a sample of scheduled option grants, Aboody and Kasznik (2000) find that relative to CEOs who receive option grants after an earnings announcement, CEOs who receive options before an earnings announcement are more likely to issue unfavorable forecasts prior to the grant. Therefore, even when managers are unable to time the option awards, they maximize the value of option awards by timing voluntary disclosures around the grant period.

In other equity-related studies, Seyhun (1986), Lee (1997), and Kahle (2000) find that insiders use their superior information about the future prospects of the firm to time stock purchases to occur prior to abnormal increases in stock price, and to time stock sales to occur prior to abnormal declines in stock price. Loughran and Ritter (1995), using initial public offerings, and Jindra (2000), using seasoned equity offerings, provide evidence indicating that the firms exploit transitory windows of opportunity by issuing equity when they are substantially overvalued. Chalmers, Dann, and Harford (2002) find a negative relation between the level of directors' and officers' liability insurance purchased and the future stock performance of the IPO firm. This finding suggests that managers behave opportunistically by timing the offering date to occur when IPO shares are overvalued, while simultaneously insulating themselves from possible negative consequences.

Collectively, these studies suggest that because managers possess superior information about the firm, they manage the timing of stock option awards when the awards are unscheduled, voluntary forecasts when the option awards are scheduled, issuances of initial and seasoned equity offerings, and purchases and sales of company's stock for their own portfolio.² Given these results and the lack of immediate disclosure of a repricing event, we posit that managers are also likely to manage the timing of repricing.

² In addition, the accounting literature is replete with studies that examine managers' ability to manage reported earnings to increase cash bonuses (Healy (1985), Lambert and Larcker (1987), and Gaver and Gaver (1993)).

II. Institutional Background, Sample Selection, and Descriptive Data

A. Institutional Background

Repricing generally occurs at the recommendation of the compensation committee. Its recommendation is then approved by the board of directors. Firms reprice either through an option exchange, cancellation and issuance of new options, or an amendment to change the exercise price. The new exercise price is usually reset to the market price of the underlying security on the repricing date. Repricing may also include changes to the vesting or expiration period, or replacement of the old options with a reduced number of new options. There are no rules governing the selection of a repricing date, and disclosure of the date is not required until the next proxy filing. Once the repricing date is selected, employees are given a period of time, typically 30 days or less, to accept the offer. Although the compensation committee is generally responsible for the decision to reprice, the repricing date may be selected independent of the compensation committee. For example, Amazon.com Inc “calls for employees with options to exchange them for fewer new options whose strike price would be set at the lowest price the stock trades at from January 1 through February 14, 2001, or at 85% of the February 14 price if that is higher” (Schroeder and Simon (2001, C1)). Nortel announced “the exercise price of the new [repriced] options will be Nortel’s stock price early next year on a date to be set” (*Wall Street Journal* (2001, B19)). Our discussions with several executives provide similar anecdotal evidence that timing may be left to management.³

B. Sample Selection

Our repricing sample comprises 236 repricing events that represent 166 firms. We use the S&P ExecuComp Database to identify 281 repricing events (in 204 firms) that occur between 1992 and 1997. We focus specifically on repricing events that involve the CEO and other senior executives for whom employee-level information is disclosed in the proxy. The sample period begins in 1992, coinciding with the SEC mandate for proxy disclosure of option repricing involving named executive officers. (There is no such requirement for repricing of nonexecutive options.) We also restrict the sample to repricings that occur prior to 1998. On December 4, 1998, the FASB announced that it intended to release an exposure draft requiring companies to expense an amount related to the difference between the new exercise price of repriced options and the market value of the underlying stock in each future period the options are unexercised. Carter and Lynch (2003) document a disproportionate increase in the number of firms that reprice options prior to the effective date of the FASB rule.

³ Although several executives were willing to talk about the repricing decision, they declined to discuss either the selection of a specific repricing date or the compensation committee meeting dates. One board member, a CFO said “timing is based on keeping employees happy.” Another stated that they had “some latitude” in selecting the repricing date, and they could select a date that helped “meet their objectives” (pers. comm., December 12, 2001).

Table I
Descriptive Data on the Sample Selection Process

We obtain our sample from the ExecuComp database for the period 1992 through 1997. We obtain proxy statements from Edgar, Lexis/Nexis, or Disclosure's Q files.

Selection Criteria	Firms
Total number of firms identified in ExecuComp as having repriced	214
Repricing in-the-money options	5
Repricing for nonprice related issues or misidentification by ExecuComp	5
Repricings available	204
No proxy available	20
Insufficient or no information in proxy	12
Lack of returns in CRSP	6
Final sample	166

In the repricing year, the SEC (1992) requires proxy disclosure of the current repricing and any other repricings that occurred within the last 10 years. From this 10-year stock option repricing table, we obtain the number of options repriced, the repricing date, the new exercise price, the market price on the repricing date, and the old exercise price. The proxy disclosure also provides shares outstanding; share ownership of officers, directors, and institutional investors; management compensation; and the composition of the board of directors and compensation committee. We obtain daily stock price and financial statement data from the CRSP and COMPUSTAT databases, respectively.

We delete firms from the sample if the proxy is unavailable or provides insufficient information; if complete stock price data is unavailable; if the firm reprices in-the-money options by raising the exercise price; or if the repricing occurs for technical reasons, such as a spin-off or conversion to restricted stock. If a firm reprices more than once in a month (within 20 trading days), we treat it as a single repricing event, effective on the last repricing date with the last exercise price.

Table I describes the resulting repricing sample, which comprises 236 repricing events by 166 firms. From the remaining 1,663 firms in the ExecuComp database, we construct both a nonrepricing matched control sample and a sample of all remaining nonrepricing firms in the database. (We note that the control sample does not include firms that repriced during 1992 through 1997. However, it is possible that they repriced outside of this window, or repriced only for nonexecutive employees.)

C. Descriptive Analysis of the Repricing and Nonrepricing Samples

Carter and Lynch (2001) show that repricing firms are smaller, industry specific, and have options that are significantly out-of-the-money. Therefore, we construct a matched control sample based on these characteristics. For each repricing firm, we select a nonrepricing control firm with the same four-digit

SIC code, which is most similar in 1- and 2-year stock returns and size. The 2-year return criterion reflects the repricing sample's median length of time between the option grant and the repricing date. If we cannot identify an appropriate control firm, we enlarge the pool to include firms with the same three- or two-digit SIC code. If a firm reprices several times during a single year, we assign the same control firm for each event. However, we do not assign the same control firm to two different firms with repricings that occur in the same year. Our selection criteria result in a matched sample of 216 event dates (156 firms).

Table II presents comparative information for the repricing sample, the matched control sample, and all remaining nonrepricing firms included in the ExecuComp database. Consistent with the control sample selection criteria, there is no significant difference in repricing-year or 2-year return between the repricing and nonrepricing control sample. We use 1992 constant dollars to estimate three measures of size: total sales, total assets, and total market value. Our parametric tests show that sales and assets are marginally greater (p -value ≤ 0.1) for the control sample relative to the repricing sample. However, when we apply nonparametric tests, this difference is not significant. There is also no significant difference in market value. In general, the matching procedure results in a control sample that is similar to the repricing sample along the identified criteria.

To further ensure similarity between the repricing and control samples (except with respect to the repricing decision), we compare the extent to which the repricing firms' options are out-of-the-money. Using methodology similar to that of Carter and Lynch (2001), we estimate that the repriced options are out-of-the-money an average (median) of 43.4% (42.9%). To make the same computation for the control firms, we use three procedures to assign an event date: the repricing date of the matched repricing firm, the control firm's fiscal year end that coincides with the end of the return interval used to identify the control firm, and the control firm's earnings announcement date that immediately follows the fiscal year end. Using the repricing date of the matched firm, we find that options held by executives in the control firms are out-of-the-money an average (median) of 25.4% (29.1%). Using the control firm's fiscal year end or the earnings announcement date following the fiscal year end yields estimated means (medians) of 31.3% (33.0%) and 28.2% (29.5%), respectively. Our estimates are similar to those reported by Carter and Lynch (2001).

We further compare the samples using measures of profitability, risk, investment opportunities, and exchange membership. Although parametric tests do not indicate significant differences in profitability, nonparametric tests indicate marginally significant differences in EPS and profit margin. We find that return volatility is significantly greater (p -value ≤ 0.01) for the repricing sample relative to the nonrepricing control sample.

Similar to Brenner et al. (2000), we find that repricing firms are smaller, less profitable, more risky (return volatility and debt to assets), and have a lower market-to-book ratio than the remaining ExecuComp firms. We find similar

Table II
Sample Characteristics

Descriptive statistics are shown for 166 repricing firms, for 156 matched nonrepricing control firms, and for the remaining 1,507 firms available in the ExecuComp database during the period 1992 to 1997. We compute sales, assets, and market value using 1992 constant dollars, reported in millions, and computed from COMPUSTAT items. Return on assets is pretax income/assets; profit margin is pretax income/sales; EPS is primary earnings per share, excluding extraordinary items; debt to assets is total liabilities/total assets; and market-to-book is market value/net book value. Annual return volatility is obtained from the ExecuComp database. The table reports means with medians provided in parentheses. Tests of differences between the samples use parametric and nonparametric methods with *t*-statistics and *z*-statistics (in parenthesis) reported at the 10, 5, and 1% levels, using a two-tailed test, and denoted by *, **, and ***, respectively.

	Repricing Sample (I)	Nonrepricing Control Firms (II)	ExecuComp- Remaining Firms (III)	Diff (I – II) <i>t</i> -Statistic (<i>z</i> -Statistic)	Diff (I – III) <i>t</i> -Statistic (<i>z</i> -Statistic)	Diff (II – III) <i>t</i> -Statistic (<i>z</i> -Statistic)
Stock returns						
Number of firms	166	156	1,507			
Return during repricing year	-0.198 (-0.283)	-0.206 (-0.236)	-	-0.21 (0.47)	-	-
Two-year return ending in repricing year	-0.236 (-0.359)	-0.280 (-0.339)	-	-0.97 (0.90)	-	-
Firm size						
Total sales	642.1 (265.3)	1,009.0 (309.7)	2,835.5 (778.8)	1.96* (1.90*)	10.09*** (8.92***)	7.09*** (6.29***)
Total assets	624.8 (263.7)	1,191.2 (300.7)	6,091.0 (1003.3)	1.89* (1.62)	10.69*** (10.18**)	8.52*** (7.89***)
Market value	953.7 (377.1)	1,249.3 (371.2)	2,895.2 (828.0)	0.72 (0.36)	7.24*** (8.11***)	3.97*** (7.24***)
Profitability						
Return on assets	-0.05 (0.00)	-0.01 (0.02)	0.08 (0.07)	1.63 (1.43)	7.15*** (9.19**)	6.53*** (7.38**)
Profit margin	-0.72 (0.00)	-0.42 (0.03)	0.15 (0.09)	0.73 (1.68*)	2.83*** (10.89**)	2.02** (9.46**)
EPS	-0.45 (-0.03)	-0.20 (0.19)	1.40 (1.02)	1.42 (1.66*)	5.00*** (15.09**)	4.38*** (13.33**)
Firm risk						
Return volatility	0.54 (0.52)	0.47 (0.45)	0.34 (0.31)	4.45*** (4.58**)	15.86*** (14.91**)	9.68*** (10.48**)
Debt to assets	0.46 (0.43)	0.47 (0.46)	0.59 (0.59)	0.71 (0.93)	7.61*** (8.13**)	7.25*** (6.97**)
Investment opportunities						
Market-to-book	5.11 (2.02)	2.59 (1.98)	2.69 (2.38)	1.01 (0.75)	-0.97 (3.53**)	0.29 (4.69**)
Exchange membership						
NYSE	34.3%	46.7%	74.1%			
NASDAQ	60.2%	50.0%	24.2%			

results when we compare the nonrepricing control sample to the remaining ExecuComp firms.

D. Characteristics of the Repricing Sample

Relaxing the requirement that proxy and CRSP information be available for inclusion, we find that 204 firms reprice in 281 repricing events. Table III shows the distribution of repricing events by year, and by the firm's frequency of repricing. Panel A indicates that during the sample period, 149 firms reprice once, 41 reprice twice, and 14 reprice three or more times. Consistent with Chance et al. (2000) and Carter and Lynch (2003), 46% of these repricing firms are from the technology and pharmaceutical industries, compared to 16% for the remaining ExecuComp sample.

Panel B indicates that repricing activity for firms in the ExecuComp database increases from 1.52% in 1992 to 4.18% in 1996. Saly (1994) suggests that repricing may be optimal during a market or industry downturn, but we note that the incidence of repricing actually increases during the 6-year sample period in which the market increased by about 150% (e.g., the Nasdaq Composite Index

Table III
Repricing Activity by Frequency and by Year

Repricing activity is shown for 204 firms that repriced executive stock options over the period 1992 to 1997. From the initial sample of 214 repricings identified in the ExecuComp database, we eliminate repricings related to in-the-money options and repricing for nonprice related reasons. Panel A reports the frequency of executive stock option repricings by firm. Panel B shows repricing activity by year. Multiple repricings for a single firm within a one-month period is counted as a single repricing. Multiple repricings by some firms during the sample period results in a total of 281 observations.

Panel A: Frequency of Executive Stock Option Repricing		
Number of Times Stock Options Repriced		Firms
1		149
2		41
3		9
4		3
5		1
6		1
Panel B: Repricing Activity by Year		
Year	Number of Repricing	Frequency of Repricing Based on the Number Firms in ExecuComp (%)
1992	26	1.52
1993	36	2.06
1994	37	2.09
1995	51	2.90
1996	72	4.18
1997	59	3.61

increased from 620 to 1,565 and the Dow Jones Industrial Average increased from 3,200 to 8,000). Thus, we examine repricing by industry. Like Brenner et al. (2000), our untabulated results suggest that repricing is not used to insulate managers from either market or industry factors.

An average of 4.6 executives (median 4.0) participate in each repricing event. The expiration period of the repriced options averages (median) 7.4 (8.8) years. Since most grants during this period include a 10-year maturity, it appears the expiration period is typically not reset. In addition, 21 firms (22 events) condition repricing on executives accepting a reduced number of options. Executives in these firms receive an average of 35.8% fewer options upon repricing. The exchange is usually structured such that the Black–Scholes value of the option grant is the same immediately before and after the exchange. Although the expected value is unchanged, the exchange is still beneficial, since it reduces the manager's risk that the options will expire out-of-the-money (Hall and Murphy (2000)).

More than 85% of the repricing sample reset the exercise price to the market price on the repricing date, approximately 13% reset at a premium (i.e., the new exercise price is higher than the market price on the repricing date but lower than the old exercise price). The rest of the sample firms reset at an exercise price lower than the current market price. Consistent with Chance et al. (2000), in 37% of the repricing events, the stock price returns to the original exercise price in less than 240 trading days following the repricing event, with 15% reaching the original exercise price within 50 days. Thus, even without repricing, many of these repriced options would have been in-the-money before expiration.

III. The Relationship between Option Repricing and Stock Price Movements

This section examines the stock performance of repricing firms and provides preliminary evidence that options are repriced at times favorable to management. Given managers' ability to time the repricing event, we also estimate the magnitude of the benefit that accrues to management.

A. Stock Price Changes around the Option Repricing Date

The repricing sample exhibits significant negative monthly returns in the 10 months prior to the repricing month. However, in the repricing month, we estimate a significant positive monthly return (14%, p -value ≤ 0.01) that suggests that, on average, repricing firms reach their lowest stock price during the repricing month. Given this pattern, and our observation that repricing generally involves resetting the exercise price to the market price on the repricing date, we use daily returns to examine the possibility of opportunistic timing. We hypothesize that repricing may be timed to occur prior to the release of favorable news, resulting in significant positive returns following the repricing date.

Table IV
Stock Returns around the Repricing Date for Repricing Firms

This table documents the abnormal returns, market-adjusted stock returns, industry-adjusted stock returns, and simple firm returns for 236 repricing events representing 166 firms that reprice executive stock options during the period 1992 to 1997. We calculate abnormal returns using Dodd and Warner's (1983) market model methodology. We use value-weighted returns for market and industry indices. We calculate an industry return if there are at least four firms represented in the SIC code. We use the four-digit SIC to match 201 repricing observations, the three-digit SIC for 29 repricing observations, and the two-digit SIC for six repricing observations. Significance at the 10, 5, and 1% levels, using a two-tailed test, is denoted by *, **, and ***, respectively.

Days Relative to Repricing Date	Mean Abnormal Return (%)	Mean Market Adjusted Returns (%)	Mean Industry Adjusted Returns (%)	Mean Stock Return (%)
-50	-0.23	0.25	-0.09	-0.15
-40	-0.56**	-0.63**	-0.59**	-0.64**
-30	-0.77***	-0.83***	-0.74***	-0.84***
-20	-0.37*	-0.44	-0.25	-0.37
-10	-0.68**	-0.71*	-0.50	-0.63
-5	-0.40*	-0.39	-0.48*	-0.27
-4	-0.47*	-0.45	-0.43	-0.34
-3	-0.87***	-0.89***	-0.80***	-0.82***
-2	-0.61***	-0.62*	-0.63**	-0.57*
-1	-0.59**	-0.60*	-0.86***	-0.53
Repricing date	0.08	0.03	0.05	0.06
1	0.90***	0.94***	0.89***	1.15***
2	1.04***	1.10***	1.04***	1.29***
3	0.69***	0.74**	0.60**	0.86***
4	0.84***	0.82***	0.82***	0.89***
5	0.61**	0.60**	0.45*	0.77***
6	0.23	0.23	0.06	0.37
7	-0.09	-0.11	-0.11	0.01
8	0.17	0.21	-0.06	0.33
9	0.03	0.03	-0.05	0.18
10	-0.05	-0.6	-0.16	0.03
15	0.36	0.34	0.11	0.43
20	0.39	0.37	0.20	0.42
30	0.34	0.33	0.23	0.36
40	-0.20	-0.19	-0.33	-0.17
50	-0.12	-0.13	-0.23	0.01
60	0.08	0.05	0.07	0.10
80	-0.12	-0.15	-0.20	-0.13
100	0.04	0.04	0.10	0.16
120	-0.10	-0.13	-0.34	-0.05

Following the event study methodology of Dodd and Warner (1983), in Table IV we estimate daily abnormal returns for repricing firms around the repricing date using the CRSP NYSE/AMEX/Nasdaq value-weighted index. The market model estimation period includes both a pre-event (days -250 to -121) and a post-event period (days +121 to +250). Doing so excludes the stock

price decline that often precedes the repricing event, as well as the following increase.

We observe significant ($p\text{-value} \leq 0.1$) negative abnormal returns for each of the 5 days preceding repricing, and significant ($p\text{-value} \leq 0.05$) positive abnormal returns for each of the 5 days following. This observation that “good news” events appear to follow repricing is consistent with our prediction that CEOs opportunistically manage the timing of the repricing event to exploit expected positive price movement.⁴

Table IV also provides mean daily market-adjusted returns (market defined as the value-weighted market index), mean industry-adjusted returns (industry defined as the mean return for all firms in the same four-digit SIC code), and mean firm returns (no adjustment). All three specifications yield positive significant daily returns in the 5-day period following repricing. To provide perspective on the magnitude of this potential benefit, we accumulate daily abnormal returns in the period immediately following repricing. We observe significant positive 5-day and 20-day cumulative abnormal returns (CARs) of 3.05 and 5.90% ($p\text{-value} \leq 0.01$), respectively.

Figure 1 shows CARs for both the repricing and nonrepricing control sample over a longer time horizon (beginning day -50 and extending to day $+120$). The three specifications used in Section II.C are again used to assign an event date to control firms. The repricing sample CARs exhibit large declines prior to repricing and significant increases immediately following repricing. Again, this result indicates a stock price low close to the repricing date. We do not observe this same pattern for the nonrepricing control sample regardless of the event date specification used. The first specification (repricing date of the matched repricing firm) is reported in Figure 1. Overall, the pattern for both daily and CARs is consistent with managers timing the repricing date to precede good news announcements.

We test robustness by reestimating all results under the following conditions. We change the estimation period to include only the period prior to repricing (day -500 to -251) and define the test period as day -250 to $+250$, thus reducing the sample to 224 repricing observations (12 observations are lost due to insufficient information in the estimation period). We test abnormal returns for the 21 repricing firms that reduced the number of options separately from firms that did not change the number of options. We repeat all tests using the equal-weighted market index. For each of these alternative test specifications, the results are qualitatively unchanged.

B. Wealth Benefits to Executives from Option Repricing

Since it appears that management may opportunistically time repricing, we examine the magnitude of the benefit that accrues to executives who hold

⁴ Chance et al. (2000) use a sample of 37 firms and 53 repricing observations from 1985 through 1994. They find similar stock price declines prior to the repricing event, but do not observe abnormal return performance subsequent to repricing. Restricting our sample to the same period as Chance, Kumar, and Todd does not alter our results.

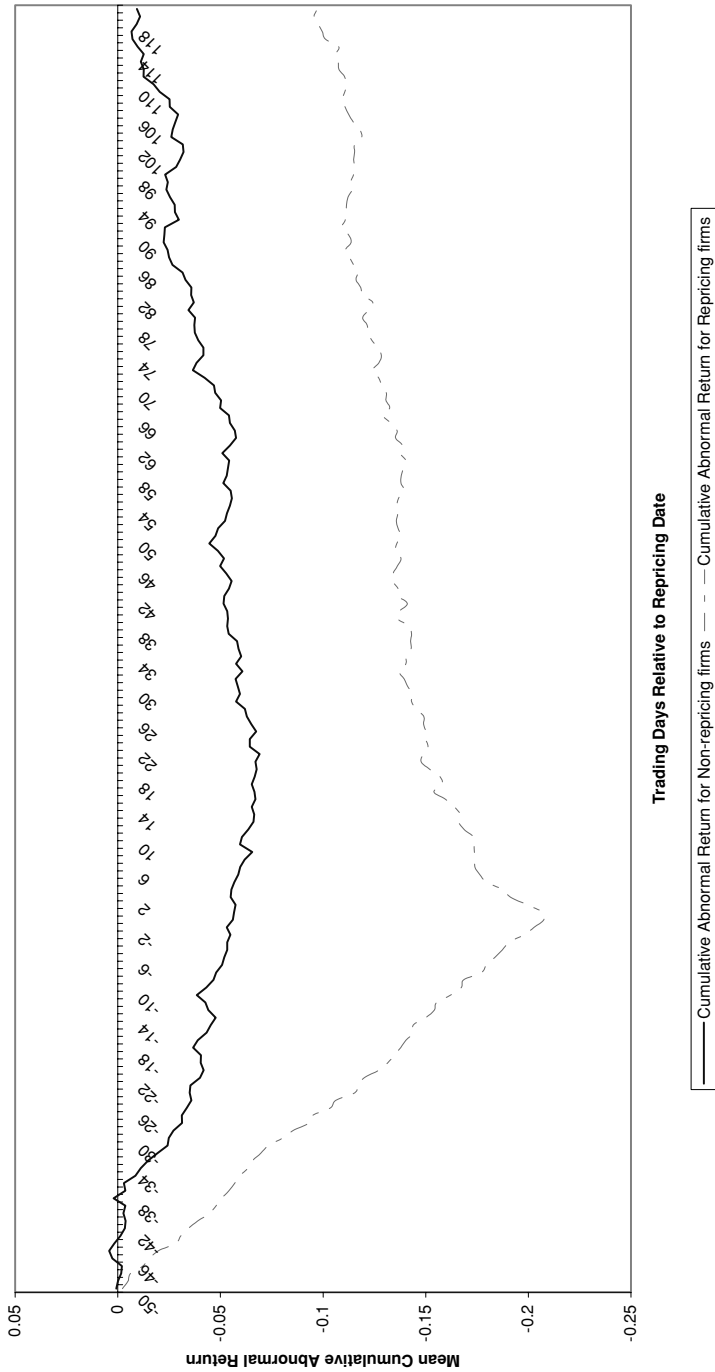


Figure 1. Daily CARs around the repricing date for the repricing and nonrepricing control sample. Our sample includes 236 repricing events (representing 166 firms) that occur during the period 1992 to 1997, and 216 matched nonrepricing control events (representing 156 firms). We select control firms based on industry, size, and return performance. We estimate CARs for the 170-day period starting in day -50 through day $+120$, with day 0 defined as the repricing date identified in the proxy.

repriced options. We estimate the value of the options using the Black–Scholes option model. Although the model does not account for restrictions often placed on executive options (e.g., inability to hedge or arbitrage the option value in secondary markets, nontransferability, and inability to take short positions in the firms' stock), the disclosure requirements promulgated by the SEC (1992) and the FASB (1995) support the use of this model. The total benefit to the executives is estimated as the difference between the option value on day +20 using the new exercise price and the new number of options, and the option value on day –1 using the old exercise price and the number of options outstanding prior to repricing. The mean (median) increase in wealth to all listed executives per repricing event is \$1,028,657 (\$322,646).

The total benefit can be partitioned into the benefit derived directly from resetting the exercise price (referred to as the “act of repricing”), and the benefit from timing the repricing. In Table V, we separately estimate the benefit of each. First, the act of repricing provides an economic benefit to the option holder on the day of repricing. We estimate this benefit as the difference in the value using the new exercise price, and when applicable, the new reduced number

Table V
Descriptive Statistics on the Wealth Benefits to the Managers
from Repricing the Executive Stock Options and from Timing
the Repricing

Estimates of the wealth increase are shown from both the act of repricing and from timing the repricing event. We base the estimates on the mean (median) benefit to all executives for each repricing event. The sample includes 236 repricing events that occur over the period 1992 to 1997. Significance at the 10, 5, and 1% levels, using a two-tailed test, is denoted by *, **, and ***, respectively.

Sample size	236
Degree to which options are out-of-the money (%)	43.27 (42.77)
Options repriced to total options outstanding (%)	43.82 (34.30)
Benefit Derived from the Act of Repricing:	
Change in Black–Scholes value from resetting option price on repricing date (in \$thousands)	\$478.72 (\$241.59)
Change in Black–Scholes value from resetting option price on repricing date/total compensation (%)	13.14*** (5.45)***
Change in Black–Scholes value from resetting option price on repricing date/cash compensation (%)	25.88*** (13.76)***
Benefit Derived from the Timing of Repricing:	
Change in Black–Scholes value over the 20-day period following repricing date (in \$thousands)	\$558.43 (\$94.06)
Change in Black–Scholes value over the 20-day period following repricing date/total compensation (%)	18.82*** (3.52)***
Change in Black–Scholes value over the 20-day period following repricing date/cash compensation (%)	27.35*** (8.08)***

of options and new duration, and the value on the repricing date using the old exercise price, old number of options, and old duration. The act of repricing results in a mean (median) benefit of \$478,720 (\$241,586).

Second, if the repricing date is selected to precede the anticipated stock price increases, managers accrue a further benefit from timing the repricing. We estimate this timing benefit as the difference between the value at day +20 using the new exercise price, and the value on the repricing day using the new exercise price, and when applicable, the new reduced number of options, and new duration. Timing results in a mean (median) benefit to the manager of \$558,428 (\$94,063). Reestimating the timing benefit at days +5 and +40, rather than day +20, results in mean (median) benefits of \$259,320 (\$32,917) and \$728,987 (\$176,401), respectively. All estimates are statistically significant (p -value ≤ 0.01).

We compare these estimates with the level of both cash and total compensation for the top five executives. The mean (median) change in Black–Scholes value from resetting the exercise price is 25.88% (13.76%) of cash and 13.14% (5.45%) of total compensation. The mean (median) timing benefit is 27.35% (8.08%) of cash and 18.82% (3.52%) of total compensation. All estimates are statistically significant (p -value ≤ 0.01). Thus, both the act and the timing of repricing appear to have a significant economic effect on executives' wealth.

IV. The Relation between Repricing and Corporate Announcements

The previous section documents that repricing tends to occur as the stock price reaches a minimum, and just prior to significant abnormal increases in stock price. Therefore, in this section we investigate whether this pattern is a result of the systematic timing of repricing in relation to specific corporate news announcements.

Timing has two potential strategies: repricing either before good news or following bad news. Using PR newswires and the Dow Jones Retrieval Service, we examine news reports surrounding the repricing date. We find that the announcements primarily relate to firm performance (including earnings announcements), new product introductions and innovations, new alliances, downsizing and/or restructuring, management and analyst forecasts, and patent approvals and denials.

We focus primarily on the quarterly earnings announcements because there is a significant potential for error in classifying the markets' expectation of other news. Furthermore, the earnings announcements provide a required disclosure event in which management presumably has private information about both the content and the announcement date. By observing stock price changes around the earnings announcements, we can measure the market's perception of the quality of the news (good or bad) and test its relation to the timing of the repricing event. We predict that repricing is more likely to precede a positive earnings announcement, thus providing managers with the economic benefits

associated with the related stock price increase; or that repricing will follow a negative earnings announcement, which allows managers to obtain a lower exercise price on resetting.

For each repricing event, we identify the earnings announcement date prior to and immediately following the repricing date. Earnings announcements that occur during the weekend or on a holiday are classified as occurring on the next business day. Figure 2 presents the frequency distribution of the repricing dates relative to the nearest quarterly earnings announcement date. We find that repricing dates are distributed normally around the earnings announcement date. The two most common days are the second day following the earnings announcement (5.19%) and 2 days prior to the earnings announcement (4.76%).

A. Earnings Announcement CAR

We partition the sample based on whether repricing occurs prior to (pre-announcement repricers) or following the earnings announcement (post-announcement repricers). We exclude from both groups three repricing events that occur on the earnings announcement date. For both partitions, we estimate the earnings announcement CAR as the 3-day CAR centered on the earnings announcement date. Again, we use the CRSP NYSE/AMEX/Nasdaq value-weighted index and an estimation period that includes days -250 to -121 and days $+121$ to $+250$.

For pre-announcement repricers, Table VI documents a positive earnings announcement CAR of 5.2% ($p\text{-value} \leq 0.01$) when options are repriced in the 2-day window prior to the earnings announcement. This positive earnings announcement CAR, and the previously documented positive post-repricing CAR, both provide evidence that managers choose a repricing date to precede good news announcements. For post-announcement repricers, the mean earnings announcement CAR is -7.76% ($p\text{-value} \leq 0.01$) when options are repriced in the 2-day period following the earnings announcement. From this result we conclude that because these managers possess superior information about the earnings announcement, they systematically delay repricing so that it follows the release of unfavorable earnings news. For both partitions, the result is robust regardless of the test window selected.

Overall, tests of pre- and post-announcement repricers indicate that managers who anticipate favorable earnings reports reprice prior to the expected stock price increase to increase their benefit from repricing. In contrast, managers who anticipate bad news reprice following the expected price decline to obtain a lower exercise price.

B. Post-repricing CAR

The observation that repricing is timed differently for pre- and post-announcement repricers also implies systematic differences in expected stock

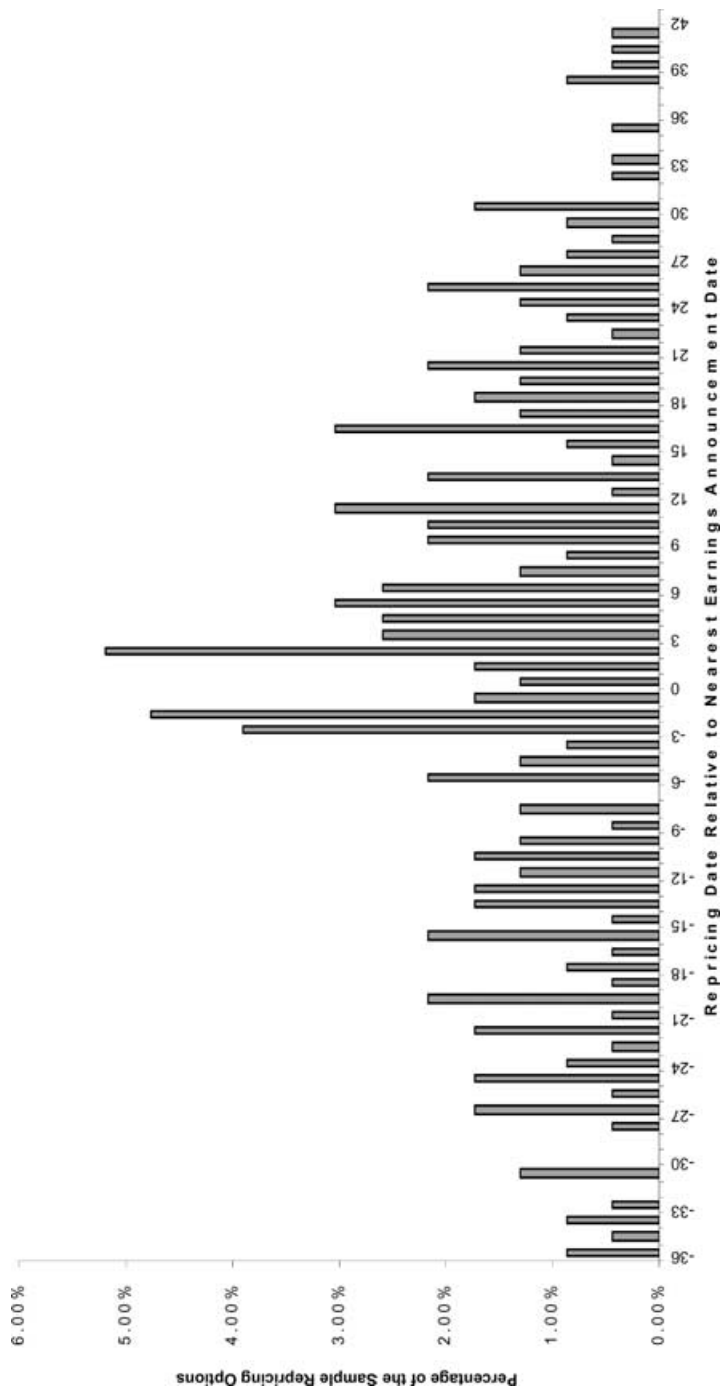


Figure 2. Timing of stock option repricing relative to the earnings announcement. Frequency distribution of the number of days between the repricing date and the firms' nearest quarterly earnings announcement. The sample consists of 236 repricing events that occur between 1992 and 1997. We obtain the earnings announcement date from the *Wall Street Journal Index* or the PR newswires.

Table VI
Relation between Earnings Announcement CAR and Timing
of the Repricing Date

CARs are shown for the 3-day period surrounding the earnings announcement date. We partition the sample of 236 repricing events based on whether the firm reprices prior to or following the earnings announcement. For each partition, we base results on the precise number of days from the announcement to repricing. We calculate CAR using Dodd and Warner's (1983) market model methodology and the value-weighted market index. The estimation period is days -250 through -120 and days $+120$ through $+250$ relative to the earnings announcement date. The t -statistics (or z -statistics) are shown in parentheses. Significance at the 10, 5, and 1% levels, using a one-tailed test, is denoted by *, **, and ***, respectively.

Repricing Date Relative to Earnings Announcement Date	Sample Size	Mean CAR Around Earnings Announcement (%)	Median CAR Around Earnings Announcement (%)
Pre-announcement repricers			
Less than 30 days before	88	1.43*** (2.19)	1.19* (1.36)
6–12 days before	19	2.65*** (2.01)	2.30* (1.57)
3–5 days before	14	3.98*** (2.26)	4.87** (1.73)
1–2 days before	14	5.20*** (2.61)	3.90* (1.35)
Post-announcement repricers			
1–2 days after	19	−7.76*** (−5.38)	−7.08*** (−3.83)
3–5 days after	19	−2.57*** (−2.16)	−0.92 (−0.76)
6–12 days after	29	−5.89*** (−5.88)	−3.53*** (−2.97)
Less than 30 days after	123	−4.92*** (−9.85)	−3.45*** (4.28)

price movement around the repricing date. Therefore, we separately estimate the post-repricing CARs for each partition. We hypothesize a significant positive post-repricing CAR for pre-announcement repricers that results from managers' timing to precede the release of good news. For post-announcement repricers, we do not anticipate abnormal post-repricing price activity since there is no expectation of a systematic release of news following the repricing event. When we combine these predictions, we then expect that the post-repricing CARs will be significantly higher for pre- compared to post-announcement repricers. We make this comparison using a sample of firms that reprice within 5- and 12-day windows, either prior to or following the earnings announcement ($n = 63$ and 105 , respectively.) Examining only those repricing events that happen close to the earnings announcement date reduces the potential for confounding news events.

Using the sample of firms that reprice within 5 days of the earnings announcement, we document in Table VII a significant positive post-repricing

Table VII
Relation between Post-repricing CARs and Timing of the Stock Option Repricing Date to Either Precede or Follow the Earnings Announcement

The 20-day CARs following the repricing event are shown for firms repricing executive stock options prior to or following the earnings announcement. Significance at the 10, 5, and 1% levels, using a two-tailed test, is denoted by *, **, and ***, respectively.

Group	Firms That Repriced Within 5 Days from the Earnings Announcement Date			Firms That Repriced Within 12 Days from the Earnings Announcement Date		
	Number of Repricing Events	Mean 20-day CAR Following the Repricing	Median 20-day CAR Following the Repricing	Number of Repricing Events	Mean 20-day CAR Following the Repricing	Median 20-day CAR Following the Repricing
Repricings before earnings announcement	28	0.110***	0.100***	44	0.123***	0.065***
Repricings after earnings announcement	35	0.018	-0.017	61	0.041**	0.025**
Difference		0.092***	0.117***		0.082*	0.040*

CAR of 0.11 for the pre-announcement repricers. The post-repricing CAR is not significant for post-announcement repricers. Furthermore, the post-repricing CAR for pre-announcement repricers is significantly greater (p -value < 0.01) than that of post-announcement repricers. For the sample of firms that reprice within 12 days of the earnings announcement, the post-repricing CAR is positive and significant for both the pre- and post-announcement repricers. However, despite the significant positive post-repricing CAR for post-announcement repricers, the post-repricing CAR is significantly greater (p -value < 0.1) for pre-announcement repricers relative to post-announcement repricers.

C. Stock Returns and Other News Announcements

Managers may also time repricing in concert with other anticipated corporate announcements. Thus, to minimize the effect of the earnings announcement, we delete all observations where repricing occurs within 5 days of the earnings announcements. This results in a sample of 127 repricing events (55 pre-announcement and 72 post-announcement repricers). We separately estimate the daily CARs over a 170-day period (day -50 to $+120$) for pre- and post-announcement partitions. Figure 3 presents our results. For pre-announcement repricers, we observe a V-shaped function similar to that shown in Figure 1 for all repricing firms. This finding suggests that pre-announcement repricers receive further benefits from good news events other than the earnings announcements. On the other hand, post-announcement repricers exhibit a more severe decline prior to repricing, and we do not observe the same positive CAR following repricing. Thus, to obtain a lower exercise price, post-announcement repricers impound the negative stock reaction associated with negative announcements that occur prior to the repricing date.

V. Additional Tests—Corporate Governance

In this section, we examine the relation between corporate governance and the repricing decision. We also investigate whether the benefits that accrue to management from timing repricing are related to corporate governance.

A. Influence of Top Management and Executive Option Repricing

The board of directors makes the decision to reprice executive stock options. If management is influential in the decision to reprice, or if repricing is opportunistically timed to benefit management, then we expect insider members of the board and/or the CEO to have significant influence over the board of directors. Consistent with Newman (2000), Newman and Mozes (1999), Byrd and Hickman (1992), and Baysinger and Butler (1985), we define “insiders” as officers and executives of the firm, and those nonemployee directors who are affiliated through a significant business relationship or interlocking directorship. Those directors on the board not classified as “insiders” are classified as “outsiders.”

The most obvious opportunities for the CEO to exert influence are when the CEO is also chairman of the board, or a member of the compensation committee,

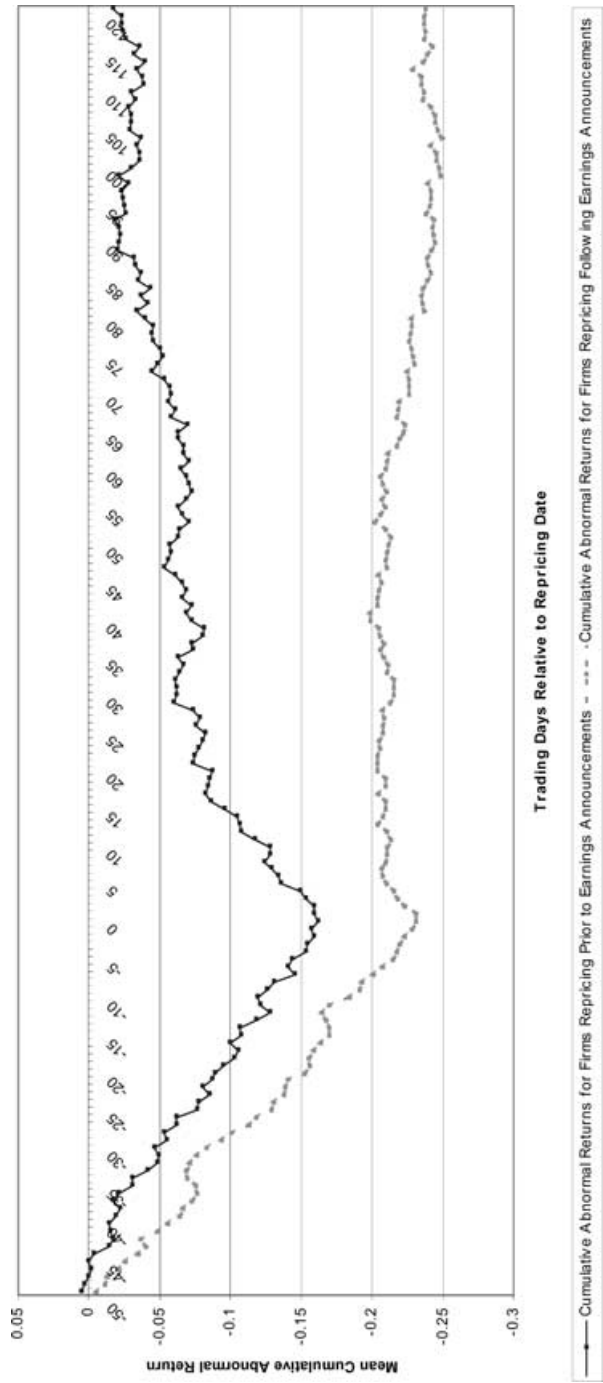


Figure 3. Daily CARs around the repricing date for firms repriced prior to and following the earnings announcement. We estimate CAR for the 170-day period starting at day -50 through day +120, with day 0 defined as the repricing date. From the sample of 236 repricing events, we eliminate repricing events if the quarterly earnings announcement falls in the 5-day period before or after the repricing date. The sample is further partitioned based on whether the repricing event precedes or follows the earnings announcement, resulting in a sample of 127 repricing events (55 pre-announcement and 72 post-announcement repricers).

or a high proportion of insiders serve on the board or compensation committee. Chance et al. (2000) find that the proportion of insiders on the board increases the likelihood of repricing. Brenner et al. (2000) find that the presence of an insider on the compensation committee increases the likelihood of repricing. However, Carter and Lynch (2001) find neither of these factors to be significant in explaining the likelihood of repricing.

We extend these previous analyses by examining situations in which insiders may have reduced influence on the compensation committee. Compensation consultants argue that due to improved independence, CEOs' opportunistic behavior can be moderated by including a powerful, independent outsider on the compensation committee. Therefore, we consider situations where a non-executive chairman of the board or an outside director who is a major (>5%) shareholder serves on the compensation committee (Yermack (1997)). We also investigate the role of institutional investors since they are among the most vocal critics of repricing (Schism and Lublin (1998)) and because prior research indicates that institutions provide a monitoring role in corporate governance (Schleifer and Vishny (1997)). However, neither Chidambaran and Prabhala (2003) nor Carter and Lynch (2001) find evidence that institutional ownership is related to the decision to reprice.

Mehran (1995) and Jensen and Murphy (1990), among others, document that the percentage of equity compensation is positively correlated with firm performance. However, when options are underwater, managers with greater proportions of equity compensation have greater risk due to the increased probability that these options will expire out-of-the-money (Hall and Murphy (2000)). This compensation risk gives managers greater incentive to undertake risky projects to raise the stock price (Gilson and Vetsuypens (1993) and Lambert, Larcker, and Verrecchia (1991)). Repricing is one mechanism used to reduce this risk. Therefore, we evaluate whether greater proportions of equity in managerial compensation are positively related to the decision to reprice. We define compensation structure as the cash proportion of total compensation for the top five executives. Cash compensation includes salary, bonus, and other cash payments. Total compensation is the sum of cash compensation, total value of restricted stock, Black-Scholes value of options granted, long-term incentives, and any other payouts that occur in the repricing year.

B. Results

Table VIII documents the role of corporate governance in the repricing decision. In Model 1, we regress an indicator variable (0,1) that identifies whether the firm repriced on the corporate governance variables. Although the percentage of insiders on the compensation committee is a significant indicator of repricing (p -value ≤ 0.01), the percentage of insiders on the board is not. To compare with previous studies, in each analysis, we reestimate the logit model by including only one of these variables (percentage of insiders on the compensation committee or the percentage of insiders on the board) along

Table VIII
Logistic Regression of the Decision to Reprice on Corporate Governance Determinants

This table presents a logit model estimated for a sample of 216 repricing and 216 matched non-repricing firm events that occurred over the period 1992 to 1997. We assign the dependent variable a value of 1 if the firm repriced, and 0 otherwise. We select the nonrepricing matched sample based on industry, size, and stock performance. We allow the size to be no more than twice (or less than one-half) the size of the repricing firm. If a firm reprices several times during a single year, we assign the same control firm. We do not assign the same control firm to two different firms with repricings occurring in the same year. The selection criteria resulted in the loss of 20 observations from the original sample of 236 observations. Cash compensation includes salary, bonus, and other cash payments. Total compensation is the sum of cash compensation, total value of restricted stock, the Black–Scholes value of stock options granted, and long-term incentives. The *t*-statistics (in parentheses) are presented with significance at the 10, 5, and 1% levels, using a two-tailed test, denoted by *, **, and ***, respectively.

Variable Definition	Hypothesized Sign	Model 1	Model 2	Model 3
Intercept		1.299 (2.16)	1.138 (2.05)	1.802 (3.54)
CEO is also chairman of the board	+	0.174 (0.63)		
CEO is also a member of compensation committee	+	-0.124 (-0.28)	0.431 (1.09)	-0.210 (0.47)
Percentage of firms' board seats held by insiders	+	1.086 (1.53)	2.210*** (3.76)	
Percentage of insiders serving on the compensation committee	+	1.776** (2.75)		2.318*** (4.25)
Percentage of the firms' shares held by insiders (officers and directors)	+	1.501 (1.48)	1.469 (1.47)	1.868* (1.89)
Percentage of firms' shares held by institutions	-	-1.896*** (2.71)	-1.815*** (2.65)	-1.994*** (2.87)
Firms in which a member of compensation committee owns ≥5% of the firm's shares	-	-0.627* (1.68)	-0.508 (1.40)	-0.700* (1.89)
Outside chairman of the board is a member of compensation committee	-	1.093** (2.34)	0.904** (2.26)	0.930** (2.29)
Cash component of total pay	-	-2.670*** (5.64)	-2.650*** (5.65)	-2.579*** (5.53)
Log (sales) for the year prior to repricing	+/-	-0.040 (0.62)	-0.037 (0.57)	0.533 (0.83)
Pseudo Adj. R^2		0.130***	0.115***	0.126***

with the remaining governance variables. In Model 2, we observe a significant coefficient (p -value ≤ 0.01) on the percentage of insiders on the board (consistent with Brenner et al. (2000)). In Model 3, we observe a significant coefficient (p -value ≤ 0.01) on the percentage of insiders on the compensation committee

(consistent with Chance et al. (2000)).⁵ The coefficient on insider stock ownership is not significant in Models 1 and 2, but is positive and marginally significant in Model 3. Together, the results suggest that the presence of insiders on the compensation committee is a relatively more important predictor of repricing than either the proportion of insiders on the board or insider stock ownership.

The estimated coefficients on the variables representing institutional ownership and the presence of a 5% outside director on the compensation committee are negative and significant, suggesting that both provide a monitoring role. The probability of repricing is inversely related to the cash proportion of total pay, suggesting that the greater the manager's compensation risk, the greater the likelihood that the manager will try to minimize or eliminate the risk through repricing when a company experiences economic turmoil.

Contrary to our prediction, we observe a significant positive coefficient on the variable indicating the presence of an outside chairman on the compensation committee. Reda and Reifler (1998) provide a potential explanation for this counterintuitive result. They suggest that CEOs often hand-pick outside directors who subsequently serve on the compensation committee. Thus, although the compensation committee may appear to be comprised of independent directors, these directors may offer little resistance to CEO initiatives, including initiatives concerning repricing.

We also examine whether a firm's governance characteristics are related to the post-repricing wealth increases reported in Section III. We estimate the wealth benefits of timing in two ways: by using the magnitude of the post-repricing CAR, and the increase in the Black-Scholes value over the 20-day period following repricing. The coefficients on the governance variables are not significant at conventional levels. These results suggest that although weak corporate governance may increase the probability of repricing, the benefits that accrue from timing the event are not associated with corporate governance. We find no qualitative change in the results when we define the dependent variable as the 5- or 40-day CAR following the repricing event, when we delete firms that reprice out-of-the-money options at a premium, or when we only use firms repricing once during the test period.

Several factors may bias our governance results, including the fact that we measure stock ownership, board directorship, and cash proportion annually. Furthermore, most governance variables experience little variation across consecutive years. Because the sample includes firms that have multiple repricings in a 1-year and in the 6-year sample period, we reestimate the regressions in two ways. First, we include only the first repricing event per firm per year, and second, we include only the first repricing event during the 6-year period. The results are qualitatively similar to the reported results.

⁵ To be consistent with Chance et al. (2000) we repeat Model 3 and find similar results when we use an indicator variable for the existence of an insider on the compensation committee.

VI. Conclusion

This study provides evidence that executive stock option repricings are systematically timed to coincide with favorable movements in the company's stock price. For a sample of 236 repricings that occur between 1992 and 1997, the underlying securities exhibit an average 6% CAR in the 20-day trading period following repricing. This increase cannot be attributed to the market's perception of the benefits of repricing (e.g., restored incentives) since news of the repricing is not public information at the time.

Our analyses suggest that repricings are opportunistically timed in conjunction with the release of corporate news. Managers who anticipate favorable earnings reports reprice prior to the announcement. Doing so allows them to benefit from both the reset exercise price and the anticipated stock price increase. Managers who anticipate bad news reprice after the expected price decline, thus obtaining a lower exercise price. Our results also suggest that although weak corporate governance may increase the probability of repricing, the benefits accrued from timing the event are independent of corporate governance. Overall, these results are consistent with the managerial opportunism hypothesis: Managers use their informational advantage to increase personal wealth.

Grein et al. (2001) also document a positive post-repricing CAR for Canadian firms required to make immediate public disclosures of repricing. They interpret this result as supportive of the view that option repricing is in the best interest of shareholders. However, management may time the event even in an environment of immediate disclosure. Therefore, to understand the market's perception of repricing, further study is needed to determine what portion of the market reaction is due to the information content of the repricing event and what portion is due to timing by management.

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