Options Repricing Behavior & Investor Attention*

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Abstract

Repricing of employee stock options has been given a lot of importance by firms, especially in the case of out of money stock options. The former is not only useful in realigning employee incentives but also helps firms in reducing employee turnover. But at times, managers have been observed to use repricing as an opportunistic tool for their self-dealing behavior and possibly acting against shareholders’ interests. We have investigated the possibility of firms timing their repricing activity depending on the temporal shifts in investor attention/distraction. We find that firms are more likely to reprice their stock options when the firm-specific investor distraction is high. The results are consistent for overall market level distraction as well.

Keywords: Executive Compensation, Investor attention, Managerial Opportunism, Corporate finance, Corporate Governance
JEL classifications: G3,G4,G34,G39,G40

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1 Introduction

Since the 1980s, Employee Stock Options (ESO’s) have been the most popular instrument of employee stock compensation plans employed by the firms. As reported by Clementi and Cooley (2009), CEO options based wealth had quadrupled during the period 1992–2006, though declined a bit from thereon. Compared to other forms of employee compensation, ESO’s provide greater aligned incentives for the employees to work towards the growth and improved performance of the company. But the attractiveness of any compensation form is in place only till the point where it significantly incentivize the employees for their own interests. There have times when a firm’s stock price declined to a level below the ESO’s strike price, eventually making the latter to be out of money. In that case, to realign the employee’s incentive, some firms have been observed to reprice their ESO’s, which is any change in terms and conditions of already granted ESO’s, usually done by lowering exercise prices, canceling and reissuing ESO’s with new exercise prices, modifying option maturity or replacing out of the money stock options with stock or cash grants.\(^1\)

The literature has jotted down various firm specific characteristics which are generally associated with their respective repricing tendencies. As per the available repricing evidence, smaller, younger & rapidly growing firms are the ones who frequently engage in repricing activity (Chidambaran and

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Prabhala (2003), Carter and Lynch (2001), Kalpathy (2009)). The latter is a more common practice among the industries with a tighter labor market and a significant requirement of labor-intensive factors of production (Kalpathy (2009), Chidambaran and Prabhala (2003), Core and Guay (2001), Carter and Lynch (2001)). There have been mixed pieces of evidence about whether repricing works in favor of firms’ shareholders’ interests or against it. On the one hand, repricing has proved to be an effective strategy in reducing employee turnover (Carter and Lynch (2004), Chen (2004)), on the other hand, the former has been associated with weak internal governance structure in a firm concerning the presence of inside directors (Chance et al. (2000)), presence of insiders in compensation committee (Brenner et al. (2000)), same individual being the CEO as well as the chair of the board of directors Grein et al. (2005), etc. Chen (2004) further argued that too much flexibility in a firm’s repricing related policies can have negative consequences, especially for the ones having weak governance structure. Though repricing ESO’s have proved to be effective in reducing the sensitivity of executive compensation to overall stock volatility (Carter and Lynch (2004) Chen (2004)), managers at times have used options repricing, not in the long term interests of the firm, and instead engaged in opportunistic tendencies to maximize vested payoffs. Callaghan et al. (2004) & Coles et al. (2006) have found significant evidence of firms timing their repricing activity before a positive earning announcement or after a negative earning report to benefit the most out of the action. We would like to extend the literature around managerial opportunism in case
of options repricing, by investigating the latter’s possible relationship with investor attention. In a one-off study, Garvey and Milbourn (2002) points out the role of limited investor attention due to which ESO dilution costs get fully reflected in the firm’s prices only after the respective options are exercised, not anytime before. According to the study, in the pre-2000 era, ESO’s were not expensed at all, and the related information was disclosed only through footnotes in the firm’s financial statements. We want to use a similar period, i.e., 1992 – 2002 in our study to test the possibility of firms’ timing their repricing activity depending on the prevailing firm-specific investor attention and also the overall attention towards the stock market. We specifically want to examine our hypothesis for the period before 2003, as from June 2003 firms were mandated to take shareholder approval before making any significant decisions regarding employee compensation matters.\(^2\) Therefore, if managers opportunistically time their repricing activity to avoid catching abnormal investor attention, they are more likely to do the same in the pre 2003 reform era, compared to the post-reform years.

For empirical testing, we employ the distraction measure introduced by Kempf et al. (2016), which computes firm-specific quarterly investor distraction, specifically from the point of view of institutional investors\(^3\). Our tests confirm the hypothesis of greater repricing likelihood for firms in a high


\(^3\)Firm level distraction data is downloaded from Prof. Elisabeth Kempf personal webpage https://sites.google.com/site/elikempf/research
investor distraction quarter. We use firms’ current and previous quarter returns as controls for the option moneyness, as the latter could be an essential predictor of a firm’s repricing activity. To broaden our results, we also investigate our hypothesis in the case of retail-specific investor attention. We use news pressure measure employed by Eisensee and Strömberg (2007), which represents the overall investor attention or distraction towards the stock market\(^4\). Our test using news pressure measure confirms the evidence in favor of firms timing their repricing activity in the period of high investor distraction.

Our research will have contributions from both aspects, i.e., theoretical as well as practical. Theoretically, our study may contribute to three major areas of literature. Firstly, our study will significantly contribute to the literature on managerial opportunism around employee stock options and their repricing activity.\(^5\) Lie (2005), Heron and Lie (2007) and Heron and Lie (2009) found that before 2002, significant abnormal returns were reported to exists around ESO’s option grants. The mentioned literature highlighted the managerial strategy of reporting fake ESO award dates. In a similar strand, Daines et al. (2018) found evidence of firm accelerating bad news before the ESO’ awards (which they term as bullet-dodging), and they delay good news after the awards. Similar results were also reported by Edmans et al. (2017, 2018a,b) who found several instances of firms reallocating their

\(^4\)Daily news pressure data is downloaded from Prof. David Stromberg webpage [http://perseus.ies.su.se/~dstro/](http://perseus.ies.su.se/~dstro/)
news related to earnings, repurchases, M&A decisions, etc. at times when their executives’ equity is about to get vested. Our research may also add to the literature on managerial opportunism in the case of options repricing activity. Callaghan et al. (2004) reported evidence of firms’ opportunistic reallocation of news around the repricing activity. Coles et al. (2006) found similar evidence in case of abnormally low discretionary accruals before the repricing announcements. Our study will be an addition to the list of different ways that highlight the self-serving behavior of the managers, specifically in the case of options repricing.

Secondly, our study will also contribute to the literature around managerial opportunism and its relation with the internal governance structure of a firm. Extensive research has already been done on the relationship between options repricing and the weak governance structure of a firm. Governance structure has been highlighted in terms of the presence of inside directors (Chance et al. (2000)), insiders nomination in compensation committee (Brenner et al. (2000), Callaghan et al. (2004)), shareholders say in firms’ compensation-related decisions (Gulen and O’Brien (2017)), etc. Our research may lend support to the studies explaining the importance of shareholder empowerment in mitigating opportunistic managerial practices.

Lastly, our study will also contribute to the theories related to the managerial use of investor attention for their personal wealth maximization at the cost of shareholders’ interests. There are varied pieces of evidence of managers using investor attention for their vested interests by timing their
discretionary decisions accordingly. Huang et al. (2018) reported evidence of firms managing their headlines salience around option grants and insider selling, Jin (2013) found link between firms’ earning management tendency and investor attention, Hirshleifer and Teoh (2003) examined the linkage between limited investor attention and firms’ financial reporting, Kempf et al. (2016) found firms with distracted shareholders as more likely to cut dividends, announce value-destroying acquisitions, etc. Our study will contribute to the list of ways depicting firms’ opportunistic use of investor attention.

Though repricing related regulations have advanced considerably in the last two decades, our research may still have some practical implications as well. Since the late 1990s, FASB has significantly improved governance practices related to grants and repricing of ESO’s; but our study may have policy implications in terms of further strengthening the regulations related to management compensation policies. Our research may also contribute to curbing opportunistic managerial practices in case of investor attention, by enhancing investor awareness and removing information inefficiencies in the financial market. Remaining study is organized as following; section 2-4 discuss the literature around ESO’s repricing and manager opportunism around the same. Section 5 describes the development of a testable hypothesis. Section 6 explains the data sources, methodology & the research design. Section 7 discusses the results and analysis of the study. Section 8 investigates the results using alternate attention proxies, section 9 discusses the limitation of the study and future research prospects, and section 10 is the concluding
2 Employee Stock Compensation

Our study is focussed on US markets and firms. Majorly, there are 3 types of stock compensation instruments used by US firms for their employee retention and incentive alignment strategies. These include: Employee stock options, restricted stock units and Phantom stocks. Employee stock options (ESO) are the most commonly used stock compensation measure used by US firms since 1980’s. ESO’s are sophisticated call option on the common stock of a company, granted to the employees at an exercise price determined at the grant date. ESO’s usually have an average vesting period of around 5 – 6 years, but some of them have their vesting periods of more than 8 years as well. Compared to other types of stock compensation measures, ESO’s are slightly risky as they might become out of the money, providing no compensation value to the employee. But the good part about ESO’s for the firm is, employees may have greater incentive to perform well to prevent their ESO’s turning into zero value. Employees would ideally want to exercise their options as deep in the money as possible to maximize their overall payoff. There are two types of ESO’s issued by the US firms currently: Non-qualified ESO’s which are issued not only to the employees but also to the firm’s advisors, directors, etc. The other type of ESO is the incentive stock option, which is issued only to the employees of the firm.
3 Repricing of Employee Stock Options

Employee stock options (ESO’s) have been an integral component of the firms employee compensation plans. There are two main reasons behind firms using ESO’s as part of the overall compensation strategy. One is that it helps firms to align the manager’s incentives in line with the firm’s growth objectives and overall performance. Secondly, it also allows firms to retain their skilled and trained workforce as fresh hiring and retraining may entail high costs to the firm. But there might occur scenarios where the firm’s stock price plummet so significantly, eventually making these ESO’s to be out of the money. These are the particular scenarios where a firm’s incentive and retention strategy may prove to be ineffective. As a response, firms have been observed to reprice their ESO’s, which is any change in terms and conditions of already granted ESO’s, usually done by lowering exercise prices, cancelling and reissuing options with new exercise prices, modifying option maturity or replacing out of the money stock options with stock or cash grants\(^5\). In most cases, maturity modification is used as a complement to resetting prices rather than substituting it. Repricing ESO’s re-aligns manager inventive and has been used as a useful retention strategy. Some have argue that this compensates managers for their poor performance (Gulen and O’Brien (2017)), but there have been studies like Carter and Lynch (2004), Chen (2004), and Jochem et al. (2018) which have found repricing ESO’s being

effective in reducing employee turnover.

There have been varied pieces of evidence on firm characteristics, industry characteristics & degree of institutional factors that are more conducive for a firm’s ESO repricing activity. Studies by Chidambaran and Prabala (2003), Carter and Lynch (2001) and Kalpathy (2009) suggests that it is mostly the smaller, younger & rapidly growing firms who are observed to engage in the repricing of ESO’s. Adding to this, Chance et al. (2000) found that repricing firms usually have higher free cash flows and have a greater percentage of insider directors. Kalpathy (2009) also found supporting evidence in favor of ESO repricing activity being more concentrated in industries that demand more human capital. Consistent with the same evidence, Chidambaran and Prabala (2003), Core and Guay (2001) and Carter and Lynch (2001) found that repricing is more common with high technology and trade firms which require more labor-intensive factors of production. These studies also underline the importance of repricing in a tight labor market environment with high growth opportunities, where firms would not like to lose their key employees.

Some of the studies mentioned above have attributed firms’ ESO repricing tendencies to their respective industry performance. Brenner et al. (2000) found more than 50% of all industries to be involved in ESO repricing during 1992 – 95, but all of them were not low performers. Brenner et al. (2000) repricing sample includes industries which were labor intensive (such as electronics, health services etc.), but also includes others that are not (textile
mills, chemicals, & wholesale trade), & excludes some that are (personal services, insurance, & brokerages). Brenner et al. (2000) further argued that the distribution of returns is also identical amongst repricer industries and non repricing ones. In contrast to Brenner et al. (2000), Carter and Lynch (2001) found no significant association between industry returns and firms' repricing decisions but instead reported a negative relation between firm-specific returns and their respective repricing probability.

Similar to industry performance, there is mixed evidence on the relationship between the internal governance structure of a firm and its respective likelihood of repricing. Chidambaran and Prabhala (2003), Grein et al. (2005), Callaghan et al. (2004) and Chen (2004) find positive relation between poor corporate governance and firm’s likelihood of repricing whereas there are studies like Carter and Lynch (2001) and Chance et al. (2000) which have found no relation between firm’s governance and its respective repricing decision. Gulen and O’Brien (2017) used an exogenous event of FASB 2003 reform that mandated shareholder approval for repricing activity, and examined its link with the firm’s likelihood of repricing. The study found evidence which indicated that after 2003 repricing was less related to poor manager performance but was similarly responsive to bad luck. Gulen and O’Brien (2017) underlined the significant role played by shareholders’ approval in the positive enhancement of repricing governance.

Despite its relation to weak governance, repricing has been a useful tool for firms’ incentive alignment and employee retention strategies. Though,
there have been contrasting studies here as well, especially in the case of the impact of repricing on employee turnover. Carter and Lynch (2004) and Chen (2004) find significant evidence that repricing helps in employee retention in case of out of money ESO’s. Coles et al. (2004) claims repricing to be extremely useful in reducing the sensitivity of executive compensation to overall stock volatility. In contrast, Chidambaran and Prabhal (2003) find a positive relationship between repricing decision and CEO turnover rates, which is ultimately inconsistent with managerial entrenchment theory. In a similar strand of literature, Aldatmaz et al. (2018) found significant evidence in favor of broad-based ESO’s leading to lower employee turnover for up to three years. Post three years of ESO’s grant, they found a large increase in employee turnover. Their evidence found ESO’s grants as a temporary but effective retention strategy. The study highlighted that ESO’s grant delays but may not prevent employee turnover. So consistent with the above results, one possibility is that firms may have to keep tweaking their ESO’s (by changing strike price or vesting period) to implement their retention strategies in the long run effectively. Some studies have also examined the differential impact of repricing on employee turnover in the case of executive versus non-executive ESO’s. For example, Carter and Lynch (2004) found significant evidence in favor of repricing of non-executive ESO’s leading to better retention ratio for firms but found little evidence to claim the same for executive ESO’s.

In all, repricing decisions are observed to be beneficial for the firms
(at least temporarily) in improving their performance and retention strategies. Aboody et al. (2010) corroborated this through their empirical finding of repricing firms exhibiting a significant improvement in their operating income and cash flows over the five years post repricing, relative to the non-repricing firms with an identical stock price decline. Considering these benefits, market investors, also in general, react positively to the firm’s repricing decisions. Grein et al. (2005) found firm-specific cumulative adjusted returns to be significantly positive around their respective repricing announcements. Callaghan et al. (2004) extended this strand of literature and argued that managers have significant incentives to time their repricing decisions, to gain maximum benefit from its subsequent market response. Callaghan et al. (2004) found that the firm’s stock experiences abnormal CAR of around 6% in the 20 day period after the repricing decision. The study further added that this return could not be attributed to repricing announcement as repricing news is not public at that time.

4 Manager Opportunism around Employee Stock Options

In earlier years, ESO’s were mostly unscheduled wherein managers had the complete discretion in when to and when not to award the ESO’s grants. Therefore, managers had a significant opportunity to maximize their payoff
by awarding ESO’s when the firm price is too low relative to its fundamentals and is expected to increase significantly in the future. In a similar instance, managers were also observed to engage in what is called as ”backdating ESO’s”. Lie (2005), Heron and Lie (2007) and Heron and Lie (2009) found that before 2002 significant abnormal returns were found to exists around ESO’s option grants. According to Heron and Lie (2007, 2009), most of these returns were attributed to backdating ESO’s done by firm managers, where they deliberately reported fake ESO award dates with low stock prices to ensure that their ESO’s are granted at a lower exercise price. To curb these practices, FASB introduced series of the regulatory reforms during 2002 − 2006, which led to the issue of scheduled ESO’s wherein firms were mandated to report their ESO award dates in advance. These reforms considerably lowered down the executives’ manipulation in granting ESO’s.

But the study by Daines et al. (2018) provided significant evidence indicating that firms kept using ESO’s grants as a manipulation tool even after FASB 2006 reforms. The study indicated the presence of significant abnormal return around executives option grants for the period 2007 − 11, consistent with price manipulation by managers. Daines et al. (2018) found results showing that firm accelerate bad news before the ESO’ awards (which they term as bullet-dodging), and they delay good news after the awards. This manipulation enables them to get ESO’s at the lower strike price and also enjoy significant payoffs after the grant due to an increase in the firm’s stock price with positive news announcements. Consistent results have been under-
lined by Edmans et al. (2018b) who were the testing the relationship between the likelihood of CEO’s selling their equity holding in a given month and the discretionary disclosure by the respective firm in the same month. Their results suggest that there is a deliberate reallocation of news into the equity vesting months which are known in advance and similarly there is reallocation of news away from the adjacent months. Their findings also indicate a positive relationship between predicted sale months and the number of positive news releases but found no significance for negative ones. Edmans et al. (2018b) also found that this strategy by the CEO’s worked well for them as the announcement of one voluntary news item in a vesting month generated a significant 16-day abnormal return of 40 basis points.

Empirical studies have also examined the consequences of such strategic decisions by the CEOs. These decisions in the case of ESO’s indicate the CEO’s myopic behavior, which may not be in the best long term interests of the firm. For instance, Edmans et al. (2018a) found a significant positive association between vesting equity and the likelihood of firm announcing repurchases, the number of shares repurchased, and also the likelihood of the firm announcing a M&A decision. The study also claimed that these decisions were made to serve managers opportunistic interests rather than improving firms operating or overall performance. A similar investigation by Edmans et al. (2017) found evidence linking vesting equity with declining growth of R&D and capital expenditure, positive analyst forecast revisions, and positive earnings guidance within the same quarter.
5 Repricing of Stock Options and Investor attention in the market

5.1 Development of Hypothesis

We intend to contribute to the literature on managerial opportunism around ESO’s, by investigating the same in the case of options repricing. This study examines the relationship of ESO repricing tendencies of a firm with prevailing investor attention in the market. Just as in the case of ESO grants, managers have significant discretion and power over decisions pertaining to ESO repricing in a firm. Although it is the compensation committee, who is responsible for making decisions related to employee compensation matters. Reda and Reifler (1998) provided evidence in favor of the CEO’s handpicking outside directors who subsequently serve on the compensation committee. Brenner et al. (2000), Callaghan et al. (2004) also found a significant positive relation between repricing and the presence of a conflict of interest on the board’s compensation committee. Callaghan et al. (2004) have argued that though the compensation committee recommends repricing decision, the timing of latter is determined independently of the compensation committee. All these findings corroborate the fact that CEO’s and higher executives of a firm have a significant level of jurisdiction and power to influence the decisions related to the timing of repricing events. These decisions provide considerable incentive to the CEO & top executives to not only benefit from
the repricing of their options but also through opportunistically timing the same, to further gain from lower exercise prices.

Regarding the timing of ESO repricing, Callaghan et al. (2004) found that repricing is more likely to occur before a positive earnings news or follow a negative one, thereby further enhancing the repricing benefits to the option holders. For each repricing firm, Callaghan et al. (2004) selected a non-repricing control firm with the same four-digit SIC code, 1 and 2 year stock returns and also of the same size. Callaghan et al. (2004) found negative abnormal returns for each of the 5 days before repricing, and significant positive abnormal returns for each of the 5 days after the repricing event. In the same strand of literature, Coles et al. (2006) found evidence in case of abnormally low discretionary accruals prior to the repricing announcement, causing the firm’s stock prices to decline. Post this; the canceled options are reissued at a lower strike price, further strengthening upside potential for the option holders.

Another instance of manager opportunism was observed around the FASB regulation in 1998, which mandated firms who are canceling and reissuing new ESO’s within 6 months to classify it as repricing & disclose it accordingly in the firm’s financial statements. Exploiting this rule, Coles et al. (2006) found a significant number of firms reissuing option after 6 months 1 day from cancellation to avoid accounting for compensation charges.

The researchers have extensively studied manager opportunism around
ESO repricing, but the latter’s relation (if any) with the prevailing investor attention is still an unexplored area. In a one-off study, Garvey and Milbourn (2002) points out the role of limited investor attention due to which ESO dilution costs get fully reflected in the firm’s prices only after the respective options are exercised, not anytime before. The study found a negative relationship between the firm’s abnormal returns and its unrecognized cost of ESO’s. According to Garvey and Milbourn (2002), in the pre-2000 era, ESO compensation costs were incorporated by the investors and firm shareholders only when options were exercised. Before that, ESO’s were not expensed at all and the related information was disclosed only through footnotes in the firm’s financial statements. Evidence from Garvey and Milbourn (2002) indicates that firms’ prices reflect their option costs primarily in the months where the former issues quarterly report post-ESO exercise. Though this non-expensing of ESO compensation costs lasted only until FASB Interpretation No.44 came in March 2000. The FASB rule mandated firms to disclose repricing as a variable accounting transaction and to expense it accordingly in the firm’s financial statements. This rule would mean accounting for the valuation difference between old ESO’s and the new modified ESO’s (if any). This variable option expensing would have improved repricing governance standards, but still, repricing activity was carried under manager discretion without any requirement of shareholders’ approval.
5.2 Research Hypothesis

We state our testable hypothesis as:

\[ \text{HOa: Do firms time their ESO’s repricing decisions based on the prevailing investor attention in the market?} \]

We expect a higher likelihood of firms repricing their ESO’s in a low attention market vis-a-vis a high attention one.

5.3 Rationale behind the time-period of the study

In June 2003, SEC issued new listing requirements for the NASDAQ and NYSE, wherein firms were mandated to take shareholder approval before making any significant decisions regarding employee compensation matters.\(^6\) Therefore, to conduct any repricing activity for the existing ESO’s, firms would require the consent of their respective shareholders; otherwise, they may face the risk of getting delisted from the exchange. This rule made repricing as a more salient activity for the shareholders and investors compared to the era before the regulation was finally enforced. Therefore, if managers opportunistically time their repricing activity to avoid catching significant investors’ attention, they are more likely to do the same in the pre 2003 reform era, compared to the post-reform years.

6 Data & Methodology

For ESO’S repricing data, our first source is the Compustat Execucomp database for the period 1992 – 2002. Execucomp has an indicator variable stating whether or not a particular executive name is listed in the stock option repricing table. But as mentioned by ?, the Execucomp database consists of less than 10 % of the total repricing sample. Therefore, to cover the missing repricing events as in Gulen and O’Brien (2017), we refer to SEC filings as our second source of repricing data. Using the EDGAR database, we search for terms like ”Repricing of options”, ”options exchange”, ”options canceled”, etc. across all the historically available SEC filings for all firms. Specifically, we search for repricing tables listed in the respective firm’s 10K or proxy statement filings for the given sample period. We removed all those repricing events where we couldn’t verify the exact date of repricing by the firm. Also, we focus our study mainly on the repricing of ESO’s granted to Top 5 executives of each firm. Using these exclusion criteria, we could consolidate data for 1522 firm-level repricing events for 945 total firms.

6.1 Investor attention proxies

In our analysis, we specifically focus on investor attention with respect to institutional investors/shareholders, who have been considered as effective monitors in the case of firms’ corporate governance practices. Studies like Chung et al. (2002), Hadani et al. (2011), Kempf et al. (2016), etc. have
well established the role of institutional shareholders in mitigating managerial opportunistic and self-serving behavior. We used a firm-level temporal distraction proxy (denoted by D) proposed by Kempf et al. (2016) to test its possible relationship with firms repricing behavior\(^7\). Kempf et al. (2016) defined distraction for firm ”f” in quarter ”q” as:

\[
D_{f,q} = \sum_{i \in F_{q-1}} \sum_{\text{IND}_i \neq \text{IND}_f} w_{ifq-1} \times w_{IND_{q-1}} \times IS^{IND}_{q}
\]

where \(F_{q-1}\) denotes the set of firm f’s institutional shareholders at the end of quarter \(q - 1\), IND denotes a given industry among the Fama-French 12 industries, and \(IND_f\) denotes firm f’s Fama-French industry. Here IS is an industry shock. Kempf et al. (2016) defines IS as an indicator variable equal to one if an industry has the highest or lowest return across all 12 Fama-French industries in a given quarter and zero otherwise. \(IS^{IND}_{q}\) measures whether there is a distraction event occurring in the industry IND in a given quarter q. Whereas \(w_{IND_{q-1}}\) is the weight of industry IND in the institutional holder i’s portfolio. We get an investor level distraction measure, which we can sum across all institutional holders of firm f to get the overall firm-level distraction measure in each quarter q. Here \(w_{ifq-1}\) is the importance of investor ”i” for firm F. Higher value of D signifies a greater amount of distraction for the institutional holders of the respective firm and, therefore, may lead to weakened monitoring. This proxy is extensively used in attention

\(^7\)Firm level distraction data is downloaded from Prof. Elisabeth Kempf personal webpage [https://sites.google.com/site/elikempf/research](https://sites.google.com/site/elikempf/research)
studies such as Chen et al. (2019), Garel et al. (2018), Liu et al. (2017), Longoni (2018), Renjie and Verwijmeren (2017) etc.

6.2 Research Design

As our distraction measure is estimated at a quarterly frequency, we capture firms repricing instances as a quarterly indicator variable with values zero and one. Table 1 presents the summary statistics with respect to our quarterly estimated study. One issue with our distraction proxy is that majority of its data is comprised of mid-cap and large-sized firms. Whereas our repricing sample consists of significant number of small-caps, and therefore leading to considerable reduction in our repricing sample. Our final Compustat matched sample is comprised of 7067 firm-quarter observations with 414 firm-quarter repricing instances. This includes 302 repricing firms with their respective repricing events for the period 1991–2002. Panel A depicts the repricing counts by year and calendar quarter. Consistent with Gulen and O’Brien (2017), repricing frequency picked up in 1996 and peaked around 1998 when various new repricing regulation were introduced but not yet implemented. After the implementation of some of the repricing reforms, repricing activity declined but rose again in 2001 with the concurrent economic downturn Saly (1994). In our sample, repricing is more common in second half of the calendar year. Also consistent with Carter and Lynch (2001), Chidambaran and Prabhala (2003), Gulen and O’Brien (2017), repricing is
a more common practice in business services and equipment related industries considering the tighter labor market in the same. Table 1 Panel B depicts the descriptive characteristics of our independent variables estimated at quarterly frequency.

We estimate the following baseline logistic regression to measure the relationship between firms Eso repricing tendency and Institutional investors attention:

$$RP_{fq} = \beta_0 + \beta_1 D_{fq} + \beta_2 QRet_{fq} + \beta_3 QRet_{fq-1} + \beta_4 LogAssets_{fq}$$

Where RP is an indicator variable = 1 if given firm "f" repriced their Eso’s in the quarter ”q” and 0 otherwise. D is the institutional investor distraction proxy for firm f in quarter q. We have controlled for firm f’s current & previous quarter returns, and also their total assets, as common predictors explaining firms repricing decisions. Firms’ current & previous quarter returns have been included to control for option moneyness, consistent with Gulen and O’Brien (2017), as we expect firms with significant number of out-of-money options being more likely to reprice the same. We expect $\beta_1$ to be positive, which would indicate that firms are more likely to time their repricing activities, relative to not repricing it when their institutional investors are significantly distracted.

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8Industry definitions taken from Kenneth R French webpage https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_12_ind_port.html
7 Results & Discussion

The results for our quarterly estimated model are presented in Table 2. Our empirical results indicate a positive and statistically significant association between our distraction measure and firms’ repricing likelihood, suggesting that, on average, firms are more likely to reprice their stock options when their institutional shareholders are significantly distracted away from the firm. Coefficients with respect to quarterly returns & lag quarterly returns are also statistically significant with an expected negative sign. The log of assets variable lacks sufficient significance, though we expected the same to be negatively significant. As discussed in the repricing literature earlier, repricing is a more prevalent practice amongst small, young & rapidly growing firms with more inside directors and also the ones belonging to labor-intensive industries Chance et al. (2000), Carter and Lynch (2001), Chidambaran and Prabhala (2003). There is also a possibility of our results being predominantly driven by greater repricing tendency amongst firms around repricing related regulation or reform years (as in the case of greater repricing instances during 1996 – 1998). To deal with these concerns, we have controlled for firm-specific and year-specific fixed effects with consistent results after that. To determine the actual impact of each of our independent variables on the dependent variable, we calculate the Average Partial Effect of each of our regressors. Ceteris paribus, the average partial effect is the average impact of the independent variable on the probability of observing "one" in
the dependent variable. Our results indicate that one unit increase in the distraction measure leads to an average increase of 9.04% in the firm’s repricing likelihood.

8 Alternative Investor Attention Proxies

As an alternative, we have also examined our hypothesis using the Daily News Pressure attention measure of Eisensee and Strömberg (2007)\(^9\). Daily news pressure is calculated as the median (across broadcast networks) number of minutes that US broadcast networks devoted to the top three news trending on television on that day. Eisensee and Strömberg (2007) argues that a significant event attracts a lot of media attention and is more likely to be broadcasted as the top news in terms of minutes of coverage on any given day. News broadcasters covered by Eisensee and Strömberg (2007) include American Broadcasting Company (ABC), Columbia Broadcasting System (CBS), and National Broadcasting Company (NBC). Studies like Liu and Krystyniak (2020) Peress and Schmidt (2020) have used daily news pressure as a possible investor distraction measure to examine its impact on stock returns, liquidity, investors’ response to merger announcements, etc. Empirical evidence indicates a significant difference in investors’ trading behavior (specifically retail investors) on high versus low news pressure days. Peress and Schmidt (2020) captured a decline in trading activity, volatility, and

\(^9\)Daily news pressure data is downloaded from Prof. David Stromberg webpage http://perseus.iies.su.se/~dstro/
liquidity on high news pressure days or high investor distraction days. Liu and Krystyniak (2020) also found significant evidence of higher stock returns and trading activity response to merger announcements on low news pressure days. We have employed daily news pressure as a proxy for investor distraction (mainly retail) to examine its possible relationship (if any) with firms’ options repricing behavior.

One possibility is that the news pressure is high due to significant economic news trending in the market on that day, which in turn may attract investors’ attention towards the stock market rather than distracting away from the same. But correlation analysis by Peress and Schmidt (2020) indicates that macro-economic news releases, investor sentiment & business activity indicators explain a minimal fraction of total variation in daily news pressure index. Peress and Schmidt (2020) points towards the likeliness of news pressure being orthogonal to stories related to discount rates and future cash flows. To further deal with the concern of economic news driving the news pressure, we followed Peress and Schmidt (2020) and excluded news pressure days on which the top three news covered included at least one word amongst the list of economics-related keywords. We transformed daily news pressure measure by taking its monthly average for the sample period 1992 – 2002. Accordingly, baseline logistic regression is estimated as:

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10 We sincerely thank Prof. David Stromberg for sharing the news headlines data with us.
\[ RP_{fm} = \beta_0 + \beta_1 DNP_m + \beta_2 QRet_{fm} + \beta_3 QRet_{f_{m-1}} + \beta_4 LagLogAssets_{fq} \]

Where RP is an indicator variable = 1 if given firm repriced their Eso’s in the given month ”m” and 0 otherwise. DNP is the Daily news pressure in month ”m” of a specific year. As in the earlier regression, we have controlled for firm f’s current & previous monthly returns, and their total assets of the preceding quarter as well. We expect \( \beta_1 \) to be positive, indicating that firms are more likely to time their repricing activities compared to not repricing when investor distraction attributed to daily news pressure is high.

Table 3 presents the summary statistics concerning our monthly estimated regression. Here our final Compustat matched sample is comprised of 1183 firm-month repricing observations with 945 firm repricers for the period 1991 – 2002. Consistent with our quarterly model, repricing increased significantly during 1996 – 1998 and is usually done in the latter half of the year. Also, repricing is a more common practice amongst business services and equipment industries\(^{11}\). Table 3 Panel B depicts the descriptive statistics of our news pressure measure and other independent variables.

Consistent with the quarterly distraction measure, we find firms’ repricing likelihood to be positively associated with the news pressure estimate in Table 4, suggesting greater likeliness of firms’ repricing their ESO’s in a

\(^{11}\)Industry definitions taken from Kenneth R French webpage: https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_12_ind_port.html

xxvii
high news pressure month. Though lag quarterly returns are statistically
significant with an expected negative sign, we find lag of Log Assets to be
positively related to firm repricing tendency, which is contrasting to our
initial expectations.

9 Limitations and Future Research Prospects

One difficulty we encountered in our study is the data availability for alter-
native investor attention proxies for the sample period 1992 – 2002. Most
of the extensively used investor attention proxies like Google Search Volume
Index (GSV) by Da et al. (2011), Bloomberg Abnormal Institutional At-
tention index (AIA) by Ben-Rephael et al. (2017) etc. have been compiled
from 2004 onwards, which lies outside our sample period. Thus, our sample
period selection limited the possibility of using other alternative attention
proxies in our study. Also with FAS 123 reform of 2003, firms were mandated
to take shareholder approval in all employee compensation-related matters
of the firm. We conducted our analysis for the period prior to 2003 as we
expected greater sensitivity of options repricing to investor attention in the
pre reform period compared to the post-reform one. As a further possibility,
we intend to extend our analysis by investigating the possible difference in
sensitivity to attention in a Pre v/s Post FAS 123 reform. We expect the
respective sensitivity to decline in the post reform era.

xxviii
10 Conclusion

For decades, Employee stock options (ESO’s) have been a preferred choice of stock compensation over other instruments as the former offers better incentive alignment benefits and effective retention as well. In case of a significant decline in firm prices, firms are observed to reprice their ESO’s by lowering strike prices, canceling and reissuing new options, or modifying option maturity to realign their employee’s incentives and to retain them as well. Though repricing ESO’s have proved to be effective in reducing employee turnover and sensitivity of executive compensation to overall stock volatility (Carter and Lynch (2004) Chen (2004)). But managers of firms at times have used options repricing, not in the long term interests of the firm, and instead engaged in opportunistic tendencies to maximize vested payoffs at the cost of a firm’s shareholders’ interests (Callaghan et al. (2004) Coles et al. (2006)). We intend to extend the literature on manager opportunism in ESO repricing by investigating the latter’s relationship with prevailing investor attention or investor distraction. In this study, we have examined the possibility of firms timing their ESO repricing decisions when the investor’s attention is low, or in other words, investors are significantly distracted away from the firm or overall stock market. Using institutional investors distraction proxy by Kempf et al. (2016), we find a significant positive relationship between a firm’s repricing likelihood in a quarter and its respective individual level distraction measure. The results remain consistent after including necessary
controls like a proxy for option moneyness, firm size, etc. We also test our hypothesis using an alternate investor attention proxy, which represents retail investors’ overall distraction away from the stock market (Eisensee and Strömberg (2007)). We got consistent results at a monthly frequency, indicating the possibility of firms timing their options repricing decisions when the overall retail investor population, on average, is diverted away from the stock market. Though our study has some data limitations due to the absence of detailed data on option characteristics and repricing instances. But our analysis will contribute significantly to not only theoretical literature surrounding managerial opportunism but may have policy implications as well.
References


xxxii


Heron, R. A. and Lie, E. (2009). What fraction of stock option grants to top execu-
atives have been backdated or manipulated? Management Science, 55(4):513–525.


xxxiv


Table 1: Summary Statistics for Estimation at Quarterly Frequency

Panel A: Repricing Characteristics

| Repricing Count by Year |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |              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              |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |          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          |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |                | 0.00  | 0.05  | 0.12  | 0.12  | 0.20  | 0.36  | -0.68 | -0.16 | 0.01  | 0.03  | 0.20  | 1.12  | 9.74  | 242.06 | 566.43 | 1656.27 | 1454.38 | 53739.30 |
Table 2: Firm Repricing Likelihood

Dependent variable is indicator variable "Reprice" which takes value one if firm "i" reprice their options in quarter "q" and zero otherwise. Main independent variable is the quarterly firm level variable "Distraction". Controls include Firm returns in quarter "q" (Q Returns), Firm returns in quarter "q-1" (LagQ Returns) and log of total assets of a firm in quarter "q" (LogAsset). Robust standard errors clustered at firm level are mentioned in parenthesis.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Reprice</th>
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<tbody>
<tr>
<td>Model:</td>
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<tr>
<td>Variables</td>
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</tr>
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<td>Distraction</td>
<td>2.628***</td>
</tr>
<tr>
<td></td>
<td>(0.8210)</td>
</tr>
<tr>
<td>QReturns</td>
<td>-0.8737***</td>
</tr>
<tr>
<td></td>
<td>(0.2300)</td>
</tr>
<tr>
<td>LagQReturns</td>
<td>-2.895***</td>
</tr>
<tr>
<td></td>
<td>(0.3109)</td>
</tr>
<tr>
<td>LogAsset</td>
<td>0.1821</td>
</tr>
<tr>
<td>Fixed-effects</td>
<td></td>
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<tr>
<td>Firm</td>
<td>Yes</td>
</tr>
<tr>
<td>Year</td>
<td>Yes</td>
</tr>
<tr>
<td>Fit statistics</td>
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<td>Observations</td>
<td>7,152</td>
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<tr>
<td>Pseudo R²</td>
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One-way (Firm) standard-errors in parentheses  
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Effect on Repricing Likelihood

<table>
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<tr>
<th>Variable</th>
<th>Average Partial Effect</th>
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<tbody>
<tr>
<td>Distraction</td>
<td>0.0904</td>
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<tr>
<td>Q Returns</td>
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<td>LagQ Returns</td>
<td>-0.1128</td>
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<td>Log Asset</td>
<td>0.0070</td>
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Table 3: Summary Statistics for Estimation at Monthly Frequency

Panel A: Repricing Characteristics

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<thead>
<tr>
<th>Year</th>
<th>Repricing Count</th>
<th>Year</th>
<th>Repricing Count</th>
</tr>
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<tbody>
<tr>
<td>1991</td>
<td>7</td>
<td>January</td>
<td>91</td>
</tr>
<tr>
<td>1992</td>
<td>17</td>
<td>October</td>
<td>136</td>
</tr>
<tr>
<td>1993</td>
<td>15</td>
<td>November</td>
<td>100</td>
</tr>
<tr>
<td>1994</td>
<td>45</td>
<td>December</td>
<td>162</td>
</tr>
<tr>
<td>1995</td>
<td>65</td>
<td>February</td>
<td>63</td>
</tr>
<tr>
<td>1996</td>
<td>146</td>
<td>March</td>
<td>72</td>
</tr>
<tr>
<td>1997</td>
<td>224</td>
<td>April</td>
<td>109</td>
</tr>
<tr>
<td>1998</td>
<td>474</td>
<td>May</td>
<td>83</td>
</tr>
<tr>
<td>1999</td>
<td>43</td>
<td>June</td>
<td>67</td>
</tr>
<tr>
<td>2000</td>
<td>49</td>
<td>July</td>
<td>100</td>
</tr>
<tr>
<td>2001</td>
<td>78</td>
<td>August</td>
<td>83</td>
</tr>
<tr>
<td>2002</td>
<td>20</td>
<td>September</td>
<td>117</td>
</tr>
<tr>
<td>Total</td>
<td>1183</td>
<td>Total</td>
<td>1183</td>
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</table>

<table>
<thead>
<tr>
<th>Industry</th>
<th>Repricing Count</th>
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<tbody>
<tr>
<td>Business Equipment (Computers, Software, Electronics etc.)</td>
<td>489</td>
</tr>
<tr>
<td>Other (Mines, Construction, Transport, Hotels, Entertainment)</td>
<td>168</td>
</tr>
<tr>
<td>Healthcare, Medical Equipment, and Drugs</td>
<td>144</td>
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<tr>
<td>Wholesale, Retail, and Services (Laundries, Repair Shops)</td>
<td>104</td>
</tr>
<tr>
<td>Finance</td>
<td>69</td>
</tr>
<tr>
<td>Manufacturing (Machinery, Trucks, Planes, Furniture, Paper etc)</td>
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</tr>
<tr>
<td>Consumer NonDurables (Food, Tobacco, Textiles, Apparel etc.)</td>
<td>42</td>
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<tr>
<td>Oil, Gas, and Coal Extraction and Products</td>
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<tr>
<td>Telephone and Television Transmission</td>
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<tr>
<td>Consumer Durables (Cars, TV’s, Household appliances etc.)</td>
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<tr>
<td>Chemicals and Allied Products</td>
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<tr>
<td>Utilities</td>
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<tr>
<td>Total</td>
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Panel B: Independent Variables Characteristics

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<thead>
<tr>
<th>Variable</th>
<th>Min.</th>
<th>1st Qu.</th>
<th>Median</th>
<th>Mean</th>
<th>3rd Qu.</th>
<th>Max.</th>
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<tbody>
<tr>
<td>Average News Pressure</td>
<td>6.28</td>
<td>7.26</td>
<td>7.61</td>
<td>7.95</td>
<td>8.48</td>
<td>14.24</td>
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<tr>
<td>Monthly Returns</td>
<td>-0.92</td>
<td>-0.11</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.11</td>
<td>12.67</td>
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<tr>
<td>Total Assets</td>
<td>0.13</td>
<td>31.81</td>
<td>91.37</td>
<td>435.34</td>
<td>307.35</td>
<td>33544.00</td>
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</table>
Table 4: Firm Repricing Likelihood

Dependent variable is indicator variable "Reprice" which takes value one if firm "i" reprice their options in month "m" and zero otherwise. Main independent variable is the monthly aggregated distraction variable "News Pressure". Controls include Firm returns in quarter just before month "m" (LagQ Returns) and log of total assets of a firm in quarter just before month "m" (Lag LogAssets). Robust standard errors clustered at firm level are mentioned in perenthesis.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Reprice</th>
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<tbody>
<tr>
<td>Model:</td>
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<table>
<thead>
<tr>
<th>Variables</th>
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<tbody>
<tr>
<td>NewsPressure</td>
<td>0.0982***</td>
<td>0.0698**</td>
</tr>
<tr>
<td></td>
<td>(0.0230)</td>
<td>(0.0298)</td>
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<tr>
<td>LagQReturns</td>
<td>-1.913***</td>
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<tr>
<td></td>
<td>(0.1529)</td>
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<tr>
<td>LagLogAsset</td>
<td>0.2649***</td>
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<tr>
<td></td>
<td>(0.0700)</td>
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<td>Yes</td>
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<td>Year</td>
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<tr>
<td>Pseudo R²</td>
<td>0.1369</td>
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</table>

*One-way (Firm) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*