Do Executive Stock Options Generate Incentives for Earnings Management? Evidence from Accounting Restatements [1]

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Abstract

This study examines the option grants and option exercises of top executives of 224 firms that announce restating their financial statements due to accounting irregularities over the period January 1997 to June 2002. I find that firms that announce large negative restatements grant about 50% more stock options to their top executives in the years prior to the announcement in comparison to a size and industry matched control group. Top executives of firms with large negative and large positive restatements also exercise significantly more options in the years prior to the announcement in comparison to a size and industry matched control group. Higher option exercises appear to be concentrated among firms that are subsequently subject to SEC enforcement actions, while higher option grants are not concentrated in this group of extreme violators. Further, I find that the percentage of restating firms in the highest quintile, by option grants, is double that in the lowest quintile and this difference is significant at the 1% level. The evidence suggests that private gains in option portfolios of top executives might have given them incentives for aggressive interpretation of GAAP.

Keywords: Executive Stock Options, Compensation, Accounting Restatements, Earnings Management, SEC.

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Do Executive Stock Options Generate Incentives for Earnings Management?

Evidence from Accounting Restatements

Principal-agent theory suggests that stock-based compensation is one of the natural mechanisms to tie manager's pay to firm performance and therefore give him incentives to take actions, often unobservable, in line with shareholder wealth maximization. Since Jensen and Murphy (1990) documented that, despite this central tenet of the principal-agent theories, the pay-for-performance sensitivities of CEOs in modern corporations remains low, there has been a surge in the use of stock options for compensating executives (See Hall and Leibman (1998)). This growth in executive stock options has been accompanied by an increase in academic research that has furthered our understanding of the effect of stock options on managerial incentives, particularly alignment incentives and risk taking incentives (See Murphy (1999)). However, there has been relatively little attention paid to the effect of stock options on other managerial incentives.

One such effect that has recently received some attention is the effect of stock option compensation on the incentives to manipulate voluntary disclosures, especially with respect to their timing. Aboody and Kasznik (2000) document that managers delay the announcement of good news and rush the announcement of bad news. Such a disclosure strategy ensures that negative price reactions to bad news occur before option awards and positive price reactions to good news after option grants. It has been further suggested that stock options give incentives to manipulate or manage earning. Healy (1986) finds evidence that accruals are related to the manager's bonus schemes, and Bergstresser and Philippon (2002) find that the use of discretionary accruals is more pronounced in firms where stock options constitute a larger fraction of CEO compensation. Beneish (1999) examined a sample of firms under SEC

enforcement action from 1987-1993 and finds that gains from stock sales are a motivation for GAAP violations. However, Dechow, Sloan and Sweeney (1996) examining firms under SEC enforcement action over a different time period, 1982 to 1992, do not find any evidence that gains from insider sales is a motivation for GAAP violations.

In this paper, I study a very specific instance of this possible incentive to "manage earning" by examining firms that restate their financial statements due to accounting irregularities over the period January 1997 to June 2002. I examine the stock option grant and exercise patterns of top executives of these firms in the years prior to the announcement of the restatement, i.e., for the years whose results were eventually restated. If incentives of executives to maximize gains on their option portfolio increases the probability of aggressive interpretation of GAAP or of outright violation of GAAP, and hence a subsequent restatement, then there should be evidence of top executives locking in these gains in the years prior to the announcement of the restatement.[2]

Restatements of financial statements represent distinct events of material reversal of accounting practices by firms. As the restatement is largely unexpected, its announcement is usually accompanied by a significant price reaction. As the manager's strategy for maximizing gains to his option portfolio, discussed below, depends crucially on this price reaction to the announcement, restatements provide a suitable venue to examine the effect of stock options on managerial incentives to manipulate earning. An examination of restatements is also interesting as the recent spate of restatements by firms has stirred up a lot of controversy in the popular press with allegations of large gains to top executives at a time

[2] There is little work on restatements as a dramatic form of earnings management. The exceptions being Richardson, Tunu and Wu (2002), Wu (2002) and Palmrose, Richardson and Scholz (2001). However, none of these papers examine the role of managerial compensation. The literature on earnings management through accruals, in contrast, is vast. However, with the exception of Healy (1985) and Burgstresser and Philippon

when their shareholders lose value due to declining market valuations and loss of investor confidence.[3]

Consider a firm that follows aggressive accounting practices that involve booking higher revenues in the year t-2 to year t-1. In year t the firm announces that it is restating its financial statements with a downward revision of revenue for years t-2 and years t-1. This announcement of a downward revision in revenue is accompanied by a decline in stock prices as the market revises its estimates of the firm's cash flow and growth prospects. An opportunistic manager aware of his aggressive accounting practices and anticipating a restatement and a price decline in the future should exercise his options in the years prior to the announcement, i.e., years t-2 and t-1. The years prior to a negative restatement should be accompanied by higher exercise of outstanding stock options.

Similar opportunism will be seen in option grants only if the manager has some influence over his compensation, as has been documented by Yermack (1997). The effect on stock option grants involves two opposing effects. As most stock options are given at the money, an anticipated decline in stock price in the future suggests that grants of stock options be postponed till after the announcement of the restatement. Stock options can then be granted with a lower exercise price. However, the available pool of stock options that can be granted is often a function of firm performance. This may prevent firms from making large option grants subsequent to a major negative revision of firm performance. Further, it may also artificially boost the stock option pool available for grant in the years prior to the announcement of a restatement. As managers might have more influence over their

(2002) this literature also does not examine the role of managerial compensation contracts. See Healy and Wahlen (1999) for a survey of this literature.

compensation and hence the granting of stock options in good times relative to bad times, it is quite likely that the years prior to a negative restatement will be associated with higher grants to an opportunistic manager.

Now consider the case of a firm that announces a positive revision of its financial performance, to be called a positive restatement. This positive restatement should be accompanied by an increase in stock prices. An opportunistic manager anticipating this positive restatement and the accompanying increase in stock price should postpone his exercises till after the announcement of the restatement so that he can sell his shares at a higher price. However, it is possible that risk averse managers may exercise early to lock into some of the gains. This is going to be especially true if firm performance prior to the announcement of a positive restatement is good, which is likely to be if firms manipulate earnings downwards in good times to set aside "cookie jar" reserves (Healy 1985). Therefore, years subsequent to the announcement of a positive restatement should be associated with higher exercises, though higher exercises may also be observed in the years prior to the restatement. Similarly, anticipating the positive effect on share price, the manager should increase option grants in the years prior to the announcement.

I examine a sample of firms that announce a restatement of their financial statements from January 1997 to June 2002. This sample of restating firms is based on a Lexis Nexus search and was compiled by the General Accounting Office (GAO) for a study of accounting restatements requested by the Chairman, Committee on Banking, Housing and Urban Affairs of the U.S. Senate. This list of 919 announcements of restatements includes only restatements due to accounting irregularities. I match this list of restating firms to firms for which option

[3] See for e.g. "Are Corporate scandals just greed, or a predictable result of theory?" New York Times, February 20, 2003, "Options Payday: Raking It In, Even as Stocks Sag" New York Times, December 29, 2002, "Before

data is available on ExecuComp to obtain a sample of 224 unique firms that make 257 announcements of restatements. A size and industry matched control group is created from other non-restating firms covered by the ExecuComp database.

Cumulative abnormal returns around the announcement day are negative and significantly different from zero for firms that announce restatements. There is significant cross-sectional variation in the estimated cumulative abnormal returns (CARs). 67 announcements have positive –2 to + 2 day CARs. The mean CAR for this group was 5.7% and was significantly different from zero. About 142 announcements have significant negative mean –2 to +2 day CAR of –14.2%. Not surprisingly, the mean CAR for the control group is not significantly different from zero. I use the sign of the estimated CAR to proxy for the nature of the restatement. A negative CAR implies a negative revision of financial performance and will be subsequently referred to as a negative restatement. A positive CAR proxies for positive information on firm performance and will be referred to as a positive restatement. Firms with positive restatement are older and have less debt than their size and industry matched control group. Firms with negative restatements tend to be higher growth and more financially constrained than their size and industry matched control group.

There is strong evidence that executives of firms with large negative restatements are granted significantly more option in the years prior to the announcement of the restatement. The average grant for firms with large negative restatements is about 50% higher in the five years prior to the announcement of the restatement in comparison to a size and industry matched control group. There is no evidence that executives of firms with positive restatements receive higher option grants in the years prior to the announcement of the restatement. I find some evidence that executives of firms with large negative restatements

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Telecom Bubble Burst, Some Insiders sold out Stakes, WSJ Aug 12 2002.

exercise more options in the two years prior to the announcement of the restatement. Executives of firms with large positive restatements, also exercise significantly more options in the years prior to as well as in the years after the announcement of the restatement as expected. The average option exercise in the years prior to the announcement of a restatement for firms with large negative and positive restatements is about 30% to 50% higher than its size and industry matched control group.

The evidence that managers exercise more options in the years prior to the announcement of a negative restatement is consistent with the evidence of insiders trading stock in their firms to opportunistically gain from major corporate events like dividend initiations (John and Lang (1991)), bankruptcy (Loderer and Sheehan (1989), Gosnell, Keown, and Pinkerton (1992), Sehyun and Bradley (1997)), and equity issuances (Karpoff and Lee (1991)) among others (See also Seyhun (1986), Noe(1999)). However, the pervasiveness of stock options in executive compensation and the fraction of executive wealth tied to stock options in recent times raises the problem of insiders opportunistically trading in private information to a higher magnitude. Besides, managers ability to somewhat influence the terms of their compensation by affecting the number of options granted as well as their exercise price, by influencing the timing of the grant, gives them further incentives for aggressive interpretation of GAAP, that are over and above the gains from insider trading.

As the accounting restatements might arise due to unpremeditated accounting errors on the one hand and deliberate GAAP violations on the other hand, I create a proxy for wrongdoing to isolate the restatements more likely to be deliberate. I then examine whether opportunistic behavior with respect to option grants and exercises documented above is widespread among restating firms or is concentrated in a small group of extreme violators.

To create a subset of the sample that has higher likelihood of deliberate manipulation of financial statements, I collect data on sample firms that were eventually subject to an Accounting Enforcement Action (AEA) by the SEC. Of the 224 firms in the sample 35 firms were subject to SEC enforcement action. I also collected data on firms that were under informal SEC investigation. 99 firms were under informal investigation by the SEC.

I find that higher option grants in the years prior to the announcement of a restatement are not correlated with firms that are charged of GAAP violations by the SEC. Higher option grants occur in firms with large negative restatements irrespective of whether they were subsequently charged of GAAP violations. However, higher options exercises in the years prior to the restatement are mostly observed in firms that are later charged of GAAP violations by the SEC. The average option exercise in the years prior to the announcement of a restatement by firms that are subject to SEC enforcement action is more than twice that seen in firms that are not subject to SEC enforcement action. There is little evidence that firms under an informal SEC investigation have unusual option grant or exercises in the years prior to the announcement of a restatement.

As option exercises, and the subsequent sale of stock by executives is subject to insider trading laws it is not surprising that firms, where executives exercise more options in the years prior to the announcement of the restatement, are likely to be subject to SEC enforcement action. The lack of any regulatory overview on option grants might explain why higher option grants in the years prior to the announcement of the restatement are not correlated with SEC enforcement actions.[4]

Further, I find some preliminary evidence of the effect of stock option usage on the incidence of aggressive interpretation of GAAP, and therefore on the incidence of

restatements. The percentage of firms restating in the quintile with the largest average option grants is more than twice the percentage of restatements in the lowest quintile. This difference between the groups is significant at the 1% level. This provides further evidence of the effect of stock options on incentives for aggressive interpretation of GAAP.

The rest of the paper is organized as follows. Section II details sample selection issues, section III discusses estimation of cumulative abnormal returns and the classification of restatements, section IV presents evidence on option grant and exercises, section V presents evidence for firms under SEC enforcement action, section VI presents some robustness checks, and section VII concludes.

II. Sample Selection

The General Accounting Office (GAO) October 2002 report to the Chairman, Committee on Banking, Housing and Urban Affairs of the U.S. Senate, titled "Financial Statement Restatements: Trends, Market Impacts, Regulatory Response, and Remaining Challenges," identifies 919 announcements of accounting restatements by 845 firms over the period January 1997 to June 30, 2002. These announcements were identified by the GAO through a Lexus-Nexus search with variations of the word 'restate'. These announced restatements were due to accounting irregularities resulting in material misstatements of financial reports.[5] I use this list as the basis of this study.

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[4] See Agarwal and Chadha (2002) for corporate governance and its impact on accounting restatements.

[5] GAO defined accounting irregularity as an instance where the company restates is financial statements because they were not fairly presented in accordance with GAAP. This includes material errors as well as fraud. Portions of this list were cross checked with lists compiled by the SEC, the Congressional Research Service and others at the GAO, when this information was available. As many restatements are routine and on account of acquisitions, divestitures and other corporate restructuring activities, it is important to isolate the firms that restate due of accounting irregularities. Wu (2002) also identifies a similar sample over a different time period, 1971-2000.

I match these 845 firms with the firms included in the ExecuComp database to get a sample of firms for which executive option data is available. Of the 845 firms, 224 firms were covered in ExecuComp. These 224 firms make 257 announcements of restatements and will be referred to as the sample firms. The distribution of these restatement announcements over time for the 224 sample firms and the GAO sample is displayed in Table 1. The 257 announcements include more announcements from the later years of the period 1997 to 2002.

Data on options outstanding, option grants and option exercises for the top five most highly paid executives, was obtained from ExcuComp. Data on compensation for the individual executives was aggregated to obtain firm level annual option grants and exercises to top executives, to be referred to as executive compensation from now on.

III Positive and Negative Restatements

For each announcement date I estimated abnormal returns around the announcement date. Each day's abnormal returns (AR) are estimated as follows

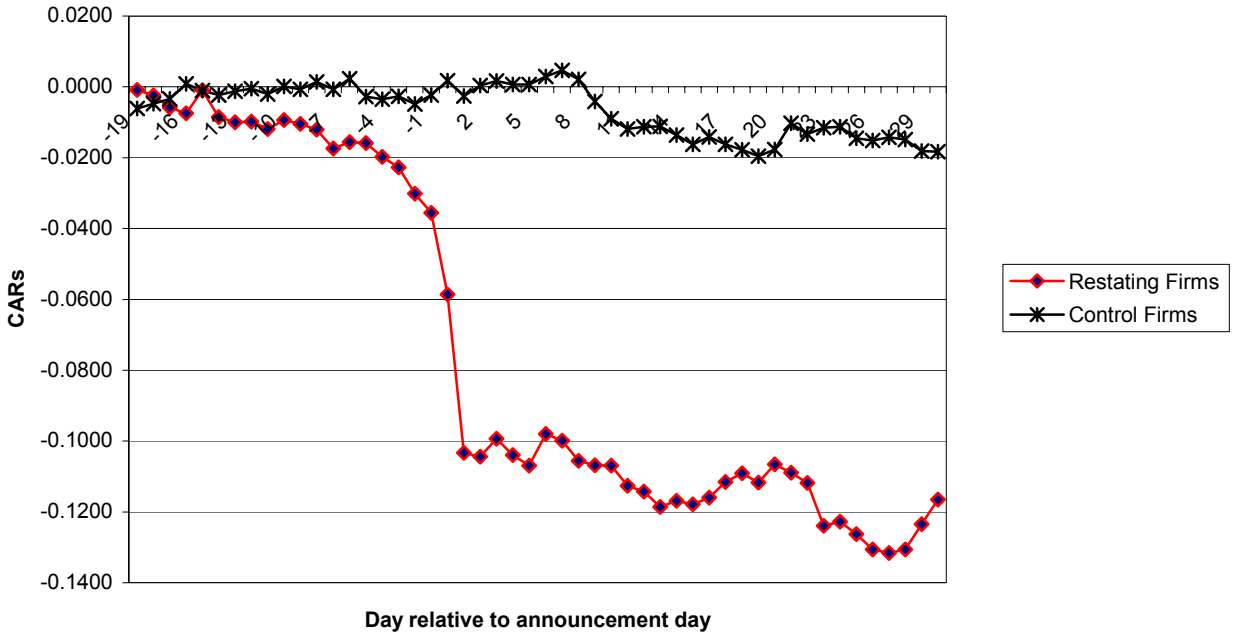
$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}$$

The market return R_{mt} is the return on the dividend included value weighted market portfolio of all NYSE/AMEX/Nasdaq stocks. R_{it} is the dividend included return on firm i for day t. The estimates of the parameters of the market model $\hat{\alpha}_i$ and $\hat{\beta}_i$ have been obtained from market model regressions for the year prior to the announcement date, i.e., from day -274 to day –20.[6]

[6] For firms with more than one announcement, the second announcement was included if it was more than 304 trading days prior. This ensures that the first announcement does not affect the estimation of the parameters of the market model. Similar checks were made when the firm had more than two announcements.

These abnormal returns are used to estimate the cumulative abnormal returns around the announcement return. The mean cumulative abnormal return, from day –1 to + 1, is –6.7% for sample firms and is significantly different from zero. The mean CAR over the same interval for the 919 announcements in the GAO study was –10%. In contrast, the mean CAR for the control firms over the same interval is zero. Fig 1 shows the mean CAR over a longer period of time, from day –20 to day + 30, for the restating group and the control group.

Figure 1: Mean Cumulative Abnormal Returns



A control group was created by matching sample firms to other firms that were in the same industry and similar in size. As executive stock option data is needed for these control firms, control firms had to be covered by ExecuComp Database. The control firm had to be in the same industry as characterized by the two digit SIC and have total assets in the 75% to 125% range of the restating firm in the year of the announcement of the restatement. Control firms were found for 222 of the 257 restatement announcements based on the above criteria. Another 15 announcements were added by extending the asset match criteria over the range of

50% to 150% and another 10 announcements were added by also matching at the one digit SIC. To maximize the sample I include the 25 announcements that were matched with the broader criteria. No matches were found for 10 announcements. This matched group will be referred to as the control group.[7] The matched control firm is given the same announcement date as its sample firm.

The GAO study provides seven reasons for the restatements. These are revenue recognition, cost/expense, restructuring, assets or inventory, acquisitions and mergers, securities related, reclassification, in process research and development, related party transactions and others. As the study does not specify the magnitude of the revision or whether it is a upward or downward revision of the respective category, it is difficult to estimate whether the restatement involves an upward or downward revision of the firm's reported financial performance.[8]

To obtain a proxy for the effect of the restatement on reported financial performance, I obtained data from Compustat on items restated. Compustat reports actual and restated values of several items. I looked at the following seven categories 1) revenues, 2) net income, 3) basic earning per share excluding extraordinary items, 4) basic earning per share including extraordinary items, 5) SG&A, 6) cost of goods sold, and 7) capital expenditures.

Out of the 224 firms that announce a restatement Compustat reported no restatements for 14 firms in the seven categories described above for the five years prior to the

[7] When more than two firms satisfied the criteria of matching, I selected the firm which was closest in asset size to the restating firm. In the event that the chosen control firm did not have option data in the years prior to the announcement of the restatement, I selected the second best control till I had the maximum number of control firms with non-missing options data over the relevant range.

[8] The precise dollar effect of the restatement is often not known till the restated financial statements are filed. Many announcements of restatements therefore do not mention the overall dollar impact of the restatement.

announcement day.[9] Of the firms that restate in the past five years in Compustat, several firms restate more than one item. 10 firms restate only 1 of the 7 items, 20 firms restate 2 items, 29 firms restate 3 items, 16 firms restate 4 items, 38 firms restate 5 items, 41 firms restate 6 items and 56 firms restate all 7 items. Table 2 displays the correlation of the number of restatements in each item in the five years prior to the announcement of the restatement. The number of revenue restatements was correlated with restatements in basic EPS excluding extraordinary items, cost of goods sold and capital expenditure. The number of net income restatements was correlated with the number of restatements in basic EPS including extraordinary items. Along with the high incidence of multiple restatements, the restatements might involve upwards revisions in some items and downward revisions in other items such that it was difficult to construct from this data an estimate of the impact of these restatements on reported performance. I therefore did not use the Compustat data on restatements to proxy for the effect of the restatement on firm performance.

I used the cumulative abnormal return, i.e., the market's reaction, to infer the effect of the announcement on the firm's reported performance. If the firm had a positive CAR over the period –2 to + 2 days around the announcement date, the restatement was regarded as being a positive revision to reported firm performance. This restatement with a positive CAR will be referred to as a "positive restatement". Similarly, if the firm had a negative CAR over the period –2 to + 2 day around the announcement date, the restatement was regarded as being a negative revision to reported firm performance and will be referred to as a "negative restatement". The use of CARs, i.e., the market's reaction to determine the directionality of

[9] The financial statement prior to the announcement day is the last financial data available at the time of the announcement. For e.g., if the firm announced a restatement in February 1998 and has fiscal year end of December then the prior year is considered as 1997. If the firm had fiscal year end of March, then prior year is 1996.

the effect of the restatement on firm's reported performance is further justified in this case as the manager's strategy for maximizing gains on his option portfolio depends crucially on the anticipated market reaction to the announcement of the restatement.

There were 67 announcements with positive CARs. The mean (median) CAR over the –2 to + 2 day period for this group is 5.7% (4.2%) and is significantly different from zero at the 1% level. The mean (median) CAR for the 142 announcements in the negative group is –14.2%(-7.5%) and is also significant at the 1% level. 38 announcements were not included. Announcements were excluded if there was not sufficiently long trading history to estimate the parameters of the market model, particularly when firms made more than one announcement, and if there is missing data.

Palmrose, Richardson and Scholz (2001) document market reaction to announcement of restatements from 1995 to 1999, and find that more severe reactions are related to management fraud, more dollar effects and restatements that are attributed to auditors. Opportunistic behavior by managers should be more evident in the case of large positive and negative restatements. The estimated cumulative abnormal return was used to further classify firms as having small or large value of restatements. Firms with a positive cumulative abnormal return greater than 6% were classified as having a large positive restatement. These firms accounted for approximately one third of all positive restatement firms. Similarly, firms with a negative cumulative abnormal return of less than –15% were classified as having a large negative restatement. These firms also accounted for approximately one third of all firms with negative restatements.

There were more announcements with a negative effect and the mean negative effect is much larger than the mean positive effect. Table 2a reports the relation between firms with

negative and positive CARs and the number of times the various items were restated upwards and downwards over the five years prior to the announcement of the restatement in Compustat. There is little difference between firms with positive CARs and those with negative CARs in the number of times revenue or net income is revised upwards. Firms with negative CARs have a higher number of negative revisions of basic EPS including extraordinary items, though the difference with positive CAR group is not significant. This further underscores the difficulty in using Compustat data to construct a proxy for positive and negative restatements.

Characteristics of restating firms and their control group are summarized in Table 3. Both positive and negative restating firms are quite similar to their respective control groups except in a few dimensions. Positive restatement firms are older, i.e., have longer trading histories and are larger and less leveraged than their control group. Negative restatement firms on the other hand are more financially constrained than their control group. However, there are significant differences between positively and negatively restating firms. Firms with negative restatements are higher growth firms, younger, smaller in size, more leveraged and more financially constrained in comparison to firms with positive restatements.

IV. Grants and Exercises of Executive Stock Options

4.1 Univariate Results

Data from ExecuComp was obtained for the 224 sample firms and their size and industry matched firms. Table 4 shows the preliminary summary statistics for stock options granted to and exercised by the top five executives of these firms in the five years prior to the announcement of the restatement. I also examine and discuss stock option grant and exercises

in the two years prior to the announcement of the restatement, though the results are not reported here. Richardson, Tuna, and Wu (2002) report that in their sample of 225 restating firms over the period 1971-2000, median number of days between the announcement of the restatement and the end of the fiscal year of alleged manipulation is 564 days. The firms in their sample are typically required to restate one to two years of financial statements. Examining option grants and exercises two and five years prior to the announcement of a restatement allows me to study option activity in the years of alleged manipulation of financial statements.

There is little difference between firms with small positive and small negative restatements and their respective control groups in option grants and option exercises in the five years, as well as two years, prior to the announcement of a restatement. However, firms with large positive and large negative restatements differ significantly from their respective control groups in option activity. Firms with large restatements, both positive and negative, grant significantly more options in the five years prior to the announcement of a restatement. The mean value of options granted to shares outstanding for firms with large positive restatements is 0.9% in comparison to 0.66% for the size and industry matched control group. The mean value of options granted for firms with large negative restatements is 1.22% in comparison to 0.85% for its respective control group. For firms with large restatements, stock options grants were approximately 50% greater than their control groups in the five years prior to the announcement of a restatement.

Firms with large positive restatements also exercise more options than their control group in the five years prior to the announcement of the restatement. The mean value of options exercised to options outstanding for firms with large positive restatements was 11.8%,

which is significantly higher than the 7.7% for its control group. However, median option exercises were not significantly different from the control group. Though, firms with large negative restatements also have higher exercises than their control group the difference is not significant at conventional levels. These univariate results should be interpreted with caution. They were weaker when I examined mean grants and exercises over the two years prior to the announcement instead of the five years and do not take into account other firm characteristics that explain option grants and exercises.

4.2. Options Grants to Executives

The model for optimal option grants estimated here is based on models of option grants estimated by Core and Guay (2001) and Yermack (1995). Firms grant options to align incentives of executives with those of shareholders. High growth firms and those that face high information asymmetry are in greater need of incentive alignment. These firms should have higher levels of option grants. I use the ratio of R&D and advertising expense to sales (RND/SALES) to capture the degree of information asymmetry. Firms with higher R&D / SALES, i.e., higher information asymmetry should grant more options. I also use the book to market value of equity to capture growth potential. Firms with higher book to market should grant fewer options.

Firms facing financial constraints are more likely to grant options (Core and Guay (2001), Yermack (1995), Matsunaga, Shevlin and Shores (1992)). Use of stock options as compensation in lieu of cash may allow firms facing temporary financial constraints to tide over periods of shortages in cash. NOL (net operating losses carried forward) is used to proxy for financial constraints. Firms with higher NOL are likely to face higher financial constraints and grant more options. Following Core and Guay (2001), I also create a measure

of cash flow shortfall which is defined as (common dividends + preferred dividends + cash flow from investing – cash flow from operations)/total assets. I have also used interest coverage (results not reported).

I control for leverage. John and John (1993) propose that firms with large debt outstanding will grant fewer options to reduce incentives for shareholder alignment. As young firms are heavier users of options than older firms I create a dummy for young firms, which takes the value one if the firm has a trading history of less than fifteen years. The dummy for old firms takes the value of one if the trading history of the firm is greater than forty years. I also include the fraction of options outstanding to shares outstanding to proxy for prior grant policy as well as for the level of incentives already in place. Firms may grant more options if the level of incentives in place decrease due to options exercises. The ratio of options exercised to options outstanding is included to control for this.

As the control firms are size and industry matched, the effect of size and industry on grant of options is controlled for. However, since the restating firms are larger than the control group I include the log of total assets to control for size. As option exercises and grants are examined over the time period 1992 to 2001, which has seen a large rise and fall in the market, I also include year dummies to control for the difference in the nature of restatements announced in different years. [10] Lastly, I include dummies for announcements of small and large positive restatements (LOWPOSDUM & HIGHPOSDUM) and dummies for

[10] Observations with extreme values (approximately 1%) of options outstanding to shares outstanding, options exercised to options outstanding, and options granted to shares outstanding have been excluded. Observations with extreme values of RND/SALES, and interest coverage have also been excluded. Missing values of NOL have been regarded as non-zero values and included in the data.

announcements of small and large negative restatements (LOWNEGDUM & HIGHNEGDUM).[11]

The results of the estimation of the grant model are presented in Table 5. Column two and three report the results with only the relevant firm years included, i.e., two years prior and five years prior to the announcement of the restatement respectively. A second specification that included all years prior to the restatement with a dummy for the two or five years prior to the restatement was also estimated and is reported in columns 4 and 5 of Table 5.

The coefficient of large negative restatements (HIGHNEGDUM) is positive and significant at the 1% level for all specifications. Though the coefficient is significant for both two years and five years prior to restatement, the estimated value of the coefficient is 30% to 40% higher for the two year prior to the announcement. This suggests that the two years prior to the announcement of the restatement are associated with large option grants to restating firms. However, there is little evidence of higher grants for firms with large positive restatements, in contrast to the univariate evidence. In line with the univariate evidence, there is no evidence of higher option grants among firms with small restatements.

The results with respect to the other variables are mostly in line with the evidence documented in prior literature. In summary, there is some evidence that firms with higher growth potential grant more options: coefficient of RND/SALES is positive and significant. There exists evidence that firms facing financial constraints grant more options: the

[11] As the dummies for positive and negative restatements, POSDUM and NEGDUM respectively are based on estimated cumulative abnormal returns they are measured with error. Their inclusion in the grant and exercise models therefore leads to an error in variables problem. However, as the cumulative abnormal returns are over –2 to + 2 day window around the announcement of the restatement while the dependent variables, the grant and exercise of options, are for the two years prior to the announcement of the restatement, the error in the grant and exercise model is not likely to be correlated with POSDUM and NEGDUM. The reported coefficients are therefore expected to be consistent estimators.

coefficients of NOL, as well as, cash flow shortfall are positive and significant. Firms with higher options outstanding, smaller firms and younger firms also grant more options.

4.3. Option Exercises

I use prior models of option exercises estimated by Huddart and Lang (1996), Heath, Huddart and Lang (1999) and Core and Guay (2001) as the basis for the model estimated in this section. There are some known factors, which explain executive options exercises in prior literature. It has been proposed that risk averse executives will exercise options to diversify their portfolio. The higher is the executive's exposure to the firm the greater will be the exercise of stock options. I include the ratio of stock options outstanding to shares outstanding to capture the level of incentives in place. The greater this ratio, the greater should be option exercises.

Option exercises are also a function of the price of the stock. Heath, Huddart and Lang (1999) document that employee option exercises increase after the stock price exceeds the 52-week high reference point. Following Core and Guay (2001), I include the number of times in the fiscal year the stock price exceeded the 52 week high. The higher this value, the larger will be option exercises in the year. Similarly, I also include the number of times during the year that the price fell below the 52 week low. The higher this value, the lesser will be option exercises in the year. I also include the average value of the Standard & Poor's 500 Composite Index to control for the overall level of the market.

I include a dummy for young and old firms, i.e., firms with trading history of less than fifteen years and greater than forty years. Young firms are likely to have greater firm specific risk in comparison to mature firms. Executives of these firms should therefore exercise more

in comparison to older firms. Log of total firm assets and leverage, the ratio of long term debt to total assets are also included as controls.

Lastly, I include the dummy for small and large positive restatements (LOWPOSDUM & HIGHPOSDUM) and for small and large negative restatements (LOWNEGDUM & HIGHNEGDUM). As discussed, opportunistic behavior by managers implies higher exercises in the years prior to the announcement of a negative restatement. Opportunistic behavior in the event of positive restatements suggests higher option exercises in the years after the announcement of a restatement. It is possible to see higher exercises in the years prior to the positive restatement as executives book profits early.

The results for the estimation of the option exercise model are present in Table 6. Columns 2 and 3 include only the relevant years prior to the announcement while columns 4 and 5 include all years prior. Consistent with prior univariate results and the results from the grant model, only the option exercises of firm with large restatements are significant. The coefficient of large positive restatements is significant in three of the four specifications. The significance of the coefficients is stronger when exercises five years prior to the announcement of the restatement are considered. The coefficient of large negative restatements is also positive and significant for three of the four specifications, though significance is only at the 10% level. Higher option exercises prior to the announcement of large restatements, both positive and negative, suggest that option exercises might be timed, and provide evidence that earnings management might be motivated by gains on the options portfolio of executives.

The results for other variables are mostly in line with prior results. In line with Heath, Huddart and Lang (1999), I find higher options exercises in years with a larger number of

price-highs and lower exercises in years with a larger number of price-lows. The coefficient of options outstanding is negative and significant. This is contrary to the predictions that managers diversify to reduce risk in their portfolios. There is also evidence that executive of young firms exercise more and those of older firms exercise less. Executive of smaller firms also exercise more options.

4.4. Option Grants and Exercises after announcement

The hypothesis of strategic option grants by firms with negative restatements is consistent with large option grants after the announcement of a negative restatement. Options can then be granted at a lower exercise price. Similarly, strategic exercise by executives is consistent with higher option exercises after the announcement of positive restatements. However, higher grants by firms with negative restatements and higher exercises by executives of firms with positive restatements is also consistent with ex post opportunistic behavior by managers who did not anticipate the restatement of financial statements. Irrespective of whether it is ex post or ex ante opportunism, option grants and exercises in the years after the announcement are informative with respect to managerial incentives.

Table 7 displays results with the inclusion of the years after the announcement of a restatement. I introduce a dummy for years after the announcement (AFTDUM) to isolate option activity in these years. There is no evidence of higher grants in the periods after restatement for firms with negative restatements. This is consistent with managers not being in a position to award themselves more options during periods of bad performance. However, there is evidence of higher exercises by executives of firms with large positive restatements. The coefficient is both statistically significant (at the 5% level) and economically significant.

The executives of firms with large positive restatements exercise about 50% more in the years after the announcement in comparison to the years prior to the announcement.

V. SEC Investigations and Enforcement Actions

The GAO list consists of firms that have material restatements due to accounting irregularities. This includes instances of unpremeditated accounting errors, legitimate differences in the interpretation of GAAP, aggressive interpretation of GAAP, as well as instances of deliberate violations of GAAP. Next, I examine whether opportunistic behavior with respect to option grants and exercises documented above is widespread among restating firms or is concentrated in a small group of extreme violators.

To create a subset of the sample that has higher likelihood of deliberate manipulation of financial statements, I collect data on sample firms that were charged by the SEC of alleged violations of GAAP. The SEC obtains it leads for potential violations of GAAP from several sources like internal review of SEC filings, market surveillance programs of NASD and NYSE, public complaints and tips among others. To obtain further information on a case the SEC may initiate "informal" investigation of a firm. The SEC does not disclose the list of firms under "informal" investigation. Firms that are found to have violated GAAP requirements are then subject to a "formal" investigation, which is disclosed through the SEC's Accounting and Auditing Enforcement Releases (AAERs).

Of the 224 firms in the sample 99 firms were identified as being under informal SEC investigation. As the SEC does not disclose the list of firms under informal investigation, this list of firms was compiled by a Lexus- Nexus search on the words "SEC investigation", "probe" and "inquiry" for up-to two years from the date of announcement of the restatement.

35 firms were subject to a "formal" investigation or SEC enforcement action. The data on SEC accounting enforcements is based on the Accounting and Auditing Enforcement Releases (AAERs). Since the sample includes firms that announced a restatement as late as June 25th 2002, this list of firms that were subject to SEC enforcement action is conservative as the SEC could still decide to charge more firms.

Table 8 reports the summary statistics of options granted and exercised for firms under SEC informal investigation and for firms subject to SEC enforcement action. There is little evidence that firms under an informal SEC investigation or probe differ from others in options granted, or options exercised in the two years or five years prior to the announcement of the restatement. The evidence for firms subject to SEC enforcement action however paints a different picture. Firms subject to SEC enforcement action exercise more options in the five years prior to the announcement of a restatement. The median exercises of the two groups are significantly different from each other at the 1% level. Option exercises by firms subject to SEC enforcement action are more than twice that of firms not subject to SEC enforcement action. Firms subject to SEC enforcement action also have significantly fewer options outstanding. There is no difference between firms subject to SEC enforcement and others in option grants.

Multivariate results, presented in Table 9, are consistent with the univariate results. There is no evidence that firms subject to SEC enforcement have any unusual grant of options in the years prior to the restatement (columns 2 to 5). However, firms subject to SEC enforcement exercise significantly more options in the years (2 and 5 years) prior to the announcement of a restatement. Interestingly, the coefficient of large negative restatements looses significance with the inclusion of the dummy for SEC enforcement. The prior result,

of higher exercises by firms with large negative restatements, is primarily on account of firms that were subsequently subject to SEC enforcement action. Higher option exercises by firms subject to SEC enforcement action, does not explain away the higher exercises in firms with large positive restatements. The coefficient of large positive restatements continues to be significant, though only when five years prior to the announcement of the restatement are examined.[12]

In summary, higher options grants occur in firms with large negative restatements irrespective to whether the firm is subsequently subject to SEC enforcement action or not. However, higher option exercises in the years prior to restatement are mostly observed in firms that are later subject to SEC enforcement action. This is not surprising as option exercises, and the associated sale of stock is subject to insider trading laws. Excessive or unusual selling by executives is therefore likely to come under SEC notice increasing the likelihood of SEC enforcement action. Despite this there continues to be some evidence of higher option exercises by executives of firms with large positive restatements in the five years prior to the announcement of the restatement.

VI. Discussion and Robustness Checks

In this section, I discuss two issues. The first issue is related to the robustness of the results to the classification of positive and negative restatements. The second issue is regarding the importance of stock option usage on the propensity for aggressive interpretation of GAAP and consequently, the propensity for restatement.

[12] The option grant and exercise model were also estimated using a dummy for informal SEC investigation. In line with univariate results, there is no evidence of higher option grants and exercises for firms under SEC informal investigation. This might be due to there being little information in SEC investigations about the probability of having violated GAAP. I do not report these results in the paper.

6.1 Classification of announcements as negative and positive restatements

To examine the effect of the classification of restatements on the results, I do the following two analyses: 1) Change the methodology by using the –20 to + 30 day CAR, in lieu of the –2 to + 2 day CAR, for classification of announcements into negative and positive restatements, and 2) Treat all restatements as one category. Next I briefly discuss the results from the both analyses.

6.1.1 *Classifying announcements based on –20 to + 30 day CARs*

Using the longer time period has the advantage of using longer lasting effects of the announcement for classification of the announcements. However, it has the downside that the CAR may incorporate other news or information revealed in the time period. Using the –20 to + 30 day CAR increases the number of firms that have positive restatements. There were 84 announcements with positive CARs with mean (median) CAR of 17.4% (12.5%). The mean (median) CAR for the 135 announcements in the negative group is –28.1(-19%). The results are qualitatively similar in most cases. The differences in firm characteristics between negative and positive restatement firms continue to be similar. There continues to be significant evidence that firms with large negative restatements grant more options in the years prior to the announcement of the restatement. There continues to be no evidence of any unusual grants for firms with positive restatement. The difference between the two classification methodologies is in the options exercise model. With the –20 to + 30 day CAR, the evidence for higher exercises in the years prior to the announcement exists only for firms with negative restatements. Unlike the results with the –2 to + 2 day classification, there is no evidence of higher exercises by firms with positive restatements. There continues to be

evidence that higher exercises are concentrated among firms that were subject to SEC enforcement.

6.1.2 Treating all Restatements as one category

Among restating sample firms, Compustat reports negative revenue restatements about five times more often than positive revenue restatements (See Table 2a). Similarly, negative EPS restatements occur ten time more often than positive EPS restatements. The suggested incidence of positive restatements from Compustat is much lower than that observed on the basis of cumulative abnormal returns used in the paper(which is about twice). This raises the concern that some announcements currently classified as positive restatements may not be positive revisions to reported financial statements. This is likely to happen if for e.g., the market becomes aware of accounting problems in the firm prior to the announcement of a restatement. The positive reaction at the time of announcement then reflects resolution of uncertainty or a better outcome than expected by the market. To estimate the effect of this mis-classification of potential negative restatements as positive restatements, I classify all restating firms as if they were negative restatements, i.e., in one category.

I use the absolute value of the CAR to identify firms with small and large restatements. Announcements with absolute values of CARs greater than 8% are regarded as having large restatements and those with CARs less than 8% as having small restatements. The results of the estimation of the grant and exercise model with this classification of restating firms is displayed in Table 10. There continues to be strong evidence of higher option grants in the years prior to large restatements. There also continues to be evidence of higher option exercises by firms with large restatements in the five years prior to announcement of the restatement. However, there is little evidence of higher exercises two

years prior to the announcement, in contrast to earlier results. There continues to be strong evidence that the higher exercise, seen in firms with large restatements, is concentrated in the group of firms that are subsequently subject to SEC enforcement action.[13]

In summary, higher options grants in the years prior to the announcement of the restatement is robust to the classification of positive and negative restatements. The result of higher option exercises is sensitive to the classification of restating firms. Changes in the classification, weakens the option exercise results generally, though there continues to be evidence of higher exercises by firms with large restatements. There is strong evidence that firms that are subject to SEC enforcement action have higher exercises, irrespective of the classification of restating firms.

6.2 Importance of option grants for the probability of restatements

The paper focuses on documenting opportunistic behavior by managers in the years prior to the restatement. As this opportunistic behavior should be observed only in managers who are anticipating a restatement, subsequent to aggressive interpretation of GAAP, evidence of such opportunistic behavior is indicative of earnings management through aggressive interpretation of GAAP. A related interesting question is how important are the gains from grant and exercise of stock options in predicting restatements of financial statements. There is little prior work with respect to the theory and empirical implementation of predictions of restatements. Recent work by Richardson, Tuna and Wu (2002) empirically examine the determinants of restatements but concentrate on the ability of accruals to predict restatements and do not examine the role of managerial compensation. Dechow, Sloan and Sweeney (1996) (DSS) and Beneish (1999) examine the factors that predict GAAP violations (not

[13] When a dummy for SEC enforcement action is included, the coefficient is positive and significant. The coefficient of large restatements however, looses significance. The results of this estimation are not reported in

restatements). They examine the role of gains from managers' insider sales (their samples predate the period of rapid rise of stock option compensation). Though DSS find little support, Beneish (1999) finds that gains from insider sales are a motivation for GAAP violations.

I provide some preliminary evidence of the effect of stock options on the propensity for aggressive interpretation of GAAP and consequently of a restatement. If higher usage of stock option based compensation gives incentives for earning management, then the incidence of restatements should be higher for the firms with large stock option grants. To test this, I take all firms with data on ExecuComp and estimate the expected stock option grants for these firms based on firm characteristics every year from 1992 to 1996.[14] The residuals from the estimation of this model are averaged across the years to obtain mean residuals for each firm. The higher the average residual the greater the option grants for the firm. Firms were then assigned to quintiles based on the average value of the residuals, with group one having the lowest residuals and group five having the highest residuals.

Table 11, reports the results of the incidence of restating firms across the five groups. Group 1, the quintile with the lowest option grants, has 21 firms that subsequently announce a restatement to their financial statements. Group 5, the quintile with the highest option grant, has 47 firms that eventually announce a restatement. The percentage of firms restating in the higher group is more than twice the percentage of restatements in the lower group. This difference between the groups is significant at the 1% level.[15] Though this is just univariate

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the paper and are available from the author on request.

[14] The grant model estimated is similar to the grant model displayed in Table 5. The data for explanatory variables was obtained from Compustat and the option data was obtained from ExecuComp.

[15] The test was also performed with the ratio of options granted to shares outstanding instead of the residuals from the grant model. The results were qualitatively similar.

evidence, it provides further evidence on the effect of stock options on the incentives to manager earnings.

VII. Conclusion

I find that executives of firms that negatively restate their reported financial statements receive higher grants of stock options in the years prior to the announcement of the restatement. Further, executives of firms with large negative and large positive restatements exercise more options in the years prior to the announcement of a restatement in comparison to a size and industry matched control group. Though higher exercises tend to be mostly concentrated in firms that are subsequently charged of GAAP violations by the SEC, higher grants are not concentrated in this group of extreme violators. Further, I find preliminary evidence that the incidence of restatements in higher in the group of firms with large option grants. The evidence suggests that options grants and exercises are timed, with respect to the years of alleged earnings manipulation that are subsequently restated, in order to maximize gains in the manager's options portfolio. This suggests that stock option compensation is probably one of the motivations for earnings management through aggressive interpretation of GAAP.

The last decade has seen a surge in the use of stock options in compensation packages. Though the benefits of stock option usage have been well publicized there has been little understanding of the downside to the use of stock options. The evidence in this paper furthers our understanding of the effect of stock option compensation on managerial incentives to manage earning. A better understanding of the incentives for managerial self-interest that arise from stock options is crucial to inform the predictions of the principal agent theories and in the design of effective compensation and governance systems.

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TABLE 1
Distribution of Restatement Announcements over Time

Year of Announced Restatement	Number of firms identified by GAO	Number of firms in the Sample	% of identified restating firms included in sample
1997	92	18	19.6
1998	102	18	17.6
1999	174	49	28.2
2000	201	46	22.9
2001	225	84	37.3
2002	125	42	33.6

TABLE 2
Correlation Matrix for Number of Restatements Reported by Compustat

The table displays the correlation coefficient between the number of restatements in each category for sample firms in the five years prior to the announcement of the restatement. Basic EPS (1) is basic earning per share not including extraordinary items, Basic EPS (2) is basic earning per share including extraordinary items, COGS is cost of goods sold and CAPX is capital expenditure.

	Revenue	Net Income	Basic EPS (1)	Basic EPS (2)	SG&A	COGS
Net Income	0.47	1				
Basic EPS (1)	0.64	0.63	1			
Basic EPS (2)	0.42	0.80	0.77	1		
SG&A	0.46	0.29	0.31	0.22	1	
COGS	0.51	0.39	0.41	0.37	0.55	1
CAPX	0.56	0.50	0.63	0.46	0.35	0.34

TABLE 2a
Relation Between Compustat Restatements and Market Reactions

Basic EPS (1) does not include extraordinary items while basic EPS (2) includes extraordinary items. COGS is cost of goods sold and CAPX is capital expenditures. The values reported are the mean number of years the item has been restated in the five years prior to the announcement of the restatement. Positive (negative) CAR group consist of firms with a positive (negative) –20 to + 30 day cumulative abnormal return around the announcement date. The T statistic tests for differences between the positive and negative CAR group in the mean number of restating years.

	Direction of Restatement	Positive CAR	Negative CAR	T statistic
Revenue Restatement	Negative	0.5235	0.5543	0.33
	Positive	0.1000	0.0969	0.05
Net Income Restatement	Negative	0.4036	0.4567	0.63
	Positive	0.0361	0.0433	0.25
Basic EPS (1)	Negative	0.6250	0.6836	0.63
	Positive	0.0595	0.0352	0.85
Basic EPS (2)	Negative	0.4518	0.5820	1.55
	Positive	0.0422	0.0195	0.96
SG&A	Negative	0.4444	0.5260	0.92
	Positive	0.0903	0.0625	0.58
COGS	Negative	0.3563	0.3856	0.39
	Positive	0.0875	0.0466	0.86
CAPX	Negative	0.1736	0.2105	0.67
	Positive	0.0139	0.0219	0.49

TABLE 3
Summary of Firm Characteristics by type of Restatement

This table summarizes the median characteristics of restating firms with positive cumulative abnormal returns (CAR), negative cumulative abnormal returns and their respective size and industry matched control group. Cumulative Abnormal returns are for –2 to + 2 day around the announcement of a restatement. Book to market is the ratio of book value of equity to market value of equity, RND/Sales is the ratio of the sum of firm's expenses on research and development and advertising to sales. Firms with missing R&D expense have been regarded as having zero R&D expense. CAPX/ Sales is the ratio of firm's capital expenditure to total assets. Cash flow shortfall is defined as (preferred and common dividends + cash flow from investing – cash flow from operation/ total assets). NOL is net operating Losses carried forward. Firms with missing NOL have been regarded as having no losses carried forward. Number of price highs is the number of times in the year that the stock price exceeded the 52 week high, and number of price lows is the number of times in the year that the stock price fell below the 52 week low. Age is the number of years since the firm was first covered by CRSP. Debt/TA is the ratio of long term debt to total assets. The test statistic is the Mann-Whitney test statistic for differences in medians. *,**,*** represent significance at 10%,5% and 1% levels.

	Positive CARs	Size and industry matched control	Negative CARs	Size and industry matched control	Test Statistic for difference between positive and negative group
	Median	Median	Median	Median	Test Statistic
Book- to-market value of Equity	0.38	0.43	0.35	0.34	3.24***
RND / Sales	0.0000	0.0000	0.019	0.022	5.29***
CAPX / Total Assets	0.05	0.051	0.054	0.054	1.18
Interest / EBITDA	0.11	0.12	0.14	0.09***	1.17
Cash Flow Shortfall	0.002	0.013**	0.028	0.006***	4.04***
Net operating Losses Carried Forward (NOL)	0	0	0	0	2.64***
Number of Price Highs in the Year	4	7	5	5	0.0492
Number of Price Lows in the Year	2	2	2	1	1.2055
Number of Years of Trading	18	12***	17	14	2.65***
Log of total Assets	7.49	7.16*	6.73	6.63	5.1***
Long Term Debt / Total Assets	0.12	0.15***	0.14	0.13	1.24

TABLE 4
Summary Statistics for Option Activity

This table shows averages of option usage in the five years prior to the announcement of a restatement. Options granted is the number of options granted during the year to shares outstanding at the beginning of the year. Options exercised (1) is the ratio of options exercised during the year to unexercised exercisable options outstanding. Options exercised (2) is the ratio of options exercised during the year to options outstanding at the beginning of the year. Options outstanding is the ratio of options outstanding at the beginning of the year to shares outstanding at the beginning of the year. Panel A displays the average for the group of restating firms with positive –2 to + 2 day CARs and their size and industry matched control group. Panel B displays the averages for the group of restating firms with negative –2 to + 2 day CARs and their size and industry matched control group. *,**,*** represent significance at the 1%, 5% and 10% level for tests of differences in the means and medians of the two groups.

Panel A: Restating Firms with Positive CARs and their size and industry matched Control						
	Sample Mean	Control Mean	Sample Median	Control Median	Sample Number	Control Number
			Low Positive CARs (< 6%)			
Options granted	0.0069	0.0073	0.0043	0.0041	207	189
Options exercised (1)	0.2379	0.2468	0.0648	0.0881	199	162
Options exercised (2)	0.0789	0.0890	0.0305	0.0408	201	170
Options outstanding	0.0259	0.0254	0.0207	0.0239	206	181
			High Positive CARs (> 6%)			
Options granted	0.0091	0.0066**	0.0076	0.0033***	110	116
Options exercised (1)	0.4616	0.1586**	0.0991	0.0755	108	114
Options exercised (2)	0.1182	0.0774**	0.0500	0.0412	108	113
Options outstanding	0.0290	0.0267	0.0204	0.0219	106	114

Panel B: Restating Firms with Negative CARs and their size and industry matched Control						
	Sample Mean	Control Mean	Sample Median	Control Median	Sample Number	Control Number
			Low Negative CARs (>-15%)			
Options granted	0.0076	0.0081	0.0041	0.0042	432	419
Options exercised (1)	0.3638	0.5450	0.0558	0.0745	406	388
Options exercised (2)	0.0809	0.0924	0.0265	0.0300	408	395
Options outstanding	0.0262	0.0275	0.0174	0.0201	410	402
			High Negative CARs (< -15%)			
Options granted	0.0122	0.0085***	0.0073	0.0048***	215	210
Options exercised (1)	0.6508	0.2786	0.0834	0.0462	203	190
Options exercised (2)	0.1031	0.0792	0.0381	0.0251	203	193
Options outstanding	0.0357	0.0295***	0.0300	0.0243**	203	195

TABLE 5
Model for Option Grants to Top Executives

This table displays OLS estimates where the dependent variable is the ratio of options granted to top executives to shares outstanding at the beginning of the year. The 2nd (3rd) column includes firm years two (five) years prior to the announcement of a restatement. The 4th and 5th columns have all firm years prior to the announcement of the restatement. Dummy for years prior, RELDUM, takes the value one when the firm year is two (for column 4) or five (for column 5) years prior to the announcement of a restatement. Cash flow shortfall is given by (preferred and common dividends + cash flow from investing – cash flow from operation/ total assets). Dummy for young (old) firms takes the value one when the firm's trading history is less (greater) than 15 (40) years. The reported coefficient for Net operating losses carried forward (NOL) is the estimated coefficient multiplied by a 1000. Low and high positive (negative) CAR dummy take the value one when the firm has a positive (negative) CAR of less than or greater than 6% (-15%) respectively around the –2 to + 2 day period around the announcement of a restatement. Year dummies were included in all specifications. Heteroscedasticity corrected absolute values of the T statistics are reported below in parenthesis. *,**,*** represent significance at the 10%, 5% and 1% level.

	2 years prior	5 years prior	All years prior	All years prior
Options Outstanding /Shares Outstanding	0.1620	0.2022	0.2179	0.2172
	(8.36***)	(14.37***)	(17.04***)	(16.94***)
Options exercised/ Options Outstanding	-0.0004	0.0004	0.0005	0.0005
	(0.17)	(0.35)	(0.51)	(0.52)
Book to Market value of equity	0.0016	0.0010	0.0007	0.0007
	(3.14***)	(1.62)	(1.54)	(1.60)
R&D / Sales	0.0001	0.0043	0.0050	0.0048
	(0.02)	(1.56)	(2.22**)	(2.10**)
Cash Flow Shortfall	0.0002	0.0031	0.0013	0.0011
	(0.12)	(2.26**)	(1.03)	(0.92)
Net Operating Losses Carried Forward	0.003	0.002	0.002	0.002
	(3.07***)	(2.54)	(3.26***)	(3.01**)
Dummy for Young Firms	0.0014	0.0010	0.0007	0.0007
	(2.14**)	(2.45**)	(1.95*)	(1.97**)
Dummy for Old Firms	0.0002	-0.0000	-0.0001	-0.0002
	(0.39)	(0.04)	(0.47)	(0.58)
Log of Total Assets	-0.0004	-0.0003	-0.0002	-0.0002
	(1.85*)	(2.1)	(2.16**)	(1.89*)
Debt / Total Assets	-0.0017	0.0007	0.0004	0.0004
	(0.89)	(0.47)	(0.35)	(0.40)
Low Positive CAR Dummy (LOWPOSDUM)	0.0001	-0.0002		
	(0.10)	(0.38)		
High Positive CAR Dummy (HIGHPOSDUM)	0.0000	0.0002		
	(0.03)	(0.28)		
Low Negative CAR Dummy (LOWNEGDUM)	-0.0008	-0.0001		
	(1.41)	(0.28)		
High Negative CAR Dummy (HIGHNEGDUM)	0.0047	0.0026		
	(3.46***)	(3.28***)		
Dummy for years prior (RELDUM)			-0.0006	0.0003
			(1.26)	(0.73)
RELDUM x LOWPOSDUM			0.0002	-0.0003
			(0.27)	(0.49)
RELDUM x HIGHPOSDUM			-0.0003	0.0001
			(0.33)	(0.07)
RELDUM x LOWNEGDUM			-0.0009	-0.0001
			(1.53)	(0.37)
RELDUM x HIGHNEGDUM			0.0038	0.0026
			(2.85***)	(3.20***)
R square	0.3009	0.3510	0.3701	0.3697
Number of Observations	867	1991	2824	2824

TABLE 6
Model for Option Exercises by Top Executives

The table reports the results of OLS estimation of a model of option exercises by top executives. The dependent variable is the ratio of options exercised during the year to options outstanding at the beginning of the year. The 2nd (3rd) column includes only firm years two (five) years prior to the announcement of the restatement. The 4th and 5th columns include all firm years prior to the announcement of the restatement. Dummy for years prior, RELDUM, takes the value one when the firm years is two (for column 4) or five (for column 5) years prior to the announcement of a restatement. Number of price highs is the number of times during the fiscal year that the stock price exceeded the 52 week high. Number of price lows is the number of times during the year that the stock price fell below the 52 week low. Dummy for young (old) firms takes the value one when the trading history of the firm is less than 15 (greater than 40) years. Level of S&P Composite Index is the mean value of the index in the fiscal year. Low and high positive (negative) CAR dummy take the value one when the firm has a positive CAR of less than or greater than 6% (-15%) respectively around the –2 to + 2 day period around the announcement of a restatement. Year dummies were included in all specifications. Heterscedasticity corrected absolute values of the T statistics are reported below in parenthesis. *,**,*** represent significance at the 10%, 5% and 1% level.

	2 Years Prior	5 Years Prior	All Years Prior	All Years Prior
Options Outstanding / Shares Outstanding	-0.6584	-0.7304	-0.7730	-0.7818
	(3.61***)	(4.36***)	(5.27***)	(5.31***)
Number of Price Highs	0.0034	0.0028	0.0025	0.0025
	(4.99***)	(6.85***)	(7.32***)	(7.39***)
Number of Price Lows	-0.0005	-0.0006	-0.0006	-0.0006
	(1.07)	(1.90*)	(1.94*)	(1.88*)
Dummy for Young Firms	0.0097	0.0130	0.0138	0.0134
	(0.92)	(1.83*)	(2.25**)	(2.19**)
Dummy for Old Firms	-0.0256	-0.0154	-0.0095	-0.0097
	(2.23**)	(1.93*)	(1.38)	(1.41)
Log of Total Assets	-0.0061	-0.0051	-0.0038	-0.0035
	(1.56)	(1.8*)	(1.51)	(1.40)
Leverage	-0.0000	-0.0000	-0.0000	-0.0000
	(0.15)	(1.7*)	(1.76*)	(1.81*)
Level of S&P 500 Index	-0.0001	-0.0001	-0.0000	-0.0000
	(1.29)	(0.91)	(0.53)	(0.68)
Low Positive CAR Dummy (LOWPOSDUM)	0.0150	-0.0058		
	(0.94)	(0.63)		
High Positive CAR Dummy (HIGHPOSDUM)	0.0418	0.0364		
	(1.66)	(2.26**)		
Low Negative CAR Dummy (LOWNEGDUM)	-0.0054	-0.0039		
	(0.58)	(0.54)		
High Negative CAR Dummy (HIGGNEGDUM)	0.0289	0.0191		
	(1.59)	(1.68*)		
Dummy for years prior (RELDUM)			-0.0081	0.0041
			(1.05)	(0.48)
RELDUM x LOWPOSDUM			0.0097	-0.0068
			(0.62)	(0.75)
RELDUM x HIGHPOSDUM			0.0428	0.0360
			(1.70*)	(2.24**)
RELDUM x LOWNEGDUM			-0.0062	-0.0049
			(0.66)	(0.68)
RELDUM x HIGHNEGDUM			0.0322	0.0207
			(1.79*)	(1.81*)
R squared	0.1104	0.0788	0.0634	0.0646
Number of Observations	875	2023	2875	2875

TABLE 7
Models of Option Grants and Exercises by Top Executives

This table displays partial results from the estimation option grant and exercise models with the inclusion of years after the announcement of a restatement. The dummy for prior years, RELDUM, takes the value one if the years are two (five) years prior to the announcement for 2nd and 4th (3rd and 5th) columns. The dummy AFTDUM takes the value one for firm years after the announcement of the restatement and zero otherwise. Low (LOWPOSDUM) and high (HIGHPOSDUM) positive CAR dummy take the value one when the firm has a positive CAR of less than or greater than 6% respectively around the –2 to + 2 day period around the announcement of a restatement. Low (LOWNEGDUM) and high (HIGHNEGDUM) negative CAR dummy take the value one when the firm has a negative CAR of greater than or less than –15% respectively around the –2 to + 2 day period around the announcement of a restatement. In the estimation of the grant model, other variables included but not reported here were year dummies, options outstanding to shares outstanding, options exercised to options outstanding, RND/SALES, book to market value of equity, net operating losses carried forward, cash flow shortfall, dummy for young firms (< that 15 years) and old firms (greater than 40 years), log to total assets and long term debt over total assets. In the estimation of the exercise model, other variables included but not reported here were year dummies, options outstanding to shares outstanding, level of the S&P 500 index, dummy for young firms (< that 15 years) and old firms (greater than 40 years), log to total assets and long term debt over total assets. The heterscedasticity corrected absolute values of the t statistics are reported below in parenthesis . *,**,*** represent significance at the 10%, 5% and 1% level.

Firms Years Included	Grant Model		Exercise Model	
Dummy for years prior (RELDUM)	-0.0005	0.0002	-0.0089	0.0037
	(1.15)	(0.41)	(1.17)	(0.44)
RELDUM x LOWPOSDUM	0.0002	-0.0002	0.0090	-0.0062
	(0.29)	(0.46)	(0.57)	(0.67)
RELDUM HIGHPOSDUM	-0.0003	0.0001	0.0433	0.0365
	(0.31)	(0.10)	(1.72*)	(2.28**)
RELDUM x LOWNEGDUM	-0.0008	-0.0001	-0.0069	-0.0051
	(1.41)	(0.18)	(0.73)	(0.70)
RELDUM X HIGHNEGDUM	0.0038	0.0026	0.0325	0.0202
	(2.85***)	(3.24***)	(1.8*)	(1.78*)
Dummy for years after (AFTDUM)	0.0010	0.0016	-0.0043	0.0047
	(1.66)	(2.49**)	(0.40)	(0.39)
AFTDUM x LOWPOSDUM	0.0004	0.0004	-0.0131	-0.0132
	(0.30)	(0.29)	(0.63)	(0.63)
AFTDUM HIGHPOSDUM	-0.0012	-0.0012	0.0625	0.0625
	(0.92)	(0.91)	(2.12**)	(2.12**)
AFTDUM x LOWNEGDUM	0.0006	0.0006	0.0037	0.0036
	(0.71)	(0.71)	(0.27)	(0.26)
AFTDUM x HIGHNEGDUM	0.0010	0.0010	-0.0096	-0.0094
	(0.88)	(0.9)	(0.7)	(0.68)
R squared	0.3711	0.3708	0.0629	0.0638
Number of Observations	3454	3454	3497	3497

TABLE 8
Summary Statistics of Option Activity by SEC Action

This table displays the median stock option activity in the years prior to the announcement of a restatement. Panel A, displays the results for announcements by firms under an informal SEC investigation. Panel B displays the results for firms that were subsequently subject to SEC enforcement action. Options granted is the ratio of options granted during the year to shares outstanding at the beginning of the year. Options exercised (1) is the ratio of options exercised during the year to unexercised exercisable options outstanding. Options exercised (2) is the ratio of options exercised during the year to options outstanding at the beginning of the year. Options outstanding is the ratio of options outstanding at the beginning of the year to the shares outstanding at the beginning of the year. The Z statistic are from the Mann-Whitney test of the difference in medians of the two groups. *,**,*** represent significance at the 1%, 5% and 10% level.

Panel A: By Firms under Informal SEC Investigation or Probe

	SEC Probe	No SEC Probe		SEC Probe	No SEC Probe	SEC Probe	No SEC Probe		SEC Probe	No SEC Probe
	Two Years Prior to the Announcement					Five Years Prior to the Announcement				
	Median	Median	Z statistics	Num	Num	Median	Median	Z statistics	Num	Num
Options Granted	0.0051	0.0050	0.1891	218	714	0.0044	0.0044	0.2726	543	1701
Option Exercised (1)	0.0464	0.0658	1.0154	217	691	0.0673	0.0664	0.5822	523	1574
Option Exercised (2)	0.0192	0.0283	0.9924	219	697	0.0299	0.0306	0.2558	529	1596
Options Outstanding	0.0228	0.0245	0.6282	213	706	0.0198	0.0213	0.9667	528	1645

Panel A: By Firms under SEC Accounting Enforcement Action (AEA)

	SEC AEA	No SEC AEA		SEC AEA	No SEC AEA	SEC AEA	No SEC AEA		SEC AEA	No SEC AEA
	Two Years Prior to the Announcement					Five Years Prior to the Announcement				
	Median	Median	Z statistics	Num	Num	Median	Median	Z statistics	Num	Num
Options Granted	0.0053	0.0049	0.1729	80	852	0.0047	0.0044	0.1269	203	2041
Option Exercised (1)	0.0739	0.0598	0.9841	79	829	0.1427	0.0637	3.60***	193	1904
Option Exercised (2)	0.0337	0.0252	1.1273	79	837	0.0652	0.0287	3.55***	194	1931
Options Outstanding	0.0190	0.0245	1.6098	78	841	0.0198	0.0212	1.5186	197	1976

TABLE 9
Option Grant and Exercises: Firms subject to SEC Enforcement Action

The dependent variables for the grant and exercise models are the number of options granted to the number of shares outstanding at the beginning of the year and the number of options exercised to options outstanding at the beginning of the year respectively. The dummy SECDUM takes the value one when the firm is subject to SEC enforcement action. Low (LOWPOSDUM) and high (HIGHPOSDUM) positive CAR dummies take the value one when the firm has a positive CAR of less than or greater than 6% respectively around the –2 to + 2 day period around the announcement of a restatement. Low (LOWNEGDUM) and high (HIGHNEGDUM) negative CAR dummy take the value one when the firm has a negative CAR of greater than or less than –15% respectively. The dummy for prior years, RELDUM, takes the value one if the years are two (five) years prior to the announcement for 4th and 8th (5th and 9th) columns. The grant model included year dummies, options outstanding to shares outstanding, options exercised to options outstanding, RND/SALES, book to market, NOL, cash flow shortfall, dummy for young (<15 years) and old firms (> 40 years), log to total assets and leverage. The exercise model included year dummies, options outstanding to shares outstanding, level of the S&P 500 index, dummy for young firms (< that 15 years) and old firms (greater than 40 years), log to total assets and long term debt over total assets. The heterscedasticity corrected absolute values of the t statistics are reported below in parenthesis . *,**,*** represent significance at the 10%, 5% and 1% level.

	OPTION GRANT MODEL				**OPTION EXERCISE MODEL**			
	2 Years Prior	5 Years Prior	All Years Prior	All Years Prior	2 Years Prior	5 Years Prior	All Years Prior	All Years Prior
Low Positive CAR Dummy (LOWPOSDUM)	0.0001	-0.0002			0.0144	-0.0061		
	(0.10)	(0.38)			(0.92)	(0.67)		
High Positive CAR Dummy (HIGHPOSDUM)	0.0000	0.0002			0.0377	0.0343		
	(0.01)	(0.23)			(1.53)	(2.13**)		
Low Negative CAR Dummy (LOWNEGDUM)	-0.0008	-0.0002			-0.0107	-0.0073		
	(1.40)	(0.38)			(1.14)	(1.01)		
High Negative CAR Dummy (HIGHNEGDUM)	0.0046	0.0025			0.0190	0.0119		
	(3.29***)	(2.99***)			(0.96)	(1.05)		
Dummy for SEC Action (SECDUM)	0.0002	0.0004			0.0388	0.0264		
	(0.24)	(0.58)			(2.1**)	(2.39**)		
Dummy for years prior (RELDUM)			-0.0006	0.0003			-0.0109	0.0008
			(1.32)	(0.63)			(1.39)	(0.09)
RELDUM x LOWPOSDUM			0.0002	-0.0003			0.0088	-0.0072
			(0.26)	(0.49)			(0.57)	(0.78)
RELDUM x HIGHPOSDUM			-0.0004	0.0000			0.0390	0.0341
			(0.36)	(0.04)			(1.58)	(2.13**)
RELDUM x LOWNEGDUM			-0.0009	-0.0002			-0.0114	-0.0080
			(1.55)	(0.44)			(1.22)	(1.1)
RELDUM x HIGHNEGDUM			0.0037	0.0025			0.0235	0.0145
			(2.66***)	(2.95***)			(1.21)	(1.22)
RELDUM x SECDUM			0.0004	0.0003			0.0356	0.0231
			(0.04)	(0.4)			(1.96**)	(2.09**)
R squared	0.3009		0.3511	0.3702	0.1161	0.0814	0.0647	0.0660
Number of Observations	867		1991	2824	875	2023	2875	2875

TABLE 10
Option Grants and Exercises: Small and Large Restatements

This table displays partial results from the estimation of the option grant and option exercise model. The dummy LOWCARDUM (HIGHCARDUM) takes the value one when the absolute value of the estimated –2 to +2 day CAR is less (greater) than 8%. The dummy for prior years, RELDUM, takes the value one if the years are upto two (five) years prior to the announcement for column 3 (4). In the estimation of the grant model other variables included but not reported here were year dummies, options outstanding to shares outstanding, options exercised to options outstanding, RND/SALES, book to market value of equity, net operating losses carried forward, cash flow shortfall, dummy for young firms (< 15 years) and for old firms (> 40 years), log to total assets and long term debt over total assets. The variables included, but not reported here, in the exercise model were options outstanding to shares outstanding, number of price highs and lows in the fiscal year, dummy for young and old firms, log of total assets, leverage and level of the S&P 500 index. The heterscedasticity corrected absolute values of the t statistics are reported below in parenthesis below. *,**,*** represent significance at the 10%, 5% and 1% level.

Firms Years Included	GRANT MODEL			
	2 years prior	5 years prior	All years prior	All years prior
Low Restatement Dummy (LOWCARDUM)	-0.0003	0.0003		
	(0.53)	(0.82)		
High Restatement Dummy (HIGHCARDUM)	0.0025	0.0018		
	(2.9***)	(3.25***)		
Dummy for years prior (RELDUM)			-0.0006	0.0001
			(1.34)	(0.29)
RELDUM x LOWCARDUM			-0.0002	0.0003
			(0.46)	(0.75)
RELDUM x HIGHCARDUM			0.0020	0.0017
			(2.21**)	(3.15***)
R squared	0.2875	0.3485	0.3667	0.3677
Number of Observations	867	1991	2824	2824
	EXERCISE MODEL			
Low Restatement Dummy (LOWCARDUM)	-0.0019	-0.0034		
	(0.21)	(0.55)		
High Restatement Dummy (HIGHCARDUM)	0.0186	0.0176		
	(1.38)	(1.96**)		
Dummy for years prior (RELDUM)			-0.0054	0.0044
			(0.68)	(0.51)
RELDUM x LOWCARDUM			-0.0039	-0.0044
			(0.43)	(0.70)
RELDUM x HIGHCARDUM			0.0212	0.0186
			(1.59)	(2.1**)
R squared	0.1035	0.076	0.0616	0.0628
Number of Observations	875	2023	2875	2875

TABLE 11
Incidence of Restating Firms by Level of Option Grants

The table reports the incidence of restating firms in groups based on option grants, with group 1 having the lowest option grants and group 5 having the highest option grants. All firms in the ExecuComp dataset were used to estimate a model of option grant for each year from 1992 to 1996. Firms were assigned to groups based on the mean residuals from the grant model. The explanatory variables used for the option grant model were the ratio of options outstanding to shares outstanding, the ratio of options exercised to options outstanding, the ratio of research and development expense and advertising expense to sales, the ratio of book to market value of equity, net operating losses carried forward, cash flow shortfall defined as (common dividends + preferred dividends+ cash flow from investing activities – cash flow from operations)/ total assets, log of total assets, and the ratio of long term debt to total assets. Restating firms were firms that announced a restatement of their financial statements from 1997 to 2002.

	Mean Residual from Option Grant Model	Number of Restating Firms	Percentage of firms that restate
Group 1	-0.007	21	5.9
Group 2	-0.003	35	9.8
Group 3	-0.001	43	12
Group 4	0.001	34	9.5
Group 5	0.01	47	13.2
T-Statistic for the difference between Group 1 and Group 5:			3.36***