Accrual management and the decision to hold the shares acquired from the exercise of executive stock options

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ABSTRACT

This study extends the employee stock option literature by examining the impact of accrual management both prior to and following stock option exercise to examine its effect on the decision to hold shares from option exercise. We find evidence that accrual management prior to exercise is negatively associated with the decision to hold shares for at least 30 days, while accrual management following exercise is positively associated with the decision to hold shares for at least a year. These results suggest that insiders adopt different earnings management strategies related to the decision to sell or hold shares over different horizons. In addition, our evidence that post-exercise accrual management is positively associated with the decision to continue holding shares extends prior research suggesting that insiders are motivated to hold shares based on private information. Finally, we find that the relation between accrual management and long window hold decisions is different for incentive stock options (ISOs) as compared to non-qualified stock options (NQSOs), consistent with individual tax incentives influencing this relation.

INTRODUCTION

Prior literature examining the managerial incentives associated with executive stock options (ESOs) implicitly assumes that managers immediately sell shares acquired through stock option exercises (Ofek and Yermack 2000; Core and Guay 2001; Carpenter and Remmers 2001; Huddart and Lang 2003; Bartov and Mohanram 2004). However, subsequent research in this area suggests that this assumption is not necessarily valid (Aboody, Hughes, Liu, and Su 2008; Sternberg and Witte 2009; Kyriacou and Mase 2010; Huston and Smith 2012), as these studies document a significant number of insiders instead choosing to hold shares obtained from ESOs for more than 30 days. Given the recent findings of exercise and hold behavior, we examine two factors that help to explain the decision to hold shares acquired from the exercise of options – earnings management and tax incentives. Specifically, we investigate discretionary accrual activity both before and after the exercise of stock options to examine the different incentives associated with short-term and long-term decisions to hold rather than sell shares. We also investigate whether tax considerations influence the timing and the extent of earnings management during the holding period. That is, whether the one-year holding requirement for preferential long-term capital gain treatment corresponds to a window of more intense earnings management. By directly linking discretionary accruals to the decision to hold shares from exercise over multiple horizons, our study provides unique insight into different earnings management strategies surrounding ESOs.

Prior research examining earnings management incentives associated with executive stock options (ESOs) focuses on two key events: the grant of ESOs and the exercise of ESOs. In general, managers have incentives to manage earnings downward prior to the grant date in order to lower the strike price (McAnally, Srivastava and Weaver 2008). In addition, managers have

incentives to manage earnings upward prior to option exercise in order to maximize their gains, i.e., the difference between the strike price and the value of the shares at exercise (Bartov and Mohanram 2004; Bergstresser and Philippon 2006). However, these gains can only be realized if managers quickly sell the acquired shares. Although, prior research documents pre-exercise earnings management, it does not directly relate it to the decision to sell. Furthermore, evidence that managers frequently hold shares after exercise suggests a more complex setting than a simple exercise-and-sell strategy. One explanation is that managers with private information hold shares following exercise in anticipation of good news (Aboody, Hughes, Liu, and Su 2008). Extending that research, we consider whether post-exercise earnings management also plays a role in the decision to hold shares from ESOs. Thus, our study provides a comprehensive investigation of how pre-exercise and post-exercise earnings management activity relates to the decision to sell or hold shares from exercise over multiple horizons.

We first examine the association between pre-exercise accrual management and the decision to sell immediately or hold the shares acquired from ESO exercise for at least one month. We use one month to be consistent with Aboody et al. (2008) and refer to this specification as a short-term hold decision. We estimate a logistic regression model where the dependent variable is coded as one if the executive holds the shares from exercise for at least a month, and zero otherwise. We include a number of control variables found in prior research (Aboody et al. 2008; Huston and Smith 2012), including controls for expiring options, size of the exercise, dividend yield, volatility, option depth, and stock returns for the six months preceding and following exercise. The variable of interest is a measure of discretionary accruals, which we use as a proxy for earnings management activity. Whereas prior research suggests that firms manage earnings prior to the exercise date (Bartov and Mohanram 2004), we explicitly

relate pre-exercise earnings management to an insider's choice between selling or holding the acquired shares. Our results indicate that executives are less inclined to hold shares following exercise when they have managed discretionary accruals to increase income leading up to the exercise. We note that this relation is evident only when there has been a run-up in prices prior to exercise, consistent with a successful strategy to boost share prices. We also find that post-exercise earnings management is positively related to the likelihood that executives hold shares after exercise. These findings suggest that different earnings management strategies, pre- and post-exercise, can influence the decision to hold or sell the acquired shares.

After finding evidence consistent with accrual management influencing short-term hold decisions, we next examine whether accrual management subsequent to ESO exercise influences long-term holding decisions. Aboody et al. (2008) find that over one-fourth of the executives in their sample hold shares for at least a month following exercise; additionally, their results suggest that future returns are more positive for the executives holding shares than for those selling shares. Huston and Smith (2012) extend the hold period to one year to examine a number of tax-oriented incentives and corroborate the Aboody et al. (2008) findings in a longer window. While both papers suggest that executives' willingness to hold shares acquired through option exercise reflects an expectation of positive returns based on private information[1], we examine a potential alternative explanation to their findings. Specifically, we examine whether executives' willingness to hold shares following exercise is also associated with accrual management during the holding period. In other words, we examine whether the observed positive relation between the decision to hold and future returns documented by prior research may be due at least in part to an effort by management to boost stock prices through the use of discretionary accruals.

[1] In addition to future returns, Huston and Smith (2012) discuss the impact of tax benefits, specifically those of incentive stock options, impacting the expectation of future stock appreciation on the choice to hold.

Consistent with our conjecture, we find a positive association between discretionary accruals during the holding period and the likelihood that the executive continues to hold shares acquired from stock option exercise. This result is generally robust to controlling for realized future stock returns as a proxy for the executive's private information. Further, both future returns and earnings management have incremental explanatory power, suggesting that each capture different factors related to a preference for holding shares. Interestingly, we observe that the marginal effect of future returns increases as the holding period increases, while the marginal effect of post-exercise earnings management remains fairly constant. Overall, we believe that these findings extend previous research related to earnings management around stock option exercises, suggesting a different earnings management incentive from that of prior research.

Finally, we examine the impact of accrual management on the long-term hold decision in the context of individual tax incentives by separately focusing on incentive stock options and non-qualified stock options. Our results suggest that individual tax incentives influence the association between accrual management and long-term hold decisions as we find that accrual management becomes a more (less) significant explanatory variable of hold behavior among our ISO (NQSO) observations as the holding period approaches the tax advantaged 12-month hold. Collectively, the findings of these additional analyses are consistent with individual tax incentives playing a role in the existence of accrual management over the holding period.

Hanlon and Heitzman (2010) note that, "We have little understanding of the incentives and constraints that drive the decisions of executives to exercise and hold shares (p. 160)." This study furthers our understanding of these incentives and constraints, contributing to both the earnings management literature and the employee stock option literature in accounting and finance. First, our results contribute to existing studies of earnings management prior to stock

option exercise by showing that there are different earnings management strategies for executives planning to hold shares following exercise relative to those that sell. We further extend this line of research, documenting that (a) conditional upon exercise, past earnings management plays a significant role in the executive's decision to sell or hold the acquired shares, and (b) the relation varies with the holding period. Second, while prior research (Aboody et al. 2008; Huston and Smith (2012) suggests that executives expect to have positive returns following exercise when they choose to hold, consistent with private information, our findings suggest that they also appear to engage in accrual management during the period following exercise to help achieve such returns. Finally, we find that the relationship between accrual management and hold decisions depends on the type of option exercised (ISO vs. NQSO), suggesting that individual tax incentives are likely influencing the decision to engage in accrual management during the hold window. Thus, our study contributes to our understanding of the interrelation between tax consequences associated with executive compensation and financial reporting constraints, consistent with the Scholes et al. (2009) framework. Evidence of different earnings management strategies for ISO and NQSO holding decisions also provides insight beyond prior studies that more generally associate earnings management with insider stock holdings (Cheng and Warfield 2005).

The balance of the paper is organized as follows: the next section discusses prior research and the development of hypotheses, followed by the research design, results, and conclusion.

PRIOR RESEARCH AND HYPOTHESIS DEVELOPMENT

Early ESO studies assume that managers prefer not to hold shares acquired from ESO exercise and instead sell the stock immediately. This assumption follows from the relaxation of

"short swing" trading rules that took effect in 1991.[2] In an effort to explain why insiders exercise an ESO before the expiration date and sacrifice the time value of the option, several studies examine stock price changes around an exercise for evidence of private information, expecting to find positive returns before the exercise followed by a reversal after the exercise. However, these studies produce mixed results that are sensitive to sample composition (Seyhun [1988]; Carpenter and Remmers [2001]; Huddart and Lang [2003]). Focusing on abnormally large exercises, Bartov and Mohanram (2004) document the predicted price reversal, but they also find evidence consistent with insiders managing earnings prior to the exercise. They conclude that executives intervene in the earnings process to increase their option gains and are not necessarily trading on private knowledge of the firm's underlying economic prospects.[3] Thus, Bartov and Mohanram (2004) add to the body of research suggesting that managers manipulate earnings to maximize the value of their stock option awards.[4]

Evidence of pre-exercise earnings management still presumes that executives quickly dispose of the acquired shares in order to realize the gains from exercise. However, recent research raises questions about the exercise-and-sell assumption. The findings of Aboody et al. (2008) suggest that more than twenty-five percent of insiders in their sample hold *all* shares

[2] Prior to May 1991, Section 16b-3 of the Securities and Exchange Act of 1934 required insiders to hold stock acquired through ESO exercise for six months before subsequent sale. This six-month "short swing" window was preserved after May 1991, but it was amended to begin at the grant rather than exercise date. The amended "short swing" came as a result of the SEC's comprehensive revision of its Section 16 rules, which took place in February of 1991. The amendment was, "based on the fundamental economic principle that a derivative security represents indirect beneficial ownership of the underlying equity securities." This led to the conclusion that the acquisition of the indirect beneficial ownership took place at the acquisition of the option (i.e. grant date), rather than at the exercise of the option, since the exercise of an option, "involves a mere change in form of beneficial ownership of the underlying securities, from indirect to direct."

[3] Bergstresser and Philippon (2006) reach a similar conclusion, although their evidence is much less direct. They find that in years when firms book greater accruals, CEOs exercise more options and insiders tend to sell more stock. Thus, they document contemporaneous annual relations and do not isolate earnings management in the months before and after exercise.

[4] For example, Baker, Collins, and Reitenga (2003) and McAnally, Srivastava, and Weaver (2008) conclude that managers manipulate earnings through income decreasing discretionary accruals to depress their stock price prior to an option grant.

obtained through exercise for more than thirty days. Clearly, the assumption that managers immediately sell shares from exercise does not hold in all cases, and this exercise and hold behavior requires an alternative explanation. In this paper, we directly examine the decision to sell or hold shares following option exercise from an earnings management perspective. In particular, we evaluate the role accrual management plays in both the short- and long-term hold decisions.

As previously described, Bartov and Mohanram (2004) find evidence that firms engage in earnings management prior to large exercises presumably to boost the stock price and increase their option gains. For an insider who is not intending to hold the stock after exercise, this strategy is economically rational. However, if we relax the assumption that executives immediately sell the shares and instead allow for some holding period, the benefit of earnings management prior to exercise becomes less obvious. Thus, for executives preferring to hold shares rather than sell shares, there should be less incentive to engage in pre-exercise earnings management. While prior research finds a positive relation between past earnings management and the decision to exercise, we condition on an exercise and expect a negative relation between prior earnings management and the decision to subsequently hold shares. Stated in its alternative form, our first hypothesis is as follows:

> H1: The decision to hold shares following ESO exercise is negatively related to the extent of pre-exercise earnings management.

Limited existing research of the exercise and hold decision generally argues that executives anticipate favorable economic performance for the firm that will result in stock price appreciation. Aboody et al. (2008), Sternberg and Witte (2009), Cicero (2009), and Huston and Smith (2012) use ex-post realized future returns to proxy for private information possessed by

insiders at the time of exercise and document a positive relation with the decision to hold shares. Building on this research, we allow for the possibility of private information but also investigate whether post-exercise earnings management plays an incremental role in explaining the decision to hold long-term. We do not view the two explanations as mutually exclusive in the cross-section of firms. It is possible that some insiders turn to earnings management when expected good news does not materialize after exercise. It is also possible that managers are not privy to good news and exercise options with full intention of managing future earnings.[5] In either event, the manager has incentives to boost the price of the stock or prevent a share price decline during the holding period to preserve option gains.[6] If the market is unable to see through the earnings management, it is further possible to observe a positive future return associated with a hold strategy that is not wholly attributable to private information. We expect that the firm's earnings management activity is positively related to the decision to hold shares obtained from ESO exercises for a longer-term horizon. Our second hypothesis, stated in its alternative form, is as follows:

> H2: The decision to hold shares following ESO exercise is positively related to earnings management activity during the period following exercise.

[5] We are unable to disentangle these alternative long-term holding scenarios; accordingly we refrain from predicting causal relations and focus on how the decision to exercise and hold corresponds to concurrent earnings management.

[6] Cheng and Warfield (2005) conclude that greater overall levels of equity ownership by management are related to greater earnings management. Our study differs from theirs in that they examine how various components of managerial compensation explain earnings management (i.e., the likelihood of a positive earnings surprise), whereas we examine whether discretionary accruals explain the sell vs. hold decision across time conditional on the exercise of ESOs. We also examine how the pattern of earnings management depends of the origin of the shares held. That is, we consider how differential tax incentives associated with those shares explains cross-sectional variation in earnings management.

RESEARCH DESIGN

We conduct our hypothesis tests by observing insiders' exercises of employee stock options and subsequent stock sales using a sample of exercises from the Thomson Reuters Database for the period 1996 through 2008. Consistent with prior research, we limit our analyses to exercises of employee stock options acquired pursuant to a Rule 16b-3[7] plan (Thomson Reuters Code = "M"), and sum all exercises that occur in the same calendar month for each insider.[8] We then examine the one, six, nine, or twelve months following exercise in order to classify each observation as either a "hold" or "sell" observation. Consistent with Dhaliwal et al. (2009) and Huston and Smith (2012), we use disposition codes "S", "F" or "D" to determine stock sales.[9] Because we are unable to definitively determine whether insiders are disposing of shares obtained from the exercise in question or from some other lot of shares held, we assume that any shares disposed of in the month of exercise and the ensuing one, six, nine, or twelve months represent shares obtained from the exercise. This assumption downwardly biases our measure of shares held because not all dispositions following exercise likely represent shares obtained from exercise. We then identify the financial statements filed with the SEC before and after the exercise month to properly align our accrual management measure with the appropriate holding period to test our hypotheses. We provide more details about this alignment approach in Figure 1.

[7] Section 16(b) of the Securities and Exchange Act of 1934 is designed to prevent insiders from profiting from private information by establishing that short-swing profits (i.e., gains from the purchase and sale of company stock over a period less than 6-months) earned by an insider can be recovered by the firm. Rule 16b-3 allows certain short-swing profits (including employee stock option profits) to be exempt from this treatment, provided that certain criteria are met (see §240.16b-3 and §240.16b-6 General Rules and Regulations of the Securities and Exchange Act of 1934 for additional details).

[8] We select ISO, NONQ, DIREO, DIRO, EMPO, OPTNS, and CALL observations from Thomson to construct our sample.

[9] Thomson describes a "S" disposition as an "Open market or private sale of a non-derivative or derivative security", a "F" disposition as a "Payment of option exercise price or tax liability by delivering or withholding securities incident to exercise of a derivative security issued in accordance with Rule 16b-3", and a "D" disposition as a "Disposition to the issuer of equity securities pursuant to Rule 16b-3."

<<< Insert Figure 1 Here >>>

We begin with an initial sample of 57,768 monthly exercise observations from a total of 20,230 unique insiders and 1,100 unique firms. This sample represents the intersection of Thomson, COMPUSTAT, and CRSP. Consistent with Bartov and Mohanram (2004), we focus on large stock option exercises as they should provide greater economic incentive to manage earnings. Eliminating smaller exercises[10] reduces our sample by 28,606. Additional COMPUSTAT and CRSP data restrictions reduce our sample to 14,904 observations involving 11,454 insiders and 807 firms. Table 1 provides the details relating to sample composition.

<<< Insert Table 1 Here >>>

Short-term hold decision

We estimate a logistic regression adapted from Huston and Smith (2012) to test our first hypothesis related to short-term holding decisions. Specifically, we estimate the likelihood that an insider holds all of the shares obtained from exercise for at least one month as a function of prior discretionary accruals and other factors that could influence the exercise decision:

$$\begin{aligned} 1M\_HOLD = {} & \alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \\ & \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(FUTRET6) + \beta_8(PASTEARNMAN6) + \\ & \beta_9(FUTEARNMAN6) + \beta_{10\text{-}22}(YEAR) + \varepsilon \end{aligned} \quad (1)^{11,12}$$

where

1M_HOLD is coded as 1 if the insider sells no shares in the month of exercise or the month following exercise, and 0 otherwise;
EXPIRE is coded as 1 if the option is expiring in the next twelve months, and 0 otherwise;
SUMPAID is the amount (in millions) required to exercise the options;

[10] We identify "large exercises" by selecting the largest monthly exercise for each insider in each of the following three-year periods: 1995-1997, 1998-2000, 2001-2003, 2004-2006, and 2007-2009. Thus, an insider can be selected up to five times for our sample. Our results are not sensitive to this sample selection criteria as our inferences remain unchanged using alternative selection windows.
[11] We include year indicators and cluster by person in all of our regressions, consistent with recommendations from Peterson (2009).
[12] All independent variables are winsorized at the 1% and 99% level in all of our regressions.

DIVYIELD is the sum of the monthly dividend payments of the 12 months preceding exercise divided by the price of the stock at the end of the exercise month;
PASTRET6 is the abnormal value weighted buy-and-hold return excluding dividends for the six-month period prior to the month of exercise[13];
VOLATILITY is the monthly standard deviation of returns for the twelve-months prior to exercise;
DEPTH is the monthly closing price less the average strike price divided by the monthly closing price;
FUTRET6 is the abnormal value weighted buy-and-hold return excluding dividends for the six-month period beginning with the month of exercise[14];
PASTEARNMAN6 is the combined accrual management for the two quarters reported prior to the quarter of exercise;
FUTEARNMAN6 is the combined accrual management for the two quarters reported following the month of exercise; and
YEAR is a vector of indicator variables for each sample year.

We use the performance modified Jones model to calculate our measures of earnings management [Kothari et al. (2005)], where ROA is included in the Jones model and the regression is estimated by industry and quarter. Our primary variable of interest in Model (1) is *PASTEARNMAN6*. Prior research suggests that insiders manage earnings upward prior to engaging in large exercises. We predict that this observed behavior is more likely to be associated with the exercise and sell observations relative to the exercise and hold observations. Consequently, our first hypothesis suggests a negative coefficient estimate for *PASTEARNMAN6*.

We also include control variables that prior research by Aboody et al. (2008), Sternberg and Witte (2009), and Huston and Smith (2012) have found to be associated with the decision to

[13] In sensitivity analyses, we also calculate *PASTRET* using abnormal returns; results are qualitatively unchanged under either specification.
[14] Barber and Lyon (1997) and Loughran and Ritter (2000) argue that long-horizon abnormal stock returns are more appropriately analyzed using buy-and-hold.

hold shares acquired through exercise. We identify option exercises that likely do not represent a voluntary early exercise by identifying options set to expire within one year of exercise (*EXPIRE*). Prior research suggests that expiring options could both increase or decrease the likelihood of observing a hold. Consequently, we do not make a directional prediction for *EXPIRE*.

We also include the amount paid to exercise the stock options (*SUMPAID*), because a greater cash outlay increases the likelihood that at least a portion of shares obtained will be sold for liquidity reasons. We expect a negative coefficient for *SUMPAID*. We also include the dividend yield of the firm to control for the effects that dividends could have on the decision to hold shares from ESOs that are often not dividend-protected (Arnold and Gillenkirch 2005). Prior research by McDonald (2003) and findings by Huston and Smith (2012) suggest a positive coefficient for dividend yield (*DIVYIELD*).

We also include abnormal stock returns for the six months prior to exercise (*PASTRET6)* to control for the effects of stock momentum. Consistent with Huston and Smith (2012), we expect a negative coefficient for *PASTRET6.* In addition, we also control for the insiders' increased risk of holding shares of volatile stocks by including *VOLATILITY* in our regressions, which is computed as the standard deviation of monthly returns for the twelve months preceding the exercise month. We expect a negative coefficient for *VOLATILITY*.

Consistent with the findings of Aboody et al. (2008) and Huston and Smith (2012), we include *DEPTH* to control for the increased likelihood that insiders sell shares from deeper in the money options. We include *FUTRET6*, computed as the value weighted buy-and-hold six month stock return excluding dividends beginning with the month of exercise to capture positive private information yet to be impounded into stock price at the time of the exercise. The findings of

Aboody et al. (2008), Sternberg and Witte (2009), and Huston and Smith would suggest a positive coefficient on *FUTRET6.* Finally, we include *FUTEARNMAN6,* computed as the combined accrual management for the 2 quarters reported after the month of exercise to capture any relation between future accrual management and the short-term decision to hold shares.

Long-term hold decision

To test the effect of future accrual management on the long-term hold decision, we estimate a series of logistic regression models adapted from Huston and Smith (2012). In these regressions, we modify the dependent variable to identify whether or not the insider holds all of the shares obtained from exercise for at least six months (*6M_HOLD*=1), nine months (*9M_HOLD*=1), or twelve months (*12M_HOLD*=1). In each model, we include a cumulative measure of earnings management corresponding to the quarterly earnings reported during the respective holding period. Thus, for a 12-month holding period (*12M_HOLD*), we expect a positive relation with discretionary accrual activity in the four fiscal quarters (twelve months) reported within that 12-month hold window (*FUTEARNMAN12*). By estimating multiple models, we evaluate this relation over various horizons. This approach assumes that the insider can exercise discretion over accruals late in the quarter or after quarter end but prior to the earnings announcement.

We estimate the following models to examine our long-term hold decision hypotheses:

$$\begin{aligned} 6M\_HOLD = {} & \alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \\ & \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(FUTRET6) + \beta_8(PASTEARNMAN6) + \\ & \beta_9(FUTEARNMAN6) + \beta_{10\text{-}22}(YEAR) + \varepsilon \end{aligned} \quad (2)$$

$$\begin{aligned} 9M\_HOLD = {} & \alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \\ & \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(FUTRET9) + \beta_8(PASTEARNMAN6) + \\ & \beta_9(FUTEARNMAN9) + \beta_{10\text{-}22}(YEAR) + \varepsilon \end{aligned} \quad (3)$$

$$12M\_HOLD = \alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(FUTRET12) + \beta_8(PASTEARNMAN6) + \beta_9(FUTEARNMAN12) + \beta_{10\text{-}22}(YEAR) + \varepsilon \quad (4)$$

where

6M_HOLD is coded as 1 if the insider sells no shares in the month of exercise or the six months following exercise, and 0 otherwise;
9M_HOLD is coded as 1 if the insider sells no shares in the month of exercise or the nine months following exercise, and 0 otherwise;
12M_HOLD is coded as 1 if the insider sells no shares in the month of exercise or the twelve months following exercise, and 0 otherwise;
EXPIRE is coded as 1 if the option is expiring in the next twelve months, and 0 otherwise;
SUMPAID is the amount (in millions) required to exercise the options;
DIVYIELD is the sum of the monthly dividend payments of the 12 months preceding exercise divided by the price of the stock at the end of the exercise month;
PASTRET is the abnormal value weighted buy-and-hold return excluding dividends for the six-month period prior to the month of exercise[15];
VOLATILITY is the monthly standard deviation of returns for the twelve-months prior to exercise;
DEPTH is the monthly closing price less the average strike price divided by the monthly closing price;
PASTEARNMAN6 is the combined accrual management for the two quarters reported prior to the quarter of exercise;
FUTRET6 is the abnormal value weighted buy-and-hold return excluding dividends for the six-month period beginning with the month of exercise;
FUTEARNMAN6 is the combined accrual management for the two quarters reported following the month of exercise;
FUTRET9 is the abnormal value weighted buy-and-hold return excluding dividends for the nine-month period beginning with the month of exercise;

[15] In sensitivity analyses, we also calculate *PASTRET* using abnormal returns; results are qualitatively unchanged under either specification.

FUTEARNMAN9 is the combined accrual management for the three quarters reported following the month of exercise;
FUTRET12 is the abnormal value weighted buy-and-hold return excluding dividends for the twelve-month period beginning with the month of exercise;
FUTEARNMAN12 is the combined accrual management for the four quarters reported following the month of exercise; and
YEAR is a vector of indicator variables for each sample year.

Our variable of interest in Model (2), (3), and (4) is *FUTEARNMAN6, FUTEARNMAN9,* and *FUTEARNMAN12,* respectively. Our long-window hold decision hypothesis (H2) predicts a positive coefficient estimate for each.

RESULTS

Descriptive Analyses

Descriptive statistics for our full sample are presented in Table 2. The mean (median) number of shares obtained at exercise in our sample is 61,131 (16,839). In addition, insiders hold all shares acquired from exercise for at least one month in 21.9 percent of our observations. This percentage is slightly below the percentages reported by both Aboody et al. (2008) and Huston and Smith (2012), but given that we focus on only large exercises in this study, it is reasonable to expect that insiders would be more likely to sell at least some of the shares received relative to smaller exercises. As expected, the percentage declines as the holding period lengthens but remains above 15 percent up to 12 months after exercise.

<<< Insert Table 2 Here >>>

Table 2 presents the Pearson correlation matrix between all variables used in our hypotheses tests. When we examine the correlations among our independent variables and the *12M_HOLD* dependent variable, we find relations that are generally consistent with prior

research, which provides us with greater confidence that our sample and variable measurements are representative of what has been used in prior research. Specifically, we find positive associations for *EXPIRE*, *VOLATILITY*, and *FUTRET12* and negative associations for *SUMPAID* and *DEPTH*, consistent with prior research. The positive correlations between *EXPIRE* and each of the hold variables, consistent with option expiration explaining a preference to hold shares rather than continuing to hold an option that is in-the-money. The negative correlations between *SUMPAID* and each of our hold variables suggests that liquidity needs explain a preference to sell shares. Regarding our variables of interest for H1 we find a negative (albeit insignificant) correlation between *1M_HOLD* and *PASTEARNMAN6* (-0.007). For our long-term hold test variables, we find positive but insignificant correlations between *6M_HOLD* and *FUTEARNMAN6* (0.011), *9M_HOLD* and *FUTEARNMAN9* (0.012), and *12M_HOLD* and *FUTEARNMAN12* (0.014). Collectively, the correlation matrix fails to provide support for H1 and H2.

<<< Insert Table 3 Here >>>

Multivariate Analyses

We test H1, the short-term holding decision, using equation (1). The coefficient estimates for this model (1) are reported in the left column of Table 4. The coefficient estimates on our control variables are largely consistent with the findings of prior research. *EXPIRE* is positively associated with the choice to hold; *SUMPAID*, *PASTRET6*, and *DEPTH* are negative and significant. Regarding our variable of interest, we are unable to document the predicted negative coefficient estimate on *PASTEARNMAN6* (-0.137; p-value=0.19) in our full sample. To explore this relationship further, we partition based on the pre-exercise stock returns.

We speculate that past earnings management more likely explains the decision to sell as opposed to hold shares when there has been a run-up in prices. This would be consistent with a successful strategy by management to boost the stock price with discretionary accruals followed by an immediate sale of the stock after exercise. Accordingly, we cut our sample into positive (negative) *PASTRET6* and report the results of this conditional analysis in the remaining four columns of Table 4. Consistent with our expectations, we find the predicted negative coefficient estimate on *PASTEARNMAN6* in the subsample with positive *PASTRET6* (-0.389; p-value=0.03). When *PASTRET6* is negative, we find no significant effect of earnings management. This result suggests that executives are less likely to hold the stock in the short-run when past earnings management and stock price increases prior to the exercise.[16] Thus, we find support for H1 conditional on an upward trend in prices prior to exercise. We also note a positive relation between future earnings management *FUTEARNMAN6*, and the short-term holding decision. This suggests that managers who quickly dispose of acquired shares have less incentive to manage earnings. This also leads into our analysis H2 concerning post-exercise earnings management and longer term holding decisions.

<<< Insert Table 4 Here >>>

We test H2 using Models (2) through (4); results are reported in Table 5. The coefficient estimates on our control variables *EXPIRE*, *SUMPAID*, *DEPTH*, *PASTRET6*, *VOLATILITY* are largely consistent with the findings of prior research. Regarding our variables of interest, we document the predicted positive coefficient estimate on *FUTEARNMAN6* (0.294; p-value=0.03), *FUTEARNMAN9* (0.230; p-value=0.05), *FUTEARNMAN12* (0.253; p-value=0.03), corresponding to the 6, 9, and 12-month holding horizons. The marginal effects associated with

[16] In untabulated analysis, we also partition our sample based on the sign of *PASTEARNMAN6*. We find the predicted negative relation between pre-exercise earnings management and the decision to hold shares when discretionary accruals increase income but not when they decrease income.

each variable are 4.2%, 3.1%, and 3.0%, respectively.[17] These findings are consistent with H2 and indicate a sustained relation between post-exercise earnings management and the decision to continue holding shares from exercise. Importantly, we note that future earnings management has incremental explanatory after controlling for future returns. To the extent that future returns proxy for private information, our results suggest that future earnings management captures a different dimension of an executive's decision to hold shares over the long-term.

Huston and Smith (2012) find that insider exercise and hold behavior differs depending on the type of option exercised. Further, their findings suggest that one can draw inferences about how individual tax incentives impact the hold decision by distinguishing between incentive stock options (ISOs) and non-qualified stock options (NQSOs). In particular, insiders have greater incentives to hold shares acquired from ISO exercise for long-term capital gains treatment than shares from NQSOs because of preferential tax treatments.[18] Consistent with this notion, we condition our previous tests based on the differences between individual tax incentives associated with ISOs relative to NQSOs, especially as we approach the incrementally tax advantaged 12-month hold.

Consistent with studies by Hall and Liebman 2000, Cicero 2009, and Huston and Smith 2012 we have many more NQSOs than ISOs in our sample (e.g., 13,866 vs. 939 for the 6-month holding horizon). We separately estimate equations (2) through (4) for each subsample and report results in Table 6. Among our NQSO observations, as the holding period expands, we find that the magnitude and significance of the future earnings management coefficients decline

[17] We compute the marginal effect associated with each observation and take the average across all observations.
[18] This preferential tax treatment relates to the ability of ISOs to receive long-term capital gains treatment on pre-exercise gains when shares are held for at least a year following exercise, a benefit not available to NQSOs. Consider an insider who exercises and holds the stock for one year. In the case of incentive stock options, the long term capital gain is equal to the difference between the stock price on the date of sale and the *exercise* price. In the case of non-qualified stock options the long term capital gain is equal to the difference between the stock price on the date of sale and the market price at the exercise date, with the difference between the exercise price and the market price at exercise date classified as ordinary income.

somewhat as we move from the six month hold (0.299, p-value=0.03) to the twelve month hold (0.218, p-value=0.06). Conversely, among our ISO observations, the magnitude and significance of the earnings management coefficient increase as we move from the six month hold (0.774, p-value=0.08) to the twelve month hold (1.034, p-value=0.01).[19] The fact that these relations tend to move in opposite directions as the holding window expands suggests that the distinct tax aspects of ISOs and NQSOs affect the earnings management strategy. We infer that the incremental benefits of long-term capital gain treatment for ISO shares account for the relatively stronger relation between earnings management and holding shares for at least twelve months. Overall, these findings are consistent with individual tax incentives influencing the relationship between post-exercise accrual management and long-term holding decisions.

<<<Insert Table 6 Here >>>

CONCLUSION

In this paper, we re-examine earnings management activity around stock option exercises in the context of research demonstrating that executives do not sell all shares immediately following exercise (Aboody et al. 2008; Sternberg and Witte 2009; Kyriacou and Mase 2010; Huston and Smith 2012). Specifically, we examine two complementary factors that help to explain the decision to hold shares acquired from option exercise, earnings management and tax incentives. We analyze both short-term and long-term holding decisions, by investigating discretionary accrual activity before and after stock option exercises. In addition, we examine

[19] The marginal effects of earnings management tell a similar story. Although the marginal effects for ISOs are generally three times greater than the effects for NQSO holdings, the increasing pattern for ISOs is somewhat muted. For ISO (NQSO) holdings the marginal effects of earnings management are 12.7%, 10.4%, and 13.1% (4.2%, 3.0%, and 2.6%) for the 6, 9, and 12 month horizons, respectively.

whether tax considerations influence the timing and extent of earnings management activity during the holding period by focusing on the relative levels of accrual management around the one-year holding requirement for preferential long-term capital gain treatment.

With respect to short-term holding decisions, our results suggest that executives are less inclined to hold shares acquired from exercise for more than 30 days when they use discretionary accruals to increase income prior to exercise. In addition, we find that pre-exercise discretionary accruals are significantly greater for our sell-all sample than our hold-all sample. With respect to long-term holding decisions, we find a positive association between post-exercise discretionary accruals and the likelihood that the executive continues to hold shares acquired from exercise for up to a year. Further, when we differentiate between ISO and NQSO exercises, we find evidence that individual tax incentives are linked to earnings management activity following stock option exercises. Taken together, our results suggest distinct earnings management strategies associated with the decision to hold rather than sell shares following exercise.

We believe that our findings contribute to both the earnings management literature and the employee stock option literature in accounting and finance. First, our results contribute to existing studies of earnings management prior to stock option exercise by directly modeling the decision to hold shares following exercise. We extend this line of research, documenting that (a) conditional upon exercise, past earnings management plays a significant role in the executive's decision to sell or hold the acquired shares, and (b) the relation varies with the holding period. Second, while prior research (Aboody et al. 2008; Huston and Smith (2012) concludes that an executive's decision to hold shares is predicated on private information, suggested by positive stock returns following exercise, our findings suggest that they also appear to engage in accrual management during the holding period to boost earnings and stock prices. Finally, after

differentiating between ISO and NQSOs, we find evidence that individual tax incentives likely influence the timing and extent of accrual management during the hold window. Thus, our study contributes to existing research of how the tax consequences of executive compensation can impact financial reporting.

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Figure 1: Alignment of exercise and hold period and accruals management measurement

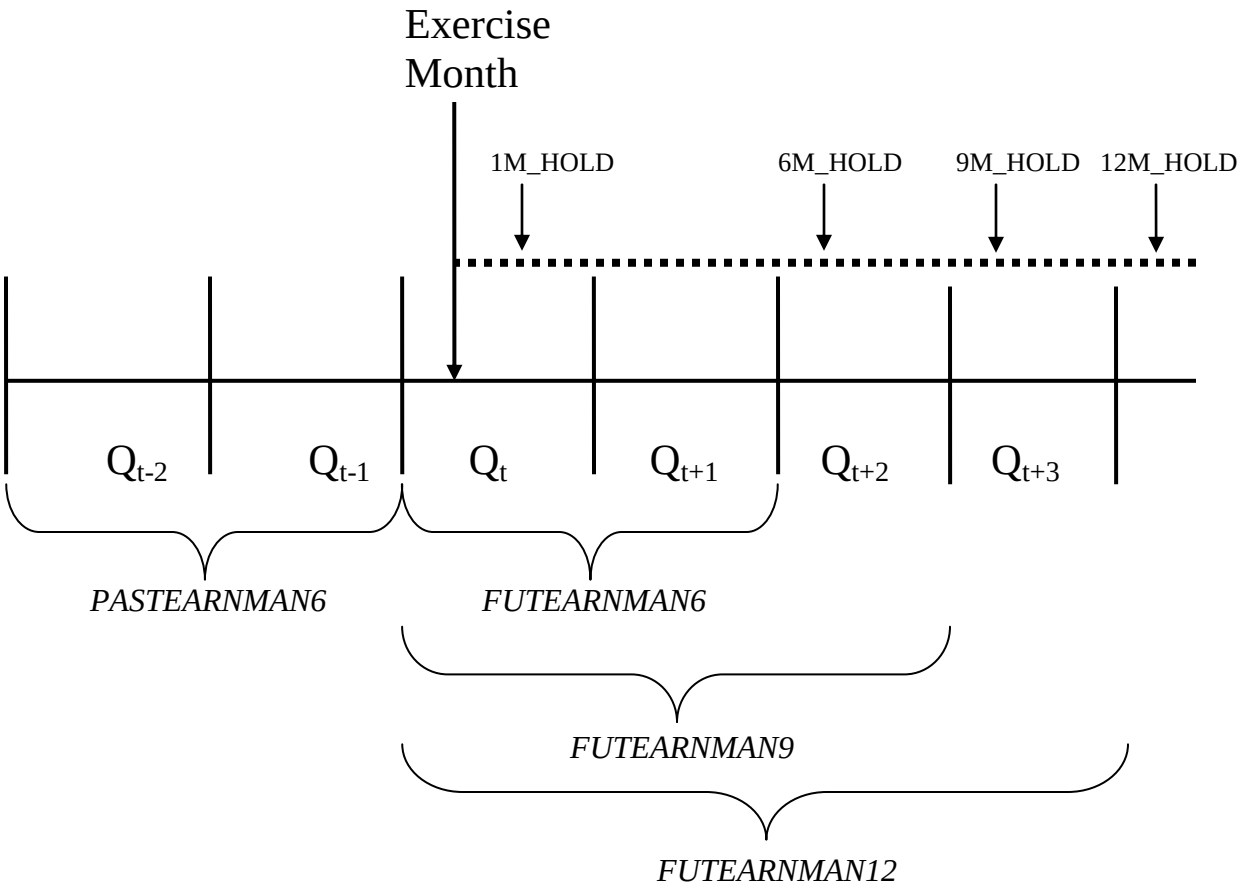

Figure 1 depicts the matching of HOLD measures with our accruals earnings management measures. To examine the effect of past accruals management on short window exercise and hold decisions (H1), we relate discretionary accruals in the two quarters reported prior to exercise (*PASTEARNMAN6*) to an immediate sale (1M_HOLD=0). To examine the association between post-exercise accruals management and long window hold decisions (H2), we relate discretionary accruals in the 2, 3, and 4 quarters reported after exercise (*FUTEARNMAN6*, *FUTEARNMAN9*, *FUTEARNMAN12*) to the likelihood of observing no stock sales during the six (6M_HOLD=1), nine (9M_HOLD=1), and twelve (12M_HOLD=1) months following exercise.

Table 1: Sample Composition

	N	*Insiders*	*Firms*
Monthly exercises of options acquired pursuant to Rule 16b-3	57,768	20,230	1,100
Less: Smaller exercises	28,606	0	0
Less: Missing data in Thomson	196	131	1
Less: Missing data in COMPUSTAT	13,051	7,929	286
Less: Missing data in CRSP	1,011	771	6
Sample	**14,904**	**11,454**	**807**

Table 2: Descriptive Statistics

Variable	N	Mean	Median	Q1	Q3	Std. Dev.
1M_HOLD	14,904	0.219	0.000	0.000	0.000	0.413
6M_HOLD	14,655	0.189	0.000	0.000	0.000	0.392
9M_HOLD	14,542	0.174	0.000	0.000	0.000	0.379
12M_HOLD	14,448	0.154	0.000	0.000	0.000	0.361
SIZE	14,904	3573.800	528.571	115.161	2342.030	9215.630
SHARES	14,904	61130.710	16838.550	6275.510	45299.490	696147.590
EXPIRE	14,904	0.319	0.000	0.000	1.000	0.466
SUMPAID	14,904	0.414	0.125	0.042	0.376	0.839
DIVYIELD	14,904	0.008	0.000	0.000	0.013	0.013
VOLATILITY	14,904	0.123	0.101	0.069	0.152	0.078
DEPTH	14,904	0.631	0.671	0.452	0.839	0.249
PASTRET6	14,904	0.063	0.001	-0.172	0.186	0.484
FUTRET6	14,904	0.029	-0.012	-0.185	0.170	0.398
FUTRET9	14,870	0.055	-0.017	-0.232	0.209	0.551
FUTRET12	14,840	0.082	-0.022	-0.270	0.255	0.683
PASTEARNMAN6	14,904	-0.003	-0.002	-0.030	0.019	0.140
FUTEARNMAN6	14,904	0.004	-0.001	-0.029	0.023	0.148
FUTEARNMAN9	14,520	0.003	-0.003	-0.042	0.028	0.183
FUTEARNMAN12	14,094	0.002	-0.003	-0.050	0.033	0.202

1M_HOLD is coded as 1 if the insider sells no shares in the month of exercise or the month following exercise, and 0 otherwise;
6M_HOLD is coded as 1 if the insider sells no shares in the month of exercise or the six months following exercise, and 0 otherwise;
9M_HOLD is coded as 1 if the insider sells no shares in the month of exercise or the nine months following exercise, and 0 otherwise;
12M_HOLD is coded as 1 if the insider sells no shares in the month of exercise or the twelve months following exercise, and 0 otherwise;
SIZE is the total assets (in millions) of the firm in which the insider is exercising the options;
SHARES is the amount of shares received at exercise;
EXPIRE is coded as 1 if the option is expiring in the next twelve months, and 0 otherwise;
SUMPAID is the amount (in millions) required to exercise the options;
DIVYIELD is the sum of the monthly dividend payments of the 12 months preceding exercise divided by the price of the stock at the end of the exercise month;
VOLATILITY is the monthly standard deviation of returns for the twelve-months prior to exercise;
DEPTH is the monthly closing price less the average strike price divided by the monthly closing price;
PASTRET6 is the abnormal value weighted buy-and-hold return excluding dividends for the six-month period prior to the month of exercise;
FUTRET6 is the abnormal value weighted buy-and-hold return excluding dividends for the six-month period beginning with the month of exercise;
FUTRET9 is the abnormal value weighted buy-and-hold return excluding dividends for the nine-month period beginning with the month of exercise;
FUTRET12 is the abnormal value weighted buy-and-hold return excluding dividends for the twelve-month period beginning with the month of exercise;
PASTEARNMAN6 is the combined accrual management for the two quarters reported prior to the month of exercise;
FUTEARNMAN6 is the combined accrual management for quarter reported following the exercise month and the subsequent quarter;
FUTEARNMAN9 is the combined accrual management for quarter reported following the exercise month and the subsequent 2 quarters; and
FUTEARNMAN12 is the combined accrual management for quarter reported following the exercise month and the subsequent 3 quarters.

Table 3: Correlation Matrix

	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***
1. 1M_HOLD																
2. 6M_HOLD	**0.908**															
3. 9M_HOLD	**0.863**	**0.950**														
4. 12M_HOLD	**0.800**	**0.881**	**0.927**													
5. EXPIRE	**0.178**	**0.173**	**0.164**	**0.147**												
6. SUMPAID	**-0.148**	**-0.144**	**-0.141**	**-0.133**	**-0.040**											
7. DIVYIELD	**-0.030**	-0.011	-0.006	-0.005	**0.065**	**0.088**										
8. VOLATILITY	**0.085**	**0.070**	**0.071**	**0.070**	**-0.077**	**0.147**	**-0.373**									
9. DEPTH	**0.024**	0.000	-0.009	**-0.018**	**-0.107**	**-0.157**	**-0.325**	**0.199**								
10. PASTRET6	**-0.019**	-0.012	-0.011	-0.011	-0.001	-0.002	-0.003	**0.044**	**0.014**							
11. FUTRET6	-0.004	-0.003	0.001	0.009	-0.005	**0.023**	-0.001	**0.042**	-0.010	**0.053**						
12. FUTRET9	0.002	0.002	0.005	0.012	0.000	**0.019**	-0.011	**0.038**	-0.002	**0.021**	**0.748**					
13. FUTRET12	0.008	0.008	0.012	0.015	-0.003	**0.025**	**-0.016**	0.050	0.002	0.006	**0.636**	**0.828**				
14. PASTEARNMAN6	-0.007	-0.008	-0.011	-0.010	0.014	-0.004	**0.021**	0.000	**-0.020**	0.007	**0.032**	**0.018**	**0.030**			
15. FUTEARNMAN6	0.013	0.011	**0.016**	-0.015	**-0.018**	0.007	0.008	**-0.024**	0.011	**0.033**	-0.004	-0.004	-0.012	**-0.119**		
16. FUTEARNMAN9	**0.016**	0.010	0.012	0.012	-0.014	0.002	0.005	**0.022**	0.001	**0.047**	0.015	0.014	0.002	**-0.148**	**0.809**	
17. FUTEARNMAN12	**0.016**	0.013	**0.015**	0.014	-0.006	0.005	0.007	**0.026**	-0.006	**0.059**	**0.018**	**0.023**	0.009	**-0.132**	**0.698**	**0.854**

Values in bold are significant at the 0.05 level.
[1]Variables are defined in Table 2

Table 4: Estimation of Past Earnings Management on Short Window Exercise and Hold

1M_HOLD = $\alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(FUTRET6) + \beta_8(PASTEARNMAN6) + \beta_9(FUTEARNMAN6) + \beta_{10\text{-}22}(YEAR) + \varepsilon$

The numbers below the estimates are rounded p-values.
*, **, *** Indicate significance at the .1, .05, .01 level (1-tail where appropriate)

		FULL SAMPLE N=14,904		**PASTRET6>0** N=7,465		**PASTRET6<0** N=7,439	
Variables[1]	Prediction						
Intercept		-1.542		-1.541		-1.568	
		(<0.01)		*(<0.01)*		*(<0.01)*	
EXPIRE	(?)	0.878	***	0.947	***	0.816	***
		(<0.01)		*(<0.01)*		*(<0.01)*	
SUMPAID	(-)	-0.973	***	-1.219	***	-0.801	***
		(<0.01)		*(<0.01)*		*(<0.01)*	
DIVYIELD	(+)	-2.380		-0.058		-4.802	
		(0.13)		*(0.49)*		*(0.05)*	
PASTRET6	(-)	-0.078	**	-0.138	***	-0.235	*
		(0.03)		*(0.01)*		*(0.09)*	
VOLATILITY	(?)	1.617	***	1.818	***	1.442	***
		(<0.01)		*(<0.01)*		*(<0.01)*	
DEPTH	(-)	-0.177	**	-0.199	*	-0.161	
		(0.04)		*(0.08)*		*(0.11)*	
FUTRET6	(+)	0.051		0.028		0.065	
		(0.15)		*(0.34)*		*(0.19)*	
PASTEARNMAN6	H1:(-)	-0.137		-0.389	**	0.242	
		(0.19)		*(0.03)*		*(0.16)*	
FUTEARNMAN6	(+)	0.323	**	0.468	***	0.149	
		(0.01)		*(<0.01)*		*(0.26)*	
R-Squared		0.124		0.142		0.113	

[1]Variables are defined in Table 2

Table 5: Estimation of Future Earnings Management on Long Window Exercise and Hold

6M_HOLD = $\alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(PASTEARNMAN6) + \beta_8(FUTRET6) + \beta_9(FUTEARNMAN6) + \beta_{10\text{-}22}(YEAR) + \varepsilon$

9M_HOLD = $\alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(PASTEARNMAN6) + \beta_8(FUTRET9) + \beta_9(FUTEARNMAN9) + \beta_{10\text{-}22}(YEAR) + \varepsilon$

12M_HOLD = $\alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(PASTEARNMAN6) + \beta_8(FUTRET12) + \beta_9(FUTEARNMAN12) + \beta_{10\text{-}22}(YEAR) + \varepsilon$

The numbers below the estimates are rounded p-values.
*, **, *** Indicate significance at the .1, .05, .01 level (1-tail where appropriate)

		6M_HOLD		**9M_HOLD**		**12M_HOLD**	
		N=14,655		N=14,125		N=13,583	
Variables[1]	Prediction						
Intercept		-1.405		-1.298		-1.264	
		(<0.01)		*(<0.01)*		*(<0.01)*	
EXPIRE	(?)	0.855	***	0.819	***	0.766	***
		(<0.01)		*(<0.01)*		*(<0.01)*	
SUMPAID	(-)	-1.214	***	-1.359	***	-1.506	***
		(<0.01)		*(<0.01)*		*(<0.01)*	
DIVYIELD	(+)	0.132		1.231		1.076	
		(0.48)		*(0.30)*		*(0.33)*	
PASTRET6	(-)	-0.046		-0.027		-0.038	
		(0.14)		*(0.27)*		*(0.42)*	
VOLATILITY	(?)	1.463	***	1.653	***	1.946	***
		(<0.01)		*(<0.01)*		*(<0.01)*	
DEPTH	(-)	-0.395	***	-0.539	***	-0.690	***
		(<0.01)		*(<0.01)*		*(<0.01)*	
PASTEARNMAN6	(-)	-0.204		-0.212		-0.128	
		(0.12)		*(0.12)*		*(0.26)*	
FUTRET6	(+)	0.047					
		(0.18)					
FUTEARNMAN6	H2:(+)	0.294	**				
		(0.03)					
FUTRET9	(+)			0.060	*		
				(0.05)			
FUTEARNMAN9	H2:(+)			0.230	*		
				(0.05)			
FUTRET12	(+)					0.091	***
						(<0.01)	
FUTEARNMAN12	H2:(+)					0.253	**
						(0.03)	
R-Squared		0.122		0.125		0.121	

[1]Variables are defined in Table 2

Table 6: Estimation of Long Window Exercise and Hold for ISOs and NQSOs

6M_HOLD = $\alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(PASTEARNMAN6) + \beta_8(FUTRET6) + \beta_9(FUTEARNMAN6) + \beta_{10\text{-}22}(YEAR) + \varepsilon$

9M_HOLD = $\alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(PASTEARNMAN6) + \beta_8(FUTRET9) + \beta_9(FUTEARNMAN9) + \beta_{10\text{-}22}(YEAR) + \varepsilon$

12M_HOLD = $\alpha_0 + \beta_1(EXPIRE) + \beta_2(SUMPAID) + \beta_3(DIVYIELD) + \beta_4(PASTRET6) + \beta_5(VOLATILITY) + \beta_6(DEPTH) + \beta_7(PASTEARNMAN6) + \beta_8(FUTRET12) + \beta_9(FUTEARNMAN12) + \beta_{10\text{-}22}(YEAR) + \varepsilon$

The numbers below the estimates are rounded p-values. *, **, *** Indicate significance at the .1, .05, .01 level (1-tail where appropriate)

		6M_HOLD				**9M_HOLD**				**12M_HOLD**			
		NQSO N=13,866		ISO N=939		NQSO N=13,366		ISO N=903		NQSO N=12,856		ISO N=862	
Variables[1]	Prediction												
Intercept		-1.451		-1.047		-1.338		-0.940		-1.287		-0.921	
		(<0.01)		*(0.06)*		*(<0.01)*		*(0.09)*		*(<0.01)*		*(0.15)*	
EXPIRE	(?)	0.875	***	0.620	***	0.836	***	0.534	***	0.767	***	0.605	***
		(<0.01)		*(<0.01)*		*(<0.01)*		*(<0.01)*		*(<0.01)*		*(<0.01)*	
SUMPAID	(-)	-1.172	***	-1.886	***	-1.325	***	-2.027	**	-1.499	***	-1.557	**
		(<0.01)		*(<0.01)*		*(<0.01)*		*(0.02)*		*(<0.01)*		*(0.05)*	
DIVYIELD	(+)	1.074		-7.776		1.798		1.417		1.666		-5.065	
		(0.32)		*(0.19)*		*(0.22)*		*(0.44)*		*(0.25)*		*(0.33)*	
PASTRET6	(-)	-0.029		-0.194		-0.005		-0.229		-0.023		-0.233	
		(0.25)		*(0.19)*		*(0.45)*		*(0.20)*		*(0.31)*		*(0.18)*	
VOLATILITY	(?)	1.774	***	-3.164	**	1.985	***	-2.969	*	2.275	***	-2.621	
		(<0.01)		*(0.02)*		*(<0.01)*		*(0.05)*		*(<0.01)*		*(0.12)*	
DEPTH	(-)	-0.428	***	-0.172		-0.572	***	-0.229		-0.718	***	-0.440	
		(<0.01)		*(0.32)*		*(<0.01)*		*(0.27)*		*(<0.01)*		*(0.15)*	
PASTEARNMAN6	(-)	-0.242	*	-0.093		-0.290	*	-0.125		-0.217		-0.155	
		(0.09)		*(0.44)*		*(0.06)*		*(0.43)*		*(0.14)*		*(0.41)*	
FUTRET6	(+)	0.036		0.091									
		(0.24)		*(0.30)*									
FUTEARNMAN6	H2:(+)	0.299	**	0.774	*								
		(0.03)		*(0.08)*									
FUTRET9	(+)					0.062	*	0.144					
						(0.05)		*(0.39)*					
FUTEARNMAN9	H2:(+)					0.227	*	0.697	*				
						(0.06)		*(0.07)*					
FUTRET12	(+)									0.089	***	0.293	**
										(<0.01)		*(0.04)*	
FUTEARNMAN12	H2:(+)									0.218	*	1.034	**
										(0.06)		*(0.01)*	
R-Squared		0.123		0.138		0.126		0.134		0.123		0.110	

[1]Variables are defined in Table 2, ISO and NQSO are identified by Thomson