

Top Executives Insider Trading Profits and Firm Performance

David Aboody*

John Hughes*

Ruihao Ke**

Nick Ross**

University of California Los Angeles

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* Professor

** Doctoral Candidate

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Abstract

In this paper, we consider the association between top executives' profits from insider trading and firm performance. A finding of a positive association would be consistent with the view that insider trading profits are an indirect form of compensation that serves to align incentives with those of the firm's shareholders. Alternatively, such an association might be interpreted as a measure of executives' talent. Failure to detect an association would be consistent with the view that insider trading profits are incidental to firm performance. A negative association would be difficult to rationalize. Our results are mixed. We find a positive association between insider trading profits and firm performance based on either contemporaneous returns or contemporaneous earnings, lending credence to insider profits as a device for aligning incentives. However, we generally find a negative association employing future earnings or future returns. We conjecture that these negative associations reflect opportunism in exploiting inside information about current performance and in anticipating reversals of fortune possibly from foreknowledge of outcomes of inferior decisions with long run implications and an inability of the market to fully impound information conveyed by insider trading profits. We also find positive associations between insider profits and contemporaneous stock issuance and capital spending. The former suggests propitious timing and the latter suggests overinvestment in capacity relative to future needs. There appears to be no association between insider profits and acquisitions.

1. Introduction

Henry Manne (1966) offered what at the time was a new perspective on insider trading by suggesting that profits from such trading by corporate executives might well constitute an efficient form of compensation by aligning incentives with those of firm shareholders. Since Manne, a large literature has developed on executive compensation in all its various forms. In addition, extensive evidence has accumulated that corporate insiders profit from trading in their firms' shares.¹ Much of the focus in the compensation literature has been on the properties of stock-based compensation formally contained within incentive compensation contracts. The principal focus of our inquiry is investigating whether insider trading profits by top executives are related to firm performance in a manner consistent with incentive alignment. Alternative views of executives' insider trading profits are that they are incidental to firm performance, or constitute a form of rent extraction that may not only fail to align incentives, but may actually be predictive of inferior future firm performance.²

Studies of insider trading, and there are many, generally work with aggregate data inclusive of the full set of corporate insiders. The typical approach is to assess returns over months following buys or sells as reported by insiders having aggregated all insiders at the firm level. A distinctive feature of our study is the estimation of insider trading profits for individual CEOs, CFOs, and other top executives. Our approach involves ordering executives across firms based on the profitability of their trades. We then examine whether firms of executives reaping the greatest profits exhibit superior performance as measured by accounting variables such as earnings and operating cash flows and stock returns. Both contemporaneous performance and

¹ Seyhun (1998) presents comprehensive evidence on the profitability of insider trading. Also, see Lakonishok and Lee (2001). Research linking insider trading to asymmetric information include Rozeff and Zaman (1998), Aboody and Lev (2000), Ke, Huddart, and Petroni (2003), Frankel and Li (2004), Piotroski and Roulstone (2004), Aboody, Hughes, and Liu (2005), and Aboody, Hughes, Liu, and Su (2008).

² Bebchuk and Fried (2004) offer a rich discussion of opposing views.

future performance are considered. We employ returns as well as accounting variables, notwithstanding contamination of contemporaneous returns and insider profits and that an association with future returns would indicate market inefficiency.³

For a sample of more than 16,000 top executives over 23 years ending in 2008, we find that firms associated with those executives and, specifically, CEOs for which estimated insider profits are the highest, out-perform in earnings over 12 months during which insider profits are measured and under-perform for up to 36 months following trades relative to those for which estimated profits are the lowest.⁴ Stock issues and changes in capital spending are positively associated with insider profits measured over the previous 12 months. While the former suggests propitious time of stock issuance from the perspective of current shareholders, the latter along with future underperformance suggests overinvestment in capacity. The contemporaneous associations are generally more pronounced for CFOs. Similar patterns emerge when stock returns replace accounting earnings as the measure of firm performance. The negative associations between insider trading profits and future stock returns after controlling for risk factors and momentum suggests market inefficiency with respect to the predictable content of insider trading profits.

Our results to date contribute to the current controversy regarding allegations that top executives are overpaid relative to their role in the performance of their firms. Apart from insider trading, one view from agency theory is that current compensation arrangements are on average efficient notwithstanding uncertainty about the optimal contracting technology. An opposing view is that executives have sufficient power due to weaknesses in corporate

³ Contamination concerns also extend to accounting earnings. Implied correlations are mitigated somewhat by the extent to which insider trades include sells and buys.

⁴ As described later, our monthly roll-forward ranking leads to fractional ranks approaching a continuous variable. Regressions are run on these fractional values and fractional values rounded to whole numbers with qualitatively similar results..

governance to extract rents independent of their impact on firm performance. Our study adds texture to the debate by considering associations between insider trading profits by key top executives and measures of contemporaneous and future performance. Were we to consider only firm performance contemporaneous with profitability of insider trading, the evidence favors incentive alignment. However, the evidence with respect to future firm performance favors the other side of the debate.

The remainder of the paper is organized as follows: Section 2 details our research design, section 3 presents our results thus far, and section 4 concludes with a brief summary.

2. Research Design

2.1 Sample and Measurement of Insider Profits

All stock transactions of corporate insiders including option exercises during the period from 1985 to the end of 2009 were obtained from the Thompson Financial Insider Database. For purposes of this study, we limited the set of individuals to the top executives including the Chairman of the Board, CEO, President, CFO, Chief Operating Officer, and General Counsel. The rationale for selecting these executives is that executives at these levels have access to the greatest amount of private information and are likely to have the greatest influence over firm performance. From among the transactions contained in the Database, we selected open market buys, open market sells, and option exercises as the transactions of interest. The initial sample of these transactions is composed of 191,902 transactions pertaining to 13,175 firms (97,396 firm-years) and 47,073 top executives including 14,445 CEOs.⁵

⁵ We have 52,756 unique firm-person identification numbers indicating that 5,683 executives switched firms during our sample period.

In many instances, transactions by the same insider transpire within a matter of days, some of which have a canceling effect. As a consequence, we accumulate insider transactions by month. Months for which some net transactions took place are regarded as “active months”. Option exercises for which all shares acquired were sold within the month are regarded as sales, while those for which some shares were held are regarded as purchases.

We commence measuring insider trading profits from the first active month net transaction of an individual during the sample period. Returns on the firm’s stock are accumulated from that transaction until the next active trade month in which the net transaction is in the opposite direction. Returns continue to be accumulated accompanied by a reversal in sign for returns following the change in direction until the next active trade month in which the net transaction again changes direction, and so on. For example, suppose the first active month net transaction is a buy. Returns are accumulated for a long position until the active month net transaction is a sell. Returns following the sell are accumulated for a short position until the next active month net buy. This process continues until six months beyond the last active month net transaction. The choice of six months is based on the common finding that returns to insiders are generally insignificant beyond this length of time. The combined accumulated returns for the buy and sell positions over the sample period represent the insider profits for that individual.

A caveat to testing for an association between insider trading profits and contemporaneous firm performance as measured by returns is that by definition they are equivalent for executives while assumed to be exploiting long positions and precisely opposite for those holding short positions. Accordingly, we remove 21,562 executives whose active transaction months display no change in direction from the sample leaving a usable sample of 16004 (16,611 unique firm-personid) top executives having at least one change of direction in

active month net transactions (6,506 CEOs). A further issue is our decision to suppress data on the number of shares traded in an active month for our analysis, which is consistent with prior insider trading literature.

2.2 *Portfolio Formation and Accounting Measures of Performance*

Our objective is to investigate whether a greater ability to profit from insider trades translates to improvement in the firms' operating performance and to financing and investing decisions. We consider future performance as well as contemporaneous performance to allow for the prospect that insider profits provide incentives to top executives to make better decisions, whose impact manifest in periods subsequent to those in which profits are obtained from insider trading.

Specifically, we begin by assessing whether the profits from insider trading are positively associated with contemporaneous and future firm performance, as measured by changes in net income and cash flows using the following empirical model:

$$\begin{aligned} \Delta NI_{t+\tau,i} = & \sum_{y=1986}^{2008} \alpha_{oY} YR_{Yti} + \sum_{N=1}^{48} \alpha_{oN} IND_{Nti} + \alpha_{1N} EXEC_RANK_{ti} + \alpha_2 \Delta NI_{ti} \\ & + \alpha_3 MB_{ti} + \alpha_3 ASSETS_{ti} + \varepsilon_{1ati} \end{aligned} \quad (1a)$$

$$\begin{aligned} \Delta CFO_{t+\tau,i} = & \sum_{y=1986}^{2008} \alpha_{oY} YR_{Yti} + \sum_{N=1}^{48} \alpha_{oN} IND_{Nti} + \alpha_{1N} EXEC_RANK_{ti} + \alpha_2 \Delta CFO_{ti} \\ & + \alpha_3 MB_{ti} + \alpha_3 ASSETS_{ti} + \varepsilon_{2ati} \end{aligned} \quad (1b)$$

We estimate equations (1a) and (1b) separately for the year over which insider profits are measured and each of three future horizons; i.e., from year t to year $t + \tau$, where $\tau = 1, 2$, or 3 .

The dependent variable in (1a), $\Delta NI_{t+\tau}$, is operating income in year $t + \tau$ minus operating income in year t , deflated by beginning-of-year $t-2$ market value of equity. Net income is defined as

income before extraordinary items, discontinued operations, and accounting changes. Similarly, the dependent variable in (1b), $\Delta CFO_{t+\tau}$, is operating cash flows in year $t+\tau$ minus operating cash flows in year t , deflated by beginning-of-year $t-2$ market value of equity.⁶ We examine performance over three years subsequent to the insider profits because it is plausible to expect top executives' operating decisions to have an impact beyond the period during which these decisions are made. For example, we later report positive associations between insider profits and financing and investment changes.

The parameter of interest in our tests is the coefficient estimate on *EXEC_RANK*. *EXEC_RANK* is insider profits calculated using the accumulated returns for the buy and sell positions over the entire period up to month t and ranked into quintiles. Finally, the quintile ranking is averaged over the 12 months of the fiscal year leading to fractional ranks between 1 and 5. If insiders' trading profits helps align executives' interests with those of shareholders, and if these changes in employee incentives are sufficiently large to have a measurable effect on operating income and cash flows, α_j in (1a) and (1b) will be positive.

The change in operating income (operating cash flows) from year $t-1$ to year t , ΔNI_t (ΔCFO_t), controls for the time-series properties of earnings (cash flows). We deflate the ΔNI and ΔCFO variables (both the dependent and independent variables) by beginning-of-year $t-2$ market value of equity. The market-to-book ratio, *MB*, controls for the potential effects of firm risk and growth opportunities, and the logarithm of total assets, *ASSETS*, controls for firm size effects. To control for omitted time- and industry-specific effects, we permit the regression intercept to vary across years and industries. Specifically, YR_Y equals one if the observation is from year Y ,

⁶ The specification of these models follows prior research that investigates the association between firms' financial reporting decisions and subsequent operating performance (see, e.g., Aboody et al., 1999).

and zero otherwise, and IND_N equals one if the firm is in industry N (based on Fama-French 1997 classification), and zero otherwise.

Similarly, we investigate the relation between $EXEC_RANK$ and contemporaneous financing and investing decisions. Specifically, we estimate the relation between $EXEC_RANK$ and common stock issuing, major acquisitions and change in firms' capital expenditures.

2.3 *Portfolio Formation and Risk-Adjusted Returns*

Quintile portfolios are formed monthly over all but the last 36 months of the sample period based on rankings of executives ranked by cumulative insider profits to date. The motivation for this roll-forward procedure is to allow for changes in CEO rankings as more of their trading activity unfolds. Returns on portfolios of firms corresponding to executives are employed in the following time series regressions, initially over the 12 months corresponding to the period over which insider profits are measured (prior to the portfolio formation date), and subsequently over the 36 months following the period over which insider profits are measured:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p (R_{m,t} - R_{f,t}) + \chi_p SMB_t + \delta_p HML_t + \phi_p MOM_t + \varepsilon_{j,t}$$

where $R_{p,t}$ is the return for portfolio p in month t , $R_{m,t}$ is the return on the CRSP value-weighted index, $R_{f,t}$ is the return on a one-month U.S. Treasury Bill, and SMB_t , HML_t , and MOM_t , are, respectively, the Fama and French (1993) size and market-to-book factor and Carhart (1997) momentum factor mimicking portfolio returns. Separate regressions are run for each portfolio-month configuration commencing July, 1986 through December, 2008. Further tests are based on the above regression augmented by a short-term reversion factor based on the returns for the previous month and a long-term reversion factor based on returns for the 48 months ending one-year earlier.

The intercepts from the above regressions represent estimates of portfolio abnormal returns that serve as a measure of either contemporaneous or future firm performance. Our tests of an association between insider trading profits and future firm performance are based on the hedge returns from going long and shorting the extreme quintile portfolios. A finding of higher contemporaneous returns for executives in the highest quintile of insider trading profits as compared with those in the lowest quintile would be consistent with incentive alignment induced by such profits as an indirect form of incentive compensation. However, a caveat to such an interpretation is the contamination effect of using returns to measure both insider profits and firm performance.⁷ A finding in the opposite direction would be consistent with market inefficiency and rent extraction either to the detriment of firm performance or to no effect on that performance. Working with future returns as the measure of firm performance would be vacuous if the market is efficient. Conversely, a finding of an association between insider profits and future returns would imply market inefficiency.

3. Empirical Findings

3.1 Descriptive Statistics

Table 1 presents descriptive statistics on insider trading activity for the initial sample of 16,611 executives including 6,506 CEOs. The average number of trades by all executives over the sample period is approximately 66.5, while the average number of active trading months is 7.68. CEOs are less active in terms of active trading months averaging 2.19 compared with 3.41 for other top executives. The average number of months between active trading months is about 6.05 months for CEOs and 7.61 for others. There are 127,568 active trading months with 59,330

⁷ This concern is mitigated to some extent by our exclusion of observations where executives' trades are all buys or all sells. Details on the numbers of changes in direction of insiders' trades are provided in the next section.

net buys and 68,238 net sells. The number of transactions increases over the sample period peaking in 2004; the number of buys peaks between 1999 and 2001, while the number of sells steadily increases. The increase in buys during the late 1990s may be a reflection of the bull market over that time span. Sells are more likely to be influenced by a diversification motive.

(Insert Table 1 About Here)

As noted earlier, filtering the sample by the requirement that there be at least one change in direction of insider trades reduces the sample to 16,611 executives including 6,506 CEOs. The average number of changes in direction for all executives is 3.52; 3.89 for CEOs and 3.38 for others. Average (median) numbers of months between changes in direction are 15.88 (8.1) and 19.37 (9.17) for CEOs and others, respectively. The average dollar value of insider trades rises slightly in active months for which there is a change in direction, the effect being driven by changes earlier in the data set. There are 28,616 active trading months in which there is a change in net transactions from buys to sells and 29,388 months in which the change is from sells to buys.

Table 2 provides descriptive statistics on the 13,175 firms and insider profits of all top executives from the 97,396 firm years (1,797,396 total observations) during the sample period. The upper panel provides statistics without regard to rankings of executives by insider profits. Overall, top executives realized mean profits (returns) of 19.15% while future firm annual returns ranged from 14% for the first subsequent year to 14.6% for the third such year. The lower panel provides statistics for quintile portfolios from rankings of executives by insider trading profits (lowest to highest). Mean insider profits are by construct steadily increasing from -72.63% to 204.76%. Firms for executives realizing the highest insider profits compared to those realizing the lowest tend to have somewhat larger market capitalizations, lower market-to-

book ratios, and lower future returns. Also, we note that firms in the highest versus lowest quintiles have higher sales, cash flows from operations, and net income, though in all cases the middle quintiles contain the peaks.

(Insert Table 2 About Here)

Albeit with all the qualifications that apply to these simple statistics, there is the suggestion of an inverse association between insider trading profits and future firm performance as measured by raw returns.

3.2 *Insider Profits and Accounting Performance*

Tables 3 and 4 present regression summary statistics from (1a) and (1b) that relate the top executives' profits from insider trading in year t to contemporaneous and subsequent changes in the firm's operating performance.⁸ We conduct our analyses separately for CEOs, Presidents, and CFOs. We also provide test results by averaging all the top executives' rankings at the firm level.

(Insert Table 3 About Here)

Table 3 results indicate that the coefficient on *EXEC_RANK* is positively significant for all four groups in the contemporaneous association specification. The largest and most significant coefficient is for the CFOs group indicating that when the CFOs have higher profits, their firms have the largest increases in net income. These findings suggest that insider profits are associated with decisions or talents that translate into improved operating income in the period where insiders profit. In contrast, we find that *EXEC_RANK* is negatively associated with

⁸ We estimate all equations using a robust regression technique, pooling data across years. The procedure begins by calculating Cook's D statistic and excluding observations with $D > 1$. Then, the regression is re-estimated, weights for each observation are calculated based on absolute residuals – Huber weights and bi-weights – and the estimation is repeated iteratively using the weighted observations until convergence in the maximum change in weights is achieved (see Berk, 1990). Our significance tests are based on standard errors calculated using the pseudo values approach described in Street, Carroll, and Ruppert (1988), after adjusting them to be heteroskedasticity-consistent (White, 1980). Our inferences are unaffected when using ordinary least squares estimation instead.

subsequent changes in operating income. Across all three time horizons, the coefficient on the insider profits ranking variable, *EXEC_RANK*, is significantly negative in all specifications. Moreover, except for the president-only specification, the decline in operating income is steadily increasing over year performance for the entire three year period. These findings suggest that the insider trading profits do not lead to decisions or imply talents that improve future firm performance shedding some doubt with regard to the lasting incentive effect of insider profits.

(Insert Table 4 About Here)

Table 4 presents regression summary statistics from the cash flow from operations specification, equation (1b). In contrast to results reported in Table 3, the contemporaneous and subsequent associations between *EXEC_RANK* and changes in cash-flow from operations are, in general, insignificant, suggesting that decisions or talents coincident with insider profits do not affect the cash flows from operations generated by the firm. This result indicates that the improvement of performance in the contemporaneous period is mainly due to accruals and that the subsequent decreases in earnings are mainly driven by these accrual reversals (although we do find a negative change in cash flow from operations in year $t+1$).

Table 5 reports results with respect to the association between insiders trading profits and contemporaneous financing and investing decisions.

(Insert Table 5 About Here)

Table 5, Panel A results indicate that the coefficient on *EXEC_RANK* is positively significant for three out of the four groups with respect to the contemporaneous association between insider profits and common stock issuing (when only presidents are included, the association is insignificant). As in Table 3' results, the strongest association is for the CFO only group. This

result can be interpreted as the stock issuing timed to benefit current shareholders, implicitly at the expense of future shareholders.

In contrast, Table 5 Panel B indicates that insider profits are not accompanied by a significant increase in major acquisitions. Since prior research indicates that major acquisitions generally lead to deterioration of subsequent performance, we find no evidence for such activity being associated with top executives' insider trading profits.

Finally, we find a significant association between *EXEC_RANK* and an increase in the firms' capital expenditures. Given the results documented in Table 3, one interpretation is that the current increase in both the firms' operating performance and the insider trading profits leads to over investment in capacity. That is, in light of future operating performance, it appears that investment decisions concurrent with insiders' profitable trading are inefficient.

3.3 Insider Profits and Abnormal Returns

We next investigate the relation between insider trading profits and contemporaneous and future stock returns after controlling for risk factors and momentum. We present these results in the following sections but caution the reader that the results are difficult to interpret given that both the contemporaneous and future stock return test results are somewhat compromised. The contemporaneous results suffer from a contamination effect as both the firm returns and insider profits are partially measured with an overlapping window. Furthermore, the future stock returns results can only be interpreted in the context of market inefficiency with respect to the predictable content of insider trading profits.

3.3.1 Insider Profits and Contemporaneous Returns

Table 6 contains the results of the time series regressions specified in section 3.3 for the lowest and highest quintile portfolios from rankings of top executives based on insider profits.

Separate regressions are run for cumulative contemporaneous returns on portfolios formed on a basis of insider profits ranging 12 months preceding the ranking of executives on a basis of insider trading profits. For example, we form quintile portfolios based on rankings of insider profits each month from the start of the sample period in July, 1986 to the end in December, 2008, yielding as many portfolios for each quintile as there are months in the data set. The preceding one month returns on these portfolios for each quintile are regressed on the four factors. Jensen's alpha for the lowest and highest quintile is reported in the first row of the table. This process is continued such that the second row of the table contains the portfolio returns for month $t-2$ such as the table spans all the preceding 12 months.

While, as previously noted, there is a contamination effect from measuring returns to the firm and insider profits for sustained long or short positions, changes in the direction of transactions tend to mitigate this effect. Consistent with contamination or with executives' increasing performance with the increase in their insider trading profits, we find that firms of top executives ranked in the highest quintile of insider profits outperform those in the lowest quintile. Further investigation of results for these quintiles reveals that 52.1% of transactions in the lowest quintile are buys while 62.3% of transactions in the highest quintile are buys.

(Insert Table 6 about Here)

Hedge returns from shorting the highest quintile portfolio and going long in the lowest quintile portfolio are significantly negative for all time horizons for measuring insider profits, indicating that executives buying shares in firms with rising prices extract greater profits than those that are selling shares in firms with rising prices.

Whether these results are completely driven by the contamination effect or whether incentive alignment may also be present for top executives profiting the most from insider trades

is an open question. Nonetheless, the combination of positive associations between insider profits and contemporaneous returns and improvements in operating income tend to support a contemporaneous incentive alignment within that time frame.

3.3.2 Insider Profits and Future Abnormal Returns

Table 7 contains the results of the time series regressions specified in section 3.3 for the lowest and highest quintile portfolios from rankings of top executives based on insider profits. Separate regressions are run for future returns on portfolios formed on a basis of insider profits ranging over periods from one month to 36 months. For example, we form quintile portfolios based on rankings of insider profits each month from the start of the sample period in July, 1986 to the end in December, 2008, yielding as many portfolios for each quintile as there are months in the data set. The future one month returns on these portfolios for each quintile are regressed on the four factors. Jensen's alpha for the lowest and highest quintile are reported in the first row of the table. The second row in the table uses the similar quintile portfolios and subsequently the future two month returns are regressed on the four factors. This process is continued up to 36 months ahead returns.

(Insert Table 7 About Here)

We find that Jensen's alpha for both the lowest and highest quintile portfolios formed from cumulative insider profits over all periods ranging from one month to 36 months are nearly always statistically significant at the 10% level or higher. Accordingly, buying all firms in months during which top executives are active would have yielded positive abnormal returns. More notably for our purpose, the abnormal returns on hedge portfolios, long in the lowest quintile portfolios and short in the highest quintile portfolio, are positive for every time horizon over which insider profits are measured, and statistically significant in 28 out of 36 of those

horizons (24 of the 28 statistically significant are concentrated mainly in quintiles formed over the first two years of accumulation of insider profits). In other words, firms of top executives extracting the lowest insider profits outperform those of top executives extracting the highest insider profits as measured by the succeeding month's abnormal returns. This result runs counter to the view of insider profits as an indirect form of compensation that aligns incentives of top executives with the interests of shareholders. The findings in Table 7 are robust to the addition of the short-term and long-term reversion factors. Furthermore, the results are robust when we measure the insiders' profits over half the life span of the insider in the firm, and observing the firm performance over the second half of the insider's term in the firm.

A concern regarding the t-tests in Table 7 is the potential lack of independence in the rankings of executives by insider profits as we roll forward in time. In particular, an executive may continue to be placed in the same quintile portfolio in non-active transaction months. Reinforcing this concern, the average turnover of executives ranked in the lowest and highest quintiles are 4.5% and 5.5%, respectively. To partially alleviate this problem, we replicate the analysis, only ranking executives in active transaction months. Again, the findings in Table 7 prove to be robust.

3.3.3 Insider Profits and Future Returns Partitioned by Buys and Sells

Findings of prior studies indicate that returns following insider sells are small in magnitude. These findings are consistent with the conjecture that insider sells are more likely than buys to be driven by diversification and consumption motives; e.g., Ofer and Yermack (2000). To explore how this conjecture and related findings might impact our analysis, we partition our sample of top executive transactions into buys and sells. Given that the last transaction by an executive was a buy (sell), all subsequent months up to a sell (buy) are

considered buy (sell) months. We point out that because we accumulate insider profits for an executive from their first transaction, those profits span both buys and sells and, hence, do not represent profits to just buy or sell transactions.

Table 8 contains our results for hedge portfolios for the two subsamples. The technology for measuring future returns based on cumulative insider profits described in the discussion of Table 7 applies here as well, albeit with the sample partitioned into buy and sell months. Accordingly, within each subsample, we again form quintile portfolios based on rankings of insider profits accumulated over the entire top executives insider trading activity and measure future returns over one month forward through 36 months forward.

(Insert Table 5 About Here)

The hedge returns for the buy subsample, long in the lowest quintile and short in the highest quintile, are significantly positive in 33 out of 36 month regressions, while for the sell subsample they are significantly positive in only three out of 36. Furthermore, the three significant hedge returns occur in the first four months, suggesting that under-performance for these executives is short-lived by comparison to executives that buy.

This last finding ameliorates concerns that results may be an artifact of short-term mean reversion. From Table 2, we note that lagged annual returns are greater for the highest quintile by comparison with the lowest quintile when the non-partitioned sample is in play. If reversion were at work, then we should expect higher future returns for the lowest quintile than for the highest. While this ordering is evident for the buy subsample where lagged returns are greater for the highest compared to the lowest quintile portfolio (55.7% versus 5.1%) and hedge returns are positive, for the sell subsample lagged returns are greater for the lowest compared to the highest quintile portfolio (58.1% versus 12.5%) and, yet, there are only significant negative

hedge returns for this subsample in months fourteen to sixteen. This latter result is inconsistent with short-term reversion.

4. Summary

The objective of our inquiry is to examine the association between insider profits and firm performance. Two contrasting views are that insider trading profits by top executives serve to align incentives of those executives with shareholder interests, or that such profits are an indication of rent extraction unrelated, possibly even detrimental, to firm performance. Our analysis encompasses tests for associations of insider trading profits by CEOs, CFOs, and other top executives with measures of both contemporaneous and future firm performance. We find significant positive associations between insider trading profits and contemporaneous changes in operating income and returns, supporting the notion that insider profits may be an indirect form of compensation that serves to align executive interests with those of shareholders at least in the short run. However, we also find significant negative associations between insider profits and future changes in income and returns, suggesting that incentive alignment is at best short-lived and that executives' decisions relative to the long run prospects of their firms may be inefficient. Somewhat supportive of this interpretation, we find that insider profits are significantly positively associated with increases in capital spending that, in light of subsequent changes in operating income, appear to be indicative of inefficient investment decisions. Insider profits are also significantly associated with stock issues, possibly suggesting wealth transfers from incoming shareholders to current shareholders, though other conclusions might be drawn.

There are several caveats to our research design. Given that insider profits are measured in returns and returns are associated with measures of firm performance including both

contemporaneous changes in income and firm returns, then some degree of positive association is to be expected by construction. Regarding future returns, the significant negative associations we find between insider profits and firm returns after controlling for risk and momentum are inconsistent with market efficiency.

Notwithstanding these caveats, we believe that the evidence overall tends to support the conclusion that firms may gain some short-run incentive alignment from insiders profiting on their trades, but this benefit does not extend beyond that time frame. Moreover, there is at least the possibility that insider profits are merely an exercise in rent extraction that bears little if any relation to firm performance over an extended period of time.

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Table 1*Descriptive statistics for sample of 13,375 firms with top executives' insider trading for the 1986-2008 period.*

Year	# of Firms	# of Firm-Executives	# of Transactions		# of Shares (1000)		\$ Value of transactions (
			Buy	Sell	Buy	Sell	Buy	Sell
1,986	147	150	41	34	2,370	791	60,552	12,263
1,987	779	855	442	344	9,048	16,843	125,577	293,931
1,988	1,079	1,233	434	524	10,640	21,226	69,871	356,624
1,989	1,261	1,469	508	655	11,771	23,304	118,335	4,191,602
1,990	1,596	1,899	1,032	600	26,283	21,472	351,824	380,298
1,991	1,876	2,287	745	1,439	26,267	57,914	332,745	1,056,907
1,992	2,292	3,016	1,666	1,563	123,793	70,692	3,545,779	1,287,940
1,993	2,660	3,645	1,672	1,864	82,851	78,085	1,618,530	1,624,614
1,994	3,033	4,221	2,127	1,710	87,998	116,650	1,614,646	2,902,159
1,995	3,308	4,767	2,557	2,064	125,833	108,969	3,044,253	2,127,264
1,996	3,650	5,667	2,618	2,510	99,178	151,665	3,129,063	2,768,637
1,997	3,949	6,501	3,703	3,609	224,365	164,179	4,914,510	4,111,005
1,998	4,194	7,353	4,877	3,580	196,867	191,785	5,070,281	6,005,734
1,999	4,165	7,408	4,781	3,202	229,279	211,891	6,436,273	7,800,523
2,000	4,143	7,560	4,674	4,000	260,493	291,075	7,667,411	8,924,906
2,001	3,993	7,319	3,869	4,332	211,670	280,949	4,532,956	6,320,787
2,002	3,738	6,888	3,602	3,658	364,386	183,126	5,407,279	4,025,448
2,003	3,607	6,620	3,507	4,661	204,828	190,943	4,682,663	4,720,735
2,004	3,525	6,573	3,817	6,421	216,849	332,161	5,362,051	7,773,337
2,005	3,387	6,206	3,358	6,314	215,483	178,344	5,838,862	4,513,230
2,006	3,211	5,729	3,054	6,321	198,395	261,457	6,166,700	8,660,950
2,007	2,886	4,953	3,159	5,580	204,406	226,928	6,328,102	6,603,217
2,008	2,365	3,747	3,087	3,253	202,326	216,355	4,583,794	4,837,994
	64,844	106,066	59,330	68,238	3335379	3396904	81002057	91300105

Table 2

Descriptive statistics for sample of 13,375 firms (97,396 firm-years) with top executives' insider trading for the 1986-2008 period.

Top executive profit is the profit to insider trades calculated each month using the prior history of the insider trades. The profits are accumulated from insider trade to trade for insider buys and sells. When an insider purchases a share, a long position in the firm is taken and when an insider sells, a short position is taken. Market value is the market value of equity. Market to Book is the ratio of the market value of equity to the book value of equity. Lagged return is the lagged annual raw stock return. Annual return_{t+i} is the one, two, and three years ahead raw stock return. Q1 to Q5 are quintiles based on the top executive profit from insider trading. All variables are calculated each month from 7/86 to 12/08 for active insiders.

	Mean	Median	STD	Q1	Q3
Top executive profit	19.15%	-4.25%	292.07%	-35.13%	18.78%
Market Value	1,876.61	149.41	10,970.24	37.23	698.78
Market to Book	2.57	1.65	124.23	0.98	2.86
Lagged return	20.15%	6.99%	89.98%	-7.91%	38.52%
Net income	79.59	5.18	948.17	-1.45	34.36
CF from operations	185.08	11.29	1,532.39	0.11	73.10
Total sales	1,631.77	158.62	8,159.25	39.06	703.64
Total assets	3,914.14	259.06	34,231.85	57.32	1,142.93
Annual return _{t+1}	14.00%	3.43%	83.23%	-26.47%	34.16%
Annual return _{t+2}	15.40%	3.84%	94.25%	-24.81%	34.34%
Annual return _{t+3}	14.61%	1.61%	83.10%	-21.92%	32.61%

	Q1	Q2	Q3	Q4	Q5
Top executive profit					
Mean	-72.63%	-32.53%	-6.81%	16.17 %	204.76%
Median	-73.41%	-31.98%	-5.37%	13.21%	82.13%
STD	18.15%	12.90%	8.15%	12.25%	659.91%
Market Value					
Mean	1,530.12	1,945.2	2,065.6	1,914.9	1,838.7
Median	109.06	164.09	172.72	178.94	165.80
STD	8,520.61	11,850.49	11,967.56	10,646.86	11,171.28
Market to Book					
Mean	2.32	4.48	1.73	2.36	2.16
Median	1.68	1.60	1.57	1.68	1.78
STD	63.31	248.84	92.74	37.71	63.06
Lagged return					
Mean	18.68%	12.38%	16.20%	19.63%	35.79%
Median	0.01%	2.55%	8.06%	10.69%	13.58%
STD	106.77%	76.43%	69.98	73.26%	124.23%
Net income					
Mean	39.84	76.30	98.05	94.09	80.79
Median	1.95	5.19	6.62	6.68	5.34
STD	655.02	1,181.74	1,175.41	824.16	690.48

CF from operations					
Mean	97.26	194.42	231.09	213.76	176.56
Median	6.36	12.98	14.25	13.71	10.39
STD	1,102.84	1,686.51	1745.50	1,647.76	1,302.29
Total sales					
Mean	1,109.70	1,795.18	1,855.68	1,750.60	1,543.10
Median	132.87	179.08	164.49	166.37	153.05
STD	5,196.13	9,456.34	9,281.63	8,406.48	7,139.01
Total assets					
Mean	2,018.56	3,852.25	4,747.90	4,397.32	4,189.22
Median	154.31	278.27	332.80	310.80	226.78
STD	26,190.87	31,252.72	39,613.39	34,436.48	36,345.00
Annual return _{t+1}					
Mean	18.76%	13.69%	13.17%	12.20%	13.78%
Median	4.42%	0.93%	5.99%	4.45%	2.43%
STD	79.71%	109.02%	71.89%	72.92%	85.20%
Annual return _{t+2}					
Mean	17.61%	16.19%	16.42%	14.25%	14.13%
Median	6.13%	1.86%	6.21%	5.14%	3.28%
STD	94.82%	85.29%	352.75%	144.63%	81.53%
Annual return _{t+3}					
Mean	17.71%	16.27%	14.06%	15.09%	15.40%
Median	5.91%	2.54%	5.97%	5.33%	3.56%
STD	96.70%	97.16%	75.66%	80.03%	80.06%

Table 3

Top executives profits from insider trading and future firms' accounting performance

$$\Delta NI_{t+\tau,i} = \sum_{y=1986}^{2008} \alpha_{oY} YR_{Yii} + \sum_{N=1}^{48} \alpha_{oN} IND_{Nii} + \alpha_{1N} EXEC_RANK_{ii} + \alpha_2 \Delta NI_{ii} \\ + \alpha_3 MB_{ii} + \alpha_3 ASSETS_{ii} + \varepsilon_{1ati}$$

The dependent variable ΔNI_t is net income in year t minus net income in year $t-1$, deflated by market value of equity at the beginning of year $t-2$. $\Delta NI_{t+\tau}$ is net income in year $t+\tau$ ($\tau = 1, 2,$ and 3) minus net income in year t , deflated by market value of equity at the beginning of year $t-2$.

EXEC_RANK is the top-executives profits from insider trading ranked by quintiles and averaged over the 12 months of the fiscal year.

MB is the ratio of market value of equity to book value of equity at the end of year t . ASSETS is the natural logarithm of the book value of total assets at the end of year t .

The regression equations include untabulated year- and 48 industry-specific intercepts (Fama-French 1997).

Panel A: Only CEO

Independent variable	ΔNI_t		ΔNI_{t+1}		ΔNI_{t+2}		ΔNI_{t+3}	
EXEC_RANK	0.080	4.08	-0.050	-2.31	-0.120	-3.34	-0.215	-4.39
$\Delta OPINC_t$	-0.509	-908.91	-0.001	-414.97	-0.001	-170.19	0.001	123.55
MB	0.001	3.59	0.001	1.94	-0.001	-2.63	0.001	3.19
ASSETS	0.001	10.04	-0.001	-2.31	-0.001	-1.39	-0.001	-1.30
N	35,515		30,701		26,097		21,934	
Adj R ²	0.98		0.08		0.07		0.38	

Panel B: Only Presidents

Independent variable	ΔNI_t		ΔNI_{t+1}		ΔNI_{t+2}		ΔNI_{t+3}	
EXEC_RANK	0.044	2.76	-0.067	-3.55	-0.103	-3.53	-0.107	-2.77
$\Delta OPINC_t$	-0.034	-16.02	0.001	53.36	-0.026	-190.13	0.081	194.15
MB	0.001	0.01	-0.026	-1.61	-0.001	-0.58	-0.001	-1.21
ASSETS	0.001	3.60	-0.001	-2.64	-0.001	-1.34	-0.001	-0.58
N	44,782		41,840		38,738		35,621	
Adj R ²	0.04		0.14		0.18		0.55	

Panel C: Only CFO

Independent variable	ΔNI_t		ΔNI_{t+1}		ΔNI_{t+2}		ΔNI_{t+3}	
EXEC_RANK	0.214	9.81	-0.054	-2.34	-0.123	-3.31	-0.288	-5.49
$\Delta OPINC_t$	-0.649	-978.64	0.014	114.49	-0.005	-11.06	0.161	445.22
MB	0.001	2.96	0.001	4.18	-0.001	-0.83	0.001	3.47
ASSETS	0.001	11.32	-0.001	-1.19	-0.001	-0.55	-0.001	-2.51
N	36,552		32,249		28,001		24,058	
Adj R ²	0.98		0.06		0.06		0.93	

Panel D: Average ranking of all top executives in the firm

Independent variable	ΔNI_t		ΔNI_{t+1}		ΔNI_{t+2}		ΔNI_{t+3}	
EXEC_RANK	0.069	4.18	-0.104	-5.34	-0.239	-7.85	-0.277	-6.83
$\Delta OPINC_t$	-0.509	-623.64	0.002	33.29	-0.001	-2.24	0.024	904.14
MB	0.001	0.21	0.001	0.26	-0.001	-2.13	0.001	2.97
ASSETS	0.001	7.43	-0.001	-2.72	0.001	0.01	0.001	1.12
N	78,820		70,853		63,125		55,971	
Adj R ²	0.43		0.04		0.04		0.98	

Table 4

Top executives profits from insider trading and future firms' accounting performance

$$\Delta CFO_{t+\tau, i} = \sum_{y=1986}^{2008} \alpha_{oY} YR_{Yti} + \sum_{N=1}^{48} \alpha_{oN} IND_{Nti} + \alpha_{1N} EXEC_RANK_{ii} + \alpha_2 \Delta CFO_{ii} + \alpha_3 MB_{ii} + \alpha_3 ASSETS_{ii} + \varepsilon_{2ai}$$

The dependent variable, ΔCFO_t is net income in year t minus net income in year $t-1$, deflated by market value of equity at the beginning of year $t-2$. $\Delta CFO_{t+\tau}$ is net income in year $t+\tau$ ($\tau = 1, 2,$ and 3) minus net income in year t , deflated by market value of equity at the beginning of year $t-2$.

EXEC_RANK is the top-executives profits from insider trading ranked by quintiles and averaged over the 12 months of the fiscal year.

MB is the ratio of market value of equity to book value of equity at the end of year t . ASSETS is the natural logarithm of the book value of total assets at the end of year t .

The regression equations include untabulated year- and 48 industry-specific intercepts (Fama-French 1997).

Panel A: Only CEO

Independent variable	ΔCFO_t	ΔCFO_{t+1}	ΔCFO_{t+2}	ΔCFO_{t+3}				
EXEC_RANK	0.013	0.56	-0.036	-1.26	-0.039	-0.94	0.035	0.64
$\Delta OPINC_t$	-0.251	-77.05	-0.001	-55.64	0.019	4.34	0.028	5.44
MB	-0.001	-0.03	-0.001	-0.02	-0.001	-1.15	-0.001	-0.30
ASSETS	0.001	7.90	0.001	1.47	-0.001	-0.94	0.001	0.64
N	32,481		27,875		23,515		19,552	
Adj R ²	0.29		0.05		0.04		0.05	

Panel B: Only Presidents

Independent variable	ΔCFO_t	ΔCFO_{t+1}	ΔCFO_{t+2}	ΔCFO_{t+3}				
EXEC_RANK	0.024	0.99	-0.038	-1.29	0.060	1.56	0.039	0.80
$\Delta OPINC_t$	-0.316	-97.49	-0.003	-0.86	0.026	7.81	-0.001	-0.10
MB	-0.001	-0.44	-0.001	-3.11	-0.001	-2.29	-0.001	-2.11
ASSETS	0.001	8.61	0.001	3.69	0.001	5.83	0.001	4.43
N	37,639		35,088		32,408		29,664	
Adj R ²	0.31		0.01		0.02		0.03	

Panel C: Only CFO

Independent variable	ΔCFO_t		ΔCFO_{t+1}		ΔCFO_{t+2}		ΔCFO_{t+3}	
EXEC_RANK	0.021	0.82	-0.080	-2.64	-0.040	-0.90	0.023	0.39
$\Delta OPINC_t$	-0.263	-294.71	-0.008	-172.63	0.053	87.18	0.048	665.28
MB	0.001	1.30	0.001	0.98	-0.001	-0.21	-0.001	-0.04
ASSETS	0.001	7.38	0.001	1.68	-0.001	-0.70	-0.001	-0.69
N	33,434		29,361		25,369		21,662	
Adj R ²	0.98		0.05		0.11		0.36	

Panel D: Average ranking of all top executives in the firm

Independent variable	ΔCFO_t		ΔCFO_{t+1}		ΔCFO_{t+2}		ΔCFO_{t+3}	
EXEC_RANK	0.025	1.08	-0.111	-4.02	-0.016	-0.41	0.069	1.40
$\Delta OPINC_t$	-0.263	-915.19	-0.008	-55.81	0.027	9.30	0.008	9.89
MB	-0.001	-0.36	0.001	0.73	-0.001	-1.15	-0.001	-1.20
ASSETS	0.001	8.96	0.001	5.45	0.001	6.11	0.002	7.32
N	67,403		60,139		53,163		46,652	
Adj R ²	0.94		0.02		0.02		0.03	

Table 5

Top executives' profits from insider trading and firms' financing and investing decisions

The dependent variable in Panel A is the value of stock issued in year t , in Panel B it is the market value of acquisitions conducted in year t , and Panel C is capital expenditures in year t minus capital expenditures in year $t-1$, deflated by market value of equity at the beginning of year $t-2$.

EXEC_RANK is the top-executives' profits from insider trading ranked by quintiles and averaged over the 12 months of the fiscal year.

MB is the ratio of market value of equity to book value of equity at the end of year t . $ASSETS$ is the natural logarithm of the book value of total assets at the end of year t .

The regression equations include untabulated year- and 48 industry-specific intercepts (Fama-French 1997).

Panel A: Stock issuing

Independent variable	Stock Issue only CEO		Stock Issue only Presidents		Stock Issue only CFO		Stock Issue all executives	
	EXEC_RANK	0.230	2.07	0.100	0.89	0.331	2.32	0.167
MB	-0.001	-0.14	-0.001	-0.03	-0.001	-0.04	-0.001	-0.16
$ASSETS$	1.033	12.92	0.828	11.32	1.067	11.37	0.877	23.11
N	39,191		48,660		40,074		177,684	
Adj R ²	0.15		0.07		0.11		0.10	

Panel B: Acquisitions

Independent variable	Acquisitions only CEO		Acquisitions only Presidents		Acquisitions only CFO		Acquisitions all executives	
	EXEC_RANK	-0.014	-0.30	0.040	0.25	0.011	0.05	0.014
MB	0.001	0.03	0.001	0.10	0.001	0.02	0.001	0.01
$ASSETS$	0.091	0.27	-0.167	-1.59	-0.231	-1.64	-0.110	-1.76
N	30,915		38,078		31,594		68,386	
Adj R ²	0.03		0.02		0.11		0.10	

Panel C: Change in Capital Expenditures (CAPEX)

Independent variable	$\Delta CAPEX$ only CEO		$\Delta CAPEX$ only Presidents		$\Delta CAPEX$ only CFO		$\Delta CAPEX$ all executives	
	EXEC_RANK	0.027	5.03	0.032	4.30	0.036	5.51	0.053
$\Delta CAPEX_{t-1}$	-0.007	-52.53	-0.012	-6.88	-0.008	-10.50	-0.014	-10.40
MB	0.001	0.03	-0.012	-1.74	-0.001	-1.61	-0.001	-0.77
$ASSETS$	0.001	19.53	0.001	15.42	0.001	13.80	0.001	23.29
N	32,011		39,955		32,943		70,888	
Adj R ²	0.07		0.04		0.06		0.04	

Table 6*Top executives' profits from insider trading and past stock performance*

Time series regression results are obtained using the Fama-French four-factor model:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p (R_{m,t} - R_{f,t}) + \chi_p \text{SMB}_t + \delta_p \text{HML}_t + \phi_p \text{MOM}_t + \varepsilon_{j,t}$$

Where $R_{p,t}$ is portfolio stock return, where the return interval is one month to 12 months prior to the portfolio formation date. $R_{m,t}$ is market portfolio return, measured using CRSP value weighted index, $R_{f,t}$ is the risk free rate, measured as the one-month treasury bill rate; SMB_t , HML_t and MOM_t respectively, are the Fama-French (1993) and Carhart (1997) size, market-to-book and momentum factor returns.

The return window is monthly, and factor loadings are estimated using a time series regression based on 270 months of data, from 7/86 to 12/08 (firm numbers range from 16 to 1,523 firms per month). T-statistics are under the coefficient estimates.

We report results for top executives' insider profits for three portfolios based on the cumulative top executives' profits from insider trading: the quintile of insider firms with the lowest top executives profit, the quintile of insider firms with the highest top executives profit, and a hedge portfolio where we buy the low quintile and sell the high quintile. Only months where at least 15 firms are present are included.

	α for executive profit in lower quintile	α for executive profit in upper quintile	α for hedge return
1 Month before	0.00208	0.01192	-0.00984
T-statistic	0.48	3.04	-7.62
2 Months before	0.00405	0.01309	-0.00904
T-statistic	0.92	3.33	-7.11
3 Months before	0.00939	0.01719	-0.00781
T-statistic	2.18	4.45	-6.48
4 Months before	0.01008	0.01765	-0.00757
T-statistic	2.38	4.66	-6.18
5 Months before	0.01106	0.01852	-0.00746
T-statistic	2.62	4.98	-6.41
6 Months before	0.01085	0.01820	-0.00735
T-statistic	2.56	4.82	-6.09
7 Months before	0.01219	0.02051	-0.00832
T-statistic	2.89	5.42	-7.28
8 Months before	0.01239	0.02122	-0.00882
T-statistic	2.95	5.70	-7.75
9 Months before	0.01408	0.02183	-0.00775
T-statistic	3.35	5.84	-6.94
10 Months before	0.01276	0.01981	-0.00705
T-statistic	3.06	5.32	-6.32
11 Months before	0.01199	0.01933	-0.00734
T-statistic	2.88	5.25	-6.70
12 Months before	0.01263	0.01930	-0.00666
T-statistic	3.02	5.27	-6.23

Table 7*Top executives profits from insider trading and future stock performance*

Time series regression results are obtained using the Fama-French four-factor model:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p(R_{m,t} - R_{f,t}) + \chi_p \text{SMB}_t + \delta_p \text{HML}_t + \phi_p \text{MOM}_t + \varepsilon_{j,t}$$

Where $R_{p,t}$ is portfolio stock return, where the return interval is one month to 36 months subsequent to the portfolio formation date. $R_{m,t}$ is market portfolio return, measured using CRSP value weighted index, $R_{f,t}$ is the risk free rate, measured as the one-month treasury bill rate; SMB_t , HML_t and MOM_t respectively, are the Fama-French (1993) and Carhart (1997) size, market-to-book and momentum factor returns.

The return window is monthly, and factor loadings are estimated using a time series regression based on 270 months of data, from 7/86 to 12/08 (firm numbers range from 16 to 1,523 firms per month). T-statistics are under the coefficient estimates.

We report results for top executives' insider profits for three portfolios based on the cumulative top executive profits from insider trading: the quintile of insider firms with the lowest top executives' profit, the quintile of insider firms with the highest top executives profit, and a hedge portfolio where we buy the low quintile and sell the high quintile. Only months where at least 15 firms are present are included.

	α for executive profit in lower quintile	α for executive profit in upper quintile	A for hedge return
1 Month ahead	0.01011	0.00786	0.00225
T-statistic	2.28	2.06	1.87
2 Months ahead	0.01085	0.00820	0.00265
T-statistic	2.39	2.08	2.22
3 Months ahead	0.01333	0.01002	0.00330
T-statistic	2.99	2.60	2.59
4 Months ahead	0.01301	0.00888	0.00413
T-statistic	2.82	2.22	3.16
5 Months ahead	0.01191	0.00813	0.00378
T-statistic	2.57	2.04	3.04
6 Months ahead	0.01213	0.00839	0.00375
T-statistic	2.62	2.12	3.04
7 Months ahead	0.01075	0.00760	0.00315
T-statistic	2.33	1.90	2.52
8 Months ahead	0.01000	0.00688	0.00312
T-statistic	2.17	1.73	2.78
9 Months ahead	0.01076	0.00696	0.00379
T-statistic	2.37	1.72	3.47
10 Months ahead	0.00974	0.00598	0.00376
T-statistic	2.13	1.46	3.79
11 Months ahead	0.01041	0.00691	0.00351
T-statistic	2.26	1.69	3.27
12 Months ahead	0.01066	0.00697	0.00369
T-statistic	2.34	1.69	3.60
13 Months ahead	0.00972	0.00697	0.00275
T-statistic	2.11	1.67	2.66
14 Months ahead	0.01136	0.00865	0.00271
T-statistic	2.47	2.09	2.48
15 Months ahead	0.00940	0.00658	0.00283
T-statistic	2.06	1.58	2.80

16 Months ahead	0.01168	0.00911	0.00257
T-statistic	2.65	2.32	2.39
17 Months ahead	0.01329	0.01078	0.00250
T-statistic	3.05	2.76	2.31
18 Months ahead	0.01262	0.01020	0.00242
T-statistic	2.89	2.62	2.52
19 Months ahead	0.01046	0.00852	0.00194
T-statistic	2.40	2.16	2.11
20 Months ahead	0.00700	0.00424	0.00276
T-statistic	1.62	1.09	3.09
21 Months ahead	0.00962	0.00796	0.00166
T-statistic	2.21	2.02	1.72
22 Months ahead	0.01245	0.00948	0.00297
T-statistic	2.87	2.42	3.20
23 Months ahead	0.01118	0.00906	0.00212
T-statistic	2.57	2.33	2.34
24 Months ahead	0.01106	0.00795	0.00310
T-statistic	2.51	2.00	3.08
25 Months ahead	0.00909	0.00673	0.00236
T-statistic	2.05	1.70	2.40
26 Months ahead	0.00833	0.00700	0.00134
T-statistic	1.90	1.77	1.29
27 Months ahead	0.00856	0.00755	0.00101
T-statistic	1.93	1.90	0.94
28 Months ahead	0.00909	0.00661	0.00248
T-statistic	2.07	1.65	2.53
29 Months ahead	0.00837	0.00711	0.00126
T-statistic	1.91	1.77	1.22
30 Months ahead	0.00970	0.00737	0.00233
T-statistic	2.23	1.83	2.16
31 Months ahead	0.00953	0.00785	0.00169
T-statistic	2.18	1.97	1.64
32 Months ahead	0.00976	0.00787	0.00189
T-statistic	2.22	1.94	1.86
33 Months ahead	0.01124	0.01036	0.00088
T-statistic	2nn.52	2.51	0.69
34Months ahead	0.00735	0.00665	0.00070
T-statistic	1.66	1.62	0.55
35 Months ahead	0.00853	0.00827	0.00025
T-statistic	1.92	1.98	0.19
36 Months ahead	0.01175	0.01175	0.00105
T-statistic	2.62	2.67	0.69

Table 8

Top executives profits from insider trading and future stock performance separated by buys and sells

Time series regression results are obtained using the Fama-French four-factor model:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p (R_{m,t} - R_{f,t}) + \chi_p \text{SMB}_t + \delta_p \text{HML}_t + \phi_p \text{MOM}_t + \varepsilon_{j,t}$$

Where $R_{p,t}$ is portfolio stock return, where the return interval is one month to 36 months subsequent to the portfolio formation date. $R_{m,t}$ is market portfolio return, measured using CRSP value weighted index, $R_{f,t}$ is the risk free rate, measured as the one-month treasury bill rate; SMB_t , HML_t and MOM_t respectively, are the Fama-French (1993) and Carhart (1997) size, market-to-book and momentum factor returns.

The return window is monthly, and factor loadings are estimated using a time series regression based on 270 months of data, from 7/86 to 12/08 (firm numbers range from 16 to 1,523 firms per month). T-statistics are under the coefficient estimates.

We report results for top executives' insider profits for a hedge portfolio based on the cumulative top-executives' profits from insider trading, separately for buys and sells. The hedge portfolio is the quintile of firms with lowest top profits from insider trading minus the quintile of firms with highest top-executives' profits from insider trading. Only months where at least 15 firms are present are included.

	Buy		Sell	
	α for hedge return	T-statistic	α for hedge return	T-statistic
1 Month ahead	0.00269	1.09	0.00262	1.23
2 Months ahead	0.00275	1.18	0.00328	1.94
3 Months ahead	0.00447	1.97	0.00280	2.36
4 Months ahead	0.00497	2.16	0.00283	2.35
5 Months ahead	0.00502	2.28	0.00190	0.98
6 Months ahead	0.00386	1.84	0.00276	1.46
7 Months ahead	0.00364	1.93	0.00198	1.09
8 Months ahead	0.00588	3.00	0.00011	0.06
9 Months ahead	0.00648	3.37	0.00053	0.31
10 Months ahead	0.00542	3.01	0.00069	0.40
11 Months ahead	0.00412	2.23	0.00085	0.48
12 Months ahead	0.00763	4.19	0.00097	0.52
13 Months ahead	0.00711	3.72	-0.00023	-1.10
14 Months ahead	0.00865	4.72	-0.00418	-2.18
15 Months ahead	0.00935	4.83	-0.00464	-2.44
16 Months ahead	0.00743	4.06	-0.00430	-2.37
17 Months ahead	0.00770	4.50	-0.00291	-1.46
18 Months ahead	0.00734	4.37	-0.00249	-1.24
19 Months ahead	0.00587	3.64	-0.00224	-1.74
20 Months ahead	0.00608	3.58	-0.00232	-1.39
21 Months ahead	0.00503	3.11	-0.00240	-1.48
22 Months ahead	0.00483	3.05	-0.00167	-1.05
23 Months ahead	0.00506	3.08	-0.00192	-1.20
24 Months ahead	0.00576	3.56	-0.00124	-1.09
25 Months ahead	0.00480	2.65	-0.00105	-1.11

26 Months ahead	0.00612	3.50	-0.00198	-1.31
27 Months ahead	0.00626	3.71	-0.001187	-0.99
28 Months ahead	0.00401	2.39	-0.00118	-0.70
29 Months ahead	0.00483	3.09	-0.00173	-1.04
30 Months ahead	0.00318	2.08	-0.00169	-1.11
31 Months ahead	0.00501	3.37	-0.00186	-1.18
32 Months ahead	0.00432	2.91	-0.00095	-0.53
33 Months ahead	0.00395	2.65	-0.00201	-0.89
34 Months ahead	0.00273	1.70	-0.00157	-0.84
35 Months ahead	0.00300	2.04	-0.00205	-1.20
36 Months ahead	0.00336	2.26	-0.00321	-0.93
