

**Opportunism as a Firm and Managerial Trait:
Predicting Insider Trading Profits and Misconduct**

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We show that opportunistic insiders can be identified through the profitability of their trades prior to quarterly earnings announcements (QEAs), and that opportunistic trading is associated with various kinds of firm/managerial misconduct. A value-weighted trading strategy based on (not necessarily pre-QEA) trades of opportunistic insiders earns monthly 4-factor alphas of over 1%—much higher than in past insider trading literature and substantial/significant even on the short side. Firms with opportunistic insiders have higher levels of earnings management, restatements, SEC actions, shareholder litigation, options backdating, and executive compensation. These findings suggest that opportunism is a domain-general trait.

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1. Introduction

Corporate insiders balance several considerations in trading their firms' stocks. Insiders have valuable private information about their firm, which provides an opportunity to buy before the public revelation of good news, and sell before bad news. However, they are also subject to scrutiny by regulators, and to formal policy restrictions by firms on their trading activities. Furthermore, owing to equity-based managerial compensation, insiders often hold a substantial fraction of their portfolios in the stocks and options of their firms. This induces diversification and liquidity motivations for selling shares after vesting.

The mixture of trading motivations and constraints makes it hard to decipher the information content of insider trades, both for outside investors and for regulators. A natural possible measure of whether an insider is opportunistic is the performance of insider's past trades. However, past profitability is a noisy indicator of whether the insider has behaved opportunistically, since there are innocent motives for trading and there is a large amount of noise in return outcomes. A further major obstacle to the use of past profitability to identify opportunistic trading is that the information possessed by insiders varies greatly in resolution timing. In consequence, it is not obvious over what horizon to measure past profitability. For instance, Ke, Huddart, and Petroni (2003) report that insiders trade upon significant accounting disclosures as long as two years prior to disclosure events.

Empirically, there are some indications that insiders do exploit private information. As discussed in more detail below, past research finds that insider purchases positively predict subsequent abnormal returns. On the other hand, effects are much harder to identify for insider sales, presumably because such sales are often performed for non-informational reasons, such as to reduce risk or to consume.

In this paper we develop a more precise measure of *opportunistic* insider trading. Such a measure offers several possible benefits for corporate finance and investments research. First, insider trading is a window into private information about firm value. To the extent that opportunistic selling as well as buying can be identified, future researchers will have a window into adverse private information signals as well as favorable ones.

Second, opportunistic trading can provide insight into other aspects of firm and manager opportunism. For example, in this paper we also address the question of whether opportunism is domain-specific, so that opportunistic insider trading by an executive says little about how the manager will behave in other contexts, or is a managerial trait that will apply in many domains, such as misleading financial reporting or pressuring the firm for excessive compensation. In other words, are some managers just ‘bad apples’?

A firm may be prone to opportunistic behavior as well, either because it happens to have a set of managers who are inherently prone to cheating, or because of a corporate culture that tolerates or even encourages such behavior. In either case, by identifying opportunistic insiders, we are also able to identify opportunistic firms as well. Furthermore, in either case, the question arises: are some firms prone to opportunistic behaviors of various sorts, or is such behavior domain-specific?

Our method of identifying opportunism focuses on times when the benefit of exploiting information is relatively high and relatively easy to detect empirically. For example, an insider who foresees the outcome of a public news announcement can profit quickly by buying before good news is publicly revealed and selling before bad news. Quarterly earnings announcements (henceforth, QEAs) are the most important and frequent dates of material information disclosure by firms. Insiders have access to this information, and outside investors do not. So QEAs are a natural place to seek the tracks of opportunistic insider trading. We therefore identify opportunistic insiders by measuring the profitability of the trades insiders make in the 21 trading days—about one calendar month—prior to QEAs. In particular, we measure the profitability by the returns earned by these trades during the 5-day window centered at the QEA date.

Our purpose in focusing on pre-QEA trading and this 5-day window for profit is to get a sharp identification of the use of inside information by the insider. However, enforcement authorities may scrutinize trades during the pre-QEA period especially heavily.¹ Given the risk of scrutiny, we expect opportunistic pre-QEA trading most often when the inside information is

¹ Such scrutiny can even deter non-opportunistic trades (those not motivated by clear-cut private information), but such trades are still likely to occur owing, for example, to time-sensitive personal liquidity shocks (see, e.g., Bettis, Coles and Lemmon 2000, Jagolinzer, Larcker and Taylor 2011).

important enough to make the illegitimate expected profits high, thereby compensating for the risk of enforcement action. If so, the *combination* of pre-QEA trading and high-profitability of such trades will be especially effective at identifying opportunism. In particular, there is no reason to think that pre-QEA trades in general—without conditioning on profitability—are made opportunistically, or are especially well-informed. Some insiders make such trades, even during blackout periods, with the firm’s permission, for liquidity or other non-informational reasons.

We therefore hypothesize that insiders who make high profits on their pre-QEA trades are opportunistic.² Based on this, we test whether such insiders *subsequently* trade opportunistically using their private information. Importantly, such future opportunistic trades may occur either within or *outside* of pre-QEA windows. Indeed, since pre-QEA trades are far less common than other trades,³ almost all of the performance effects that we document come from subsequent non-pre-QEA trades. Our measure therefore identifies a *general* tendency of the insider to trade profitably, not a mere tendency to trade profitably pre-QEA.

In particular, at the beginning of each year, we rank insiders into quintiles based on the profitability of their past pre-QEA trades. We call insiders in the highest profitability quintile *opportunistic insiders*. We then examine the performance of stocks subsequently traded by insiders in different past profitability categories.

In our 1986-2014 sample, we find that opportunistic insiders do indeed earn higher returns on their future trades. We consider long-short strategies which buy after insider buys and short after insider sells for each of the five pre-QEA profitability quintiles. The long-short strategy constructed using trades of insiders with a history of low pre-QEA profits (bottom quintile) generates an insignificant value-weighted 4-factor alpha of 0.18% per month, whereas the same strategy constructed using trades of opportunistic insiders (top quintile) generates an

² We do not argue that on theoretical grounds the profitability of pre-QEA trades *must* identify opportunism well. For example, if enforcement against opportunistic pre-QEA trades were sufficiently intense, all such trades would be deterred. Furthermore, insiders often have valuable long-term private information which will not be publicly resolved by the upcoming earnings announcement. Insiders with such information are likely to exploit it by trading at times other than pre-QEA. So how effective the profitability of pre-QEA trades is at identifying opportunism is an empirical question, one which our paper answers in the affirmative.

³ Insiders who trade in pre-QEA periods make only 2.13 pre-QEA trades on average, and 59% make only one pre-QEA trade over the entire sample period. Nevertheless, there is enough such trading to generate a large sample size and, as we will show, strong evidence of the differing traits of different pre-QEA-trading insiders.

alpha of 1.12% per month, significant at the 1% level. The difference between the two is also statistically significant. For the same strategy constructed using trades of *all* insiders, the alpha is much smaller—only 0.50% per month. We obtain similar outperformance for equal-weighted portfolios and similar results using Fama-Macbeth regressions with standard controls.

Consistent with previous work on insider trading, we find a strong effect on the long side—buys strongly positively predict future performance. However, in contrast with most previous work, the effect is also substantial and significant even on the short-side. Stocks sold by opportunistic insiders have 4-factor alphas of –34 basis points per month (equal-weighted) or –53 basis points per month (value-weighted), both significant at the 1% level. In contrast, there is no return predictability on the sell side either for non-opportunistic insiders (those in the bottom three profitability quintiles) or for all insiders. These results suggest that past profitability of pre-QEA trading is a strong way of distinguishing opportunistic from non-opportunistic insiders.

These findings raise the question of whether the return predictability associated with opportunistic insiders is driven by firm characteristics unrelated to opportunism. Insider trades should be more informative for small firms or firms with opaque information environments, so the insiders we identify as opportunistic could instead just belong to such firms. To rule out the possibility that our results are driven by firm characteristics unrelated to opportunism, we compare the performance of the trades of general insiders versus opportunistic insiders *at the same firm and during the same year*. We find that similar conclusions apply—at a given firm, the trades of opportunistic insiders substantially outperform the trades of non-opportunistic insiders.

We verify that the effects of opportunistic trading that we document are robust to controlling for the opportunistic trading measure of Cohen, Malloy, and Pomorski (2012). Their measure is based on eliminating routine trades that are predictable based upon seasonality of past insider trading. We find that our opportunistic trading measure dominates the non-routineness measure. After controlling for general insider trades and our measure of opportunistic trades, the non-routine trading measure does not predict returns.

Furthermore, in contrast with the non-routineness measure, our opportunism measure predicts returns for insider sells too. In Fama-Macbeth regressions that include both sets of measures, our index of opportunistic buying generates an incremental return of 51 basis points per month versus general insider buys, while the non-routine index generates an insignificant incremental return of 3 basis points. For selling, our opportunistic trading measure generates incremental abnormal performance of –23 basis points per month, whereas the effect of the non-routineness index is again insignificant and close to zero.⁴

We also show that the return results are robust with respect to a battery of other robustness checks such as ranking insiders based on pre-QEA buy or sell trades only and limiting the analysis to large stocks only. Also, even though opportunistic insiders are identified based on past pre-QEA trading profitability, the subsequent insider trades that are the focus of our tests are *not* selected to have any special timing with respect to earnings announcements. So there is no reason, for example, to expect the results to be influenced by post-earnings announcement drift, and indeed we verify that the effects are robust to controlling for such drift.

Our approach may seem surprising since many firms have policies that limit the extent of insider trading during ‘blackout periods’ prior to QEAs. However, many firms do not have such blackout periods, and even firms that do often allow pre-QEA trading on a by-request basis. Furthermore, it is likely that managers sometimes violate these blackout periods. Overall, in our 1986-2014 sample, trading prior to QEAs is quite common—on the order of about 16% of total insider trades and total market value of trades. This is consistent with the finding of Bettis, Coles and Lemmon (2000) and Jagolinzer, Larcker and Taylor (2011) that even firms that have blackout periods have insider trading in those periods.⁵

⁴ Even in tests that do not control for our opportunism measure, the non-routineness measure does *not* predict significant abnormal returns for insider sells, as discussed in more detail in Subsection 4.3.

⁵ Bettis et al. (2000) also find that on average blackout period trades are less profitable during 1992-7. Bettis et al. (p. 217) conjecture that blackout trades may be mostly ‘liquidity motivated.’ Jagolinzer, Larcker and Taylor (2011) verify Bettis et al.’s result for the 1992-7 time period, but find that in a more recent sample that includes the more recent regulatory environment, trades during restricted period are much *more* profitable. They therefore interpret such trades as generally informed (except at firms where trades require approval from the firm’s General Counsel). Our focus is not on average profitability nor whether, on average, pre-QEA trades reflect information. Our focus is on the implications of *differences* in profitability. We find that the profitability of pre-QEA trades varies greatly

Our main result is that pre-QEA insider trading profitability predicts subsequent insider trading profitability. A possible objection is that our opportunism proxy is actually capturing superior ability to process publicly available information that is not reflected in market prices, rather than an inherently opportunistic managerial trait. If such skill is persistent, it can explain the positive relationship between past and future performance that we document. To verify that our measure is actually capturing opportunism, and also to test whether opportunism spans multiple domains, we examine the relation of pre-QEA profitability of insiders to opportunistic firm-level behaviors.⁶

Research in criminology, psychology, and economics discussed in Section 2 suggests that some managers may be prone to opportunistic behavior that spans very different decision domains. To test whether pre-QEA profitability is associated with opportunism across decision domains, we examine the relationship between our opportunism measure and various measures of firm-level opportunism: restatements, SEC enforcement actions, shareholder lawsuits, earnings management, option grant backdating, and excess executive compensation. The first four of these primarily reflect misconduct related to financial reporting.

Our first test examines whether firms with opportunistic insiders have greater incidence of restatements, which are often used as a proxy for misconduct in financial reporting. Our second test focuses on the occurrence of SEC investigations of a firm for accounting and/or auditing misconduct. Our third test examines the occurrence of shareholder lawsuits against the firm for financial misconduct. Finally, earnings management is sometimes opportunistically used by managers to increase their bonus compensation (Healey 1985) or to increase the firm's stock price in the short term (Teoh, Welch and Wong 1998). When used to increase the current share price, such earnings management can also benefit managers whose reputation depends on the share price. So our final test of financial reporting misconduct examines earnings management, as proxied by the absolute value of discretionary accruals.

from highly profitable to highly unprofitable. Our finding that pre-QEA profitability strongly predicts the performance of subsequent trades suggests that many pre-QEA trades are opportunistic.

⁶ We will speak of 'firm-level opportunism' as including either an organizational culture that demands opportunistic behavior on behalf of the firm's objectives, or a firm-level environment that is permissive toward managerial opportunism on behalf of a manager's personal objectives.

We find that profitable pre-QEA trading is positively associated with all four misconduct variables, after controlling for several possible determinants of misconduct. For example, a one standard deviation increase in fraction of opportunistic insiders is associated with an increase of 9.9% in the probability of being investigated by the SEC relative to the unconditional probability, and an increase of 7.5% in the probability of shareholders suing the firm for accounting malpractice.

To further test whether a general trait of opportunism is captured by pre-QEA insider trading profitability, we examine whether firms with a high fraction of opportunistic insiders are more likely to be involved in option backdating. We find that there is a modest effect during the pre-SOX period. For regulatory reasons, it is only during this period that there was a substantial potential benefit to backdating (Narayanan and Seyhun 2006, Heron and Lie 2007). A one standard deviation increase in fraction of opportunistic insiders increases the likelihood of backdating by 3.5% (relative to the mean).

To consider another very different domain of opportunism, we test whether our opportunism measure predict compensation of top executives in excess of what would be expected based upon standard determinants. We find that our measure is a significant predictor of both CEO compensation and the top-5 executives' compensation, after controlling for several possible determinants of executive compensation.

Overall, our findings suggest that pre-QEA profitability is a strong way of identifying future opportunistic trading. Furthermore, knowing that a firm's managers trade profitably is informative about whether the firm and its managers engage in other forms of misconduct. In particular, our profitability-based methodology allows us to evaluate the opportunism of managers in a very broad sample of over 14,000 unique insiders, including many CEOs, employed by 4,952 unique firms. So in contrast with approaches to identifying opportunism that use small or hand-collected samples, our approach provides a general-purpose tool for identifying firm and managerial opportunism.

2. Background and Motivation

A large literature studies the ability of insider trades, when aggregated at the level of the firm, to predict stock returns (see, e.g., Lorie and Niederhoffer (1968), Jaffe (1974), Seyhun (1986, 1998), Rozeff and Zaman (1988), Lin and Howe (1990), Lakonishok and Lee (2001), and Marin and Olivier (2008), and the review of Seyhun (1998)). These studies show that profitable trading strategies can be constructed based upon publicly available information in insider trades. A common finding is that insider buys predict returns and insider sells do not. For example, Jeng, Metrick and Zeckhauser (2003) find abnormal performance of over 6% annually after insider buys, as contrasted with no significant abnormal performance for insider sells.

Only a few papers are able to identify an effect on the sell side, typically with specialized samples. Scott and Xu (2004) finds that sells that constitute a large fraction of the insider's holdings negatively predict returns. Jagolinzer (2009), which we discuss further below, finds that sales made upon the initiation of a 10b5-1 plan are profitable. In contrast to these papers, our method results in a very general sample of trades, including small trades, and including trades that occurred prior to the introduction of 10b5-1 plans.

Our paper also differs from most of this literature by identifying ex ante, based on past trading performance, which insiders are likely to make opportunistic trades. There are, however, a few papers that do try to distinguish insiders or trades that are more versus less informative. Jenter (2005) argues that recent changes in the value of managers' equity holdings induced by price run-ups or compensation grants are likely to induce uninformative insider trading for diversification reasons, and therefore he controls for such changes. Nevertheless, he finds that insider trades do not predict future returns.

Cohen, Malloy, and Pomorski (2012) identify opportunistic insider traders by stripping away routine traders—those whose trades tend to be predictable based upon past calendar patterns of trading. In contrast, our paper is based on *profitability* of past trades, with a focus on those trades that are likely to be especially informative. Our measure of opportunistic trading is a much stronger and more robust predictor of future returns, even on the sell side, and dominates the non-routineness measure in predicting returns, as we document in Section

4.3. In addition, our paper differs in exploring whether past opportunistic trading by insiders at a firm is associated with other kinds of opportunistic behavior.

A literature in accounting studies insider trading in relation to corporate events of various kinds. Ke, Huddart and Petroni (2003) find that insiders trade as long as two years ahead of significant accounting disclosures. In contrast, our focus is on trading in close proximity to QEAs, and using this as a technique for identifying *future* opportunistic trading. Our premise is not that short-term private information is the only—or even primary—source of opportunistic trading, just that it is a particularly useful form for identifying empirically who the opportunists are.

Piotroski and Roulstone (2005) find that insider trading reflects both private information about future profits and contrarianism against market prices. Kahle (2000) and Clarke, Dunbar, and Kahle (2001) find that insider trading is associated with subsequent long-run abnormal performance after seasoned equity offerings. There is mixed evidence as to whether insiders trade so as to exploit foreknowledge of upcoming earnings announcements (Elliott, Morse, and Richardson 1984, Givoly and Palmon 1985, Sivakumar and Waymire 1994, Roulstone 2008). Fidrmuc, Goergen, and Renneboog (2006) provide further evidence of insiders trading near the times of corporate news events. Our paper differs from these in focusing on *differences* amongst insiders in the opportunism of their trades and other behavior, rather than examining the trading of insiders as a whole.

Jagolinzer (2009) provides evidence of opportunistic behavior among insiders who publicly disclose 10b5-1 plans wherein the insider can pre-specify buys and sells of the firm's equity. This takes the form of initiating sales plans before bad news and terminating sales plans before good performance. When we restrict our sample to the pre-2000 period before these plans existed, we still find superior performance of our opportunism measure. This suggests that our findings do not derive from trading in 10b5-1 plans. Wu (2014) finds that after the terminations of analyst coverage, corporate insiders experience larger abnormal profits, consistent with exploitation of private information. Niessner (2013) finds that managers strategically time the disclosure of good versus bad news to benefit their insider trading. Kelly (2014) finds that insider trades that realize losses are more profitable than those that realize

gains, consistent with the disposition effect influencing the informativeness of insider trading. Our paper differs in focusing on identifying opportunism and evaluating whether it is a trait that carries across different domains.

A previous literature has documented market inefficiencies wherein the market tends to underweight information which requires statistical processing. For example, there is evidence that the history of success in past innovative activities is a positive return predictor (Cohen, Diether and Malloy 2013, Hirshleifer, Hsu and Li 2013). Our findings that our opportunism measure helps predict future returns (even after the public disclosure of the relevant insider trades) provides further evidence that investors sometimes systematically neglect relevant public signals that require non-obvious processing.

Our paper also builds on a recent literature which examines how managerial traits affect firm behavior. Bertrand and Schoar (2003) provide evidence that managerial 'style' affects a wide range of corporate decisions. Measures of managerial overconfidence are associated with investment/cash flow sensitivities, and with bad acquisitions (Malmendier and Tate 2005, 2008), and with high R&D and patenting activity (Hirshleifer, Lim, and Teoh 2012). Cronqvist, Makhija, and Yonker (2011) find that corporate leverage is positively correlated with the CEO's personal leverage. Cain and McKeon (forthcoming) report that firms managed by CEOs who personally pilot small aircraft have higher leverage and return volatility, consistent with sensation-seeking. Using psychometric tests, Graham, Harvey, and Puri (2013) find that CEO traits such as optimism and risk-aversion are related to financial policies. Our paper differs in focusing on *opportunism* as a managerial and firm trait.

There is evidence that managerial life experiences affect firm financing and investment policies (Greenwood and Nagel 2009, Malmendier, Tate, and Yan 2011), and that culture affects managerial behavior. Hilary and Hui (2009) use religiosity in the community of a firm's headquarters as a proxy for corporate culture and find that greater religiosity is associated with lower risk-taking as proxied by the volatility of returns and return on assets. Pan, Siegel, and Wang (2014) find that CEO cultural heritage has an effect on acquisition policies, capital expenditures and cash holdings. Our focus is on identifying opportunism through trading behavior.

The criminology literature lends support to the idea that some managers may be prone to domain-general opportunism. This literature suggests that there are specific personal traits that cause a propensity to crime, such as low self-control and tendency to conform to social norms (Gottfredson and Hirschi 1990). Blickle et al. (2006) argue that committing white-collar crime is associated with the personal traits of low self-control and high hedonism (value placed on and enjoyment of material objects). In a review of multiple literatures, Kish-Gephart, Harrison, and Treviño (2010) find that people differ in propensity to behave unethically (there are 'bad apples'). Similarly, Jones and Kavanagh (1996) find that people differ in their propensity to be Machiavellian (not adhering to conventional morality), and therefore in the degree to which they are prone to unethical behavior.

Furthermore, individuals who have engaged in unethical or criminal behavior in the past tend to rationalize their behavior via moral disengagement and motivated forgetting (Shu, Gino, and Bazerman 2011). Such self-justifying tendencies are likely to operate across different decision domains, and to differ in strength across individuals. If so, we expect some managers to behave less ethically than others over a range of different types of decisions.

Intriguing evidence suggesting domain-generality of unethical behavior is provided by Fisman and Miguel (2007), who find a positive association between unpaid parking tickets by United Nations diplomats in New York City and the corruption and legal enforcement in their home country. Here one very specific kind of violation (nonpayment of parking tickets) may be an indicator of individual adoption of cultural propensities toward more general forms of misconduct such as bribery or disrespect for rule of law.

A large literature examines various aspects firm and manager misconduct. Many studies on firm and manager misbehavior focus on one kind of misconduct, whereas our purpose is to examine whether opportunism is a general trait that can be identified through insider trading profitability and which operates in multiple domains of misconduct. Several papers consider the effects of religion, corporate culture, or community culture on misconduct. McGuire, Omer and Sharp (2012) find that firms headquartered in areas with high religiosity tend to have fewer financial reporting irregularities. Bereskin, Campbell and Kedia (2014) study whether some corporate cultures engender prosocial activity versus misconduct. Davidson, Dey and Smith

(2013) find that firms with CEOs and CFOs who have personal legal infractions are more likely to engage in fraudulent reporting, and that firms with managers who are profligate in their personal spending habits have a looser control environment and a higher probability of fraud. Biggerstaff, Cicero and Puckett (2015) identify 261 CEOs who engage in options backdating and find that their firms are more likely to overstate earnings and commit financial fraud, and have more negative market reaction to acquisition announcements.

Our paper differs from these papers in several important ways. First, we develop a unique methodology to uncover opportunistic insider trading. Second, as discussed in the introduction, our methodology allows us to construct a very broad sample of firms and insiders, including CEOs. Finally, we examine a wide range of kinds of misconduct both by managers on their own account and by their firms (opportunistic insider trading, earnings management, reporting violations, option backdating, and excess managerial compensation). So in contrast with approaches that use small or hand-collected samples, our approach provides a generally applicable methodology for classifying managers or their firms as opportunistic or otherwise.⁷

3. The Data, Pre-QEA Insider Trading, and Firm and Insider Characteristics

Our main data on insider trades come from Thomson Reuters Insider Filing Data Feed, which includes all trades by corporate insiders reported on SEC Form 4 from January 1986 to June 2014. The Securities and Exchange Act of 1934 requires corporate insiders with access to material nonpublic information to report their open-market trades to the Securities and Exchange Commission (SEC). These insiders include company officers, directors, and beneficial owners of more than 10% of the company's stock. The dataset contains the name and position(s) of each insider, the transaction date, the transaction price and quantity, and the date the filing was received by the SEC.⁸ We merge the open-market transactions data with

⁷ We find that our opportunism measure captures various kinds of opportunism, even for non-CEO executives, which contributes to our large sample size. In contrast, the evidence of Biggerstaff, Cicero and Puckett (2015) does not provide any indication that backdating by non-CEO executives predicts misreporting. Also, the option-backdating approach to identifying opportunism was relevant only prior to the Sarbanes Oxley Act, when there was a potential benefit to backdating. Our approach is applicable to researchers even in post-SOX samples and to regulators and monitors in the current post-SOX environment.

⁸ The SEC originally required that Form 4 be filed within 10 days following the end of the transaction month. This deadline was changed to 2 days in 2002.

security-level data from CRSP and accounting data from COMPUSTAT. We focus on common stocks (CRSP share codes 10 and 11) listed on NYSE, NYSE MKT, and NASDAQ.

For our corporate misconduct tests, we use data on executive compensation, earnings restatements, SEC enforcement actions, and executive option awards. We obtain CEO and top-5 executives' compensation data from Execucomp. Execucomp collects detailed information on salary, bonus, stock awards, and other compensation items, mainly for S&P 1500 firms. Our restatement data are from Audit Analytics and SEC enforcement action data are hand collected. We obtain data on executive option grants from Thomson Reuters Insider Filing Data Feed.

Many firms have blackout periods whereby insider trading is restricted prior to QEAs. Nevertheless, as documented by Bettis, Coles and Lemmon (2000), even firms with blackout periods have substantial (though lower) amounts of trading during these periods. They discuss potential reasons why insiders trade even during blackout periods. For example, some insiders may violate their firms' trading restrictions. Furthermore, in some firms managers can trade during a blackout period by obtaining permission in the form of a pre-clearance letter from the firm. In a more recent sample, Jagolinzer, Larcker and Taylor (2011) find a high rate of insider trading (24% of all insider trading) occurring during restricted trade windows.

It is possible that firms are careful to eliminate all possibility of opportunism before agreeing to such trades. On the other hand, the insider may possess information that the approving parties within the firm do not have. It is also possible that the approval process is lax—'a wink is as good as a nod.' For all these reasons, whether profitable pre-QEA trading captures opportunism is an empirical question.

Figure 1 shows pre-QEA insider trading, defined as trading by corporate officers and directors in the one-month period (21 trading days) before a QEA, by year. The prevalence of pre-QEA trading is surprisingly high. The fraction of pre-QEA trades (pre-QEA trades/all insider trades) shows a fairly clear declining trend over time, but there is no evident trend in the fraction of dollar value of pre-QEA trades (close to 14% by the end of the sample period). The fraction of pre-QEA trades still represents a sizeable fraction of total trades even at the end of the period.

To identify opportunistic insiders, at the beginning of each year, we rank insiders into quintiles based on the profitability of their past pre-QEA trades. A pre-QEA trade is a trade that occurs during the 21 trading days before the QEA, excluding the last two days before the QEA.⁹ We then calculate the profitability of each pre-QEA trade as the average market adjusted return in the 5-day window centered at the QEA date:

$$\text{Profit} = \sum_{j=-2}^{j=2} (r_{i,t+j} - r_{m,t+j}) / 5,$$

where t is the QEA date, $r_{i,t}$ is stock i 's return on day t , and $r_{m,t}$ is the return on the CRSP value-weighted index on day t .

Each year, for each insider, we then calculate the average profitability of the insider's past pre-QEA trades:

$$\text{Average Profit} = (\sum^B \text{Profit}_{\text{buy}} - \sum^S \text{Profit}_{\text{sell}}) / (B + S),$$

where B is the total number of buy and S the total number of sell pre-QEA trades made by the insider prior to the start of the year. If an insider makes multiple trades in a particular pre-QEA period, we aggregate the trades and classify them as a buy (sell) trade if the number of shares bought is greater (less) than the number of shares sold by the insider during the pre-QEA period.¹⁰ We exclude pre-QEA (aggregate) trades less than \$5,000 to focus on the more meaningful transactions.¹¹

At the beginning of each year, we rank insiders into quintiles based upon Average Profit. We then examine the profitability of their *future* trades. We start the ranking in 1989 to ensure a long enough history to accurately compute the first ranking, where we require 3 years of data to compute the first ranking.

Table 1 shows the summary statistics for the sample. We report insider and firm characteristics for the entire Thomson Reuters universe and for the subset of insiders who have at least one pre-QEA trade. We further divide this subset into 5 quintiles based on past pre-QEA profitability.

⁹ We have also examined pre-QEA trading windows of 2, 3, and 4 weeks. Results are qualitatively similar with shorter windows, but are statistically weaker since fewer insiders have pre-QEA trades during these shorter windows.

¹⁰ We use split-adjusted shares provided by Thomson Reuters to aggregate trades. If split-adjusted shares are unavailable from Thomson Reuters, we use CRSP share adjustment factor to adjust shares for splits.

¹¹ Lakonishok and Lee (2001) also exclude small trades to focus on more meaningful transactions. Our results are very similar if we include small trades to compute the ranking (see Table 5).

Panel A presents insider-level characteristics. During the sample period, 33% of the insiders have at least one pre-QEA trade; 37% of buy and 41% of sell trades are made by these insiders.¹² The average number of pre-QEA trades per Ranked insider is only 2.13; the median is only 1. This is consistent with the fact that many firms have restrictions on pre-QEA trading, and with the desire of insiders, other things equal, to avoid the risk that such trading could bring unwanted attention from the firm or regulators. Even though most insiders make only one pre-QEA trade, we will see that this trade (or these trades) provides very revealing information about future firm and insider behavior and performance.

Panel B of Table 1 describes firm-level characteristics. Firms with pre-QEA trades are larger and have lower book-to-market ratios compared to all firms in Thomson Reuters universe. Firms in the extreme past profitability quintiles are somewhat smaller and more volatile than the rest. This is not surprising, since smaller and more volatile firms tend to have more extreme price movements, generating extremes of trading profits. In addition, smaller firms are more likely to have lax insider trading policies. In untabulated results, we find that the industry composition of stocks traded by Quintile 5 insiders is similar to that of stocks traded by other insiders.

4. Insider Trades and Subsequent Return Performance

We next examine whether past pre-QEA trading profitability is associated with subsequent trading performance of insiders. We employ both portfolio and regression tests.

4.1 Portfolio Return Tests

Using a calendar time portfolio approach, we first test whether differences in past pre-QEA trading profitability predict differences in performance of subsequent insider trades. Each month, for each past profitability quintile, we construct two portfolios. The long (short) portfolio consists of stocks that had at least one insider buy (sell) by an insider in the particular quintile in the previous month. We also consider as a benchmark the overall insider trading long-short portfolio (“All Insider”), i.e., the portfolio formed based on the trades of all insiders

¹² We aggregate multiple trades made by the same insider on the same day into one trade.

rather than just those who had at least one pre-QEA trade, and which is long stocks that had at least one insider buy and short stocks that had at least one insider sell in the previous month. Stocks are held in the portfolios for one month; the portfolios are rebalanced at the end of each month based on new insider trades. We exclude stocks with price below \$5 at the time of portfolio formation and limit the analysis to common stocks. We report both equal- and value-weighted returns.

Table 2 presents the main result of the paper. Panel A summarizes the return performance of the long-short portfolios for each of the five quintiles and the baseline All Insider portfolio. It reports the returns and 3- and 4-factor alphas of both equal-weighted and value-weighted portfolios. Ranking insiders by past pre-QEA profitability generates substantial variation in future performance of insiders. The equal-weighted long-short strategy constructed using trades of Quintile 5 insiders generates a 4-factor alpha of 1.59% per month ($p < 0.01$). The alphas decrease monotonically as quintile rank decreases to 1. The bottom quintile portfolio generates an alpha of 0.83% per month ($p < 0.01$) and the difference between top and bottom quintile portfolio alphas is large and significant, 0.75% per month ($p < 0.01$).

The difference in performance is much more substantial for value-weighted portfolios—only the alphas of top 2 quintiles are significant. The Quintile 5 portfolio generates a highly significant 4-factor alpha of 1.12% per month ($p < 0.01$). The difference between top and bottom quintile portfolio alphas is again large and significant, 0.94% per month ($p < 0.05$). These results suggest that the use of pre-QEA profitability is especially helpful in uncovering opportunistic trading in larger firms.

These top quintile long-short returns and alphas, for both equal- and value-weighted portfolios, are considerably larger than those of the corresponding baseline All Insider portfolios. The All Insider long-short portfolio achieves returns or alphas in the range of 0.73-0.88% per month (equal-weighted) or 0.37-0.50% (value-weighted), all significant at the 1% level. This performance tends to be only about half as large as the performance of Quintile 5 portfolios.

These trading strategies are also implementable in practice. The SEC originally required that insider trades be reported within 10 days following the end of transaction month; the

deadline was changed to 2 days in 2002. Most of the trades in our sample are actually reported to the SEC within a few days; the median difference between report date and transaction date is only 3 days. Nonetheless, we take a very conservative approach and form portfolios at the close of 10th day in month $t + 1$ and hold them until the 10th day of month $t + 2$, where t is the month in which insider trade occurred. The Quintile 5 portfolio generates an equal-weighted 4-factor alpha of 1.44% per month ($p < 0.01$) and a value-weighted 4-factor alpha of 1.11% per month ($p < 0.01$).

These findings indicate that the market does not fully make use of the information contained in the history of managerial opportunism, i.e., past insider trading profitability. This is consistent with the idea that investors tend to underweight information which requires cognitive and statistical processing, as has been documented in other contexts as well.

In contrast to the substantial differences moving from Quintile 3 to Quintile 5, the differences in returns and alphas are quite small within the bottom three quintiles in Panel A of Table 2. For the rest of the tables, we therefore combine trades within the bottom three quintiles into one portfolio. Panel B of Table 2 shows that both long and short portfolios constructed from top quintile insiders' trades outperform the corresponding portfolios constructed from trades of other insiders. This contrasts with most previous studies, which find that predictability is limited to the long side.

In particular, the Quintile 5 long portfolio generates an equal-weighted 4-factor alpha of 1.24% per month and a value-weighted 4-factor alpha of 0.59% per month (both significant), outperforming the Quintile 1-3 long portfolio alphas by 0.43% (equal-weighted) and by 0.47% (value-weighted). The outperformance is even more striking on the short side. For the All Insiders and Quintile 1-3 short portfolios, the alphas are all insignificant and close to zero. In fact, only Quintile 5 short portfolios have statistically and economically significant negative alphas; -0.34% per month for the equal-weighted portfolio and -0.53% per month for the value-weighted portfolio, both significant at 1% level. The differences between Quintile 5 and Quintile 1-3 short alphas are all statistically significant as well. Quintile 5 portfolios are also

fairly well diversified—on average, the long portfolio contains 29 stocks per month and the short portfolio contains 85 stocks per month.

Notably, the profitability of Quintile 5 insider sells is even larger for the value-weighted portfolio than for the equal-weighted portfolio. This may come from the opportunities afforded insiders at large firms of trading and especially selling opportunistically when there is high stock market liquidity.

Figure 2 plots the long-term performance (4-factor alphas) of portfolios constructed using trades of opportunistic insiders versus other insiders. For equal-weighted portfolios, Quintile 5 insider trading continues to generate performance up to 6 months out, whereas Quintile 1-3 insider trading stops generating returns within about 4 months. The Quintile 5 alpha rises to a bit over 4% after 6 months; the Quintile 1-3 alpha is only about 2%. For value-weighted portfolios, the 4-factor alphas of opportunistic insiders rise for about four months and Quintile 5 outperformance increases to over 1% in the 6 month period.

Overall, these findings suggest that past profitability of pre-QEA trading is a very effective way of identifying opportunistic insider traders.

4.2 Regression Analysis

To verify the incremental effects of opportunistic insider trading relative to trading by other insiders, we perform a multivariate analysis. In Table 3, we run Fama-MacBeth regressions to measure this effect while controlling for other predictors.¹³

In these tests, the universe is all CRSP stocks with price greater than or equal to \$5 at the end of the preceding month that have COMPUSTAT data available for the test variables. The dependent variable is the future one-month percentage return. Control variables include size, book-to-market, momentum, and past one-month return. The variable Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) by any insider in our universe (insiders who have made at least one pre-QEA trade) in a given firm in the previous month, and zero otherwise. The variable Quintile 5 Buy (Sell) is equal to 1 if there were any buys (sells) by any Quintile 5 insider in a given firm in the previous month, and zero otherwise. In the first

¹³ We have replicated all of these results with pooled regressions that include month fixed effects, and where standard errors are clustered by month or firm.

three columns of Table 3, Buy and Sell variables are constructed using trades of insiders with at least one pre-QEA trade in the past.

Column 1 of Table 3 shows that buys by insiders in our universe are followed by a statistically significant positive return of 80 basis points in the next month, and sells are followed by a weakly significant negative return of 11 basis points. These results are consistent with past literature on insider trading finding an effect of insider buys but only a weak and marginal effect of insider sells.

In Column 2, we replace Buy and Sell indicators with Quintile 5 Buy and Sell indicators. The return predictability becomes considerably stronger. The coefficients on Quintile 5 Buy and Quintile 5 Sell variables indicate that opportunistic buys are followed by a much larger return, 125 basis points, in the next month ($p < 0.01$), and opportunistic sells are followed by a return of -32 basis points ($p < 0.01$). So consistent with the time series tests of Table 2, even opportunistic insider sells are strong and significant return predictors.

In Column 3, we add the Buy and Sell indicators to regression 2 in order to measure the incremental return earned by opportunistic trades relative to trades made by other insiders in the universe. Again consistent with Table 2, Quintile 5 outperformance comes from both buys and sells—Quintile 5 buys earn an incremental 58 basis points in the next month ($p < 0.01$) and Quintile 5 sells underperform by an incremental 28 basis points in the next month ($p < 0.05$). Inclusion of the Quintile 5 indicators causes the general insider Sell variable to lose even its weak significance from Column 1, and the point estimate becomes close to zero. This indicates that among trades by insiders who have previously made pre-QEA trades, insider sells predict returns only because of insiders who previously made profitable pre-QEA trades. Overall, these findings show that our method for identifying opportunistic trading is highly effective within the universe of insiders who have made pre-QEA trades in the past.¹⁴

Column 4 compares the performance of Quintile 5 insiders' trades to the trades of unranked insiders (insiders without any pre-QEA trades). Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) in the given firm in the preceding month by a Quintile 5 insider or an unranked insider. We see that opportunistic insiders' trades significantly

¹⁴ We have also performed tests with Quintile 4 and 5 Buy/Sell indicator variables included in the regressions. The results are similar, with Quintile 4 insiders being somewhat opportunistic but less so than Quintile 5 insiders.

outperform the trades of unranked insiders as well. Quintile 5 buys are associated with an additional return of 52 basis points ($p < 0.01$) in the next month, and Quintile 5 sells with underperformance of an additional -24 basis points ($p < 0.05$).

The last column of Table 3 performs a test similar to those in Columns 3 and 4, except that the sample now includes trades by *all* insiders. Now the Buy (Sell) indicator is equal to 1 if any insider in the Thomson Reuters database bought (sold) the stock in the prior month, and zero otherwise. We see that opportunistic insiders' trades outperform the trades of all insiders. Quintile 5 buys are associated with an additional return of 56 basis points ($p < 0.01$) next month, and Quintile 5 sells with underperformance of an additional -26 basis points ($p < 0.05$) in the next month.

In economic terms, on the long side, the incremental effect of having a Quintile 5 buy instead of an ordinary buy is to increase the mean return by more than $3/4$ of the ordinary insider buy return. On the short side, the calculation is not as meaningful since the ordinary mean return is not significant, but the incremental effect of having a Quintile 5 sell instead of an ordinary sell is to make the negative mean return be $3 \frac{1}{4}$ times larger (in absolute terms) than the ordinary insider sell return.

4.3 Robustness Checks and Extensions

We are not the first to try to identify opportunistic insiders based on their trading history. In contrast with our focus on the profitability of past trades prior to earnings announcements, Cohen, Malloy, and Pomorski (2012) (henceforth CMP) focus on insiders whose trades are non-routine in the sense that they are hard to predict based on seasonality in the past history of the insider's trading.

Table 4 compares our opportunism variable with that of CMP. Each year, insiders who make at least one trade in each of the preceding 3 years are classified as routine or non-routine using the methodology of CMP. Insiders who trade in the same month in each of the 3 years are classified as routine. The rest of the insiders are classified as non-routine; Table 4 describes this classification in more detail. (CMP also call insiders with seasonally unpredictable trades

`opportunistic'; to avoid confusion we will call such insiders `non-routine insiders', and we call insiders with seasonally predictable trades `routine insiders'.)

We again perform Fama-MacBeth regressions with different insider trading indicator variables, using the same control variables as in Table 3; for brevity we do not report coefficients on the controls. Routine Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the prior month by a routine insider, and zero otherwise. Non-Routine Buy and Sell indicators are defined similarly for non-routine insiders. To maintain comparability with CMP, we include low-priced stocks in the first two columns of Table 4. Consistent with their results, Column 1 shows that non-routine buys are more profitable than routine buys. However, non-routine sells do not negatively predict subsequent returns.¹⁵ This is consistent with the portfolio return evidence shown in CMP (2012), which also shows no significant return predictability on the sell side.¹⁶

In Column 2, we add indicators for trades by insiders in the top quintile of past pre-QEA profitability and general buy and sell indicators for trades by any insider to regression 1 in order to compare the performance of our opportunism measure with that of CMP (2012). The results indicate that once we control for Quintile 5 trades and general trades, even the non-routine Buy indicator does not predict returns. In contrast, the coefficients on Quintile 5 buy and sell indicators are both substantial and significant. Furthermore, Quintile 5 buys outperform non-routine buys by 48 basis points per month ($p < 0.05$) and Quintile 5 sells underperform non-routine sells by 32 basis points ($p < 0.05$).

Column 3 repeats the test in column 2 except that we exclude stocks with price below \$5 to ensure that the results are not contaminated by microcap illiquid securities. Consistent

¹⁵ In tests that regress returns on Non-Routine Buy, Non-Routine Sell, Routine Buy, and Routine Sell indicators, CMP find significant coefficients on both Non-Routine Buy and Non-Routine Sell. However, the universe for these tests is limited to firm-months in which there is at least one non-routine or routine buy or sell. This constraint implies that the regression coefficients do not reflect any difference in future returns between having a non-routine sell versus having neither a buy nor a sell. Since it is relatively uncommon to have both buys and sells in the same stock in the same month, such a differential is a crucial determinant of whether, in a general sample, non-routine sells are a negative return predictor. So non-routine sells can have little or no ability to predict return in a general sample even when there is a negative coefficient on Non-Routine Sell within the restricted universe. This is indeed the case; non-routine sells have no significant predictive power either in CMP's portfolio tests or in our Table 4.

¹⁶ None of the 3-, 4-, and 5-factor alphas is significantly different from zero for the equal- and value-weighted non-routine sell portfolios shown in Table IV of CMP (2012).

with the results in column 2, Quintile 5 trades are strong incremental predictors of future return, while non-routine trades are not; both the economic and statistical magnitudes of the non-routine coefficients are close to zero.

In summary, while CMP develops a method which identifies a subset of insiders, routine traders, whose trades do not predict future returns (and sometimes predict returns in the opposite direction), it does not identify opportunistic trading sharply, even for insider buys. The profitability of trades made by non-routine insiders (who are supposed to be the opportunistic traders) is very similar to that of trades by average insiders. In contrast, we are able to identify a subset of insiders whose buys and sells generate incremental abnormal returns relative to the trades of average insiders (and the non-routine or routine insiders of CMP).

In untabulated results, we find similar outperformance of Quintile 5 insiders' trading over non-routine insiders' trading in calendar time portfolios. The difference between 4-factor alphas of an equal-weighted long-short portfolio constructed from trades of Quintile 5 insiders and the same portfolio constructed from trades of non-routine insiders is 0.61% per month ($p < 0.01$). The difference in value-weighted portfolio alphas is even larger; 0.81% per month ($p < 0.05$).

We next conduct an extensive battery of robustness checks in Table 5 (for brevity, we do not report the coefficients of control variables). We first show that our results are not driven solely by the buy or sell side of pre-QEA trades. In Columns 1-4 of Panel A, we perform the tests of Table 3 but rank insiders into quintiles based on profitability of their pre-QEA buy (Columns 1-2) or sell (Columns 3-4) trades only. Even though the resulting Quintile 5 samples are smaller, buy and sell trades of Quintile 5 insiders ranked by both of these additional measures generate substantial incremental returns relative to general insider trades. In Columns 5-6, we include pre-QEA trades below \$5,000 when computing the ranking. The results are robust to this alternative ranking.

Since quarterly earnings surprises are positively autocorrelated, it is possible that Quintile 5 insiders are simply adept at trading based on recent earnings surprises, resulting in both high pre-QEA profitability and high profitability of future trading. To rule out this possibility, we control for two measures of earnings surprise in Fama-MacBeth regressions, the

most recent SUE and earnings announcement CAR. Columns 7-8 in Table 5 show that controlling for past earnings surprises has no effect on our main result. Quintile 5 insiders buy and sell trades are significantly more profitable than the trades of other insiders. In fact, the coefficient on Quintile 5 Sell becomes even more negative, and even the general Sell indicator's coefficient is statistically significant. This happens because insider sells, including Quintile 5 sells, are negatively correlated with recent earnings surprises.

It is possible that our results are being driven by firm characteristics such as size, an opaque information environment, low analyst coverage, or poor governance. Insider trades are likely to be especially informative for firms for which less information is available. Moreover, Ravina and Sapienza (2010) document that insider profits are higher at firms with weak governance. So the insiders we identify as opportunistic could be earning high trading profits merely by virtue of belonging to such firms. However, Table 2 shows that the difference in top and bottom quintile portfolio returns is large and significant, and Table 1 shows that the firms in these quintiles have similar characteristics. Table 1 also shows that firms in extreme past pre-QEA profitability quintiles are only slightly smaller and more volatile than firms in other quintiles, so firm characteristics are unlikely to be driving our results. Nonetheless, we conduct direct tests to control for firm-level effects.

We start with firm size. Table 5, Panel A, Columns 9-12 describe the tests of Table 3 performed separately among small and large market capitalization firms. Among both sets of firms, Quintile 5 buys continue to significantly outperform, and Quintile 5 sells significantly underperform. Furthermore, the coefficients on Quintile 5 Buy and Quintile 5 Sell are fairly similar to those of Table 3. So there is no sign that controlling for size weakens the effects we have documented.

Finally, in Columns 13-14, each year, we identify all stocks traded by Quintile 5 insiders in that year and then compare the profitability of Quintile 5 insiders' trades and the trades of other insiders *at the same firm and in the same year*. We therefore perform tests using only those stocks ("overlap" stocks) that are traded by both Quintile 5 insiders and by at least one insider who is not in quintile 5 in that year. This ensures that the opportunism effects we identify are not driven by a firm effect in which Quintile 5 traders happen to be trading in firms

in which trading by all insiders is more profitable than the trades of insiders in other firms. Quintile 5 Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given overlap stock in the preceding month by an insider in Quintile 5. Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given overlap stock in the preceding month by any insider who is not in Quintile 5. The opportunism effects we identify remain strong in these overlap stock tests. Even at a given firm, Quintile 5 insiders' trades are more profitable than the trades of other insiders. Column 14 indicates that a Quintile 5 buy generates an additional 45 basis points in the next month ($p < 0.05$), and a Quintile 5 sell underperforms by an additional 59 basis points in the next month ($p < 0.01$), relative to a buy or sell by another insider in the same stock.

It is conceivable that those Quintile 5 insiders who are at firms that are lax toward opportunistic trading make many trades, and those that are at firms that are tough on such trading make few trades; whereas for some reason this is reversed for non-Quintile 5 insiders (they trade especially heavily at tough firms). If so, even in a test restricted to overlap stocks, and even if managers and firms do not differ in degree of opportunism, owing to firm effects together with the fact that opportunistic versus non-opportunistic insiders have different numbers of observations at different firms, Quintile 5 insiders' trades would be more profitable owing to firm effects rather than managerial effects.

This possibility does not strike us as very likely. Nevertheless, to rule this out, we perform tests that aggregate buys or sells of an insider type in any given firm-year. Specifically, to test whether opportunistic buys earn higher returns than non-opportunistic buys, each year, for each overlap stock we calculate the mean monthly abnormal return (size, book-to-market, and momentum adjusted) of all buys by Quintile 5 insiders, and the mean return of all buys by non-opportunistic insiders.¹⁷ Therefore, for each overlap firm-year, all the buys by Quintile 5 insiders are aggregated into a single return observation and all the buys by non-opportunistic insiders are aggregated into another observation. Similarly, for each overlap firm-year there is one observation for Quintile 5 insider sells, and one for non-opportunistic insider sells.

¹⁷ Multiple buy (sell) trades in the same month by insiders in the same group are aggregated into one buy (sell) trade.

We then regress these overlap buy and sell return observations on a dummy variable for whether the return observation is for Quintile 5 insiders. The results in Panel B of Table 5 indicate that the trades of Quintile 5 insiders are substantially more profitable than those of non-opportunistic insiders, even at a given firm during a given year. Despite the loss in sample size entailed by this conservative procedure, the effects are statistically significant. In particular, opportunistic buys outperform by 24 basis points ($p < 0.05$) and opportunistic sells underperform by 43 basis points ($p < 0.01$).

Taken in its entirety, the evidence in Table 5 shows that our results are not driven by differences in firm characteristics across different past pre-QEA profitability quintiles (nor other plausible methodological issues). Instead, these findings reflect the differences in the exploitation of private information in the trading of opportunistic insiders versus other insiders.

It is interesting to examine whether differences among Quintile 5 insiders affect the strength of the return predictability that we document.¹⁸ One possible source of such differences is the time since the insider made an opportunistic pre-QEA trade. In Column 1 of Table 6, we divide Quintile 5 insiders into two groups based on the time since they first made an opportunistic pre-QEA trade. The return predictability is significantly stronger for insiders who made opportunistic pre-QEA trades a long time ago—buys by such insiders generate twice as much return as general insider buys and sells generate an incremental 36 basis points per month over general insider sells. The return predictability is both statistically and economically weaker for insiders who recently made an opportunistic pre-QEA trade. These results are consistent with the hypothesis that opportunistic insiders try to conceal their trading to avoid getting caught.

In Column 2 of Table 6, we examine whether the predictive ability is higher for insiders who made more than one opportunistic pre-QEA trade versus those who made only one such trade. We find that trades of both types of these insiders generate incremental returns over general insider trades and the difference between the performance of two types is not statistically significant.

¹⁸ It is also interesting to examine if predictive ability improves with intensity of trading. However, our sample does not allow us to construct a meaningful test of this, as only a tiny fraction (8%) of opportunistic trades are made by more than one Quintile 5 insider.

5. Do variations in insider trading profitability reflect differences in opportunism?

It is possible that the return effects we have documented merely indicate that some insiders have superior ability to process publicly available information that is not being reflected in stock prices, and as a result, earn higher trading profits than other insiders. A more ominous interpretation is that the insiders we have identified as profiting heavily in the past from pre-QEA trading are more prone to opportunism of all kinds. If so, we would expect to see the tracks of such opportunism in other kinds of decisions that such managers and their firms make.

To test whether pre-QEA trading profitability actually reflects opportunism, we test whether pre-QEA profitability is associated with opportunistic behavior in other domains. In particular, we test whether profitable pre-QEA trading is a predictor of misconduct by managers and their firms.

5.1 Financial Misconduct and Earnings Management

Our first set of tests focuses on whether opportunistic insider trading at a firm is associated with earnings management or other forms of financial misreporting. In particular, we measure firm-level accounting opportunism by levels of subsequent financial statement restatements, enforcement actions by the SEC, shareholder lawsuits over alleged accounting improprieties, and proxies for earnings management.

For our first test, we obtain restatement data from Audit Analytics for the 1998-2013 period. Consistent with previous research (Myers, Scholz, and Sharp 2010), we exclude restatements that occur because of changes in accounting principles, GAAP-to-GAAP changes, and changes in estimates. We treat multiple restatements for the same filing as one observation. In the panel logit regressions described below, our restatement indicator is equal to 1 if the firm restates (at some point in the future) its financial statements for a fiscal period ending in that year, and zero otherwise. Thus, the variable relates to the fiscal periods with incorrect filings and not the period when the restatement occurs. Accounting literature

frequently makes use of financial restatements to measure firm misconduct (e.g., Palmrose and Scholz 2004, Desai et al. 2006, Beneish, Lee, and Nichols 2013).

In our second test, we make use of Accounting and Auditing Enforcement Releases (AAERs) from the U.S. Securities and Exchange Commission (SEC) describing enforcement actions for alleged misstatements in financial reports. In our panel logit regressions, the AAER indicator is equal to 1 if the SEC conducted an investigation of the firm for accounting and/or auditing misconduct for a fiscal period ending in that year, and zero otherwise. The AAER data cover the 1993-2007 period.

In our third test, we examine whether our opportunism measure is associated with shareholders suing the firm for accounting malpractice. We obtain the lawsuit data from Audit Analytics for the 1995-2011 period. In our logit regressions, the lawsuit indicator takes a value of 1 if the shareholders sued the firm over alleged accounting improprieties for a fiscal period starting in that year, and zero otherwise.

Finally, we test whether our opportunism measure is associated with earnings management as proxied by the absolute value of discretionary accruals estimated from the modified-Jones model (Dechow, Sloan and Sweeney 1995). The reason for taking the absolute value is that earnings management can be either upward or downward. A firm that urgently wishes to increase its stock price in the short run will favor positive accruals. A firm that wants the freedom to manage earnings up in the future (e.g., before an SEO) may manage earnings downward to create a 'cookie jar reserve' of potential positive accruals. Alternatively, a firm may 'take a big bath' by reporting negative accruals when a new management team arrives, to blame resulting low earnings on past management and give higher earnings in the future.

The key independent variable in the panel regressions is Fraction of Q5 Insiders, defined as the ratio of the number of opportunistic insiders who traded at least once over the past three years to the number of all insiders who traded at least once in the last three years. We test whether this measure of insider trading opportunism at the firm predicts other forms of firm-level misconduct.

Table 7 presents the results of this analysis. The control variables in our logit regressions include book-to-market, firm size, leverage, profitability, volatility of profitability, average

insider trading in the firm over the past 3 years, a loss indicator for whether the firm had negative earnings in either of previous two years, an indicator for whether the firm has a Big-4 auditor, the governance index of Gompers, Ishii, and Metrick (2003)—henceforth *Governance Index*, firm age, and analyst coverage.¹⁹ We control for past profitability to ensure that our results are not being driven by deteriorating fundamentals. We control for average level of insider trading in the firm to ensure that our results are not being driven by the sheer scale of insider trading rather than our opportunism measure. We also include two control variables for pre-QEA trading in general (profitable or unprofitable) to ensure that our results are not being driven by pre-QEA trading. These control variables include the ratio of pre-QEA trading to overall insider trading and the fraction of insiders with past pre-QEA trades. All the tests in this table use these controls.

The first column of Table 7 examines the relationship between our firm-level opportunism measure (Fraction of Quintile 5 Insiders) on the likelihood of financial restatements. Column 1 shows that Fraction of Q5 Insiders positively predicts the incidence of restatements ($p < 0.05$). The economic magnitude of the effect is relatively modest; a one standard deviation increase in Fraction of Q5 Insiders is associated with an increase of 2.7% in the probability of restatement relative to the unconditional probability of doing so.

Column 2 tests whether insider opportunism is associated with SEC investigations for accounting and/or auditing misconduct.²⁰ We see that firms with a high fraction of opportunistic insiders have a greater risk of SEC investigation ($p < 0.05$). The economic magnitude of the effect is substantial; a one standard deviation increase in Fraction of Q5 Insiders is associated with an increase of 9.9% in the probability of being investigated by the SEC relative to the unconditional probability.

Column 3 tests whether the shareholders of firms with opportunistic insiders are more likely to sue the firm over alleged accounting improprieties. The effect of fraction of opportunistic insiders is positive and significant ($p < 0.01$). In terms of economic magnitude, a

¹⁹ For firms that are missing data needed for calculation of the Governance Index, we assign this variable its cross-sectional mean value to avoid loss of data.

²⁰ We have also performed tests based upon the M-score of Beneish, Lee, and Nichols (2013). The M-Score is constructed from a predictive logit regression model where the dependent variable is being charged with, or admitting to, accounting misstatements. The results are similar.

one standard deviation increase in Fraction of Q5 Insiders is associated with a 7.5% increase in probability of lawsuit relative to the unconditional probability.

Column 4 tests whether firms with opportunistic insiders have higher levels of subsequent earnings management, as proxied by absolute value of discretionary accruals. Again consistent with domain-general opportunism, firms with opportunistic insiders have higher earnings management ($p < 0.05$). The economic magnitude of the effect is modest; a one standard deviation increase in Fraction of Q5 Insiders is associated with an increase of 1.9% in absolute discretionary accruals (relative to unconditional mean absolute discretionary accruals).

To sum up, profitable pre-QEA trading is positively associated with all four misconduct variables, and generally with meaningful economic magnitudes.

5.2 Options Backdating

To further test whether our opportunism measure captures a domain-general tendency toward opportunistic behavior, we examine firm behavior during the period of the option-backdating scandal. This was a form of concealed managerial compensation in which managers were granted stock options which were nominally at-the-money at the time of option grant. In fact fictitious grant dates were selected ex post so that managers would immediately start with in-the-money options. There is, of course, nothing wrong with paying managers more, but misleading investors about compensation is unethical. When news of this practice became public, it was widely criticized.

Table 8 describes the relationship between our opportunism measure and options backdating. We construct a dataset of options awarded to top executives (CEO/CFO) between 1996 and 2014 using Table 2 of Thomson Reuters Insider Filing Data Feed. Following the methodology of Bebchuk, Grinstein, and Peyer (2009), we identify an at-the-money grant as “lucky” (likely backdated) if it was awarded on a day when the stock price was at the lowest level during the month. We examine pre- and post-SOX periods separately, since SOX required that grants be reported to the SEC within two business days after the grant date, making backdating more difficult.

In the panel logit regressions, the dependent variable is an indicator which takes a value of 1 if either the CEO or CFO was awarded at least one lucky grant during the year, and zero otherwise. We include several control variables that might be associated with opportunistic timing: book-to-market, firm size, past year return, return volatility, profitability, average insider trading in the firm over the past 3 years, Governance Index, firm age, analyst coverage, and year and industry fixed effects. We also control for the two pre-QEA trading measures discussed in Table 7 above to ensure that we are simply not capturing the effect of pre-QEA trading in general.

The first column of Table 8 shows that Fraction of Q5 Insiders is a positive predictor of the probability that the firm issues a lucky grant to top executives in the pre-SOX period ($p < 0.10$). A one standard deviation increase in Fraction of Q5 Insiders is associated with a 3.5% increase in the probability (relative to the mean).

Post-SOX, the relationship between our opportunism measure and the incidence of lucky grants is economically and statistically insignificant. This is not surprising; as mentioned above, the potential benefit of backdating is much smaller post-SOX, since the option can be backdated by at most two days (if it is reported to the SEC on time).

5.3 Excess Compensation

To further test whether pre-QEA insider trading profitability reflects a domain-general trait of opportunism, we examine whether firms with opportunistic insiders have high excess compensation relative to what would be predicted based on other determinants of executive pay.

Table 9 presents the results. The dependent variables are CEO compensation in column 1, and top-5 executives' compensation in columns 2. We control for several possible determinants of executive compensation: book-to-market, size, past year return, return volatility, profitability, a measure of aggregate insider trading in the firm, the extent of pre-QEA trading in the firm, fraction of insiders with pre-QEA trades, CEO tenure, firm age, and year and industry fixed effects.²¹

²¹Controlling for CEO stock holdings does not affect the conclusions.

Column 1 shows that Fraction of Q5 Insiders is a strong positive predictor of CEO compensation ($p < 0.01$); a one standard deviation increase in Fraction of Q5 Insiders is associated with an increase of 2.2% in CEO compensation. Since this effect is after controlling for other known determinants, this means that opportunistic insider trading can be viewed as a predictor of excess compensation relative to the norms of other firms.

Similarly, Column 2 shows that our opportunism measure is strongly associated with higher top-5 executives' pay; a one-standard-deviation increase in Fraction of Q5 insiders is associated with an increase of 1.4% in top-5 executives' compensation ($p < 0.05$).

Overall, the findings in this section strongly support the hypothesis that our measure captures insider opportunism and that this opportunism spans multiple decision domains.

6. Concluding remarks

We argue that opportunistic insider traders can be identified through the profitability of their trades prior to quarterly earnings announcements (QEAs), and that opportunistic trading is associated with various other kinds of managerial and firm misconduct. The subsequent general trades of opportunistic insiders (those with high past pre-QEA profits) are substantially more profitable than those of non-opportunistic insiders. A value-weighted trading strategy based on opportunistic trading earns 4-factor alphas of over 100 basis points per month, an effect much stronger than in past insider trading literature. Also in contrast with past literature, the effect is substantial and robust for opportunistic insider sells, not just buys.

The finding that insiders identified as opportunistic based on their pre-QEA trading subsequently earn high trading profits than general insiders obtains even when comparing the trades of opportunistic insiders versus general insiders in the same firm and during the same year. This is consistent with such insiders having a manager-specific trait that promotes trading profitability rather than our measure capturing some firm characteristic. However, it is also possible that the superior trading performance of the insiders we have identified as opportunistic derives from their having superior ability to process publicly available information.

To further resolve whether the insiders we have identified as opportunistic are actually opportunists, we test whether pre-QEA profitability is associated with other forms of firm or managerial misconduct. In cross-sectional tests, firms with opportunistic insiders have higher levels of earnings management, restatements, SEC enforcement actions, shareholder litigation, option compensation backdating, and excess executive compensation. Overall, these findings indicate that opportunism is a domain-general trait that can be identified effectively through the profitability of insider trades prior to earnings announcements. These findings therefore suggest that past trading profitability can be a useful general-purpose tool for boards of directors, shareholder groups, and regulators as a screen for monitoring and deterring managerial opportunism.

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Figure 1: Pre-QEA Trading

This figure shows insider trading in pre-QEA periods relative to trading during the entire year. The pre-QEA period is defined as the 21-trading day period ending two trading days before a quarterly earnings announcement date. We exclude all trades by beneficial owners since these owners might not be subject to the same trading restrictions as firm officers and directors. The sample includes all trades in the Thomson Reuters database that have QEA dates available from COMPUSTAT. We exclude firms in a given year with less than four QEA dates available in that year. We discard QEA dates which are either before the fiscal-quarter-end-date or more than one year after the fiscal-quarter-end-date (likely data errors). Dollar value of trades is calculated using self-reported price in the Thomson Reuters database.

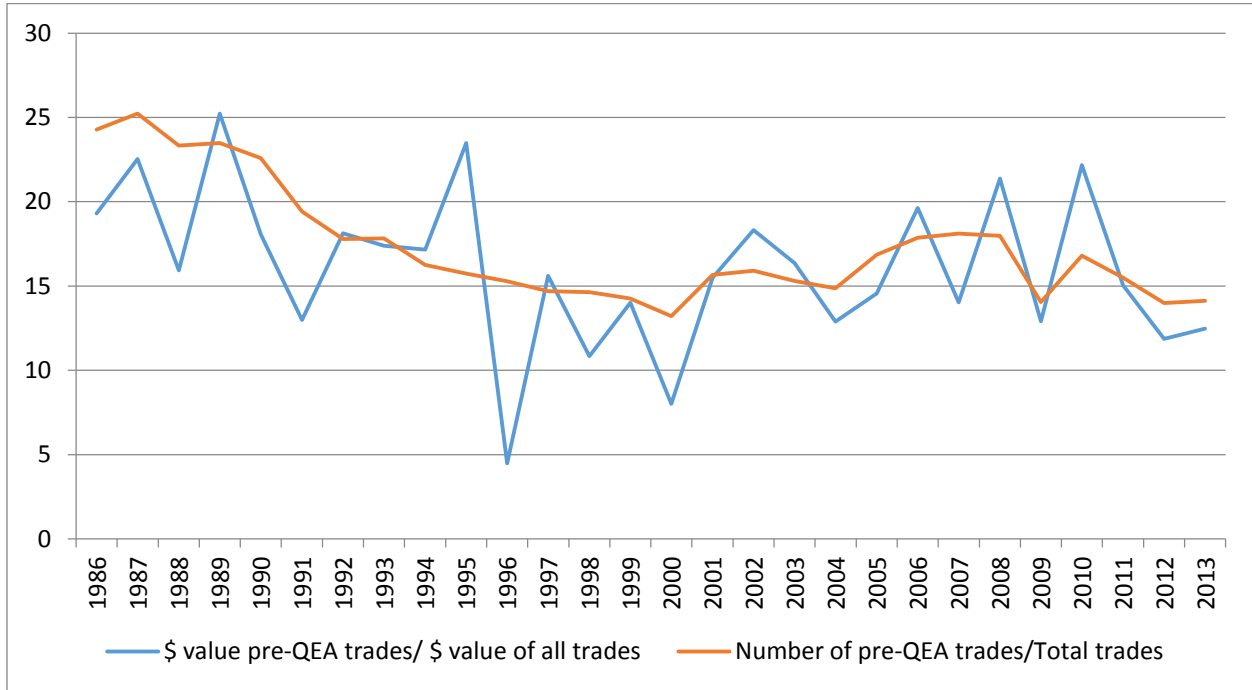


Figure 2: Event-time Returns

This figure shows the cumulative abnormal performance of portfolios constructed using insider trades over the January 1989 through June 2014 sample period. Portfolios are constructed as described in Table 2. The Q5 (Q4) portfolio is the long/short portfolio that is long buys and short sells by insiders in quintile 5 (4). The Q1-3 portfolio is the long/short portfolio that is long buys and short sells by insiders in bottom 3 quintiles. The figure also shows the difference in performance between the Q5 and Q1-3 portfolios. Abnormal performance is calculated as the 4-factor alpha.

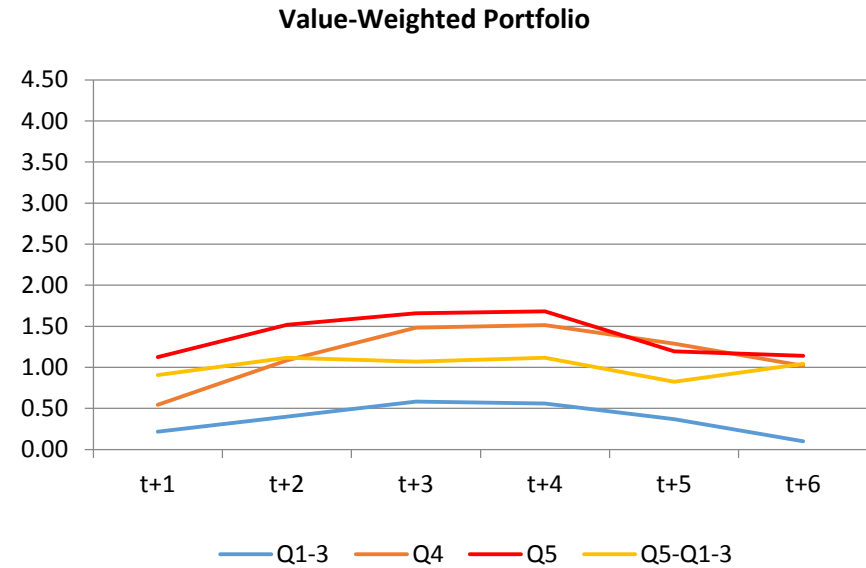
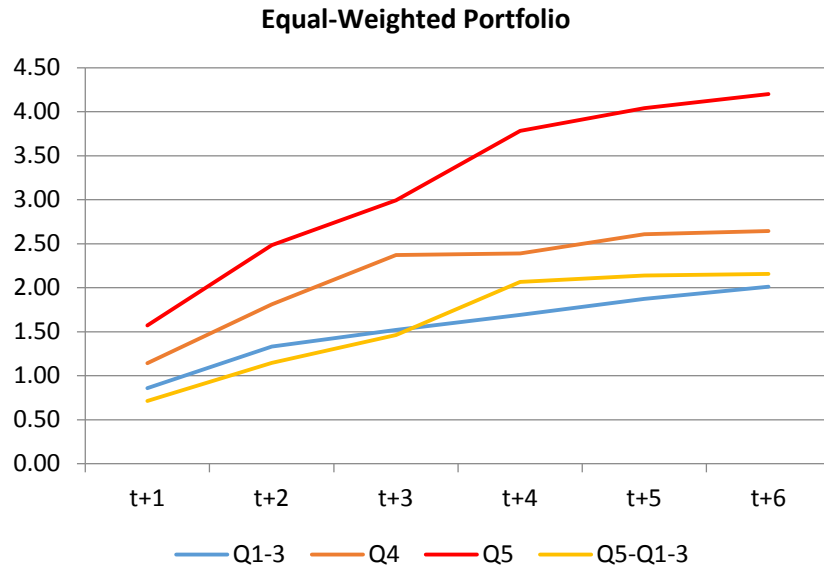


Table 1: Firm and Insider Characteristics

This table provides summary statistics for the sample used in this paper. Each year, starting in 1989, we rank insiders into quintiles based on the profitability of their past pre-QEA trades. The pre-QEA period is defined as the 21-trading day period ending two trading days before a quarterly earnings announcement date. We calculate the profitability of a pre-QEA trade as the average market adjusted return in the 5-day window centered at the QEA date: $\text{Profit} = \sum_{j=-2}^{j=2} (r_{i,t+j} - r_{m,t+j}) / 5$, where t is the QEA date, $r_{i,t}$ is stock i 's return on day t , and $r_{m,t}$ is the return on the CRSP value-weighted index on day t . Each year, for each insider, we calculate the average profitability of the insider's past pre-QEA trades: $\text{Average Profit} = (\sum^B \text{Profit}_{\text{buy}} - \sum^S \text{Profit}_{\text{sell}}) / (B + S)$, where $B(S)$ is the total number of buy (sell) pre-QEA trades. We then rank insiders into quintiles based on Average Profit. If an insider makes multiple trades in a particular pre-QEA period, we aggregate the trades and classify them as a buy (sell) trade if the number of shares bought is greater (less) than the number of shares sold by the insider during the pre-QEA period. We exclude pre-QEA (aggregate) trades less than \$5,000 to focus on the more meaningful transactions. Panel A presents insider-level characteristics. The sample of firms is all CRSP common stocks (share codes 10 and 11) listed on NYSE, NYSE MKT, and NASDAQ. "TR Universe" consists of all insiders in the entire Thomson Reuters database. "Ranked Universe" consists of all insiders who can be ranked based on pre-QEA profitability. Panel B presents firm-level characteristics. We discard negative book value firms and winsorize book-to-market ratios at 1% and 99% levels. Volatility is the standard deviation of monthly returns over the past 2 years. Mean (median) book-to-market ratio is the time-series mean of annual cross-sectional mean (median) book-to-market ratios. Mean (median) size and volatility are calculated similarly.

Panel A				
RANK	No. of unique insiders	#buys	#sells	#buys/ #sells
1	15,114	20,965	83,522	0.25
2	15,343	29,143	82,670	0.35
3	15,124	38,175	82,323	0.46
4	15,418	31,283	71,964	0.43
5	14,604	26,984	65,714	0.41
TR Universe	170,141	394,574	934,800	0.42
Ranked Universe	56,980	146,550	386,193	0.38
Ranked/TR Universe	0.33	0.37	0.41	
Avg. No. of pre-QEA trades per Ranked Insider				2.13
Median No. of pre-QEA trades per Ranked Insider				1

Panel B							No. of unique firms
RANK	BTM		Size		Volatility		
	Mean	Median	Mean	Median	Mean	Median	
1	0.58	0.41	3,554	403	13.4%	11.6%	4,981
2	0.60	0.44	4,464	504	11.7%	10.0%	5,050
3	0.60	0.45	4,956	538	11.2%	9.3%	4,910
4	0.61	0.45	4,631	446	11.8%	9.9%	4,930
5	0.62	0.42	3,190	331	13.7%	11.8%	4,952
TR Universe	0.72	0.51	2,809	211	13.3%	11.0%	11,441
Ranked Universe	0.65	0.47	3,407	295	12.7%	10.7%	8,742

Table 2: Portfolio Returns

This table reports the returns and alphas of portfolios constructed from insider trades over the January 1989-June 2014 sample period. Each year, starting in 1989, we rank insiders into quintiles based on the profitability of their past pre-QEA trades as described in Table 1. At the end of each month, for each quintile, we construct long and short portfolios following the buy and sell trades of insiders in that quintile in that month. For example, the Quintile 5 long portfolio consists of all stocks with at least one buy by any insider in quintile 5 during the month. If an insider makes multiple trades in the same month, we aggregate the trades and classify them as a buy (sell) trade if the number of shares bought is greater (less) than the number of shares sold by the insider during the month. Stocks are held in the portfolios for one month and the portfolios are rebalanced at the end of each month based on new insider trades. We exclude stocks with price below \$5 at the time of portfolio formation and limit the analysis to common stocks listed on NYSE, NYSE MKT, and NASDAQ with insider trades. We report returns and alphas of both equal-weighted and value-weighted portfolios. We obtain factor returns from Ken French's website. Panel A reports results for long/short portfolios and Panel B reports results of long and short legs separately. In Panel B, we combine trades by insiders in the bottom 3 quintiles (labeled Quintile 1-3). *t*-statistics are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

Panel A						
RANK	Equal-weighted			Value-weighted		
	L/S Return	3-factor Alpha	4-factor Alpha	L/S Return	3-factor Alpha	4-factor Alpha
Quintile 1	0.68*** (2.76)	0.66*** (2.85)	0.83*** (3.60)	0.27 (0.89)	0.00 (0.00)	0.18 (0.68)
Quintile 2	0.81*** (4.38)	0.71*** (4.27)	0.85*** (5.39)	0.52** (2.02)	0.28 (1.09)	0.46* (1.84)
Quintile 3	0.83*** (5.02)	0.80*** (4.89)	0.96*** (5.62)	0.22 (0.83)	0.06 (0.22)	0.28 (1.09)
Quintile 4	1.02*** (5.68)	0.98*** (5.66)	1.15*** (6.71)	0.56** (2.12)	0.39 (1.48)	0.56** (2.09)
Quintile 5	1.47*** (6.15)	1.40*** (6.02)	1.59*** (6.88)	1.33*** (3.94)	1.03*** (3.26)	1.12*** (3.38)
Quintile 5 – Quintile 1	0.80*** (3.14)	0.74*** (2.75)	0.75*** (2.66)	1.06*** (2.78)	1.03*** (2.71)	0.94** (2.39)
All Insiders	0.74*** (5.88)	0.73*** (7.21)	0.88*** (9.69)	0.48*** (3.70)	0.37*** (3.09)	0.50*** (4.20)

Panel B

Equal-weighted

	L/S			Long			Short		
	Excess Return	3-factor Alpha	4-factor Alpha	Excess Return	3-factor Alpha	4-factor Alpha	Excess Return	3-factor Alpha	4-factor Alpha
Quintile 1-3	0.75*** (4.99)	0.71*** (5.27)	0.85*** (6.44)	1.49*** (5.55)	0.73*** (6.52)	0.81*** (7.59)	0.74** (2.56)	0.02 (0.21)	-0.04 (-0.47)
Quintile 4	1.02*** (5.68)	0.98*** (5.66)	1.15*** (6.71)	1.70*** (5.97)	0.95*** (6.56)	1.03*** (7.23)	0.68** (2.37)	-0.03 (-0.25)	-0.11 (-1.06)
Quintile 5	1.47*** (6.15)	1.40*** (6.02)	1.59*** (6.88)	1.96*** (5.84)	1.12*** (6.30)	1.24*** (7.16)	0.49 (1.42)	-0.28** (-2.24)	-0.34*** (-2.62)
Quintile 5 – Quintile 1-3	0.72*** (3.74)	0.69*** (3.39)	0.73*** (3.44)	0.47*** (2.96)	0.39** (2.53)	0.43*** (2.63)	-0.25** (-2.04)	0.30*** (-2.60)	-0.30** (-2.51)
All Insiders	0.74*** (5.88)	0.73*** (7.21)	0.88*** (9.69)	1.48*** (5.64)	0.74*** (8.07)	0.84*** (10.08)	0.74*** (2.49)	0.01 (0.12)	-0.03 (-0.64)

Value-weighted

	L/S			Long			Short		
	Excess Return	3-factor Alpha	4-factor Alpha	Excess Return	3-factor Alpha	4-factor Alpha	Excess Return	3-factor Alpha	4-factor Alpha
Quintile 1-3	0.24 (1.20)	0.08 (0.44)	0.22 (1.35)	0.79*** (2.78)	0.07 (0.44)	0.12 (0.82)	0.55** (2.06)	-0.01 (-0.15)	-0.10 (-1.06)
Quintile 4	0.56** (2.12)	0.39 (1.48)	0.56*** (2.09)	1.05*** (3.23)	0.30 (1.30)	0.39* (1.65)	0.48* (1.76)	-0.09 (-0.67)	-0.17 (-1.20)
Quintile 5	1.33*** (3.94)	1.03*** (3.26)	1.12*** (3.38)	1.51*** (3.64)	0.58** (2.07)	0.59** (2.00)	0.18 (0.55)	-0.45** (-2.50)	-0.53*** (-2.99)
Quintile 5 – Quintile 1-3	1.09*** (3.76)	0.94*** (2.86)	0.90*** (2.61)	0.72** (2.37)	0.51* (1.70)	0.47* (1.65)	-0.37** (-2.16)	-0.44** (-2.51)	-0.43** (-2.52)
All Insiders	0.48*** (3.70)	0.37*** (3.09)	0.50*** (4.20)	1.03*** (3.90)	0.34*** (3.39)	0.40*** (4.03)	0.55** (2.16)	-0.03 (-0.53)	-0.10 (-1.57)

Table 3: Fama-MacBeth Regressions

This table reports the results of Fama-MacBeth cross-sectional regressions of returns on buy and sell indicators of insider trades, over the January 1989 through June 2014 sample period. Each year, insiders are ranked into quintiles as described in Table 1. The dependent variable is future one-month return. In the first three regressions, Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the prior month by any Ranked Insider. Quintile 5 Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the prior month by an insider in quintile 5. If an insider makes multiple trades in the same month, we aggregate the trades and classify them as a buy (sell) trade if the number of shares bought is greater (less) than the number of shares sold by the insider during the month. In Column 4, we compare Quintile 5 insiders' trades with the trades of insiders without pre-QEA trades prior to the ranking year. We include trades by unranked insiders and Quintile 5 insiders, but not insiders who rank in Quintiles 1-4. Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the prior month by a Quintile 5 insider or an unranked insider. In Column 5, we include trades by all insiders; Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the prior month by *any* insider. Book-to-Market and Size are the natural logarithms of the book-to-market ratio and market value of equity. Ret (t-1) (Ret (t-12,t-2)) is the return of the stock in the past month (past 11 months excluding the most recent month). We discard negative book value firms and winsorize book-to-market ratios at 1% and 99% levels. The universe is all CRSP common stocks listed on NYSE, NYSE MKT, and NASDAQ with price above \$5 at the end of previous month. *t*-statistics are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

	(1)	(2)	(3)	(4)	(5)
Quintile 5 Buy		1.25*** (8.04)	0.58*** (3.53)	0.52*** (3.30)	0.56*** (3.55)
Quintile 5 Sell		-0.32*** (-2.88)	-0.28** (-2.44)	-0.24** (-2.16)	-0.26** (-2.42)
Buy	0.80*** (10.35)		0.69*** (8.43)	0.78*** (11.08)	0.76*** (11.81)
Sell	-0.11* (-1.94)		-0.05 (-0.82)	-0.10* (-1.92)	-0.08* (-1.74)
Book-to-Market	0.20** (2.11)	0.20** (2.14)	0.20** (2.11)	0.19** (2.03)	0.19** (2.01)
Ret (t-1)	-1.51*** (-3.16)	-1.52*** (-3.17)	-1.51*** (-3.15)	-1.49*** (-3.12)	-1.49*** (-3.12)
Ret (t-12,t-2)	0.51*** (3.19)	0.51*** (3.18)	0.51*** (3.20)	0.51*** (3.20)	0.52*** (3.22)
Size	0.02 (0.59)	0.02 (0.58)	0.02 (0.60)	0.02 (0.67)	0.02 (0.66)
Avg. # of Obs. Per Month	3,442	3,442	3,442	3,442	3,442

Table 4: Comparison with Routine and Non-Routine Insider Trading

This table compares the performance of our insider classification with the routine and non-routine insider classification Cohen, Malloy, and Pomorski (2012) (CMP). Each year, insiders who make at least one trade in each of the preceding 3 years are classified as routine or non-routine using the methodology of CMP. Insiders who trade in the same month in each of the 3 years are classified as routine. The rest of the insiders are classified as non-routine. Once an insider becomes routine, the insider is classified as routine for all of the insider's subsequent trades, regardless of the trading behavior after the initial 3 year classification period. A non-routine insider, on the other hand, can become routine at any point in the future if the insider trades in the same month for 3 consecutive years (Exhibit A1, CMP). The dependent variable in the regressions is future one-month return. Routine Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the prior month by a routine insider. Non-Routine Buy and Sell indicators are defined similarly for non-routine insiders. Quintile 5 Buy/Sell indicators are as defined in Table 3. Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the prior month by any insider. The Fama-MacBeth regressions include all CRSP common stocks listed on NYSE, NYSE MKT, and NASDAQ. Regressions in the first 2 columns include low-priced stocks (<\$5) and the regressions in the last column exclude low-priced stocks. We include, but do not report coefficients of, controls for book-to-market, size, and past year and past month returns as described in Table 3. *t*-statistics and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

	(1)	(2)	(3)
Quintile 5 Buy		0.51*** (3.07)	0.55*** (3.52)
Quintile 5 Sell		-0.23** (-2.01)	-0.25** (-2.37)
Buy		1.03*** (13.74)	0.80*** (12.52)
Sell		-0.02 (-0.28)	-0.09* (-1.69)
Non-Routine Buy	0.98*** (7.34)	0.03 (0.29)	-0.03 (-0.24)
Non-Routine Sell	0.08 (0.98)	0.09 (1.26)	-0.06 (-0.79)
Routine Buy	0.46*** (3.68)	-0.45*** (-3.78)	-0.27** (-2.31)
Routine Sell	0.21** (2.28)	0.24*** (2.75)	0.12 (1.27)
Avg. # of Obs. Per Month	4,672	4,672	3,442

Table 5: Robustness Tests

This table provides robustness tests. Each year, insiders are ranked into quintiles as described in Table 1. In the Fama-MacBeth regressions in Panel A, the dependent variable is future one-month return. Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the preceding month by any Insider. Quintile 5 Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the preceding month by an insider in quintile 5. In Columns 1 and 2, we rank insiders into quintiles based on the profitability of their pre-QEA buy trades only. In Columns 3 and 4, we rank insiders into quintiles based on the profitability of their pre-QEA sell trades only. In Columns 5 and 6, we include pre-QEA trades below \$5,000 when computing the ranking. In Columns 7 and 8, we include two controls for earnings momentum; SUE and earnings announcement CAR. SUE is calculated as the most recent quarterly EPS minus the EPS four quarters ago, divided by the standard deviation earnings innovations over the past 8 quarters. Earnings announcement CAR is the average market adjusted return in the 5-day window centered at the most recent quarterly earnings announcement date. For brevity, we do not report the coefficients of these variables. In Columns 9–12, we repeat the tests in Table 3 for large and small stocks separately. Large (Small) stocks are defined as stocks with market capitalization above (below) the NYSE median market capitalization. In Columns 13 and 14, we examine the trades in “overlap” stocks only. We find the stocks (“overlap” stocks) that are traded by both insiders in quintile 5 and by at least one insider who is not in Quintile 5 in that year. Quintile 5 Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given overlap stock in the prior month by an insider in Quintile 5. Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given overlap stock in the prior month by any insider who is not in Quintile 5. Stocks with price below \$5 at the end of preceding month are excluded from the regressions. We include, but do not report coefficients of, controls for book-to-market, size, and past year and past month returns in all of the regressions, as described in Table 3. *t*-statistics are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively. In Panel B, we examine the difference in average monthly returns of stocks bought (sold) by quintile 5 insiders and also bought (sold) by at least one insider who is not in quintile 5 in the same year. For the overlap buy (sell) trades of stock *i* in year *t*, we calculate the average one-month ahead abnormal return of the buy (sell) trades of stock *i* in year *t* by quintile 5 insiders and the average one-month ahead abnormal return of the buy (sell) trades of stock *i* in year *t* by insiders who are not in quintile 5. Returns associated with multiple buy (sell) trades in the same month by insiders in the same group are averaged, and treated as one buy (sell) trade. In the regression in Panel B, for each overlap buy (sell) stock in year *t*, there are two average one-month ahead return observations—one for quintile 5 insiders and one for insiders who are not in quintile 5. The dependent variable is abnormal average one-month ahead return; the independent variable is a dummy variable which takes a value of 1 for quintile 5 insiders’ observations, and zero otherwise. The abnormal return of a stock is calculated as the return of the stock minus the return on a size, book-to-market, and past one year return matched portfolio (Daniel et al. 1997). *t*-statistics, based on standard errors clustered by firm, are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

Panel A

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Rank Based on Buy Trades	Rank Based on Buy Trades	Rank Based on Sell Trades	Rank Based on Sell Trades	Include Small Trades in Ranking	Include Small Trades in Ranking	Control for Earnings Surprise	Control for Earnings Surprise	Large Stocks	Large Stocks	Small Stocks	Small Stocks	Same Set of Stocks	Same Set of Stocks
Quintile 5 Buy	1.41*** (7.30)	0.72*** (3.73)	1.33*** (3.41)	0.61* (1.69)	1.28*** (8.22)	0.60*** (3.79)	1.20*** (7.20)	0.53*** (3.13)	1.06*** (4.30)	0.71*** (2.85)	1.33*** (6.99)	0.51*** (2.65)	1.34*** (8.36)	0.45** (2.49)
Quintile 5 Sell	-0.34** (-2.29)	-0.28** (-1.97)	-0.31*** (-2.76)	-0.24** (-2.26)	-0.33*** (-3.01)	-0.28*** (-2.61)	-0.46*** (-4.04)	-0.31*** (-2.80)	-0.35** (-2.45)	-0.29** (-2.10)	-0.34** (-2.42)	-0.29** (-2.01)	-0.29** (-2.55)	-0.59*** (-4.72)
Buy		0.76*** (12.09)		0.79*** (12.30)		0.75*** (11.62)		0.74*** (11.51)		0.36*** (5.13)		0.89*** (12.23)		0.87*** (7.89)
Sell		-0.09** (-2.01)		-0.09* (-1.91)		-0.08* (-1.65)		-0.19*** (-3.05)		-0.09* (-1.80)		-0.07* (-1.14)		0.26*** (3.17)
Avg. # of Obs. Per Month	3,442	3,442	3,442	3,442	3,442	3,442	2,807	2,807	942	942	2,500	2,500	3,442	3,442

Panel B

	(1)	(2)
	Overlap Buy Trades	Overlap Sell Trades
Quintile 5 Dummy	0.24** (2.34)	-0.43*** (-3.77)
# of Observations	8,972	21,526

Table 6: Extensions

Each year, insiders are ranked into quintiles as described in Table 1. In the Fama-MacBeth regressions the dependent variable is future one-month return. Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the preceding month by any Insider. In Column 1, at the beginning of each year, we rank quintile 5 insiders into two groups (“Recent” and “Distant”) based on the time since they were first ranked as quintile 5 insiders. Recent Quintile 5 insiders are quintile 5 insiders who recently made a highly profitable pre-QEA trade and Distant Quintile 5 insiders are quintile 5 insiders who made a highly profitable pre-QEA trade some time ago. Recent Quintile 5 Buy (Sell) is an indicator variable equal to 1 if there were any buys (sells) on a given firm in the preceding month by a Recent quintile 5 insider. Distant Quintile 5 Buy and Sell indicators are defined similarly. In Column 2, we divide quintile 5 insiders into two groups – those who made only one pre-QEA trade in the past and those who made more than one pre-QEA trade in the past – and construct Quintile 5 Buy and Sell indicators for these subgroups. Stocks with price below \$5 at the end of preceding month are excluded from the regressions. We include, but do not report coefficients of, controls for book-to-market, size, and past year and past month returns in all of the regressions, as described in Table 3. *t*-statistics are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

	(1)	(2)
Distant Quintile 5 Buy	0.75*** (3.34)	
Distant Quintile 5 Sell	-0.36** (-2.42)	
Recent Quintile 5 Buy	0.47* (1.85)	
Recent Quintile 5 Sell	-0.15 (-1.00)	
>1 pre-QEA Quintile 5 Buy		0.70*** (2.85)
>1 pre-QEA Quintile 5 Sell		-0.29* (-1.66)
1 pre-QEA Quintile 5 Buy		0.49*** (2.60)
1 pre-QEA Quintile 5 Sell		-0.33*** (-2.62)
Buy	0.76*** (11.88)	0.76*** (11.82)
Sell	0.08* (-1.74)	-0.08 (-1.62)
Avg. # of Obs. Per Month	3,442	3,444

Table 7: Earnings Management and Financial Misreporting

This table reports the results of panel regressions examining the relationship between our opportunistic insider measure and various proxies for earnings management or other forms of financial misreporting. Columns 1-3 report results of logit regressions; Column 4 report the results of a linear regression. In the first column, the dependent variable is an indicator variable which takes a value of 1 if the firm restates (at some point in the future) its financial statements for a fiscal period ending in that year, and zero otherwise. In Column 2, the dependent variable is an indicator variable which takes a value of 1 if the firm is the subject of enforcement actions by the SEC (according to SEC *Accounting and Auditing Enforcement Releases* (AAERs)) for alleged accounting and/or auditing misconduct for a fiscal period ending in that year, and zero otherwise. In column 3, the dependent variable is an indicator variable which takes a value of 1 if the shareholders sued the firm over alleged accounting improprieties for a fiscal period starting in that year, and zero otherwise. In column 4, the dependent variable is the absolute value of discretionary accruals estimated from modified Jones model (Dechow, Sloan and Sweeney 1995). Fraction of Q5 insiders is defined as the ratio of number of quintile 5 insiders who made at least one trade in the last three years to the number of all insiders who made at least one trade in the last three years. Fraction of pre-QEA insiders is defined as the ratio of number of ranked insiders who made at least one trade in the last three years to the number of all insiders who made at least one trade in the last three years. Following Beneish, Lee, and Nichols (2013), we exclude firms with market capitalization below \$50 million and firms with sales or assets below \$0.1 million. Book-to-market (Size) is the log of book-to-market ratio (market value of equity) measured at the end of previous year. Leverage is the ratio of long-term debt to total assets. Profitability is income before extraordinary items divided by lagged equity. Volatility of profitability is the standard deviation of the profitability measure over the past five fiscal years. Aggregate Insider Trading is the average dollar value of insider trades in the firm over the past 3 years divided by the market value of equity at the end of previous year. Pre-QEA Trading is the past 3 year average of the ratio of the dollar value of pre-QEA trades during the year to the dollar value of all insider trades during the year. Loss indicator is an indicator variable equal to 1 if the firm's income before extraordinary items was negative in either of last two fiscal years, and zero otherwise. Big 4 is an indicator variable equal to 1 if the firm's last financial statements were audited by a big 4 accounting firm, and zero otherwise. Governance Index is the Gompers, Ishii, and Metrick (2003) index of the firm's corporate governance. To avoid loss of data, we set missing values of the index equal to the cross-sectional mean of the Governance Index. Firm Age is $\log(1 + \# \text{ of years since the firm first appeared in CRSP})$. Analyst coverage is $\log(1 + \# \text{ of analysts issuing earnings estimates for the firm})$. All continuous variables are winsorized at 1% and 99% levels. Year and industry (Fama and French 12 industry grouping) fixed effects are included in all regressions. z-values (columns 1-6) and t-statistics (columns 7-8), based on standard errors clustered by firm, are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

	(1)	(2)	(3)	(4)
	Restatement Indicator	SEC AAER Indicator	Lawsuit Indicator	Disc. Accruals
Fraction Q5	0.321**	1.412**	1.11***	0.008**
Insiders	(2.07)	(2.49)	(2.64)	(2.39)
Fraction pre-QEA	0.038	-0.297	-0.117	-0.000
Insiders	(0.35)	(-0.80)	(-0.46)	(-0.15)
Aggregate	-0.234	-0.793	-0.362	0.022***
Insider Trading	(-0.40)	(-0.54)	(-0.28)	(2.01)
Pre-QEA	0.001	-0.003	0.002	-0.000
Trading	(0.89)	(-0.85)	(0.71)	(-0.18)
Book-to-	0.234***	0.135	-0.093	-0.010***
Market	(5.72)	(1.00)	(-1.09)	(-14.10)
Size	-0.008	0.284***	0.462***	-0.005***
	(-0.31)	(3.19)	(7.14)	(-11.86)
Leverage	0.607***	1.057***	0.520**	-0.025***
	(4.71)	(2.66)	(2.15)	(-12.18)
Profitability	-0.172	-0.109	-0.108	-0.015***
	(-1.55)	(-0.40)	(-0.46)	(-6.61)
Volatility of	0.236***	0.189	0.311**	0.017***
Profitability	(3.69)	(0.81)	(2.28)	(9.96)
Loss Indicator	0.322***	-0.035	0.062	0.011***
	(4.98)	(-0.17)	(0.43)	(10.63)
Big 4	0.117	0.047	-0.019	-0.002**
	(1.64)	(0.20)	(-0.13)	(-2.07)
Governance	-0.040***	0.003	-0.003	0.000
Index	(-2.89)	(0.08)	(-0.12)	(0.29)
Firm Age	0.011	-0.343***	-0.230***	-0.004***
	(0.29)	(-3.05)	(-3.27)	(-6.65)
Analyst	-0.012	0.294*	0.093	-0.000
Coverage	(-0.28)	(1.92)	(0.94)	(-0.56)
# of Observations	38,652	27,596	34,305	39,971
Fixed Effect	Year/Industry	Year/Industry	Year/Industry	Year/Industry

Table 8: Options Backdating

This table reports the results of logit regressions examining the relationship between our opportunistic insider measure and the likelihood of options backdating. Following the methodology of Bebchuk, Grinstein, and Peyer (2009), we identify an at-the-money grant as 'lucky' if it was awarded on a day when the stock price was at the lowest level during the month. The dependent variable is an indicator variable which takes a value of 1 if either the CEO or CFO was awarded at least one lucky grant during the year, and zero otherwise. Fraction of Q5 insiders is defined as the ratio of number of quintile 5 insiders who made at least one trade in the last three years to the number of all insiders who made at least one trade in the last three years. Fraction of pre-QEA insiders is defined as the ratio of number of ranked insiders who made at least one trade in the last three years to the number of all insiders who made at least one trade in the last three years. Book-to-market (Size) is the log of book-to-market ratio (market value of equity) measured at the end of previous year. Past year return is the market adjusted return of the stock during the previous year. Return volatility is the standard deviation of monthly returns over the past 2 years. Profitability is income before extraordinary items divided by lagged equity. Aggregate Insider Trading is the average dollar value of insider trades in the firm over the past 3 years divided by market value of equity at the end of previous year. Pre-QEA Trading is the past 3 year average of the ratio of the dollar value of pre-QEA trades during the year to the dollar value of all insider trades during the year. Governance Index is the Gompers, Ishii, and Metrick (2003) index of the firm's corporate governance. To avoid loss of data, we set missing values of the index equal to the cross-sectional mean of the Governance Index. Firm Age is log (1 + # of years since the firm first appeared in CRSP). Analyst coverage is log (1 + # of analysts issuing earnings estimates for the firm). New Economy Dummy takes a value of 1 for high-tech firms (SIC codes 3570, 3571, 3572, 3576, 3577, 3661, 3674, 4812, 4813, 5045, 5961, 7370, 7371, 7372, 7373), and zero otherwise. All continuous variables constructed from COMPUSTAT and Execucomp data are winsorized at 1% and 99% levels. Year and industry (Fama and French 12-industry grouping) fixed effects are included in all regressions. Pre-SOX (Post-SOX) is the period from January 1996 to August 28, 2002 (August 29, 2002 to October 2014). z-values, based on standard errors clustered by firm, are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

	(1)	(2)
	Lucky Grant Indicator	Lucky Grant Indicator
Fraction Q5 Insiders	0.320* (1.71)	0.092 (0.35)
Fraction pre-QEA Insiders	0.371** (2.47)	0.121 (0.80)
Aggregate Insider Trading	0.433 (1.14)	-0.563 (-0.98)
Pre-QEA Trading	-0.000 (-0.17)	-0.001 (-0.77)
Book-to-Market	0.034 (0.67)	-0.023 (-0.42)
Size	-0.006 (-0.15)	0.011 (0.29)
Past year return	-0.019 (-0.59)	-0.014 (-0.44)
Return Volatility	1.417*** (3.86)	1.054*** (2.64)
Profitability	0.098 (0.91)	-0.157 (-1.42)
Governance Index	-0.068*** (-3.13)	-0.029 (-1.49)
Firm Age	-0.267*** (-5.32)	-0.158*** (-3.06)
Analyst Coverage	0.079 (1.20)	0.020 (0.30)
New Economy Dummy	0.152 (1.13)	0.230* (1.83)
# of Observations	15,423	21,010
Fixed Effect	Year/Industry	Year/Industry

Table 9: Executive Compensation

This table reports the results of panel regressions examining the relationship between our opportunistic insider measure and executive compensation. In the first column, the dependent variable is the log of CEO compensation. In the second column, the dependent variable is the log compensation of top 5 executives of the firm. Compensation data are from Execucomp and compensation is defined as the sum of salary and bonus, total value of restricted stock granted, total value (using Black-Scholes model) of stock options granted, long-term incentive payouts, and all other total compensation. Fraction of Q5 insiders is defined as the ratio of number of quintile 5 insiders who made at least one trade in the last three years to the number of all insiders who made at least one trade in the last three years. Fraction of pre-QEA insiders is defined as the ratio of number of ranked insiders who made at least one trade in the last three years to the number of all insiders who made at least one trade in the last three years. Book-to-market (Size) is the log of book-to-market ratio (market value of equity) measured at the end of previous year. Past year return is the market adjusted return of the stock during the firm's fiscal year. Return volatility is the standard deviation of monthly returns over the past 2 years. Profitability is income before extraordinary items (during the current fiscal year) divided by lagged equity. Aggregate Insider Trading is the average dollar value of insider trades in the firm over the past 3 years divided by market value of equity at the end of previous year. Pre-QEA Trading is the past 3 year average of the ratio of the dollar value of pre-QEA trades during the year to the dollar value of all insider trades during the year. CEO tenure is log (CEO tenure). Governance Index is the Gompers, Ishii, and Metrick (2003) index of the firm's corporate governance. To avoid loss of data, we set missing values of the index equal to the cross-sectional mean of the Governance Index. Firm Age is log (1 + # of years since the firm first appeared in CRSP). All continuous variables constructed from COMPUSTAT and Execucomp data are winsorized at 1% and 99% levels. Year and industry (Fama and French 12 industry grouping) fixed effects are included in all regressions. *t*-statistics, based on standard errors clustered by firm, are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

	(1)	(2)
	Log (CEO Compensation)	Log (top 5 Executives' Compensation)
Fraction Q5 Insiders	0.0191** (2.39)	0.125** (2.02)
Fraction pre-QEA Insiders	-0.028 (-0.57)	-0.015 (-0.39)
Aggregate Insider Trading	0.684*** (2.85)	0.957*** (5.01)
Pre-QEA Trading	-0.000 (-0.20)	-0.000 (-0.72)
Book-to-Market	0.172*** (9.00)	0.152*** (9.80)
Size	0.472*** (36.85)	0.476*** (52.46)
Past year return	0.130*** (7.86)	0.110*** (7.17)
Return Volatility	1.456*** (7.60)	1.618*** (8.54)
Profitability	0.162*** (4.25)	0.072** (2.36)
CEO Tenure	-0.021 (-1.53)	-0.021** (-2.03)
Governance Index	0.027*** (5.56)	0.014*** (3.53)
Firm Age	-0.008 (-0.53)	-0.027** (-2.42)
# of Observations	26,533	26,533
Fixed Effect	Year/Industry	Year/Industry