Opportunism as a firm and managerial trait:

Predicting insider trading profits and misconduct[Δ]

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Abstract

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 or managerial misconduct. A value-weighted trading strategy based on (not necessarily pre-QEA) trades of opportunistic insiders earns monthly four-factor alphas of over 1%, which is much higher than in past insider trading literature and substantial and significant even on the short side. Firms with opportunistic insiders have higher levels of earnings management, restatements, US Securities and Exchange Commission enforcement actions, shareholder litigation, 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 good news and sell before bad news becomes public. However, they are subject to scrutiny by regulators, as well as 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 extracting the information content of insider trades difficult, for both outside investors and regulators. A natural measure of whether an insider is opportunistic is the performance of the insider's past trades. However, past profitability is a noisy indicator of opportunism, as some motives for trading are innocent and noise exists 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. As a consequence, determining what horizon over which to measure past profitability is not obvious. 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, some indications are that insiders do exploit private information. Past research finds that insider purchases positively predict subsequent abnormal returns. However, effects are much harder to identify for insider sales, presumably because such sales are often performed for noninformational 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 and buying can be identified, future researchers will be able to identify adverse and favorable private information signals.

Second, opportunistic trading can provide insight into other aspects of firm and manager opportunism. For example, we address the question: Is opportunism domain-specific, so that opportunistic insider trading by an executive says little about how the manager will behave in other contexts, or is it 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 can 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 can also identify opportunistic firms. Furthermore, 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 and selling before bad news is revealed. Quarterly earnings announcements (QEAs) offer 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. We measure the profitability by the returns earned by these trades during the five-day window centered at the QEA date.

Our purpose in focusing on pre-QEA trading and this five-day window for profit (as compared, e.g., with a window that starts the day of the insider trade) is to exploit the very well defined trading horizon for profit to sharply identify the use of inside information. A longer window could capture more of the insider's profits but would certainly contain considerably more noise (just as inferences in long window event studies are harder because of greater noise). Nevertheless, we also confirm the robustness of our main conclusions with respect to other measurement horizons. In addition to increasing power, focusing on pre-QEA trades has the advantage that an all-past-trade measure would capture non-opportunistic ways in which insiders could profit from their trades.[1]

We recognize that enforcement authorities can scrutinize trades during the pre-QEA period especially heavily.[2] Given the risk of scrutiny, we expect opportunistic pre-QEA trading most often when the inside information is 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 is especially effective at identifying opportunism. No reason exists to think that pre-QEA trades in general, without conditioning on profitability, are opportunistic or especially well informed. Some insiders make such trades, even during blackout periods, with the firm's permission, for liquidity or other noninformational reasons.

We therefore hypothesize that insiders who make high profits on their pre-QEA trades are opportunistic.[3] Based on this, we test whether such insiders subsequently trade opportunistically using their private information. Such future opportunistic trades can occur either within or outside of pre-QEA windows. Because pre-QEA trades are far less common than other trades, almost all of the performance effects that we find come from subsequent non-pre-

[1] Suppose that insiders tend to trade against mispricing in the sense of semi-strong market inefficiency, not just mispricing relative to their private information. For example, evidence shows that chief executive officers (CEOs) sell shares after their firms have high discretionary accruals, suggesting that CEOs exploit the accrual anomaly (Bergstresser and Philippon, 2006). Evidence also exists that insiders buy when their firms become value stocks and sell when their stocks become growth stocks. Then, with a measure based on all past trades, some managers are classified as opportunistic on the basis of exploiting anomalies, not exploiting private information, because controlling for all possible anomalies is hard when measuring abnormal performance of an insider trade. Similarly, insiders who are skillful at processing publicly available information would be measured as opportunistic even if they are not exploiting inside information.

[2] 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).

[3] 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 that is not 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 that our paper answers in the affirmative.

QEA trades.[4] Our measure therefore identifies a general tendency of the insider to trade profitably, not a mere tendency to trade profitably pre-QEA.

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

In our 1986–2014 sample, opportunistic insiders earn higher returns on their future trades. We consider long-short strategies that buy after an insider buys and short after an 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 four-factor alpha of 0.18% per month, and the same strategy constructed using trades of opportunistic insiders (top quintile) generates an 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, that is, buys strongly positively predict future performance. However, in contrast with most previous work, the effect is substantial and significant even on the short side. Stocks sold by opportunistic insiders have four-factor alphas of −34 basis points per month (equal weighted) or −53 basis points per month (value weighted), both significant at the 1% level. No return predictability emerges 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

[4] 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, enough such trading exists to generate a large sample size and strong evidence shows the differing traits of different pre-QEA-trading insiders.

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 with 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 find are robust to controlling for the opportunistic trading measure of Cohen, Malloy, and Pomorski (2012; hereafter, CMP). 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 nonroutineness measure. After controlling for general insider trades and our measure of opportunistic trades, the nonroutine trading measure does not predict returns.

Furthermore, in contrast with the nonroutineness 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, and the nonroutine 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, and the effect of the nonroutineness index is again insignificant and close to zero.[5]

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 we verify that the effects are robust to controlling for such drift.

[5] 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 Subsection 4.3.

Our approach could seem surprising because 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 (Bettis, Coles, and Lemmon, 2000), and even firms that do often allow pre-QEA trading on a by-request basis. Furthermore, managers sometimes violate these blackout periods. Overall, in our 1986–2014 sample, trading prior to QEAs is 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 with blackout periods have insider trading in those periods.[6]

Our main result is that pre-QEA insider trading profitability predicts subsequent insider trading profitability. A possible objection is that our opportunism proxy is capturing superior ability to process publicly available information that is not reflected in market prices, instead of an inherently opportunistic managerial trait. If such skill is persistent, it can explain the positive relation between past and future performance that we find. To verify that our measure is 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.[7]

Research in criminology, psychology, and economics, discussed in Section 2, suggests that some managers can 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 relation between our opportunism measure and various measures of firm-level opportunism: restatements, US Securities and Exchange Commission (SEC) enforcement actions, shareholder litigation, earnings management, options backdating, and

[6] Bettis, Coles, and Lemmon (2000) also find that on average blackout period trades are less profitable during 1992–1997. Bettis, Coles, and Lemmon (2000) conjecture that blackout trades can be mostly “liquidity motivated” (p. 217). Jagolinzer, Larcker, and Taylor (2011) verify the results in Bettis, Coles, and Lemmon (2000) for the 1992–1997 time period but find that, in a sample including the more recent regulatory environment, trades during restricted periods 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 or on 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 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.

[7] We 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.

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 or auditing misconduct, or both. 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 (Healy, 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 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.

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 options backdating. We find a modest effect during the pre–Sarbanes-Oxley Act of 2002 (SOX) period. For regulatory reasons, only during this period was there a substantial potential benefit to backdating (Narayanan and Seyhun, 2005; 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 predicts 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 chief executive officer (CEO) compensation and the top-five 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. Our profitability-based methodology allows us to evaluate the opportunism of managers in a very broad sample of more than 14 thousand 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.

The remainder of the paper is organized as follows. Section 2 provides the background and describes the test hypotheses. Section 3 describes the data. Section 4 examines the relationship between pre-QEA profitability and the performance of future insider trades. Section 5 presents the results for firm and insider misconduct tests. Section 6 concludes.

2. Background, motivation, and hypotheses

This section covers the background and motivation for our approach and describes the test hypotheses.

2.1. Background and motivation

A large literature studies the ability of insider trades, when aggregated at firm level, to predict stock returns (see, e.g., Lorie and Niederhoffer, 1968; Jaffe, 1974; Seyhun, 1986; Rozeff and Zaman, 1988; Lin and Howe, 1990; Lakonishok and Lee, 2001; Marin and Olivier, 2008; and the review of Seyhun, 1998). 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) find that sells constituting a large fraction of the insider's holdings negatively predict returns. Jagolinzer (2009) 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 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. A few papers 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. Therefore, he controls for such changes. Nevertheless, he finds that insider trades do not predict future returns.

CMP identify opportunistic insider traders by stripping away routine traders, i.e., those whose trades tend to be predictable based upon past calendar patterns of trading. 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 nonroutineness measure in predicting returns (see Subsection 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. 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. Instead, 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) show that insider trading is associated with subsequent long-run abnormal performance after seasoned equity offerings. Evidence is mixed 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 insider 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, instead of 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 prespecify 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 (2016) finds that, after the terminations of analyst coverage, corporate insiders experience larger abnormal profits, consistent with exploitation of private information. Niessner (2015) concludes that managers strategically time the disclosure of good versus bad news to benefit their insider trading. Kelly (2014) shows 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 finds market inefficiencies, wherein the market tends to underweight information that requires statistical processing. For example, evidence exists 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 nonobvious processing.

Our paper builds on a recent literature examining 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 and cash flow sensitivities, bad acquisitions (Malmendier and Tate, 2005, 2008), and high research and development and patenting activity (Hirshleifer, Low, and Teoh, 2012). Cronqvist, Makhija, and Yonker (2012) find that corporate leverage is positively correlated with the CEO's personal leverage. Cain and McKeon (2016) 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.

Managerial life experiences affect firm financing and investment policies (Greenwood and Nagel, 2009; Malmendier, Tate, and Yan, 2011), and 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 (2016) 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.

A large previous literature examines various aspects of firm and manager misconduct. Many studies on firm and manager misbehavior focus on one kind of misconduct. Our purpose is to examine whether opportunism is a general trait that can be identified through insider trading profitability and 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 pro-social activity versus misconduct. Davidson, Dey, and Smith (2015) find that firms with CEOs and chief financial officers (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, 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, options 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.[8]

Another possible approach, based on experimental literature suggesting greater pro-social behavior by females than males, is to use gender as an opportunism proxy. A drawback is the predominance of males as financial executives in the data, which would prevent using a gender proxy for cross-sectional tests of the effects of opportunism. Other demographic variables such as wealth or education could be considered as opportunism proxies, but proxies based on actual managerial behaviors likely would be much stronger proxies for opportunism.

2.2. Hypotheses

The profitability of pre-QEA trades has the potential to identify opportunistic insider trading more sharply, by virtue of the strictly identified time period during which the insider's trade can generate or fail to generate profits.

H1. *Insiders who earn high profits on their pre-QEA trades will earn high profits on their subsequent (not necessarily pre-QEA) trades.*

[8] Our opportunism measure captures various kinds of opportunism, even for non-CEO executives, which contributes to our large sample size. 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.

The criminology literature lends support to the idea that some managers can be prone to domain-general opportunism. This literature suggests that specific personal traits cause a propensity to crime, such as low self-control and tendency to conform to social norms (Gottfredson and Hirschi, 1990). Blickle, Schlegel, Fassbender, and Klein (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 (bad apples exist). Similarly, Jones and Kavanagh (1996) show 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. We thus 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. A specific kind of violation (nonpayment of parking tickets) could be an indicator of individual adoption of cultural propensities toward more general forms of misconduct such as bribery or disrespect for rule of law.

Based on these considerations, we hypothesize that opportunism will tend to be manifested across diverse decision domains and, therefore, opportunistic insider trading can identify opportunism in other very different managerial activities.

H2. *Insiders identified as opportunistic through the profitability of their pre-QEA trades, and firms that employ such insiders, will also display opportunism in a variety of other decision domains, including financial reporting, options backdating, and managerial compensation. In consequence, they will also be subject to greater shareholder litigation.*

Frictions could reduce the extent to which a manager's trait of opportunism would carry across the diverse set of domains that we consider. For example, opportunistic insider trading could be done mainly by mid- or low-level employees who have little control over major corporate decisions, so that they are able to obtain opportunistic insider trading profits but do not influence corporate behaviors such as earnings management or compensation policy. The board or senior management could tolerate a degree of opportunistic insider trading at lower levels because of a poor monitoring system or a belief that such insider trading is acceptable so long as it is not so egregious as to attract the attention of regulators.

Even to the extent that opportunistic insider trading is by high-level managers, the profits from insider trading, and any sanctions for illegal insider trading, directly accrue to the particular manager, and the benefits to misleading financial reporting are indirect. These indirect benefits can accrue to multiple members of the management team and even to the firm's current shareholders in general, so an opportunistic insider could care little about such benefits. Also, in contrast to the lone wolf profits from insider trading, the benefits of high executive compensation require persuasion of the compensation committee. An insider who is unethical but not persuasive perhaps is not able to acquire high compensation. Whether or not these considerations result in greater effects of opportunism in one domain or the other depends on many other factors as well, such as the intensity of enforcement and punishment in the different domains.

To sum up, despite the arguments for domain-generality, a number of frictions could prevent it from occurring. It is therefore important to test H2 empirically.

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. These insiders include company officers, directors, and beneficial owners of more than 10% of the company's stock. The data set 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.[9] We merge the open-market transactions data with security-level data from the Center for Research in Security Prices (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-five executives' compensation data from ExecuComp. ExecuComp collects detailed information on salary, bonus, stock awards, and other compensation items, mainly for Standard & Poor's (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 shown 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 that insiders trade even during blackout periods. For example, some insiders violate their firms' trading restrictions. Furthermore, in some firms, managers can trade during a blackout period by obtaining permission in the form of a preclearance 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.

Firms could be careful to eliminate all possibility of opportunism before agreeing to such trades. Meanwhile, the insider can possess information that the approving parties within the firm do not have. Also, the approval process could be lax—a wink is as good as a nod. For all these reasons, whether profitable pre-QEA trading captures opportunism is an empirical question.

Fig. 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

[9] The SEC originally required that Form 4 be filed within ten days following the end of the transaction month. This deadline was changed to two days in 2002.

trades) shows a fairly clear declining trend over time, but no evident trend emerges in the fraction of dollar value of pre-QEA trades (close to 14% by the end of the sample period; pre-QEA dates account for about 34% of total available trading dates). Although concerns about regulatory scrutiny or firm-level restrictions clearly have a deterrent effect upon pre-QEA trading, the fraction of pre-QEA trades still represents a fairly significant fraction of total trades at the end of the period.

[Insert Fig.1 near here]

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.[10] We then calculate the profitability of each pre-QEA trade as the average market-adjusted return in the five-day window centered at the QEA date:

$$\textit{Profit} = \sum_{j=-2}^{j=2}(r_{i,t+j} - r_{m,t+j}) \; / \; 5, \tag{1}$$

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:

$$\textit{Average Profit} = (\sum^{B} Profit_{buy} - \sum^{S} Profit_{sell})/(B + S), \tag{2}$$

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.[11] We exclude pre-QEA (aggregate) trades of less than \$5,000 to focus on the more meaningful transactions.[12]

[10] We also examine pre-QEA trading windows of two, three, and four weeks. Results are qualitatively similar with shorter windows, but they are statistically weaker because fewer insiders have pre-QEA trades during these shorter windows.

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

[12] 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 6).

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. We require three 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 five quintiles based on past pre-QEA profitability.

[Insert Table 1 near here]

Panel A presents insider-level characteristics.[13] During the sample period, 33% of the insiders have at least one pre-QEA trade and 37% of buy and 41% of sell trades are made by these insiders.[14] 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, this trade provides very revealing information about future firm and insider behavior and performance.

Panel B of Table 1 describes firm-level characteristics and the mean and median values of the ranking variable (*Average Profit*). Quintile 5 insiders' past pre-QEA trades are highly profitable. On average, they earn more than 10% over the market during the five-day QEA window, and Quintile 1 insiders lose money on their past pre-QEA trades. Panel B also shows that firms with pre-QEA trades are larger and have lower book-to-market ratios compared with all firms in the Thomson Reuters universe. Firms in the extreme past profitability quintiles are somewhat smaller and more volatile than the rest. This is not surprising, as 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

[13] Because the ranking is updated each year, the same insider can belong to different quintiles in different years.
[14] We aggregate multiple trades made by the same insider on the same day into one trade.

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.

For our main tests, we employ the standard measure of earnings surprise (average abnormal return around the QEA date) used in the literature. [The Compustat QEA date can sometimes be off by a day or two for some firms (DellaVigna and Pollet, 2009), so we extend the window slightly to accurately measure the market reaction to earnings news for such firms.] However, prices typically drift in the direction of the earnings surprise during the weeks leading up to the QEA. Therefore, our focus on QEA window returns perhaps does not capture all of the private information that opportunistic insiders presumably trade on.

Unrelated news arrival between the trade date and the QEA can add noise to a measure that includes returns between the trade date and QEA date. For example, an opportunistic insider with strong favorable information about an upcoming earnings announcement could get unlucky, so that unrelated news about a lawsuit, an analyst downgrade, or an adverse event in the firm's industry would cause a low holding return. A longer return measurement period increases the variance of returns of non-opportunistic insiders derived from unrelated news arrival. This can reduce the signal-to-noise ratio, making it harder to identify the return deriving from opportunism. If the data set were large enough, this noise would not matter. But the median insider makes only one pre-QEA trade, so noise is an important consideration.

We verify that all of our main results still hold if we measure the profitability of pre-QEA trades as the cumulative abnormal return (CAR) measured from the trade date to two days after the QEA date. In fact, the return predictability becomes slightly stronger (see Subsection 4.3). For our main tests, we focus on the QEA window profitability measure, because empirically its performance is similar to the measure discussed above, it is easy to calculate, and it is widely used in finance and accounting literature focusing on earnings surprises.

4. Insider trades and subsequent return performance

We 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 insiders"), i.e., the portfolio formed based on the trades of all insiders, not just those who had at least one pre-QEA trade, and 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 first 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 insiders portfolio. It reports the returns and three- and four-factor alphas of both equal- 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 four-factor alpha of 1.59% per month ($p < 0.01$). The alphas decrease monotonically as quintile rank decreases to one. 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 ($p < 0.01$).

[Insert Table 2 near here]

The difference in performance is much more substantial for value-weighted portfolios. Only the alphas of top two quintiles are significant. The Quintile 5 portfolio generates a highly significant four-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 insiders portfolios. The All insiders 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 ten days following the end of the transaction month. The deadline was changed to two days in 2002. Most of the trades in our sample are reported to the SEC within a few days. The median difference between report date and transaction date is only three days. Nonetheless, we take a very conservative approach and form portfolios at the close of the tenth day in month $t + 1$ and hold them until the tenth day of month $t + 2$, where t is the month in which insider trade occurred. The Quintile 5 portfolio generates an equal-weighted four-factor alpha of 1.44% per month ($p < 0.01$) and a value-weighted four-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 that requires more extensive cognitive and statistical processing, as has been shown in other contexts as well.

Panel B of Table 2 shows that both long and short portfolios constructed from top quintile insiders' trades generate significant abnormal returns. This contrasts with most previous studies, which find that predictability is limited to the long side.

The Quintile 5 long portfolio generates an equal-weighted four-factor alpha of 1.24% per month and a value-weighted four-factor alpha of 0.59% per month (both significant), outperforming the Quintile 1 long portfolio alphas by 0.51% (equal weighted) and by 0.46% (value weighted). For value-weighted portfolios, only Quintile 5 alphas are significant and economically meaningful. The outperformance is even more striking on the short side. For the All insiders and Quintile 1–4 short portfolios, the alphas are all insignificant and close to zero. 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 the 1% level.

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

Fig. 2 plots the long-term performance (four-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 six months out, and Quintile 1-3 insider trading stops generating returns within about four months. The Quintile 5 alpha rises to a bit over 4% after six months, and the Quintile 1-3 alpha is only about 2%. For value-weighted portfolios, the four-factor alphas of opportunistic insiders rise for about four months and Quintile 5 outperformance increases to over 1% in the six-month period.

[Insert Fig. 2 near here]

It is also interesting to examine is whether ranking insiders based on profitability of all of their past trades identifies any differences in performance of their subsequent trades. A key problem with doing so is that, for a general insider trade, whether an opportunistic insider is expecting to earn high returns over a short or a long horizon, from days to many months, is not clear. This adds noise to the evaluation of whether an insider is trading opportunistically. In Table 3, we perform this analysis. For brevity, because we consider eight different strategies, we report only the four-factor alphas.

[Insert Table 3 near here]

Determining over which horizon to measure performance of past trades is not obvious. We therefore consider two profitability measures. Both use size- and book-to-market–adjusted cumulative abnormal returns. The first cumulates returns for one month (21 trading days) after the trade date; the second, for three months (63 trading days). We then rank insiders into quintiles based on average profitability of their past trades. Because insider purchases are more likely to be information driven than insider sales, we also rank insiders based on average profitability of their past buy trades only. We then construct long-short portfolios for each quintile using the subsequent trades of insiders in that quintile.

Table 3 shows that this all-trades classification method identifies only a hint of opportunism in Quintile 5 insiders' trades. For equal-weighted portfolios, a U-shaped relation exists between quintile rank and portfolio alphas. While the alphas of Quintile 5 portfolios are generally somewhat higher than those of Quintile 1 portfolios, the differences are not significant (*t*-statistics are generally less than 1). This conclusion holds for rankings based on both one-month and three-month profitability measures and also for rankings based on profitability of buy trades only. While Quintile 5 equal-weighted alphas are not that much smaller than the pre-QEA Quintile 5 alpha of 1.59%, this result does not hold for value-weighted portfolios. Only two of the value-weighted Quintile 5 portfolios generate statistically significant alphas (at the 5% significance level), and they are not statistically or economically larger than the alpha of the value-weighted All insiders portfolio of 0.5% per month. In contrast, the pre-QEA Quintile 5 value-weighted portfolio generates an alpha of 1.12%, which is statistically stronger and economically larger than the All insiders portfolio. In untabulated results, we also find that of the eight Quintile 5 portfolios shown in Table 3, only one generates a statistically significant alpha on the short side. So, the ability of the all-trades classification to identify opportunism seems to be limited solely to small stocks and insider buys.

Overall, these findings suggest that past profitability of pre-QEA trading is a very effective way of identifying opportunistic insiders in general and in comparison with measures based on past profitability of all insider trades, notably even for large stocks and for insider sells.

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 4, we run Fama-MacBeth regressions to measure this effect while controlling for other predictors.[15]

[Insert Table 4 near here]

[15] We replicate all of these results with pooled regressions that include month fixed effects with standard errors clustered by month or firm.

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 are size, book-to-market, past one-year return, and past one-month return. The variable *Buy* (*Sell*) is an indicator variable equal to one 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* (*Quintile 5 Sell*) is equal to one if there were any buys (sells) by any Quintile 5 insider in a given firm in the previous month and zero otherwise. In Columns 1–3 of Table 4, *Buy* and *Sell* are constructed using trades of insiders with at least one pre-QEA trade in the past.

Column 1 of Table 4 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 that 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 the *Buy* and *Sell* indicators with *Quintile 5 Buy* and *Quintile 5 Sell* indicators. The return predictability becomes considerably stronger. The coefficients on *Quintile 5 Buy* and *Quintile 5 Sell* indicate that opportunistic buys are followed by a much larger return, 125 basis points ($p < 0.01$), in the next month 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 the second regression 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 under-perform 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.[16]

Column 4 compares the performance of Quintile 5 insiders' trades with the trades of unranked insiders (insiders without any pre-QEA trades). *Buy* (*Sell*) is an indicator variable equal to one if there were any buys (sells) in the given firm in the preceding month by a Quintile 5 insider or an unranked insider. Opportunistic insiders' trades significantly 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 under-performance of an additional −24 basis points ($p < 0.05$).

The last column of Table 4 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 one if any insider in the Thomson Reuters database bought (sold) the stock in the prior month and zero otherwise. 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 under-performance 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 three-quarters of the ordinary insider buy return. On the short side, the calculation is not as meaningful because 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 3.25 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,

[16] We also perform tests with Quintile 4 and 5 *Buy* and *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.

Cohen, Malloy, and Pomorski (2012) focus on insiders whose trades are nonroutine in the sense that they are hard to predict based on seasonality in the past history of the insider's trading.

Table 5 compares our opportunism variable with that of CMP. Each year, insiders who make at least one trade in each of the preceding three years are classified as routine or nonroutine using the methodology of CMP. Insiders who trade in the same month in each of the three years are classified as routine. The rest of the insiders are classified as nonroutine. Table 5 describes this classification in more detail. (CMP also call insiders with seasonally unpredictable trades opportunistic. To avoid confusion, we call such insiders "nonroutine insiders" and we call insiders with seasonally predictable trades "routine insiders".)

[Insert Table 5 near here]

We again perform Fama-MacBeth regressions with different insider trading indicator variables, using the same control variables as in Table 4. For brevity, we do not report coefficients on the controls. *Routine Buy* (*Routine Sell*) is an indicator variable equal to one if there were any buys (sells) on a given firm in the prior month by a routine insider and zero otherwise. *Nonroutine Buy* and *Nonroutine Sell* indicators are defined similarly for nonroutine insiders. To maintain comparability with CMP, we include low-priced stocks in the first two columns of Table 5. Consistent with their results, Column 1 shows that nonroutine buys are more profitable than routine buys. However, nonroutine sells do not negatively predict subsequent returns.[17] This is consistent with the portfolio return evidence in CMP, which also shows no significant return predictability on the sell side.[18]

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 the first regression to

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[17] In tests that regress returns on *Nonroutine Buy*, *Nonroutine Sell*, *Routine Buy*, and *Routine Sell* indicators, CMP find significant coefficients on both *Nonroutine Buy* and *Nonroutine Sell*. However, the universe for these tests is limited to firm-months with at least one nonroutine or routine buy or sell. This constraint implies that the regression coefficients do not reflect any difference in future returns between having a nonroutine sell versus having neither a buy nor a sell. Because having both buys and sells in the same stock in the same month is relatively uncommon, such a differential is a crucial determinant of whether, in a general sample, nonroutine sells are a negative return predictor. So, nonroutine sells can have little or no ability to predict return in a general sample even when *Nonroutine Sell* has a negative coefficient within the restricted universe. This is the case. Nonroutine sells have no significant predictive power either in the CMP portfolio tests or in our Table 5.

[18] None of the three-, four-, and five-factor alphas is significantly different from zero for the equal- and value-weighted nonroutine sell portfolios shown in Table IV of CMP.

compare the performance of our opportunism measure with that of CMP. The results indicate that once we control for Quintile 5 trades and general trades, even the nonroutine *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 nonroutine buys by 48 basis points per month ($p < 0.05$) and Quintile 5 sells under-perform nonroutine sells by 32 basis points ($p < 0.05$).

Column 3 repeats the test in Column 2 except that stocks with price below $5 are excluded to ensure that the results are not contaminated by microcap illiquid securities. Consistent with the results in Column 2, Quintile 5 trades are strong incremental predictors of future return and nonroutine trades are not. Both the economic and statistical magnitudes of the nonroutine coefficients are close to zero.

In summary, while CMP develops a method that 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 nonroutine 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 nonroutine or routine insiders of CMP).

In untabulated results, we find similar outperformance of Quintile 5 insiders' trading over nonroutine insiders' trading in calendar-time portfolios. The difference between four-factor alphas of an equal-weighted long-short portfolio constructed from trades of Quintile 5 insiders and the same portfolio constructed from trades of nonroutine 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 6 (for brevity, we do not report the coefficients of control variables). We first consider concerns relating to the measurement of past profitability and then turn to possible differences in firm characteristics and omitted variable problems.

[Insert Table 6 near here]

4.3.1. Alternative measures of the profitability of pre-QEA trades

Our focus on QEA window returns perhaps does not capture all of the private information that insiders trade on. No strong prior exists about whether our short return window or a longer one is optimal, because there is a trade-off between capturing more of the trading profits versus minimizing extraneous noise. We next test whether our results are robust to an alternative measure of past profitability that includes returns from the trade date to the start of the QEA window.

For each pre-QEA trade, we measure its profitability as the cumulative abnormal return from the day after the trade date through two days after the QEA date. We then rank insiders into quintiles based on average past cumulative profitability. Columns 1 and 2 show that this measure performs slightly better. Quintile 5 buys generate an incremental return of 63 basis points per month, and Quintile 5 sells under-perform by an additional 30 basis points per month (both are a few basis points larger than the corresponding numbers in Column 5 of Table 4). In untabulated results, we find that the same result holds for our portfolio returns analysis. The equal-weighted (value-weighted) long-short portfolio constructed from trades of Quintile 5 insiders generates a four-factor alpha of 1.77% (1.12%) per month (both $p < 0.01$, and both larger than the corresponding figures in Panel A of Table 2).

A different possible profitability measurement issue is whether the results are driven solely by the buy or sell side profitability of pre-QEA trades. In Panel A, we perform the tests of Table 4 but rank insiders into quintiles based on profitability of their pre-QEA buy (Columns 3–4) or sell (Columns 5–6) 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 and the economic magnitudes of profitability of Quintile 5 insiders' trades are fairly similar for both measures. In Columns 7–8, we include pre-QEA trades below $5,000 when computing the ranking. The results are almost identical to those reported in Column 3 of Table 4.

4.3.2. Omitted variables and differences in firm characteristics

A reasonable alternative explanation of our results is that, because quarterly earnings surprises are positively autocorrelated, Quintile 5 insiders could simply be adept at trading based on recent earnings surprises. This could result in both high pre-QEA profitability and high profitability of future trading. To address this possibility, we control for two measures of earnings surprise in Fama-MacBeth regressions: the most recent standardized unexpected earnings (SUE) and earnings announcement CAR. If Quintile 5 insiders make money solely by trading on earnings surprises, both prior to their classification as opportunistic and subsequently, then these two controls will substantially reduce the predictive power of Quintile 5 indicators in our regressions.

Columns 9–10 in Table 6 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. The coefficient on *Quintile 5 Sell* becomes 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.

Our results also could be 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) show that insider profits are higher at firms with weak governance. The insiders we identify as opportunistic could be earning high trading profits merely by virtue of belonging to such firms.

An argument against these concerns is that 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 6 (Panel A, Columns 11–14) describes the tests of Table 4 performed separately among small and large market capitalization firms. Consistent with previous studies, we find that general insider buys are significantly more profitable for small stocks. The coefficient on the general *Buy* signal is 0.89% for small stocks and 0.36% for large stocks. However, size does not affect the incremental profitability of Quintile 5 trades. Among both sets of firms, Quintile 5 buys continue to significantly outperform and Quintile 5 sells significantly under-perform. Furthermore, the coefficients on *Quintile 5 Buy* and *Quintile 5 Sell* are fairly similar to those of Table 4. No indication exists that controlling for size weakens the effects we find.

A further possible concern relating to differences in firm characteristics is that the opportunism effects we identify are 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. To address this, in Columns 15–16, 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 both by Quintile 5 insiders and by at least one insider who is not in Quintile 5 in that year. *Quintile 5 Buy* (*Quintile 5 Sell*) is an indicator variable equal to one 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 one 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 under-performs 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.

Another possible explanation for our findings is 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; and that 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, not managerial effects.

This possibility does not strike us as very likely. Nevertheless, we perform tests that aggregate buys or sells of an insider type in any given firm-year. To test whether opportunistic buys earn higher returns than non-opportunistic buys, for each overlap stock, each year, 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.[19] 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.

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 6 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. Opportunistic buys outperform by 24 basis points ($p < 0.05$) and opportunistic sells under-perform by 43 basis points ($p < 0.01$).

Taken in its entirety, the evidence in Table 6 shows that our results are not driven by differences in firm characteristics across different past pre-QEA profitability quintiles (or by 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.

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

4.3.3. Extensions

Also to be considered is whether differences among Quintile 5 insiders affect the strength of the return predictability that we find.[20] One possible source of such differences is the time since the insider made an opportunistic pre-QEA trade.

In Column 1 of Table 7, we divide Quintile 5 insiders into two groups based on the time since they first made an opportunistic pre-QEA trade. Insiders whose distance from the first year they were classified as opportunistic up to the current year is above (below) the median distance are classified as Non-Recent Quintiles (Recent Quintile 5) insiders. The return predictability is 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.

[Insert Table 7 near here]

In Column 2, we show that this timing effect does not exist among other ranked insiders. We divide insiders in the bottom four quintiles into Recent and Non-Recent groups using the methodology described above and find that trades of insiders in neither of these groups generate any incremental returns relative to other insiders (ranked and unranked). In Column 3, we show that the results in Column 1 are robust to an alternative classification of Recent and Non-Recent insiders.[21]

In Column 4 of Table 7, 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. There are opposing possible effects. On the one hand, making opportunistic trades more often can be an indicator of being more opportunistic. On the other hand, it can represent an insider who has a lower hurdle for making an opportunistic trade and, therefore, makes more trades with modest profitability. We find that trades of both types of these insiders generate

[20] Also of interest is 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.

[21] We rank Quintile 5 insiders into three groups based on the time since they were first ranked as Quintile 5 insiders, and we classify insiders in the bottom third of this distribution as Recent. The results for Non-Recent insiders are similar to the ones in Column 1, but the returns of Recent insiders' trades are far from significant.

incremental returns over general insider trades and that the difference in performance of the two types is not statistically significant. In untabulated results, we find no significant difference in performance of opportunistic insiders who trade more frequently in general (not necessarily pre-QEA) and those who do not trade so frequently, where frequency of trading is measured as average number of trades by the insider per year.

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

The return effects we find could 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 identify 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 reflects opportunism, we test whether pre-QEA profitability is associated with opportunistic behavior in other domains. 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. 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, 2013), our tests exclude restatements that occur because of changes in accounting principles, Generally Accepted 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, our restatement indicator is equal to one if the firm restates (at some point in the future) its financial statements for a time 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, Hogan, and Wilkins, 2006; Beneish, Lee, and Nichols, 2013).

In our second test, we make use of Accounting and Auditing Enforcement Releases (AAERs) from the US Securities and Exchange Commission describing enforcement actions for alleged misstatements in financial reports. In our panel logit regressions, *AAER Indicator* is equal to one if the SEC conducted an investigation of the firm for accounting or auditing misconduct, or both, 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 one 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 model suggested by McNichols (2002) and the predicted earnings manipulation measure of Beneish (1999). 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 favors positive accruals. A firm that wants the freedom to manage earnings up in the future (e.g., before a seasoned equity offering) can manage earnings downward to create a cookie jar reserve of potential positive accruals. Alternatively, a firm can 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 Quintile 5 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 8 presents the summary statistics on the dependent variables of our misconduct tests and some of the main independent variables.[22]

[Insert Table 8 near here]

Table 9 presents the results of this analysis. The control variables in our logit regressions are book-to-market, firm size, leverage, profitability, volatility of profitability, average insider trading in the firm over the past three 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 (2001) (*Governance Index*), firm age, and analyst coverage.[23] 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 instead of 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 are 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.

[Insert Table 9 near here]

The first column of Table 9 examines the relation between our firm-level opportunism measure (*Fraction of Quintile 5 Insiders*) on the likelihood of financial restatements. Column 1 shows that *Fraction of Quintile 5 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 Quintile 5 Insiders* is associated with an increase of 2.7% in the probability of restatement relative to the unconditional probability of doing so.

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[22] Our data are broadly consistent with previous studies. For example, Dechow, Sloan, and Sweeney (1995) examine 2,190 AAERs between 1982 and 2005. Our initial sample (before imposing any requirements of non-missing data on explanatory variables) contains 1,300 AAER firm-years from 1993 to 2007. Similarly, Bebchuk, Grinstein, and Peyer (2010) identify 1,741 CEO grants as likely backdated in the pre-SOX period. We are able to classify 1,825 CEO and CFO grants as likely backdated in the same period.

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

Column 2 tests whether insider opportunism is associated with SEC investigations for accounting or auditing misconduct, or both. 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 Quintile 5 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 one standard deviation increase in *Fraction of Quintile 5 Insiders* is associated with a 7.5% increase in probability of lawsuit relative to the unconditional probability. In principle, this relation could be mechanically induced, because, for any given behavior by the firm, past opportunistic insider trading could itself attract the attention of investors and attorneys. However, this seems somewhat unlikely because the lawsuits we focus on are for accounting improprieties, not for insider trading. We also control for the level of insider trading and pre-QEA trading in the firm in our tests.

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 Quintile 5 Insiders* is associated with an increase of 2.04% in absolute discretionary accruals (relative to unconditional mean absolute discretionary accruals). Finally, in Column 5, we show that our measure also predicts an ex ante proxy of earnings manipulation, the M-score of Beneish (1999). M-score is constructed from a predictive logit regression model in which the dependent variable is being charged with, or admitting to, accounting misstatements and the independent variables are financial statement variables that Beneish finds to be predictive of misstatements.

To sum up, profitable pre-QEA trading is positively associated with all five 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 that were nominally at-the-money at the time of option grant. Fictitious grant dates were selected ex post so that managers would immediately start with in-the-money options. There is 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 10 describes the relation between our opportunism measure and options backdating. We construct a data set of options awarded to top executives (CEO and CFO) between 1996 and 2014 using Table 2 of Thomson Reuters Insider Filing Data Feed. Following the methodology of Bebchuk, Grinstein, and Peyer (2010), 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, as SOX required that grants be reported to the SEC within two business days after the grant date, making backdating more difficult.

[Insert Table 10 near here]

In the panel logit regressions, the dependent variable is an indicator that takes a value of one 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 could 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 three 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 9 to ensure that we are simply not capturing the effect of pre-QEA trading in general.

The first column of Table 10 shows that *Fraction of Quintile 5 Insiders* is a mildly 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 Quintile 5 Insiders* is associated with a statistically and economically modest 3.5% increase in the probability (relative to the mean).[24] Post-SOX, the relation between our opportunism measure and the incidence of lucky grants is economically and statistically insignificant. This is what we would expect. The potential benefit of backdating is much smaller post-SOX, because the option can be backdated by at most two days (if it is reported to the SEC on time). A test for the difference in pre-SOX and post-SOX coefficients on *Fraction of Quintile 5 Insiders* (Column 3 of Table 10) is not statistically significant. So, although the point estimates are consistent with the hypothesis, these findings are only suggestive.[25]

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 11 presents the results. The dependent variables are CEO compensation in Column 1 and top five executives' compensation in Column 2. Our regression methodology and list of control variables follows previous literature (see, e.g., Bebchuk and Grinstein, 2005; Core, Holthausen, and Larcker, 1999; Murphy, 1999). We control for several possible determinants of executive compensation: book-to-market, size, past 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

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[24] Pre-SOX, *Fraction of pre-QEA Insiders* is significant. A possible interpretation is that firms that allow many insiders to trade in pre-QEA periods are prone to opportunistic behavior of other sorts. However, *Fraction of Pre-QEA Insiders* is not significant in any of the other misconduct tests.

[25] The pre- versus post-SOX result is somewhat stronger under an alternative measure of opportunism, the fraction of insiders who were ever classified as Quintile 5. (Under our current definition, an insider who was ranked Quintile 5 several years ago could move down the ranking in later years if other insiders make even more profitable pre-QEA trades or if the insider makes another pre-QEA trade that is slightly less profitable). Under this measure, which seems equally reasonable, the main results of the paper go through, and opportunism is a significant predictor (at 5% level) of backdating pre-SOX. Furthermore, the difference between the size of this effect pre- and post-SOX becomes significant at the 10% level.

effects.[26] Finally, we include average earnings surprise over the past four quarters as a control variable for unexpected earnings growth.

[Insert Table 11 near here]

Column 1 shows that *Fraction of Quintile 5 Insiders* is a strong positive predictor of CEO compensation (p < 0.05). A one standard deviation increase in *Fraction of Quintile 5 Insiders* is associated with an increase of 2.27% in CEO compensation. Since this is controlling for other known determinants, 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 five executives' pay. A one standard deviation increase in *Fraction of Quintile 5 Insiders* is associated with an increase of 1.47% in top five executives' compensation (p < 0.05).[27]

In untabulated results, we separately examine the relation of our opportunism measure to two major components of total compensation: cash compensation (cash salary and bonus) and all other compensation (including stock and option grants). We find that *Fraction of Quintile 5 Insiders* is a statistically significant predictor of CEO other compensation, top five executives' other compensation, and CEO cash compensation. A one standard deviation increase in *Fraction of Quintile 5 Insiders* is associated with an increase of 2.91% in CEO other compensation, an increase of 2.27% in top five executives' other compensation, and an increase of 1.5% in CEO cash compensation, after controlling for all of the variables discussed above. *Fraction of Quintile 5 Insiders* also positively predicts top five executives' cash compensation, but not significantly so. These results are consistent with the hypothesis of Bebchuk and Fried (2004), which predicts that rent extraction is more likely to occur through forms of compensation that are hard to value, such as option grants.

[26] Controlling for CEO stock holdings does not affect the conclusions.

[27] Another possibility is that opportunistic insiders are being compensated in recognition of prospective good performance of the firm, based on favorable information that they could possess on the conditioning date. Why, subsequent to being classified as opportunistic, they would systematically receive favorable instead of unfavorable information compared with other managers is unclear. Nevertheless, we performe tests that include average earnings surprise over the next four quarters as an additional control. This does not affect the economic or statistical magnitude of *Fraction of Quintile 5 Insiders*.

These findings support the hypothesis that opportunistic insiders engage in profitable insider trading and that having opportunistic insiders is associated with greater executive compensation. This could be because an opportunistic culture results in greater extraction of resources from the firm. A more innocent interpretation is that risky firms appropriately compensate their managers more, on average, and have greater opportunities for profitable insider trading. However, our tests control for both volatility and firm age.

Overall, the findings 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, 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 four-factor alphas of more than 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 profits subsequently earn high trading profits than general insiders obtains even when comparing the trades of opportunistic insiders with 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 instead of our measure capturing some firm characteristic. However, the superior trading performance of the insiders we identify as opportunistic could derive from their having superior ability to process publicly available information.

To further resolve whether the insiders we identify as opportunistic are 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, 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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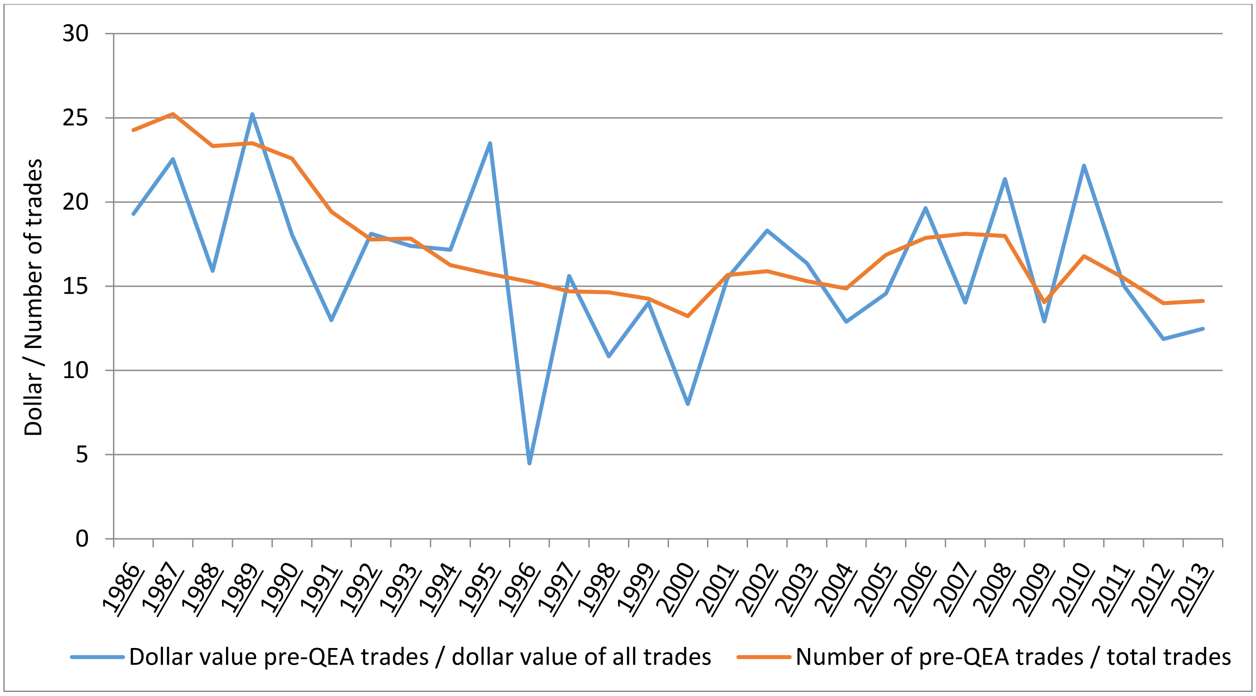
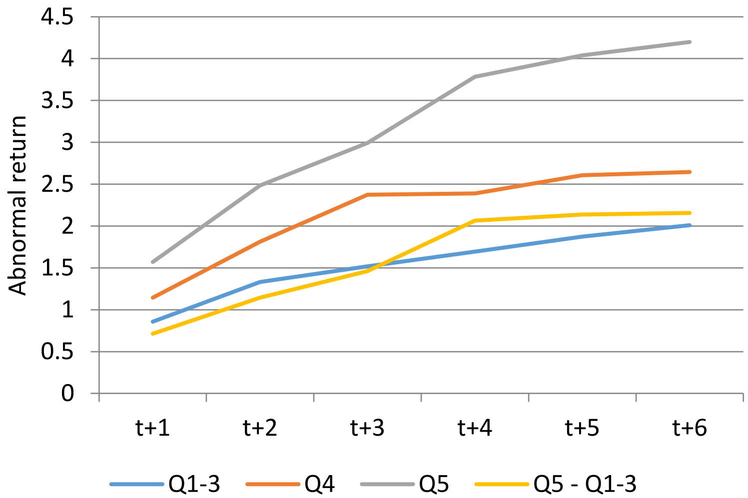


Fig. 1. Pre-quarterly earnings announcement (QEA) trading. This figure shows insider trading in pre-QEA periods relative to trading during the entire year. The pre-QEA period is defined as the 21 trading day period ending two trading days before a quarterly earnings announcement date. We exclude all trades by beneficial owners because these owners perhaps are not subject to the same trading restrictions as firm officers and directors. The sample contains 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 that 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.

Panel A: Equal-weighted portfolios



Panel B: Value-weighted portfolios

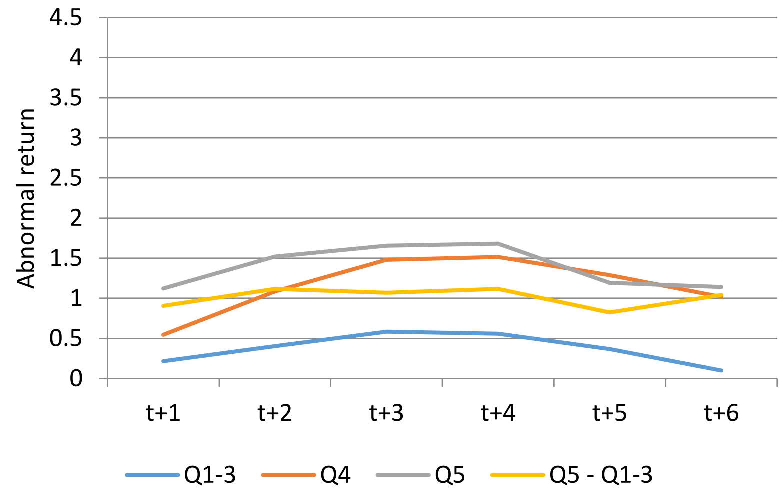


Fig. 2. Event-time returns. This figure shows the cumulative abnormal performance of portfolios constructed using insider trades over the January 1989–June 2014 sample period. Portfolios are constructed as described in Table 2. The Q5 (Q4) portfolio is the long-short portfolio that is long buys and short 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 the bottom three quintiles. The figure also shows the difference in performance between the Q5 and Q1-3 portfolios. Abnormal performance is calculated as the four-factor alpha.

Table 1. Firm and insider characteristics

This table provides summary statistics for the sample used in this paper. The sample period is 1986–2014. Each year, starting in 1989, we rank insiders into quintiles based on the profitability of their past pre-quarterly earnings announcement (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 five-day window centered at the QEA date: *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 Center for Research in Security Prices (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: *Average Profit* = $(\sum^{B} Profit_{buy} - \sum^{S} Profit_{sell})/(B+S)$, 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 two years. Mean (median) average pre-QEA profitability is the time series mean of annual cross-sectional mean (median) *Average Profit*. 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: Insider characteristics					
Rank	Number of unique insiders	Number of buys	Number of sells	Number of buys / number of sells	Number of trades
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 universe / TR universe	0.33	0.37	0.41		
Average number of pre-QEA trades per ranked insider					2.13
Median number of pre-QEA trades per ranked insider					1

Panel B: Pre-QEA profitability and firm characteristics

	Average pre-QEA profitability		Book-to-market		Size		Volatility		Number of unique firms
Rank	Mean	Median	Mean	Median	Mean	Median	Mean	Median	
1	-1.87%	-1.47%	0.58	0.41	3554	403	13.4%	11.6%	4,981
2	-0.47%	-0.45%	0.60	0.44	4464	504	11.7%	10.0%	5,050
3	0.03%	0.03%	0.60	0.45	4956	538	11.2%	9.3%	4,910
4	0.54%	0.52%	0.61	0.45	4631	446	11.8%	9.9%	4,930
5	2.16%	1.64%	0.62	0.42	3190	331	13.7%	11.8%	4,952
TR universe			0.72	0.51	2809	211	13.3%	11.0%	11,441
Ranked universe			0.65	0.47	3407	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-quarterly earnings announcement (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- and value-weighted portfolios. We obtain factor returns from Ken French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/). Panel A reports results for long-short portfolios and Panel B reports results of long and short legs separately. *t*-statistics are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

Panel A: Long-short portfolios

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

Panel B: Long and Short portfolios

Rank	Long			Short		
	Excess return	Three-factor alpha	Four-factor alpha	Excess return	Three-factor alpha	Four-factor alpha
Equal-weighted						
Quintile 1	1.40***	0.63***	0.73***	0.72**	-0.03	-0.09
	(4.33)	(3.02)	(3.62)	(2.01)	(-0.38)	(-1.08)
Quintile 2	1.53***	0.74***	0.81***	0.72**	0.03	-0.04
	(5.30)	(5.06)	(5.67)	(2.53)	(0.28)	(-0.37)
Quintile 3	1.56***	0.83***	0.93***	0.73***	0.03	-0.04
	(5.74)	(5.86)	(6.65)	(2.69)	(0.27)	(-0.35)
Quintile 4	1.70***	0.95***	1.03***	0.68**	-0.03	-0.11
	(5.97)	(6.56)	(7.23)	(2.37)	(-0.25)	(-1.06)
Quintile 5	1.96***	1.12***	1.24***	0.49	-0.28**	-0.34***
	(5.84)	(6.30)	(7.16)	(1.42)	(-2.24)	(-2.62)
Quintile 5 – Quintile 1	0.56***	0.49***	0.51***	-0.17	-0.18*	-0.25*
	(3.07)	(2.72)	(2.68)	(-1.63)	(-1.69)	(-1.73)
All insiders	1.48***	0.74***	0.84***	0.74***	0.01	-0.03
	(5.64)	(8.07)	(10.08)	(2.49)	(0.12)	(-0.64)
Value-weighted						
Quintile 1	0.87**	0.01	0.13	0.60**	0.01	-0.05
	(2.37)	(0.05)	(0.53)	(1.98)	(0.08)	(-0.37)
Quintile 2	0.97***	0.18	0.24	0.45*	-0.10	-0.21
	(2.94)	(0.82)	(1.09)	(1.66)	(-0.75)	(-1.53)
Quintile 3	0.77**	0.05	0.14	0.55*	-0.01	-0.14
	(2.51)	(0.25)	(0.63)	(1.93)	(-0.03)	(-1.00)
Quintile 4	1.05***	0.30	0.39*	0.48*	-0.09	-0.17
	(3.23)	(1.30)	(1.65)	(1.76)	(-0.67)	(-1.20)
Quintile 5	1.51***	0.58**	0.59**	0.18	-0.45**	-0.53***
	(3.64)	(2.07)	(2.00)	(0.55)	(-2.50)	(-2.99)
Quintile 5 – Quintile 1	0.64*	0.57*	0.46	-0.43**	-0.46**	-0.48**
	(1.81)	(1.89)	(1.51)	(-2.21)	(-2.34)	(-2.21)
All insiders	1.03***	0.34***	0.40***	0.55**	-0.03	-0.10
	(3.90)	(3.39)	(4.03)	(2.16)	(-0.53)	(-1.57)

Table 3. Ranking based on all trades: portfolio alphas

This table reports the four-factor 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 [not necessarily pre–quarterly earnings announcement (QEA) trades). For each insider trade, we calculate two profitability measures: one-month (21 trading days) benchmark-adjusted cumulative return and three-month (63 trading days) benchmark-adjusted cumulative return. Benchmark return for each stock is calculated as the return on a value-weighted portfolio of stocks in the same size and book-to-market quintiles. Multiple trades by the same insider on the same date are aggregated into one observation. At the beginning of each year, we then calculate the average profitability of each insider's past buy and sell trades. We also calculate the average profitability of each insider's past buy trades only. We then rank insiders into quintiles based on these average profitability measures. To avoid look-ahead bias, we include only those past insider trades in each year's ranking whose return measurement period ends prior to the start of the year. 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 as described in Table 2. 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 four-factor alphas of both equal- and value-weighted portfolios. We obtain factor returns from Ken French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/). *t*-statistics are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

	Equal-weighted				Value-weighted			
Rank	One-month profitability measure—all trades	One-month profitability measure—buy trades	Three-month profitability measure—all trades	Three-month profitability measure—buy trades	One-month profitability measure—all trades	One-month profitability measure—buy trades	Three-month profitability measure—all trades	Three-month profitability measure—buy trades
Quintile 1	1.33***	1.51***	1.21***	1.17***	0.62**	0.44	0.35	0.28
	(7.62)	(7.66)	(6.77)	(5.63)	(2.25)	(1.28)	(1.30)	(0.89)
Quintile 2	0.88***	0.76***	0.81***	0.80***	0.37*	0.27	0.30	0.49**
	(6.65)	(4.91)	(6.19)	(4.87)	(1.74)	(1.09)	(1.35)	(1.91)
Quintile 3	1.01***	0.91***	0.98***	0.99***	0.45**	0.65***	0.43**	0.49**
	(7.94)	(5.62)	(7.64)	(5.98)	(2.26)	(2.61)	(2.28)	(2.17)
Quintile 4	1.13***	1.27***	1.39***	1.18***	0.47**	0.61**	0.77***	0.53**
	(8.80)	(7.51)	(9.49)	(6.96)	(2.24)	(2.41)	(3.52)	(2.05)
Quintile 5	1.32***	1.41***	1.26***	1.49***	0.74***	0.52*	0.69**	0.57
	(6.94)	(6.71)	(6.85)	(7.06)	(2.66)	(1.81)	(2.41)	(1.60)
Quintile 5 –	-0.02	-0.10	0.04	0.32	0.12	0.08	0.34	0.29
Quintile 1	(-0.11)	(-0.41)	(0.22)	(1.23)	(0.38)	(0.20)	(0.91)	(0.66)

Table 4. 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 one if there were any buys (sells) on a given firm in the prior month by any ranked insider. *Quintile 5 Buy* (*Quintile 5 Sell*) is an indicator variable equal to one 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–quarterly earnings announcement (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 one 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 one 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 respectively. *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 Center for Research in Security Prices 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.

Variable	(1)	(2)	(3)	(4)	(5)
Quintile 5 Buy		1.25***	0.58***	0.52***	0.56***
		(8.04)	(3.53)	(3.30)	(3.55)
Quintile 5 Sell		-0.32***	-0.28**	-0.24**	-0.26**
		(-2.88)	(-2.44)	(-2.16)	(-2.42)
Buy	0.80***		0.69***	0.78***	0.76***
	(10.35)		(8.43)	(11.08)	(11.81)
Sell	-0.11*		-0.05	-0.10*	-0.08*
	(-1.94)		(-0.82)	(-1.92)	(-1.74)
Book-to-Market	0.20**	0.20**	0.20**	0.19**	0.19**
	(2.11)	(2.14)	(2.11)	(2.03)	(2.01)
Ret(*t*-1)	-1.51***	-1.52***	-1.51***	-1.49***	-1.49***
	(-3.16)	(-3.17)	(-3.15)	(-3.12)	(-3.12)
Ret(*t*-12,*t*-2)	0.51***	0.51***	0.51***	0.51***	0.52***
	(3.19)	(3.18)	(3.20)	(3.20)	(3.22)
Size	0.02	0.02	0.02	0.02	0.02
	(0.59)	(0.58)	(0.60)	(0.67)	(0.66)
Average adjusted R^2	3.2	3.2	3.3	3.3	3.3
Average number of observations per month	3,442	3,442	3,442	3,442	3,442

Table 5. Comparison with routine and nonroutine insider trading

This table compares the performance of our insider classification with the routine and nonroutine insider classification of Cohen, Malloy, and Pomorski (2012). Each year, insiders who make at least one trade in each of the preceding three years are classified as routine or nonroutine using the methodology of Cohen, Malloy, and Pomorski. Insiders who trade in the same month in each of the three years are classified as routine. The rest of the insiders are classified as nonroutine. 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 three year classification period. A nonroutine insider, can become routine at any point in the future if the insider trades in the same month for three consecutive years (Cohen, Malloy, and Pomorski, 2012, Exhibit A1). The dependent variable in the regressions is future one-month return. *Routine Buy* (*Routine Sell*) is an indicator variable equal to one if there were any buys (sells) on a given firm in the prior month by a routine insider. *NonRoutine Buy* and *Nonroutine Sell* indicators are defined similarly for nonroutine insiders. *Quintile 5 Buy* and *Quintile 5 Sell* indicators are as defined in Table 4. *Buy* (*Sell*) is an indicator variable equal to one if there were any buys (sells) on a given firm in the prior month by any insider. The Fama-MacBeth regressions include all Center for Research in Security Prices common stocks listed on NYSE, NYSE MKT, and Nasdaq. Regressions in the first two 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 4. *t*-statistics are shown below coefficient estimates and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

Variable	(1)	(2)	(3)
Quintile 5 Buy		0.51***	0.55***
		(3.07)	(3.52)
Quintile 5 Sell		-0.23**	-0.25**
		(-2.01)	(-2.37)
Buy		1.03***	0.80***
		(13.74)	(12.52)
Sell		-0.02	-0.09*
		(-0.28)	(-1.69)
Nonroutine Buy	0.98***	0.03	-0.03
	(7.34)	(0.29)	(-0.24)
Nonroutine Sell	0.08	0.09	-0.06
	(0.98)	(1.26)	(-0.79)
Routine Buy	0.46***	-0.45***	-0.27**
	(3.68)	(-3.78)	(-2.31)
Routine Sell	0.21**	0.24***	0.12
	(2.28)	(2.75)	(1.27)
Average adjusted R^2	2.8	2.8	3.3
Average number of observations per month	4,672	4,672	3,442

Table 6. Robustness tests

This table provides robustness tests. Each year, insiders are ranked into quintiles based on profitability of their past trades. In the Fama-MacBeth regressions in Panel A, the dependent variable is future one-month return. *Buy* (*Sell*) is an indicator variable equal to one if there were any buys (sells) on a given firm in the preceding month by any Insider. *Quintile 5 Buy* (*Quintile 5 Sell*) is an indicator variable equal to one 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 cumulative profitability of pre–quarterly earnings announcement (QEA) trades from the day after the trade date to two days after the QEA. For each pre-QEA trade, we measure profitability of the trade as the cumulative return of the stock from the day after the trade date to two days after the QEA date minus the cumulative return of a size- and book-to-market–matched portfolio over the same period. Each year, for each insider, we calculate the average profitability of the insider's past pre-QEA trades: *Average Profit* = $(\sum^{B} CumProfit_{buy} - \sum^{S} CumProfit_{sell})/(B+S)$, where *B(S)* is the total number of buy (sell) pre-QEA trades. We then rank insiders into quintiles based on this measure for tests in Columns 1 and 2. In Columns 3 and 4, we rank insiders into quintiles based on the profitability of their pre-QEA buy trades only. In Columns 5 and 6, we rank insiders into quintiles based on the profitability of their pre-QEA sell trades only. In Columns 7 and 8, we include pre-QEA trades below $5,000 when computing the ranking. In Columns 9 and 10, we include two controls for earnings momentum, standardize unexpected earnings (SUE) and earnings announcement cumulative abnormal return (CAR). SUE is calculated as the most recent quarterly earnings per share (EPS) minus the EPS four quarters ago, divided by the standard deviation of earnings innovations over the past eight quarters. Earnings announcement CAR is the average market adjusted return in the five-day window centered at the most recent quarterly earnings announcement date. For brevity, we do not report the coefficients of these variables. In Columns 11–14, we repeat the tests in Table 4 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 15 and 16, we examine the trades in overlapstocks only. We find the 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* (*Quintile 5 Sell*) is an indicator variable equal to one 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 one 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 4. *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 that takes a value of one 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, Grinblatt, Titman, and Wermer, 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: Alternative rankings and additional controls

Variable	Rank based on cumulative return from trade date	Rank based on cumulative return from trade date	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
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Quintile 5 Buy	1.31***	0.63***	1.41***	0.72***	1.33***	0.61*	1.28***	0.60***	1.20***	0.53***	1.06***	0.71***	1.33***	0.51***	1.34***	0.45**
	(9.15)	(4.28)	(7.30)	(3.73)	(3.41)	(1.69)	(8.22)	(3.79)	(7.20)	(3.13)	(4.30)	(2.85)	(6.99)	(2.65)	(8.36)	(2.49)
Quintile 5 Sell	-0.36***	-0.30**	-0.34**	-0.28**	-0.31***	-0.24**	-0.33***	-0.28***	-0.46***	-0.31***	-0.35**	-0.29**	-0.34**	-0.29**	-0.29**	-0.59***
	(-2.85)	(-2.53)	(-2.29)	(-1.97)	(-2.76)	(-2.26)	(-3.01)	(-2.61)	(-4.04)	(-2.80)	(-2.45)	(-2.10)	(-2.42)	(-2.01)	(-2.55)	(-4.72)
Buy		0.75***		0.76***		0.79***		0.75***		0.74***		0.36***		0.89***		0.87***
		(11.56)		(12.09)		(12.30)		(11.62)		(11.51)		(5.13)		(12.23)		(7.89)
Sell		-0.09*		-0.09**		-0.09*		-0.08*		-0.19***		-0.09*		-0.07*		0.26***
		(-1.84)		(-2.01)		(-1.91)		(-1.65)		(-3.05)		(-1.80)		(-1.14)		(3.17)
Average number of observations per month	3,442	3,442	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: Overlap trades

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

Table 7. 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 one 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 who make at least one trade during that year into two groups (Recent and Non-Recent) based on the time since they were first ranked as Quintile 5 insiders. Insiders whose distance from the current year to the first year they were classified as opportunistic is above (below) the median distance are classified as Non-Recent (Recent) Quintile 5 insiders. *Recent Quintile 5 Buy* (*Recent Quintile 5 Sell*) is an indicator variable equal to one if there were any buys (sells) on a given firm in the preceding month by a Recent Quintile 5 insider. *Non-Recent Quintile 5 Buy* and *Non-Recent Quintile 5 Sell* indicators are defined similarly. In Column 2, we repeat the test in Column 1 for insiders in Quintiles 1–4. In Column 3, we rank Quintile 5 insiders into three groups based on the time since they were first ranked as Quintile 5 insiders and classify insiders in the bottom third of this distribution as Recent. In Column 4, 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–quarterly earnings announcement (QEA) trade in the past] and construct *Quintile 5 Buy* and *Quintile 5 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 4. *t*-statistics are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

Variable	(1)	(2)	(3)	(4)
Non-Recent Quintile 5 Buy	0.75***		0.66***	
	(3.34)		(2.83)	
Non-Recent Quintile 5 Sell	-0.36**		-0.33**	
	(-2.42)		(-2.50)	
Recent Quintile 5 Buy	0.47*		0.27	
	(1.85)		(0.88)	
Recent Quintile 5 Sell	-0.15		-0.25	
	(-1.00)		(-1.32)	
Non-Recent Quintile 1–4 Buy		-0.07		
		(-0.74)		
Non-Recent Quintile 1–4 Sell		-0.02		
		(-0.24)		
Recent Quintile 1–4 Buy		0.05		
		(0.50)		
Recent Quintile 1–4 Sell		-0.01		
		(-0.17)		
>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***	0.80***	0.76***	0.76***
	(11.88)	(12.05)	(11.85)	(11.82)
Sell	-0.08*	-0.10*	-0.08*	-0.08
	(-1.74)	(-1.85)	(-1.73)	(-1.62)
Average number of observations per month	3,442	3,442	3,440	3,444

Table 8. Summary statistics for misconduct tests

This table reports the summary statistics for the dependent variables and some key independent variables used in our misconduct tests in Tables 9–11. All variables are defined in Tables 9–11. AAER: Accounting and Auditing Enforcement Release; SOX: Sarbanes-Oxley Act of 2002.

Variable	Mean	Median	Standard Deviation
Restatement tests			
Restatement Indicator	0.058	0	0.233
Fraction of Quintile 5 Insiders	0.078	0	0.127
Fraction of Pre-QEA Insiders	0.420	0.400	0.258
Log (*Size*)	6.568	6.362	1.712
Log (*Book-to-Market*)	-0.763	-0.696	0.732
AAER tests			
AAER Indicator	0.017	0	0.128
Fraction of Quintile 5 Insiders	0.079	0	0.131
Fraction of Pre-QEA Insiders	0.413	0.400	0.258
Log (*Size*)	6.303	6.062	1.633
Log (*Book-to-Market*)	-0.838	-0.765	0.711
Lawsuit tests			
Lawsuit Indicator	0.016	0	0.126
Fraction of Quintile 5 Insiders	0.078	0	0.129
Fraction of Pre-QEA Insiders	0.415	0.400	0.257
Log (*Size*)	6.406	6.172	1.671
Log (*Book-to-Market*)	-0.800	-0.733	0.721
Discretionary Accruals tests			
Discretionary Accruals	0.032	0.021	0.035
Fraction of Quintile 5 Insiders	0.081	0	0.131
Fraction of Pre-QEA Insiders	0.423	0.400	0.256
Log (*Size*)	6.533	6.333	1.691
Log (*Book-to-Market*)	-0.845	-0.776	0.726
Predicted Earnings Manipulation (M-score) tests			
M-score	-2.527	-2.581	0.704
Fraction of Quintile 5 Insiders	0.082	0	0.129
Fraction of Pre-QEA Insiders	0.418	0.400	0.253
Log (*Size*)	6.555	6.339	1.649
Log (*Book-to-Market*)	-0.852	-0.802	0.720
Backdating tests (pre-SOX)			
Lucky Grant Indicator	0.076	0	0.265
Fraction of Quintile 5 Insiders	0.079	0	0.135
Fraction of Pre-QEA Insiders	0.397	0.375	0.266
Log (*Size*)	5.708	5.608	2.068
Log (*Book-to-Market*)	-0.766	-0.715	0.846
Backdating tests (post-SOX)			
Lucky Grant Indicator	0.044	0	0.205
Fraction of Quintile 5 Insiders	0.085	0	0.136
Fraction of Pre-QEA Insiders	0.419	0.400	0.257
Log (*Size*)	6.346	6.282	2.02
Log (*Book-to-Market*)	-0.781	-0.737	0.779
Executive Compensation tests			
Log (*CEO compensation*)	7.902	7.896	1.036
Log (*top five compensation*)	8.927	8.892	0.910
Fraction Q5 Insiders	0.071	0	0.111
Fraction of Pre-QEA Insiders	0.417	0.400	0.244
Log (*Size*)	7.413	7.249	1.540
Log (*Book-to-Market*)	-0.769	-0.705	0.656

Table 9. Earnings management and financial misreporting

This table reports the results of panel regressions examining the relation 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 and Columns 4–5 report the results of linear regressions. In the first column, the dependent variable is an indicator variable that takes a value of one if the firm restates (at some point in the future) its financial statements for a time period ending in that year and zero otherwise. In Column 2, the dependent variable is an indicator variable that takes a value of one if the firm is the subject of enforcement actions by the US Security and Exchange Commission (SEC) [according to SEC Accounting and Auditing Enforcement Releases (*AAERs*)] for alleged accounting or auditing misconduct, or both, for a fiscal period ending in that year and zero otherwise. In Column 3, the dependent variable is an indicator variable that takes a value of one 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, which are calculated as residuals from cross-sectional regressions (estimated by two-digit standard industrial classification code industries) of change in working capital on current operating cash flow, next year's cash flow, previous year's cash flow, change in sales, and property, plant, and equipment (McNichols, 2002). In Column 5, the dependent variable is *M-score* which is constructed from a predictive logit regression model in which the dependent variable is being charged with, or admitting to, accounting misstatements (Beneish, Lee, and Nichols 2013; Beneish, 1999). *Fraction of Quintile 5 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 three years divided by the market value of equity at the end of previous year. *Pre-QEA Trading* is the past three year average of the ratio of the dollar value of pre–quarterly earnings announcement (QEA) trades during the year to the dollar value of all insider trades during the year. *Loss Indicator* is an indicator variable equal to one 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 one 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 *Governance Index*. *Firm Age* is log (1 + number of years since the firm first appeared in the Center for Research in Security Prices). *Analyst Coverage* is log (1 + number 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 1–3) and *t*-statistics (Columns 4–5), based on standard errors clustered by firm, are shown below coefficient estimates, and 1%, 5%, and 10% statistical significance are indicated with ***, **, and *, respectively.

Variable	*Restatement Indicator* (1)	*SEC AAER Indicator* (2)	*Lawsuit Indicator* (3)	*Discretionary Accruals* (4)	*M-score* (5)
Fraction of Quintile 5 Insiders	0.321**	1.412**	1.11***	0.005**	0.088**
	(2.07)	(2.49)	(2.64)	(2.42)	(2.36)
Fraction of pre-QEA Insiders	0.038	-0.297	-0.117	-0.01	-0.006
	(0.35)	(-0.80)	(-0.46)	(-0.72)	(-0.30)
Aggregate Insider Trading	-0.234	-0.793	-0.362	0.021***	-0.255*
	(-0.40)	(-0.54)	(-0.28)	(3.12)	(-1.95)
Pre-QEA Trading	0.001	-0.003	0.002	0.000	-0.000
	(0.89)	(-0.85)	(0.71)	(0.19)	(-0.11)
Book-to- Market	0.234***	0.135	-0.093	-0.007***	-0.170***
	(5.72)	(1.00)	(-1.09)	(-15.14)	(-19.12)
Size	-0.008	0.284***	0.462***	-0.005***	-0.028***
	(-0.31)	(3.19)	(7.14)	(-16.15)	(-5.51)
Leverage	0.607***	1.057***	0.520**	-0.018***	-0.162***
	(4.71)	(2.66)	(2.15)	(-12.91)	(-6.62)
Profitability	-0.172	-0.109	-0.108	-0.002*	0.220***
	(-1.55)	(-0.40)	(-0.46)	(-1.76)	(7.33)
Volatility of Profitability	0.236***	0.189	0.311**	0.006***	0.001
	(3.69)	(0.81)	(2.28)	(6.18)	(0.03)
Loss Indicator	0.322***	-0.035	0.062	0.003***	-0.060***
	(4.98)	(-0.17)	(0.43)	(5.32)	(-4.94)
Big 4	0.117	0.047	-0.019	-0.001	-0.017
	(1.64)	(0.20)	(-0.13)	(-0.70)	(-1.52)
Governance Index	-0.040***	0.003	-0.003	-0.000	-0.002
	(-2.89)	(0.08)	(-0.12)	(-1.08)	(-1.12)
Firm Age	0.011	-0.343***	-0.230***	-0.001	-0.035***
	(0.29)	(-3.05)	(-3.27)	(-3.60)	(-4.95)
Analyst Coverage	-0.012	0.294*	0.093	0.001	-0.041***
	(-0.28)	(1.92)	(0.94)	(1.63)	(-4.96)
Number of observations	38,652	27,596	34,305	38,451	32,912
Fixed effects	Year, industry	Year, industry	Year, industry	Year, industry	Year, industry

Table 10. Options backdating

This table reports the results of logit regressions examining the relation between our opportunistic insider measure and the likelihood of options backdating. Following the methodology of Bebchuk, Grinstein, and Peyer (2010), 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 that takes a value of one if either the chief executive officer or chief financial officer was awarded at least one lucky grant during the year, and zero otherwise. *Fraction of Quintile 5 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 two 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 three years divided by market value of equity at the end of previous year. *Pre-QEA Trading* is the past three year average of the ratio of the dollar value of pre–quarterly earnings announcement (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 *Governance Index*. *Firm Age* is log (1 + number of years since the firm first appeared in the Center for Research in Security Prices). *Analyst Coverage* is log (1 + number of analysts issuing earnings estimates for the firm). *New Economy Dummy* takes a value of one for high-tech firms (Standard Industrial Classification 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). SOX = Sarbanes-Oxley Act of 2002. *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.

	Lucky Grant Indicator		
Variable	Pre-SOX (1)	Post-SOX (2)	Full Sample (3)
Fraction of Quintile 5 Insiders	0.320*	0.092	0.072
	(1.71)	(0.35)	(0.28)
Fraction of Pre-QEA Insiders	0.371**	0.121	0.125
	(2.47)	(0.80)	(0.85)
Pre-SOX Dummy			0.435**
			(2.26)
*Pre-SOX Dummy * Fraction of Quintile 5 Insiders*			0.264
			(1.30)
*Pre-SOX Dummy * Fraction of Pre-QEA Insiders*			0.228
			(1.46)
Aggregate Insider Trading	0.433	-0.563	0.055
	(1.14)	(-0.98)	(0.17)
Pre-QEA Trading	-0.000	-0.001	-0.001
	(-0.17)	(-0.77)	(-0.70)
Book-to-Market	0.034	-0.023	0.011
	(0.67)	(-0.42)	(0.29)
Size	-0.006	0.011	0.001
	(-0.15)	(0.29)	(0.05)
Past Year Return	-0.019	-0.014	-0.019
	(-0.59)	(-0.44)	(-0.80)
Return Volatility	1.417***	1.054***	1.241***
	(3.86)	(2.64)	(4.67)
Profitability	0.098	-0.157	-0.019
	(0.91)	(-1.42)	(-0.25)
Governance Index	-0.068***	-0.029	-0.048***
	(-3.13)	(-1.49)	(-3.24)
Firm Age	-0.267***	-0.158***	-0.219***
	(-5.32)	(-3.06)	(-6.00)
Analyst Coverage	0.079	0.020	0.050
	(1.20)	(0.30)	(1.06)
New Economy Dummy	0.152	0.230*	0.188**
	(1.13)	(1.83)	(2.00)
Number of observations	15,423	21,010	36,498
Fixed effects	Year, industry	Year, industry	Year, industry

Table 11. Executive compensation

This table reports the results of panel regressions examining the relation between our opportunistic insider measure and executive compensation. In the first column, the dependent variable is the log of chief executive officer (CEO) compensation. In the second column, the dependent variable is the log of compensation of the top-five 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 Quintile 5 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. *Average Earnings Surprise* is the average market-adjusted return over the four quarterly earnings announcement (QEA) windows corresponding to the four fiscal quarters during the fiscal year, where QEA window is defined as two days prior to and two days after the QEA. *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. *Second Last Year Return* is the market adjusted return of the stock during the firm's previous fiscal year. *Return Volatility* is the standard deviation of monthly returns over the past two years. *Profitability* is income before extraordinary items (during the current fiscal year) divided by lagged equity. *Lagged Profitability* is Profitability lagged by one year. *Aggregate Insider Trading* is the average dollar value of insider trades in the firm over the past three years divided by market value of equity at the end of previous year. *Pre-QEA Trading* is the past three 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 *Governance Index*. *Firm Age* is log (1 + number of years since the firm first appeared in the Center for Research in Security Prices). 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.

Variable	*Log* (*CEO compensation*) (1)	*Log* (*Top-five executives' compensation*) (2)
Fraction of Quintile 5 Insiders	0.202**	0.131**
	(2.51)	(2.12)
Fraction of Pre-QEA Insiders	-0.027	-0.016
	(-0.56)	(-0.40)
Average Earnings Surprise	4.271***	3.675***
	(6.36)	(7.12)
Aggregate Insider Trading	0.877***	1.108***
	(3.47)	(5.53)
Pre-QEA Trading	-0.000	-0.000
	(-0.24)	(-0.80)
Book-to-Market	0.179***	0.154***
	(9.13)	(9.64)
Size	0.475***	0.477***
	(36.58)	(52.47)
Past Year Return	0.116***	0.097***
	(7.14)	(6.38)
Second Last Year Return	0.034***	0.016*
	(3.17)	(1.88)
Return Volatility	1.327***	1.526***
	(6.79)	(7.74)
Profitability	0.111***	0.043
	(2.86)	(1.41)
Lagged Profitability	0.025	0.006
	(0.73)	(0.21)
CEO Tenure	-0.019	-0.019*
	(-1.40)	(-1.85)
Governance Index	0.026***	0.0132***
	(5.48)	(3.39)
Firm Age	-0.005	-0.024**
	(-0.33)	(-2.15)
Number of observations	25,931	25,931
Fixed effects	Year, industry	Year, industry
Adj. R^2	0.52	0.63