The Dollar Profits to Insider Trading

Peter Cziraki[*] Jasmin Gider[#]

March 2021

Abstract

This paper studies insider trading quantities and dollar profits to measure the benefits insiders extract from their superior information. Dollar profits are economically small for a typical insider, the median insider earning $464 per year. The correlation between dollar profits and percentage returns is moderate, because returns are negatively correlated with trade size and frequency. We show that these correlations vary with proxies for insider preferences, firm-level monitoring, and regulatory scrutiny. As a consequence, variables that predict percentage returns fail to predict dollar profits, and past dollar profits are negatively related to future returns. Our work suggests that dollar profits are a better measure for corporate governance applications of insider trading.

JEL classification: G14, G34, M52

Keywords: insider trading, trading profits, corporate governance, executive compensation

---

We thank the editor Kelly Shue, an anonymous second editor and two anonymous referees for their constructive comments. We are also grateful to our conference discussants Kenneth Ahern, David Cicero, Carole Comerton-Forde, François Derrien, Christoph Schneider, Rik Sen, Heather Tookes, Jun Yang, Jinyuan Zhang, Zhongyan Zhu, and Paul Zurek, as well as Pat Akey, Patrick Augustin, Claire Célérier, Mark Chen, Rahul Deb, Alexander Dyck, Rüdiger Fahlenbrach, Jim Goldman, Dirk Jenter, Chao Jiang, Marcin Kacperczyk, Arthur Korteweg, Veronika Krepely Pool, Evgeny Lyandres, Robert McMillan, Daniel Metzger, Jordi Mondria, Randall Morck, Luc Renneboog, Adriana Robertson, Yuri Tserlukevich, Wei Wu, and participants at the Rodney White Center Conference on Investment Decisions and Asset Markets, the American Finance Association Annual Meeting, the Asian Bureau of Financial Economics Research Conference, the European Finance Association Annual Conference, the UBC Summer Finance Conference, the Mid-Atlantic Research Conference, the China International Conference in Finance, the Northern Finance Association Annual Conference, the Swiss Finance Association (SGF) Annual Conference, the German Finance Association (DGF) Annual Conference, the 2nd European Capital Markets Workshop, and seminars at Erasmus University, Tilburg University, Queen's (School of Business), University of Bristol, University of Guelph, University of Luxembourg, University of Ontario Institute of Technology, University of Toronto, WHU Otto Beisheim School of Management, and Wilfrid Laurier University (Lazaridis) for valuable comments and suggestions. Nour Chehab Eddine and Saarah Sheikh provided excellent research assistance. Peter Cziraki acknowledges financial support from the Connaught Foundation, a Social Sciences and Humanities Research Council Institutional Grant, a University of Toronto Excellence Award, and from the National Research, Development, and Innovation Fund of Hungary, under the 2020-4.1.1-TKP2020 funding scheme (project number TKP2020-IKA-08).

[*] Corresponding author. University of Toronto, peter.cziraki@utoronto.ca, +1 416 9463298
[#] Tilburg University, j.gider@uvt.nl, +31 13 4663238

Electronic copy available at: https://ssrn.com/abstract=2887628

The notion that corporate insiders possess more information about their firm than outside investors plays an important role in models of financial markets. Traditionally, the empirical literature uses the abnormal returns to publicly reported insider trades to measure insiders' informational advantage and finds that such returns are economically large.[1] However, there has been almost no research examining how much economic value insiders extract from their superior information, i.e., insiders' *dollar profits.* Our paper provides this empirical analysis.

Measuring the dollar benefits from insider trading is important to evaluate whether insider trading is a source of private benefits. Prior work has used abnormal returns both to establish trading strategies that generate alpha and to capture insiders' private benefits as a proxy for agency issues. However, if insiders face constraints to capitalizing on private information, the determinants of abnormal returns (as a measure of superior information) and the determinants of who capitalizes on private information (thereby generating high profits) can differ. Our work informs the choice of the measure for different applications.

High abnormal returns need not result in large profits, as profits are also determined by trade quantities: trade size and frequency. Trade quantities are an important choice variable of the insider, vary substantially across insiders, and may also be correlated with abnormal returns, as suggested by theoretical models of insider trading (see, e.g., Kyle, 1985 for informed trading in general, and Huddart, Hughes, and Levine, 2001 or Lenkey, 2014 for corporate insider trading). These models typically consider an insider who chooses trade quantities with given private information, while she trades off gains from trading and the costs of exploiting informational advantages – such as litigation risk, reputational costs, or adverse selection costs imposed on other market participants.[2] Mandatory disclosure of insider trades makes both the costs of exploiting

[1] See, e.g., Seyhun (1986), Lakonishok and Lee (2001), Ravina and Sapienza (2010), Cohen, Malloy, and Pomorski (2012), Alldredge and Cicero (2015), and Biggerstaff, Cicero, and Wintonki (2020). Jeng, Metrick, and Zeckhauser (2003) find that insider purchases earn positive abnormal returns but sales do not, while Eckbo and Smith (1998) find no evidence of superior performance in their sample of Norwegian insiders.

[2] Huddart, Hughes, and Levine (2001) show theoretically that the insider does not choose trading quantities to fully exploit her private information, but adds some noise to her trading quantities. The notion that corporate insiders have an interest in outsiders' participation in the market is formalized in Ausubel (1990). Lenkey (2014) argues that trading too aggressively has an adverse effect on insiders' risk sharing ability in the future.

Electronic copy available at: https://ssrn.com/abstract=2887628

information but also the price impact of the trade a function of insider and trade characteristics. For example, insiders with more immediate access to private information, such as top executives, likely also face the highest reputational costs of exploiting this information. While well-informed insiders' trades have greater price impact, these insiders may also choose to trade less aggressively. Hence, the quantities chosen by the insider may decrease with the amount of information she possesses, suggesting an inverse relation between returns and quantities.

We present stylized facts about dollar profits, contrast them with percentage returns, and investigate a number of mechanisms to explain the discrepancy between returns and profits. Our main finding is that quantities matter: returns and dollar profits paint a markedly different picture of insider trading, because insiders who make high returns tend to place small and infrequent trades. First, we show that dollar profits are small for the typical corporate insider. We study all insider trades reported on SEC Form 4 during 1986-2013. The median insider who trades in a given year earns annual abnormal profits of $464, while the average insider earns $12,000 per year. The distribution of profits has a long right tail. For insiders whose compensation we can observe, trading profits equal 0.1% of total compensation at the median, 1.1% on average. The main reason that profits are small is that most insiders trade infrequently. The average insider makes 7 trades in our sample, the median insider makes 3. We initially measure abnormal profits over the 20-day window after the trade, following the literature. However, the profits remain small if we extend this period to longer time horizons. Our results suggest that only 7% of insiders enjoy trading profits that exceed 10% of their compensation.

Second, we show that high percentage returns do not imply high dollar profits. The correlation between dollar profits and returns is only 22-23%, and markedly lower, only 4-5% for abnormal returns above 0.5%, which approximately corresponds to the top tercile. To make high dollar profits, an insider would need to trade large amounts when she expects abnormal returns to be high. We show that dollar profits to insider trading are small partly because insiders with the most informative trades, earning large abnormal returns, tend to trade infrequently and in relatively modest amounts. In contrast, insiders who trade frequently earn lower percentage returns per trade,

Electronic copy available at: https://ssrn.com/abstract=2887628

but still make higher dollar profits per year than infrequent traders.[3] Aggregating profits at the insider-year level is critical to the measurement and comparison of trading profits, as some insiders trade frequently (see also, e.g., Betzer et al., 2015 or Klein, Maug, and Schneider, 2017).

We consider two explanations for the variation in trade quantities. First, firm-level monitoring or regulatory scrutiny influence the quantities chosen by the insider. Suppose that the regulator monitors both abnormal returns and overall trade quantities (the optimal policy in DeMarzo, Fishman, and Hagerty, 1998), and is most likely to act when both of these are high, i.e., when an insider makes a large profit by placing a large trade at a time when she has value-relevant information. Anticipating this, insiders have two strategies to avoid scrutiny from the regulator. Some insiders ("high-return") may trade small amounts, trade infrequently, but do so when they possess value-relevant information, i.e., information that is expected to move the stock price once public. The regulator is unlikely to allocate their resources to investigating such insiders because the harm to other market participants is small. Other insiders ("high-quantity") may trade large amounts or trade frequently but do so when they are not in possession of value-relevant information. The regulator is unlikely to allocate their resources to investigating such insiders because given the low abnormal returns on the insider's trades, it would be difficult to prove that the insider traded on information. Whether it is high-return or high-quantity insiders that make larger profits is an empirical question, as it depends on the tradeoff between returns and quantities. In reality, insiders may fall between these two stylized types.

A second explanation is that insiders may have different preferences, with some insiders inherently more intent on turning a profit than others. Insiders may trade for alternative reasons, e.g., to increase or unwind their equity incentives (Ofek and Yermack, 2003), to meet mandatory ownership requirements (Core and Larcker, 2002; Bhagat and Tookes, 2012), or to support the stock price (Wu, 2018b). These factors may affect their response to regulation and monitoring.

[3] Cohen, Malloy, and Pomorski (2012) classify insiders as either routine or opportunistic traders based on their past trading history. Our definition of frequent and infrequent traders looks only at the number of trades placed. We confirm that these two definitions provide two different partitions of the sample of insider trades. In fact, 69% of all opportunistic traders are frequent traders.

Electronic copy available at: https://ssrn.com/abstract=2887628

Our next set of results speaks to the tradeoffs that insiders consider – following their preferences, or as a result of firm-level monitoring or regulatory scrutiny. The correlation between returns and trade size is lower for insiders who have been with the firm for a longer time, those with a high ownership stake, for local insiders, and those that report their trades in a timely fashion. These patterns are suggestive of insiders' own preferences. The correlation between returns and trade size is also lower for insiders of firms with high institutional ownership, larger firms, and those covered by security analysts. Finally, the correlation between returns and trade size is significantly lower after the passage of the Sarbanes-Oxley Act (SOX), and in years when the SEC's budget is higher. These patterns suggest variation in insiders' trading choices that reflect firm-level monitoring and regulatory scrutiny.

We show three empirical implications of the differences between high-return and high-quantity insiders. The first implication is that informed trading proxies established by the existing literature are negatively correlated with trade quantities, and hence, with yearly dollar profits, even though they are positively correlated with percentage returns, by definition. In line with prior literature, we confirm that abnormal returns are higher for opportunistic traders (Cohen, Malloy, and Pomorski, 2012), insider purchases (e.g., Lakonishok and Lee, 2001; Jeng, Metrick, and Zeckhauser, 2003; Fidrmuc, Goergen, and Renneboog, 2006), CFOs (Wang, Shin, and Francis, 2012), and executives (Ravina and Sapienza, 2010). However, we show that quantities and yearly dollar profits are *lower* for all of these categories.

A second implication is that insiders making the highest profits are different from those making the highest returns. We examine who makes high profits. Exploiting a legally-imposed discontinuity, we propose a new measure capturing insiders' trading intentions. Section 16(b) of the Securities Exchange Act of 1934 defines short-swing profits as profits on round-trip transactions where the offsetting trades (e.g., the initial purchase and the subsequent sale) are less than 6 months apart. The law requires insiders to return these profits to the company. We show that having closed a trade after 181200 days in the past predicts higher future returns, trading frequency, trade values, and profits. We also find that insiders with a higher percentage of sales,

Electronic copy available at: https://ssrn.com/abstract=2887628

those who trade frequently, and CEOs are more likely to make higher dollar profits. These findings on sales and frequent trading contrast with the literature on percentage returns.

The third implication is that dollar profits predict future returns to insider trades because they reveal whether an insider is more likely to be "high-return" or "high-quantity". Indeed, we show that insiders in the top quintile of yearly dollar profits in one year earn 21bps lower abnormal returns in the following year. This result holds even after we control for other measures of informed insider trading such as the opportunistic measure of Cohen, Malloy, and Pomorski (2012). This finding suggests that dollar profits contain relevant information beyond existing proxies, hence, they are also useful for asset pricing applications of insider trading.

We conduct several additional tests to examine the robustness of our main results. First, our findings are not driven by our choice of the benchmark for abnormal profits: using a market adjustment or raw dollar profits yields similar results. Second, dollar profits remain small over our sample of 27 years. Third, we track each insider's ownership over time and show that non-trading generates (even) lower dollar profits than trading. Finally, insiders may profitably sell shares once they leave the firm. These trades lose money on average and are thus unlikely to bias our results.

Our paper contributes to three main strands of the academic literature. First, our study is related to the literature that studies which observable characteristics predict abnormal returns to insider trading (e.g., Jeng, Metrick, and Zeckhauser, 2003; Cohen, Malloy, and Pomorski, 2012; Alldredge and Cicero, 2015; Biggerstaff, Cicero, and Wintoki, 2017; Akbas, Jiang, and Koch, 2020; Wu, 2018a). This literature has focused on "high-return" insiders. Instead, we examine the trade quantities that insiders choose, how much they make on their trades, and to what extent observable characteristics that predict abnormal returns also predict dollar profits. To the best of our knowledge, this is the first study examining the dollar profits to insider trading.[4]

[4] Skaife, Veenman, and Wangerin (2013) analyze a sample of firms with an audit opinion on Internal Controls over Financial Reporting effectiveness under Section 404 of SOX, for the period 2004-2008. They find that insider trading profits relative to the market capitalization of the firm are higher in firms disclosing material weaknesses in internal control, but they do not analyze dollar profits beyond this comparison.

Electronic copy available at: https://ssrn.com/abstract=2887628

Second, our paper adds to the literature on insider trading behavior as a proxy for corporate governance issues. Figure 1 shows that the number of published papers on insider trading in leading academic journals has been increasing. The percentage of these papers that study whether insiders profit from their informational advantage through insider trading, or examine insider trading as a symptom of corporate governance issues has also been increasing. Given this growing interest in whether insiders profit from their information and which corporate governance arrangements may curb such behavior, we highlight that returns are an inaccurate proxy that yields misleading results about economic rents, and shed light on why this is the case.

Theoretical work (Dye, 1984; Bebchuk and Fershtman, 1994; Hu and Noe, 2001) argues that allowing corporate insiders to trade can be desirable for shareholders, because it creates managerial incentives and mitigates agency conflicts by strengthening the relation between the insider's personal wealth and firm value. This mechanism has been tested in several empirical studies (Roulstone, 2003; Henderson, 2011; Denis and Xu, 2013; Cziraki, de Goeij, and Renneboog, 2014). Roulstone (2003) examines the relation between insider trading restrictions and executive pay in the U.S., and finds that firms that restrict insider trading pay higher total compensation. Denis and Xu (2013) study the relation in an international setting. This literature uses percentage returns to measure private benefits, which is imprecise. Our findings suggest that profits are not a meaningful source of private benefits for most insiders. Future studies interested in measuring private benefits from insider trading should analyze dollar profits.

Insiders may use alternative strategies such as trading illegally in stocks or derivatives, tipping, or trading in related stocks, which may not be traceable through reported trades (e.g., Meulbroek, 1992; Tookes, 2008; Augustin, Brenner, and Subrahmanyam, 2019; Augustin, et al., 2020; Mehta, Reeb, and Zhao, 2020; McNally, Shkilko, and Smith, 2017; Ahern, 2017, 2020; Kacperczyk and Pagnotta, 2019; Shkilko, 2019). Illegal trading profits reach an average of $1 million (Kacperczyk and Pagnotta, 2019) per trade or an average of $1.3 million per tip for illegal insider trading (Ahern, 2017). High-return insiders may shift some of their trades to these alternative channels, which are not observable to researchers in their entirety. For example, illegal insider trades are only observable if they were successfully prosecuted, and the SEC chooses which

Electronic copy available at: https://ssrn.com/abstract=2887628

cases to investigate, making illegal trades a selected subsample (Ahern, 2020). Our findings complement also this line of research by facilitating the comparison between the benefits from publicly reported insider trades and alternative channels to exploit private information.[5]

Finally, our paper contributes to the literature studying the relation between monitoring at the firm level or by regulators, and insider trading (Roulstone, 2003; Brochet, 2010; Ravina and Sapienza, 2010; Cziraki, de Goeij, and Renneboog, 2014). Our work connects academic research to how regulators monitor insider trading.[6] The SEC explicitly refers to dollar profits in its Enforcement Manual (U.S. Securities and Exchange Commission, 2013, section 2.3.2/(2)/(d)). It also refers explicitly to profits and trade quantities in the context of recent cases, e.g., SEC v. Lawson et al. (2014) and SEC v. Levoff (2019).[7] By studying dollar profits and trade quantities, we highlight considerations that are relevant for the SEC, yet have received little attention from academics, even in studies focusing on insiders' personal gains and corporate governance. Looking at trade quantities and dollar profits alongside percentage returns gives a more accurate picture of which trades the SEC may investigate.

2. Data and Summary Statistics

2.1 Sample

We use data from Table 1 of the Thomson Reuters insider transaction database, which consists of all transactions filed on Form 4 of the U.S. Securities and Exchange Commission. Our sample period extends from January 1986 to December 2013. Following prior literature (e.g., Jeng, Metrick, and Zeckhauser, 2003; Ravina and Sapienza, 2010; Cohen, Malloy, and Pomorski, 2012), we focus on open market purchases and sales, identified as transaction codes "P" and "S". When

[5] Reporting a trade to the SEC does not necessarily imply that the trade is legal. Several trades reported to the SEC in our dataset were later identified as illegal, e.g., Steven S. Spitzer's stock sales at Peregrine Systems between 1999-2001, or the trades of CEO Frank J. Fradella and other insiders at Home Solutions of America in 2006.

[6] Empirical evidence on the effectiveness of SEC enforcement is scant (Kedia and Rajgopal, 2011) and the SEC discloses relatively little information (Velikonja, 2016) to avoid firms potentially gaming its enforcement processes (e.g., Stice-Lawrence, 2019). Ahern (2020) summarizes how the SEC and other regulators detect insider trading.

[7] Compl. 3, *SEC v. Lawson*, No. 3:14-cv-02157 (N.D. Cal.) and Compl. 8-11, *SEC vs Levoff*, No. 2:19-cv-05536 (D.N.J.).

Electronic copy available at: https://ssrn.com/abstract=2887628

an insider makes multiple trades in the same stock on the same day, we aggregate the total number of shares traded to the daily level. In such cases, we also value-weight transaction prices to obtain the total dollar value of the trade. Finally, we merge with data from CRSP.

We impose the following filters on trade price and size. We drop all trades for which the reported transaction price is outside the daily low-high range reported in CRSP, or more than 20% away from the closing price of the day. We also drop transactions for which the number of shares traded is higher than either the trading day's total volume reported in CRSP or half of the total market capitalization of the company.[8] Finally, for trades reported on dates when exchanges are closed, we use data on the first trading day following the reported transaction date. We merge the insider trade data with financial statement information from Compustat and the number of analysts covering the firm's stock from I/B/E/S. We obtain data on executive compensation from ExecuComp, which reports the compensation of the top 5 highest-paid executives of firms in the S&P 1500, starting in 1993. We winsorize all non-binary variables at the 1st and 99th percentiles.

Table 1 Panel A describes the resulting sample. Overall, we are left with 644,643 transactions, about a quarter of which are purchases.[9] Our sample contains 92,758 insiders trading across 7,643 unique firms. 22% of insiders only buy shares, 57% only sell shares and 21% trade in both directions. The typical insider makes very few trades (with a median of 3 and an average of 7), although some insiders trade much more and trade the shares of more than one company.

2.2 Measuring Returns and Dollar Profits

We use two approaches to measure the dollar profits to insider trading. Our main approach is to multiply the inflation-adjusted dollar value of the trade, expressed in 2013 U.S. dollars, by the abnormal return in the 20 days after the trade. Many prior studies find that insiders earn high abnormal returns at horizons of 20 days or shorter (e.g., Seyhun, 1986; Jeng, Metrick, and Zeckhauser, 2003; Fidrmuc, Goergen, and Renneboog, 2006; Ravina and Sapienza, 2010; Cohen,

[8] We obtain very similar results if we do not exclude these trades.

[9] There are approximately 1.3 million insider transactions in the Thomson Reuters database. We exclude transactions of stock with unreasonable book-to-market values that are negative or higher than 100 (approximately 11% of observations), missing return histories (approximately 19% of observations) and missing analyst coverage from I/B/E/S (approximately 22% of observations).

Electronic copy available at: https://ssrn.com/abstract=2887628

Malloy, and Pomorski, 2012). We thus examine whether dollar profits at this horizon are also substantial. The benefit of this approach is that we are able to use all insider transactions. The drawback is that the profits are hypothetical and may not correspond to the dollar gains any particular insider realizes. We follow the trading horizon choice of Cohen, Malloy, and Pomorski (2012), and use the Fama-French 3-factor model as our return benchmark. We estimate factor betas using monthly data for the 36 months preceding the trade. We multiply returns on insider sales by –1, to facilitate comparison with purchases.

To account for the possibility that hypothetical ("paper") profits differ from actual profits, we also calculate realized profits using round-trip transactions, i.e., buy-sell and sell-buy transaction pairs and sequences. For example, if we observe an insider buying 100 shares in January and selling 100 shares in December, we can calculate the dollar gains or losses on this trade. Because the number of shares bought and sold may not be equal, for each insider with both buys and sells in the sample we compute profits using the value-weighted purchase and sale price. Internet Appendix C presents the results of this exercise. Although we find that round-trip transactions differ from non-round-trip transactions, we also find that dollar profits remain small, and that variables that predict returns do not predict profits.

2.3 Descriptive Statistics of Trade Quantities, Returns, and Dollar Profits

Panel B of Table 1 reports the average and median value traded for the overall sample. The value traded is highly skewed. Insiders transact roughly $129,000 per trade at the median, but the average trade is much larger at $631,000.[10] On average, corporate insiders generate positive returns of 0.9% (median of 0.6%) within a 20-day window. Abnormal dollar profits are small: per trade, insiders generate an average (median) abnormal profit of approximately $4,000 ($141). The distribution of abnormal dollar profits, similarly to value traded, has a long right tail.[11]

[10] Tables A1 and A2 in the Internet Appendix provide time-series information on trade quantities, returns, and profits.
[11] The distribution of abnormal returns, shown in the top graph of Internet Appendix Figure A1, roughly follows a normal distribution, though it has a higher kurtosis. The bottom left graph of Figure A1 shows the distribution of the

Electronic copy available at: https://ssrn.com/abstract=2887628

We examine dollar profits aggregated at the yearly level because insiders may split up their trades into several smaller parts and trade over several days. Dollar profits at the trade level may therefore underestimate the true profits accruing to these insiders. Yearly abnormal dollar profits are still quite small with a median value of $464 and an average of $12,000.[12] Insider trading profits account for 0.1% of total compensation at the median and 1.1% on average, while at the 90th percentile, trading profits are equal to 6.7% of total compensation. Only 7% of insiders make profits that exceed 10% of their compensation (not shown in a table).[13] We conclude that insider trading profits do not represent a meaningful source of compensation for the typical insider, but only for a small subset.[14]

Dollar profits are small irrespective of the benchmark we use to calculate abnormal profits. Table A3 shows that the average (median) yearly abnormal dollar profit is lower at $4,380 ($370) if we use the market return as a benchmark. Raw yearly dollar profits, without any adjustment, are even lower, equaling –$3,520 ($80). Finally, Table 1 Panel C shows summary statistics of the control variables used in our regressions.

Reporting requirements expire six months after a corporate insider leaves the firm. In Internet Appendix E, we consider the possibility that insiders make profits that are not captured by any of the measures used in the main analysis, which may lead to an underestimation of profits. This would be the case if an insider bought stock that did not appreciate immediately, but did rise

entire sample, while the bottom right graph shows the distribution of abnormal profits excluding values between –$30,000 and $30,000 to show the longer right tail.

[12] Table A2 in the Internet Appendix shows trade-level and yearly abnormal profits for longer trading horizons of 3, 6, and 12 months. The yearly profits range from a median of $945 for a 3-month horizon to a median profit of $1,442 for a 12-month horizon. Due to the strong right skew of the distribution, the average values are much larger and range from $26,000 for a 3-month horizon to $68,000 for a 12-month horizon.

[13] Panel A of Table A4 in the Internet Appendix provides a breakdown of value traded, abnormal returns, and profits by insider role. In Panel B of Table A4, we aggregate insider trading profits at the firm level to shed light on the value that outside investors may lose when they trade against corporate insiders as their counterparty. The median (average) value of yearly abnormal profits at the firm level is $3,000 ($61,000). Panel C of Table A4 contains aggregates over the insiders' lifetime: The median (average) abnormal dollar profit is $1,000 ($35,000), and the median (average) abnormal round-trip profit is $0 ($43,000).

[14] The ratio of profits to total compensation may be higher for insiders that are not covered by ExecuComp. We study this possibility in detail in Internet Appendix D. We find that the average (median) remains around 2-3% (0.2%) in the various subsamples and extended samples we examine. We also study the ratio of dollar profits to estimated insider wealth and find that, if anything, it is slightly lower outside the ExecuComp sample.

Electronic copy available at: https://ssrn.com/abstract=2887628

in value after a few years, and the insider did not sell this stock before leaving the firm. We estimate these profits and find that they are not large enough to bias our results.

3. Why Do High Returns not Imply High Dollar Profits?

3.1 The Correlation Between Returns and Profits

If insiders seek to capitalize on private information, profits should increase with high abnormal returns, as returns measure how value-relevant insiders' private information is. However, Figure 2 shows that the relation between abnormal returns and profits is S-shaped. This pattern is robust to risk-adjustment of returns, or to controlling for firm fixed effects, year fixed effects, and time-varying firm characteristics. Table 2 reports the correlation between returns and dollar profits, which is moderate over the entire sample and close to 0 at high levels of abnormal returns. Panel A shows that the correlation between returns and profits is between 22% and 23%, depending on the specification. Panels B breaks down the correlation across three ranges of abnormal returns and finds that it is highest when returns are low in absolute value: trades making small gains or losses. Even in this range, the correlation is moderate, between 3% and 34%. However, for high abnormal returns (above 0.5%), the correlation is between 4% and 5%. The number of observations is similar across the three groups, so the low correlation is not an artifact of a small subsample. These patterns remain similar if we choose a higher cutoff for abnormal returns. Table 2 Panel C shows that the correlation between returns and profits is 13 to 21% when abnormal returns are between –3% and 3%, and remains low at 0 to 4%, when abnormal returns exceed 3%. Using cutoffs of ±3% splits our sample into three bins of approximately equal size.[15]

If returns were uncorrelated or positively correlated with trade quantities, we would expect a strictly monotonic relation between returns and profits, which would justify the use of returns as a proxy for returns. However, our evidence suggests that returns are a poor proxy for economic rents that insiders extract through trading, especially when returns are high. This discrepancy is due to the negative relation between trade quantities and returns. To extract rents from private

[15] Table A11 in the Internet Appendix shows that the results remain similar for cutoffs of ±1% and ±2%.

Electronic copy available at: https://ssrn.com/abstract=2887628

information, an insider would have to place larger (not smaller) trades when they expect abnormal returns to be high. Trading frequency is another driver of dollar profits. The extent to which insiders can generate rents from their private information also depends on the relation between returns and trade frequency. The low correlation between profits and abnormal returns for high positive returns suggests that insiders face constraints to capitalizing on private information.

Next, we analyze the relation between returns and trade size, and returns and trade frequency. We also examine potential constraints at the insider level and firm level that moderate the relation between returns and trade quantities.

3.2 The Relation Between Returns and Trade Size

We now examine what drives the non-monotonic relation between returns and dollar profits. Insiders seeking to maximize their trading profits would choose larger transaction volumes when their superior information is large, i.e., when abnormal returns are high. Even if trade sizes were uncorrelated with abnormal returns, we would still observe a positive relation, but not the flat relation as shown in Figure 2. What prevents insiders from using their superior information to make high dollar profits? Table 3 examines the correlation between returns and trade volume in various subsamples. We split the sample into subgroups using variables that we expect to capture economic constraints that prevent corporate insiders from monetizing their superior information. Each cell of the table shows coefficient estimates from a regression of trade size on returns, while we keep the grouping into abnormal return ranges as in Table 2. We show the slope coefficient rather than the correlation, as the slope coefficient reveals information about the steepness of the relation and allows for convenient comparison across the models. If a firm or insider characteristic is associated with less profit seeking, we expect (i) greater variation in the correlation among the three ranges, and (ii) a lower coefficient for trades with the highest returns.

First, Table 3 Panel A shows that abnormal returns are negatively correlated with trade size in firms with analyst coverage, but the correlation is positive for firms without analyst coverage.[16]

[16] Results remain similar if we use cutoffs of ±1%, ±2%, or ±3% as shown in Tables A12-A14 in the Internet Appendix.

Electronic copy available at: https://ssrn.com/abstract=2887628

This difference suggests that less attention from other financial market participants, and professional analysts in particular, is associated with a greater willingness or ability of insiders to monetize their information advantage. These results complement Wu (2018a) who shows that exogenous decreases in the number of analysts covering a firm are associated with higher percentage returns to insider trading. The correlation between returns and trade size is positive in small firms and negative in large firms, consistent with the view that insiders in firms with higher information asymmetry and subject to less media attention and public scrutiny are more likely to take advantage of profitable trading opportunities.

Second, we partition the sample by whether the insider reported their trade in a timely fashion or late (Betzer et al., 2015). The correlation between returns and trade size is negative for trades reported on time, but positive for trades reported late. These patterns suggest that insiders who are more likely to capitalize on superior information by placing large trades also delay the revelation of these trades to other market participants. The positive correlation between returns and trade size for trades filed late also suggests that these insiders are less worried about complying with insider-trading regulations and the potential consequences.

Insiders may exhibit less discipline around insider-trading policies in the presence of lax firm-level governance standards (Fidrmuc, Goergen, and Renneboog, 2006; Ravina and Sapienza, 2010). In line with this hypothesis, we find that the correlation between returns and trade size is noticeably higher for profitable trades at firms with low institutional ownership than at firms with high institutional ownership. The correlation between returns and trade size is higher in poorly-governed firms (G-Index $\geq$ 12) than in well-governed firms (G-Index < 12), but the difference is not statistically significant. Similarly, the correlation is higher in dual-class firms – in which control rights and cash flow rights are separated – but not significantly so.

Table 3 Panel B examines insider characteristics. Insiders with a lower tenure at the firm, and those with lower dollar ownership are more likely to place larger trades when they expect the trade to be more profitable. At the same time, insiders with a high tenure and those with a high dollar stake in the firm are more likely to place large trades when they stand to *lose* money, as shown by the large positive coefficients in column 1. These patterns suggest that insiders who have

Electronic copy available at: https://ssrn.com/abstract=2887628

been with the firm for quite some time or have a large ownership stake value diversification more than capitalizing on private information. We also show that such insiders are more likely to engage in stock price support by making large purchases even when the stock price subsequently declines. These patterns are revealing because high-tenure insiders know the firm better, and insiders with higher ownership have incentives that are more aligned with outside shareholders. We show that the diversification and the stock price support motives outweigh these latter considerations.

In addition to firm-level corporate governance standards, we also look at the general regulatory environment in Table 3 Panel C. To do so, we use the passage of the Sarbanes-Oxley Act (SOX) and variation in the SEC budget. SOX marked a substantial change in the enforcement regime applicable to corporate insider trading. Before SOX, rules governing corporate insider trading and the enforcement of these rules were rather lax. By law, insiders had until the 10th of the month following the month of the trade – i.e., potentially up to 42 days – to disclose their transactions. Even these lax standards were weakly enforced. Post SOX, insiders have to report their trades within two business days. In addition, the post-SOX period is characterized by stricter regulatory monitoring of the compliance with existing rules (see e.g., Brochet, 2009 or Betzer et al., 2015). We also who use the SEC budget in constant 2013 U.S. dollars as a resource-based measure of enforcement intensity, following Del Guercio, Odders-White, and Ready (2017). There is substantial variation in the SEC budget over time: in real terms, the budget has increased six-fold over our sample. Variation in the SEC budget can be viewed as independent of the severity of actual trading on inside information, as it is primarily determined through idiosyncratic political budgeting processes, which mitigates potential concerns of reverse causality.

We find that both the passage of SOX, and higher SEC budgets are associated with a more negative correlation between returns and trade size for abnormal returns above 3%. We also find that they are both associated with a much more positive correlation between returns and trade size for abnormal returns below –0.5%. The variation between columns (1) and (3) is significantly more pronounced both post SOX and when the SEC budget is higher.

There are two caveats to this interpretation. First, these tests rely on variation over time, and, with some exceptions, the SEC budget increases over our sample period. Insiders may have

Electronic copy available at: https://ssrn.com/abstract=2887628

simply become more reluctant to profit from their information over time, perhaps because market participants more readily recognize their trades. To better understand these time trends, Figure 3 shows the average correlation between the size of insider trades and abnormal returns over our sample period for trades with abnormal returns greater than or equal to 0.5%. We find that the correlation declines over time, with a notable decrease after 2002.[17]

The second caveat is that SOX and changes in the SEC budget may partly be responses to large-scale corporate scandals and failures of governance. Thus, even though once the regulation is in place, it is exogenous to an individual firm (i.e., in the short term, insiders' only choice is to adjust), we acknowledge that our estimates may not capture the pure causal effect of tighter regulation and greater scrutiny on insider trading behavior.

Nevertheless, collectively, the results in Table 3 suggest three sets of factors that are associated with insiders making smaller trades when they have potentially profitable trading opportunities, thereby limiting the economic rents insiders extract from their private information: Firm-level governance proxies (such as institutional ownership), insider characteristics related to the exposure of the insider to firm value, and recent regulatory changes.

3.3 The Relation Between Returns and Trade Frequency

There is substantial heterogeneity in trade frequencies, which determine dollar profits in addition to abnormal returns and transaction volume. In this subsection, we try to understand the relation between trading frequency and dollar profits. To that end, we create deciles based on the number of trades for an insider's lifetime in the sample. The top left graph of Figure 4 shows the mean number of trades for each decile.[18] The growth over deciles is slow and approximately linear for all but the top two deciles: the average number of trades is 1 in the bottom decile, 5 in the fifth decile, 10 in the ninth decile, and 30 in the top decile.

[17] We obtain similar results if we limit the sample to the 5-year period ± 2 years around SOX. We also verify that the largest decrease in the correlation over any 5-year period takes place around SOX – these results are untabulated.
[18] Deciles 2 and 3 are missing because 25% of all insiders place only one trade in their lifetime. As a result, all insiders with one trade are in the first decile.

Electronic copy available at: https://ssrn.com/abstract=2887628

The top right graph of Figure 4 shows an inverse relation between trading frequency and average abnormal returns. The most informative trades are placed by insiders who trade infrequently. The bottom left graph shows that there is no significant relation between trading frequency and average trade-level abnormal profits. If anything, trade-level abnormal profits are lower for the upper deciles. However, the bottom right graph reveals a strong positive relation between trading frequency and yearly average dollar profits. Even though abnormal returns are smaller for insiders who trade frequently, overall yearly profits appear to be mainly driven by trade frequency rather than average abnormal returns. This analysis suggests that abnormal returns do not line up with dollar profits, and that this discrepancy is due to trade quantities.[19] Therefore, to understand potential consequences of the divergence between returns and quantities, in Section 4 we examine their relation with known predictors of abnormal returns.

4. Do Informed Trading Proxies Predict Dollar Profits?

Section 3 documents that for transactions that appear to be based on private information, insiders choose smaller trade sizes and frequencies for more profitable transactions. We now study the implications of these empirical patterns. We examine whether informed trading proxies that have been shown by the existing literature to predict abnormal returns also predict abnormal dollar profits. These informed trading proxies are typically correlated with the size of the insider's informational advantage, but they can also be correlated with the costs of exploiting private information. Insiders with considerable private information can deliberately choose to trade small quantities, as we have shown in Section 3.1. They may do so because their incentives are aligned with those of other shareholders, or because they are subject to larger public scrutiny as a top executive in the firm. In line with existing theoretical models, these costs, and accordingly, the

[19] To further understand the role of frequency, we run tests similar to those reported in Table 3 examining the relation between yearly volume-weighted average returns and trade frequency for various subsamples and return regions in Table A15 in the Internet Appendix. With the exception of the timeliness of filings and the gender, we find very similar results for the relation between frequency and returns at high abnormal returns and various firm, insider, and regulatory monitoring characteristics.

Electronic copy available at: https://ssrn.com/abstract=2887628

informed trading proxies, may be inversely associated with insider trading quantities such as value traded, frequency, and yearly profits.

Our first result is that the analysis of dollar profits yields contrasting evidence to the analysis of percentage returns. In situations where the extant literature predicts trades to be informative, dollar profits are not large; in fact, in many cases, they are even smaller. Table 4 shows the results from regressions of abnormal returns, trade quantities, and dollar profits on six different proxies for whether an insider or trade is more likely to be informed, while controlling for firm fixed effects, year fixed effects and, firm-level control variables. Each panel of Table 4 reports a separate set of regressions, where each cell reports the coefficient and standard error for the respective informed trading proxy for brevity.[20] Because the buy dummy is a trade-level proxy, in columns 2, 4, 6, and 7, we use the mean of the variable for the given insider-year observation (i.e., the percentage of buys) instead of a dummy. We control for the natural logarithm of market capitalization because trade quantities can vary with firm size (e.g., Seyhun, 1986). We also control for the book-to-market ratio (e.g., Jenter, 2006), the logarithm of the number of analysts covering the firm (Wu, 2018a), and idiosyncratic volatility (e.g., Ben-David and Roulstone, 2010; Gider and Westheide, 2016) to account for measures of asymmetric information and potentially priced risk factors that are not captured using the chosen return benchmark.

For most proxies of informed trading, we find higher percentage returns in line with prior studies, but lower trading frequency, lower trade value, and, as a result, lower dollar profits. Column 1 of Table 4 shows that abnormal returns are higher for purchases, confirming the results of Lakonishok and Lee (2001), Jeng, Metrick, and Zeckhuser (2003), and Fidrmuc, Goergen, and Renneboog (2006). However, our results also show that more insider buying is associated with significantly less frequent trading (column 2) and trading significantly smaller amounts (columns 3-4). Finally, column 6 shows that yearly abnormal profits are lower for insiders who buy.

The regressions in Table 4 rows 2-5 show a similar pattern for opportunistic traders (Cohen, Malloy, and Pomorski, 2012), infrequent traders using our cutoff value of 20 trades, CFOs (Wang,

[20] Table A16 in the Internet Appendix reports the coefficients for the firm-level control variables, with year fixed effects (Panel A) and with (Panel B) year and firm fixed effects.

Electronic copy available at: https://ssrn.com/abstract=2887628

Shin, and Francis, 2012), and executives (Ravina and Sapienza, 2010). For each of these variables, we confirm that it is associated with higher percentage returns, but also lower yearly abnormal profits. Yearly abnormal profits are also lower for opportunistic traders, although not significantly so. For insiders who only buy and for executives, the point estimates for abnormal profits (column 5) are positive, but not statistically significant. Overall, we conclude that insiders who are more likely to be informed make lower dollar profits on their insider trading, or do not make higher profits, *despite* making higher percentage returns.

We include firm fixed effects throughout the regressions in the paper, because there is substantial heterogeneity in the dependent variables across the firms. This heterogeneity is supported by the following analyses: Panel A of Table A17 documents that there is significant persistence in returns, trade frequency, volumes, and dollar profits as shown by the large positive coefficients on their lagged values. In Panel B of Table A17, we test the null hypothesis that the firm fixed effects are jointly equal to zero. We reject this null for all dependent variables, indicating that there is substantial firm-level heterogeneity.

4.1 Robustness of the Results on Informed Trading Proxies

The results in Table 4 remain similar if we remove firm fixed effects from the regressions, as shown in Panel A of Table A18 in the Internet Appendix. In Panel B of Table A18, we control for time-varying unobserved heterogeneity at the firm level by adding *firm* × *year* fixed effects to the regressions. Here, the estimates are identified from variation across different insiders in the same firm-year. Consequently, they are not driven by any omitted variable at the firm level that varies over time. Even after including firm × year FE, we still find that trades that are more likely to be informed indeed have higher returns, but lower yearly profits. In Panel C, we exclude any time-varying control variables from the regressions. Our results remain similar, suggesting that they are not driven by the control variables we choose to include in our models.

Our results remain similar if we use 6 months instead of 20 days to measure abnormal returns and profits – see Panel D of Table A18 of the Internet Appendix. Hence, the divergence between the predictors of returns and profits is not specific to considering a horizon of 20 days.

Electronic copy available at: https://ssrn.com/abstract=2887628

We focus on purchases and sales, transactions subject to the discretion of insiders, as we are interested in measuring whether they are able to profit from their information. In our sample, 46% of sales involve shares obtained through an option exercise. Table A18 Panel E shows that our findings remain similar if we exclude these transactions.

Table A18 Panels F and G repeat the analyses in Table 4 *separately* for purchases and sales. Informed trading proxies are positively associated with returns, but negatively associated with trade quantities, *both* in the purchase and in the sales subsample. This symmetry of the results helps evaluate alternative explanations. First, purchases have higher percentage returns than sales and are smaller on average. If the informed trading proxies are correlated with the purchase dummy, the documented patterns may arise mechanically from the differences between purchases and sales. The symmetry of the results in Panels F and G of Table A18 allows us to rule out this explanation. Second, it is possible that uninformed trades represent a higher percentage of sale (purchase) transactions if insiders trade predominantly for liquidity or diversification motives (to support the stock price). The symmetry of the results across purchases and sales means that none of these stories alone can explain our results in their entirety.[21] In Panel H, we show that our results remain similar when we exclude trades classified as routine using the method of Cohen, Malloy and Pomorski (2012). Finally, we examine the sensitivity of the results to how we cluster standard errors in Panel I of Table A18. Our conclusions remain unchanged if we use double-clustering by firm and by year, clustering by insiders, or double-clustering by insider and by year.

5. Who Makes High Dollar Profits?

We now examine directly which insiders make high dollar profits. An insight of our analysis so far is that to make high dollar profits, an insider needs to trade larger amounts, or trade more frequently, when they expect to have more valuable information. We focus our exposition on insider-level traits. In Section 5.1, we use a threshold imposed by law as a new proxy for insider

[21] Internet Appendix H compares the role that risk aversion and trading ability play in determining high dollar profits.

Electronic copy available at: https://ssrn.com/abstract=2887628

preferences for making a profit. Then, in Section 5.2, we study a broad set of insider characteristics to understand which insiders make high dollar profits.

5.1 Does Closing a Trade After 181-200 Days Predict Future Trading Behavior and Outcomes?

One potential explanation for the observation that insiders do not seem to capitalize on their superior information is that insider trading is driven by motives other than profit seeking. Ideally, we would like to observe trading motives directly to understand whether differences in these intentions drive dollar profits. To develop a proxy for trading objectives, we exploit a legal threshold, the so-called short-swing rule, which creates a discontinuity in the behavior of insiders who are likely to care about turning a profit, thereby eliciting insider preferences.[22]

The short-swing rule is defined under section 16(b) (15 U.S.C. § 78p) of the Securities Exchange Act of 1934. It mandates that insiders who realize profits on round-trip transactions where the offsetting trades (e.g., the initial purchase and the subsequent sale) are less than 6 months apart must return these profits to the company.[23] An implication of this law is that an insider wishing to keep these profits needs to wait at least 6 months after a purchase (sale) to make the offsetting sale (purchase).[24]

Relying on the assumption that bunching reveals insiders' intention to make a profit – an assumption we further validate in Internet Appendix I – we examine whether having closed a trade between 181-200 days predicts future behavior and outcomes. In Table 5 we regress returns, volumes, and dollar profits on an indicator set to 1 if the insider has closed a trade after 181-200 days in the past, and our set of control variables. We find that insiders who completed a round-trip transaction after 181-200 days in the past have higher abnormal returns on their trades, trade more frequently, trade higher dollar values on a yearly basis, and make higher dollar profits on their

[22] Cross-sectional differences in bunching to elicit preferences have been used by, e.g., Chetty, Friedman, and Saez (2013) to capture differences in household sophistication across neighborhoods. See Kleven (2016) for a survey of the bunching design.

[23] In cases where an insider places multiple purchases and sales within 6 months, the company is entitled to recover the highest profit possible under the sequence of transactions (see e.g., Chin, 1997, 2016).

[24] This rule is strictly enforced: any shareholder may sue the firm, even if they did not hold the share when the violation took place. Law firms indeed buy shares of the firm after a violation occurs and, as shareholders, seek legal action.

Electronic copy available at: https://ssrn.com/abstract=2887628

trades in general than do other insiders. All of these correlations are consistent with the notion that insiders who complete a round-trip transaction just after the 6-month threshold care about their trading profits. Given that we control for firm fixed effects in all regressions, trading with the apparent goal of maximizing profits seems to be a trait specific to insiders.

Two concerns with using the short-swing rule to identify profit-seeking insiders is that there are few such insiders, and that measures developed in prior work may already identify them. A small fraction of observations identified as profit-seeking may cause our tests to lack power to reject the null. To address these issues, in Table 5 Panel B we regress insider trading outcomes on the dummy variable measuring whether the insider closed a trade after 181-200 days and the same proxies for informed insider trading as in Table 4. Our measure remains highly statistically significant even after controlling for other variables discussed in the literature.

The results in Table 5 show that having closed a trade after 181-200 days in the past predicts future trading behavior and outcomes. These findings suggest that insiders who close trades just after the 6-month threshold are aware of the regulation and are more likely to trade with the intention of turning a profit.

5.2 The Characteristics of Insiders Making High Profits

We now study in greater depth which insiders make high profits, in Table 6. Panel A examines all insiders while Panel B focuses on executives and directors. In columns 1-3, our dependent variable is an indicator for whether the insider-firm-year is in the top quintile of yearly dollar profits. We find that female insiders and local insiders are less likely to make high dollar profits. Focusing on insider role, we find that blockholders are significantly more likely to make high profits (Table 6 Panel A), as are executives, CEOs, and CFOs (Table 6 Panel B).

Insiders with a higher percentage of sales relative to purchases are more likely to make higher profits, highlighting the importance of trade frequencies. While buys generate higher returns than sales, yearly profits to sales are higher once we account for the larger trade size and higher number of sales. Similarly, infrequent traders are significantly less likely to make high profits. Insiders who trade infrequently are 8-9 percentage points less likely to be in the quintile of

Electronic copy available at: https://ssrn.com/abstract=2887628

dollar profits further underscoring the importance of trade quantities. Finally, we find that insiders with longer tenure and insiders with a high dollar ownership are more likely to be in the top quintile of profits. The latter result is likely connected to insider selling: it is easier for insiders with a high dollar stake to trade frequently, and especially to sell frequently. The results are similar when we use the top 10% or 15% of insider-year profits instead of the top quintile in Table A20.

The dependent variable in Table 6 columns 4-6 is an indicator for whether the insider closes a round-trip after 181-200 days. We study the overlap between insiders using this strategy and those making high profits. Similarly to the regressions in columns 1-3 predicting whether an insider is in the top quintile of profits, we find that female insiders are less likely to close a round-trip after 6 months, as are insiders with a higher fraction of buy transactions, and infrequent traders. Blockholders and CEOs are significantly more likely to close a round-trip after 181-200 days. Differently from the regressions in columns 1-3, the fraction of transactions that insiders file late is positively correlated with the likelihood of closing a round-trip after 181-200 days. We also find a negative coefficient for insiders with a high dollar ownership and executives, indicating that these insiders make high dollar profits, but not by closing round-trip trades after 181-200 days. [25]

Overall, we find that insiders making higher profits place more sales than buys, trade frequently, are less likely to be local, and more likely male. The first three of these results contrast with the findings of studies examining percentage returns (e.g., Seyhun, 1986; Fidrmuc, Goergen, and Renneboog, 2006; Cohen, Malloy, and Pomorski, 2012). For example, Cohen, Malloy, and Pomorski (2012) find that trades by local insiders are most predictive of information events. In contrast, we document that non-local insiders are more likely to earn high profits.

6. Do Dollar Profits Predict Future Insider Trading Patterns?

We have shown that an insider's willingness to place large trades when they have valuable information is key to understanding dollar profits. Profits are the outcome of tradeoffs that the insider considers when deciding how much to trade and when. To the extent that profits are

[25] The findings in Panel A and Panel B of Table 6 remain similar when excluding insider-years in which the insider is classified as a routine trader (following Cohen, Malloy, and Pomorski, 2012) in Table A21.

Electronic copy available at: https://ssrn.com/abstract=2887628

correlated with observable and unobservable factors influencing insiders' behavior, they can be used to predict future returns if these factors are persistent. We now study whether the dollar profits an insider makes predict their future trading behavior.

As Table 6 shows, even with firm FE, over 85% of the variation in trading profits is unexplained. An advantage of using past profits is that they may capture unobservable insider traits. In Table 7, we regress abnormal returns to insider trading on yearly dollar profits of the previous year, and the same controls and FE as in Table 4. We also control for the opportunistic variable of Cohen, Malloy, and Pomorski (2012) to ensure that our strategy is different and to gauge the economic significance of our estimates. The correlation between past dollar profits and the opportunistic dummy is close to zero, at -0.02.

Table 7 shows that past dollar profits are negatively associated with future abnormal returns. A decrease in past yearly dollar profits of $100,000 predicts an increase in abnormal returns of 4bps (column 1). Insiders in the top quintile of yearly dollar profits make 26bps lower abnormal returns on their trades (column 2) The difference in abnormal returns is larger in economic terms than the difference of 20bps between executives and other insiders (Table 4). The economic magnitude and statistical significance of the estimates remain similar if we control for opportunistic trades (Cohen, Malloy, and Pomorski, 2012) in columns 3 and 4. The results also remain similar when we exclude routine trades in columns 5 and 6. The findings in this table suggest that, similarly to trading patterns (Cohen, Malloy, and Pomorski, 2012), or trading before earnings announcements (Ali and Hirshleifer, 2015), making high dollar profits is a persistent insider-level trait.[26] Overall, our findings imply that understanding the economic mechanisms driving dollar profits is useful also to researchers who are interested in predicting abnormal returns.

7. Conclusion

While insiders realize significant abnormal returns on their trades, how much they make in dollar terms, and whether trading profits are a meaningful source of private benefits for the average

[26] Dollar profits also predict trade frequency, trade value, and yearly dollar profits – these results are untabulated.

Electronic copy available at: https://ssrn.com/abstract=2887628

insider, has received less attention in the literature. We provide evidence on the dollar profits from insider trading, using data for publicly listed U.S. firms for the period 1986-2013.

Our main finding is that returns and dollar profits paint a markedly different picture of insider trading, because insiders who make high returns tend to place small and infrequent trades. First, we show that dollar profits are small for the typical corporate insider. The median (average) insider earns annual abnormal profits of $464 ($12,000). Second, we show that high percentage returns do not imply high dollar profits. The correlation between dollar profits and returns is only 22-23%, and markedly lower, only 4-5% for abnormal returns above 0.5% (approximately the top tercile). Dollar profits to insider trading are small partly because insiders with the most informative trades (earning large abnormal returns) tend to trade infrequently and in relatively modest amounts. We find that the correlation between returns and trade quantities vary with measures of insider preferences, firm-level monitoring, and regulatory scrutiny.

We show three empirical implications of the differences between high-return and high-quantity insiders. First, informed trading proxies established by the existing literature, although positively correlated with returns, are negatively correlated with trade quantities, and hence, with dollar profits. Second, insiders making the highest profits are not the same as those making the highest returns. We exploit a legally-imposed discontinuity to develop a new proxy for insiders' trading intentions. This measure predicts both returns and profits. We also show that insiders with a higher percentage of sales, and those who trade frequently, are more likely to make high profits, even though they have been shown in prior literature to make lower percentage returns. Third, past profits predict future returns, because past profits proxy for observable and unobservable insider traits, shedding light on an insider's trading preferences.

Taken together, our work shows that percentage returns and dollar profits capture distinct aspects of insider trading. We argue that in the context of insider trading, profits are a more precise measure for corporate governance applications. Our findings help to inform the debate on insider trading regulation and firm-level insider-trading policies by providing insights for firms and regulators on the extent to which insider trading actually benefits insiders.

Electronic copy available at: https://ssrn.com/abstract=2887628

References

Ahern, K.R. (2017) Information networks: Evidence from illegal insider trading tips. *Journal of Financial Economics* 125, 26–47.

Ahern, K.R. (2020) Do proxies for informed trading measure informed trading? Evidence from illegal insider trades. *Review of Asset Pricing Studies* 10, 397–440.

Akbas, F., Jiang, C., and Koch, P.D. (2020) Insider investment horizon. *Journal of Finance* 75, 1579–1627.

Ali, U. and Hirshleifer, D. (2017) Opportunism as a firm and managerial trait: Predicting insider trading profits and misconduct. *Journal of Financial Economics* 126, 490–515.

Alldredge, D.M. and Cicero, D.C. (2015) Attentive insider trading. *Journal of Financial Economics* 115, 84–101.

Augustin, P., Brenner, M., and Subrahmanyam, M.G. (2019) Informed options trading prior to M&A announcements: Insider trading? *Management Science* 65, 5697–5720.

Augustin, P., Brenner, M., Hu, J., and Subrahmanyam, M.G. (2020) Are corporate spin-offs prone to insider trading? *Critical Finance Review* 9, 115–155.

Ausubel, L.M. (1990) Insider trading in a rational expectations economy. *American Economic Review* 80, 1022–1041.

Bebchuk, L.A. and Fershtman, C. (1994) Insider trading and the managerial choice among risky projects, *Journal of Financial and Quantitative Analysis* 29, 1–14.

Ben-David, I. and Roulstone, D.T. (2010) Idiosyncratic risk and corporate transactions, Working Paper.

Betzer, A., Gider, J., Metzger, D., and Theissen, E. (2015) Stealth trading and trade reporting by corporate insiders. *Review of Finance* 19, 865–905.

Bhagat, S. and Tookes, H. (2012) Voluntary and mandatory skin in the game: understanding outside directors' stock holdings. *European Journal of Finance* 18, 191–207.

Biggerstaff, L., Cicero, D.C., and Wintoki, M.B. (2020) Insider trading patterns. *Journal of Corporate Finance*, forthcoming.

Brochet, F. (2009) Information content of insider trades before and after the Sarbanes-Oxley Act. *Accounting Review* 85, 419–446.

Electronic copy available at: https://ssrn.com/abstract=2887628

Chetty, R., Friedman, J.N., and Saez. E. (2013) Using differences in knowledge across neighborhoods to uncover the impacts of the EITC on earnings. *American Economic Review* 103, 2683–2721.

Chin, A. (1997) Accurate calculation of short-swing profits under section 16 (b) of the Securities Exchange Act of 1934. *Delaware Journal of Corporate Law* 22, 587–601.

Chin, A. (2016) The learned hand unformula for short-swing liability. *Washington Law Review* 91, 1523–1594.

Cohen, L., Malloy, C., and Pomorski, L. (2012) Decoding inside information. *Journal of Finance* 67, 1009–1043.

Core, J.E. and Larcker, D.F. (2002) Performance consequences of mandatory increases in executive stock ownership. *Journal of Financial Economics* 64, 317–340.

Cziraki, P., de Goeij, P., and Renneboog, L. (2014) Corporate governance rules and insider trading profits. *Review of Finance* 18, 67–108.

Del Guercio, D., Odders-White, E. R., and Ready, M. J. (2017) The deterrent effect of the Securities and Exchange Commission's enforcement intensity on illegal insider trading: Evidence from run-up before news events. *Journal of Law and Economics* 60, 269–307.

DeMarzo, P.M., Fishman, M.J., and Hagerty, K.M. (1998) The optimal enforcement of insider trading regulations. *Journal of Political Economy* 106, 602–632.

Denis, D.J. and Xu, J. (2013) Insider trading restrictions and top executive compensation. *Journal of Accounting and Economics* 56, 91–112.

Dye, R. (1984) Insider trading and incentives. *Journal of Business* 57, 295–313.

Fidrmuc, J.P., Goergen, M., and Renneboog, L. (2006) Insider trading, news releases and ownership concentration. *Journal of Finance* 61, 2931–2973.

Gider, J. and Westheide, C. (2016) Relative idiosyncratic volatility and the timing of corporate insider trading. *Journal of Corporate Finance* 39, 312–334.

Gompers, P., Ishii, J., and Metrick, A. (2003) Corporate governance and equity prices. *Quarterly Journal of Economics* 118, 107–156.

Henderson, M.T. (2011) Insider trading and CEO pay. *Vanderbilt Law Review* 64, 505–555.

Hu, J. and Noe, T. (2001) Insider trading, costly monitoring, and managerial incentives. *Journal of Banking and Finance* 25, 881–716.

Electronic copy available at: https://ssrn.com/abstract=2887628

Huddart, S., Hughes, J.S., and Levine, C.B. (2001) Public disclosure and dissimulation of insider trades. *Econometrica* 69, 665–681.

Jeng, L., Metrick, A., and Zeckhauser, R. (2003) Estimating the returns to insider trading: A performance-evaluation perspective. *Review of Economics and Statistics* 85, 453–471.

Jenter, D. (2005) Market timing and managerial portfolio decisions. *The Journal of Finance* 60, 1903–1949.

Kacperczyk, M. and Pagnotta, E. (2019) Chasing private information. *Review of Financial Studies* 32, 4997–5047.

Kedia, S. and Rajgopal, S. (2011) Do the SEC's enforcement preferences affect corporate misconduct? *Journal of Accounting and Economics* 51, 259–278.

Klein, O., Maug, E., and Schneider, C. (2017) Trading strategies of corporate insiders. *Journal of Financial Markets* 34, 48–68.

Kleven, H. (2016) Bunching. *Annual Review of Economics* 8, 435–464.

Kyle, A.S. (1985) Continuous auctions and insider trading. *Econometrica* 53, 1315–1335.

Lakonishok, J. and Lee, I. (2001) Are insiders' trades informative? *Review of Financial Studies* 14, 79–112.

Lenkey, S.L. (2014) Advance disclosure of insider trading. *Review of Financial Studies* 27, 2504–2537.

McNally, W., Shkilko, A., and Smith, B. (2017) Do brokers of insiders tip other clients?, *Management Science* 63, 317–332.

Mehta, M.N., Reeb, D.M., and Zhao, W. (2020) Shadow trading. *The Accounting Review*, forthcoming.

Meulbroek, L.K. (1992) An empirical analysis of illegal insider trading. *Journal of Finance* 47, 1661−1699.

Ofek, E. and Yermack, D. (2003) Taking stock: Equity-based compensation and the evolution of managerial ownership. *Journal of Finance* 55, 1367–1384.

Ravina, E. and Sapienza, P. (2010) What do independent directors know? Evidence from their trading. *Review of Financial Studies* 23, 962–1003.

Roulstone, D.T. (2003) The relation between insider-trading restrictions and executive compensation. *Journal of Accounting Research* 41, 525–551.

Electronic copy available at: https://ssrn.com/abstract=2887628

Seyhun, H.N. (1986) Insiders' profits, costs of trading, and market efficiency. *Journal of Financial Economics* 16, 189–212.

Shkilko, A. (2019) Insider trading under the microscope. Working Paper.

Skaife, H.A., Veenman, D., and Wangerin, D. (2013) Internal control over financial reporting and managerial rent extraction: Evidence from the profitability of insider trading. *Journal of Accounting and Economics* 55, 91–110.

Stice-Lawrence, L. (2019) Regulatory spillover and monitoring frictions at the SEC. Working Paper.

Tookes, H. (2008) Information, trading, and product market interactions: Cross-sectional implications of informed trading. *Journal of Finance* 63, 379–413.

U.S. Securities and Exchange Commission (2013) Enforcement Manual. *Securities and Exchange Commission Division of Enforcement. Washington, DC*.

Velikonja, U. (2016) Reporting agency performance: Behind the SEC's enforcement statistics. *Cornell Law Review* 101, 901–980.

Wu, W. (2018a) Information asymmetry and insider trading. Working Paper.

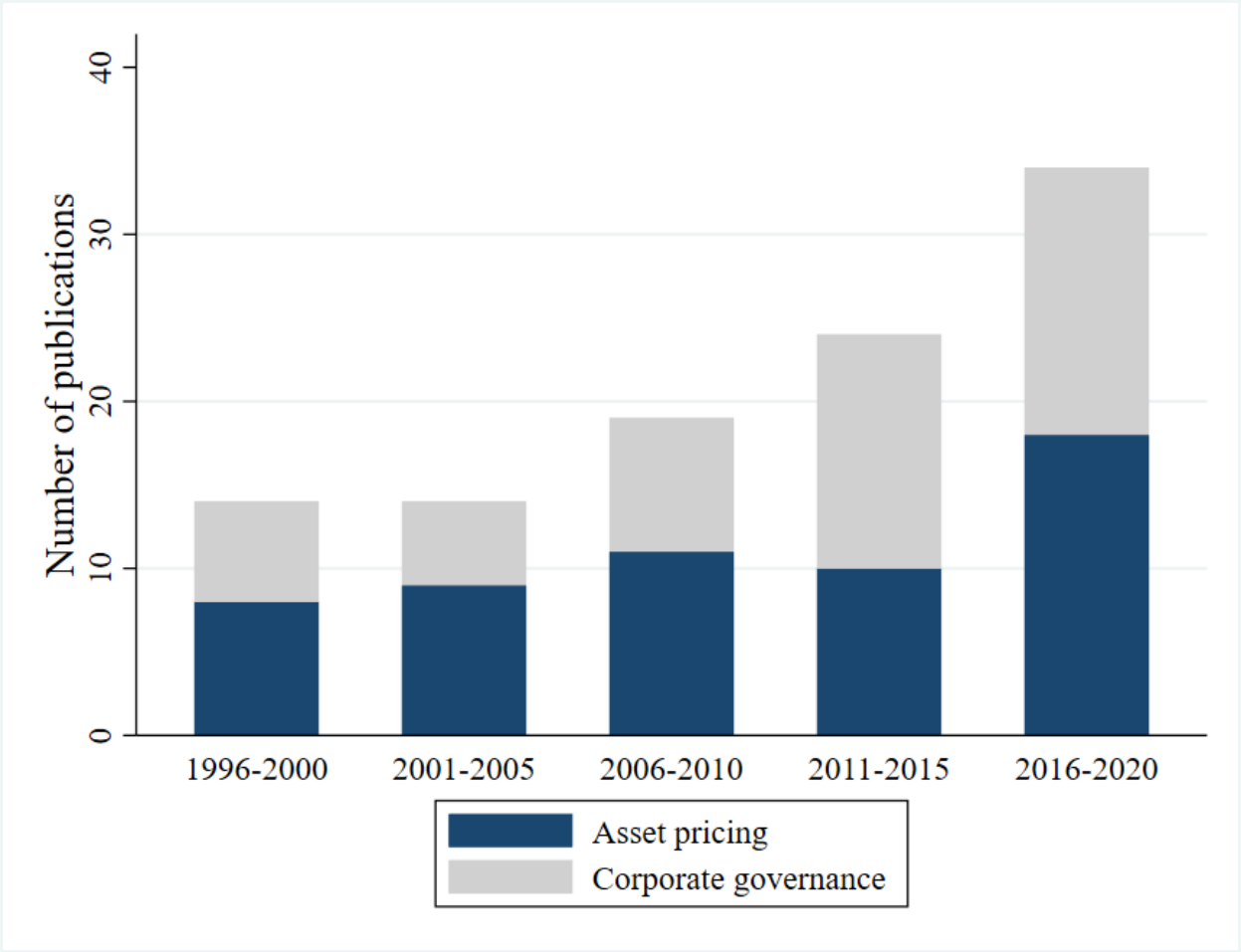
Wu, W. (2018b) Insider purchases after short interest spikes: A false signaling device? Working Paper.

Wang, W. Shin, Y.-C., and Francis, B.B. (2012) Are CFOs' trades more informative than CEOs' trades? *Journal of Financial and Quantitative Analysis* 47, 743–762.

Electronic copy available at: https://ssrn.com/abstract=2887628

Figure 1: Applications of insider trading in the academic literature

This figure plots the number of papers published in *Journal of Finance*, *Journal of Financial Economics*, *Journal of Financial and Quantitative Analysis*, *Management Science*, *Review of Financial Studies*, and *Review of Finance* (*European Finance Review* prior to 2003) during 1996-2020 that analyze insider trading. Papers were initially identified by searching the journal publisher's website for articles published in 1996-2020 that contain the phrase "insider trading". We further restrict attention to articles analyzing trades filed through Form 4. A paper is classified as "Corporate governance" if it states that insiders profit from their information and/or uses insider trading as a proxy for corporate governance (agency) issues. A paper is classified as "Asset pricing" if it examines only whether insider trades predict future (abnormal) returns, but does not make any claims about rents extracted through insider trading.

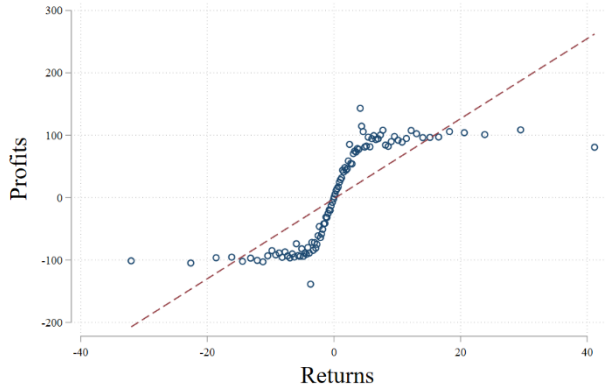


Electronic copy available at: https://ssrn.com/abstract=2887628

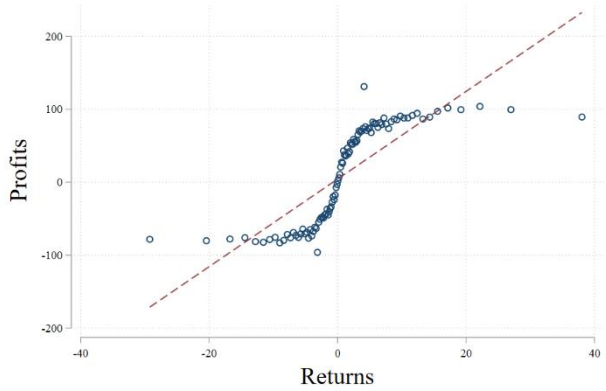
Figure 2: The relation between returns and profits

This figure plots the average profits over 100 equally-sized groups based on returns. Panel A (B) plots raw (abnormal) profits over raw (abnormal) returns. Panel C (D) plots the residuals of a regression of raw (abnormal) profits on time-varying firm characteristics (log of market capitalization, log of number of analysts following the firm, book-to-market ration and idiosyncratic volatility), firm fixed effects and year fixed effects over the 100 equally-sized groups of residuals of a regression of raw (abnormal) returns on the same control variables and fixed effects. The dashed line plots the linear regression fit. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

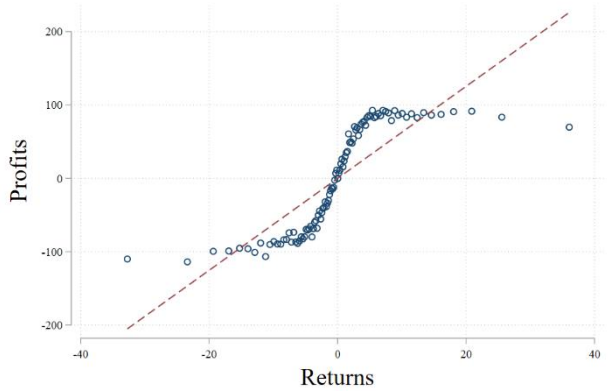
Panel A. Raw



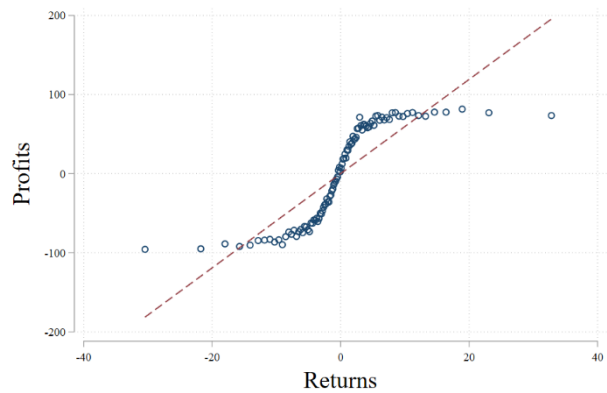
Panel B. Abnormal



Panel C. Raw residuals



Panel D. Abnormal residuals



Electronic copy available at: https://ssrn.com/abstract=2887628

Figure 3: The relation between abnormal returns and trade size over time

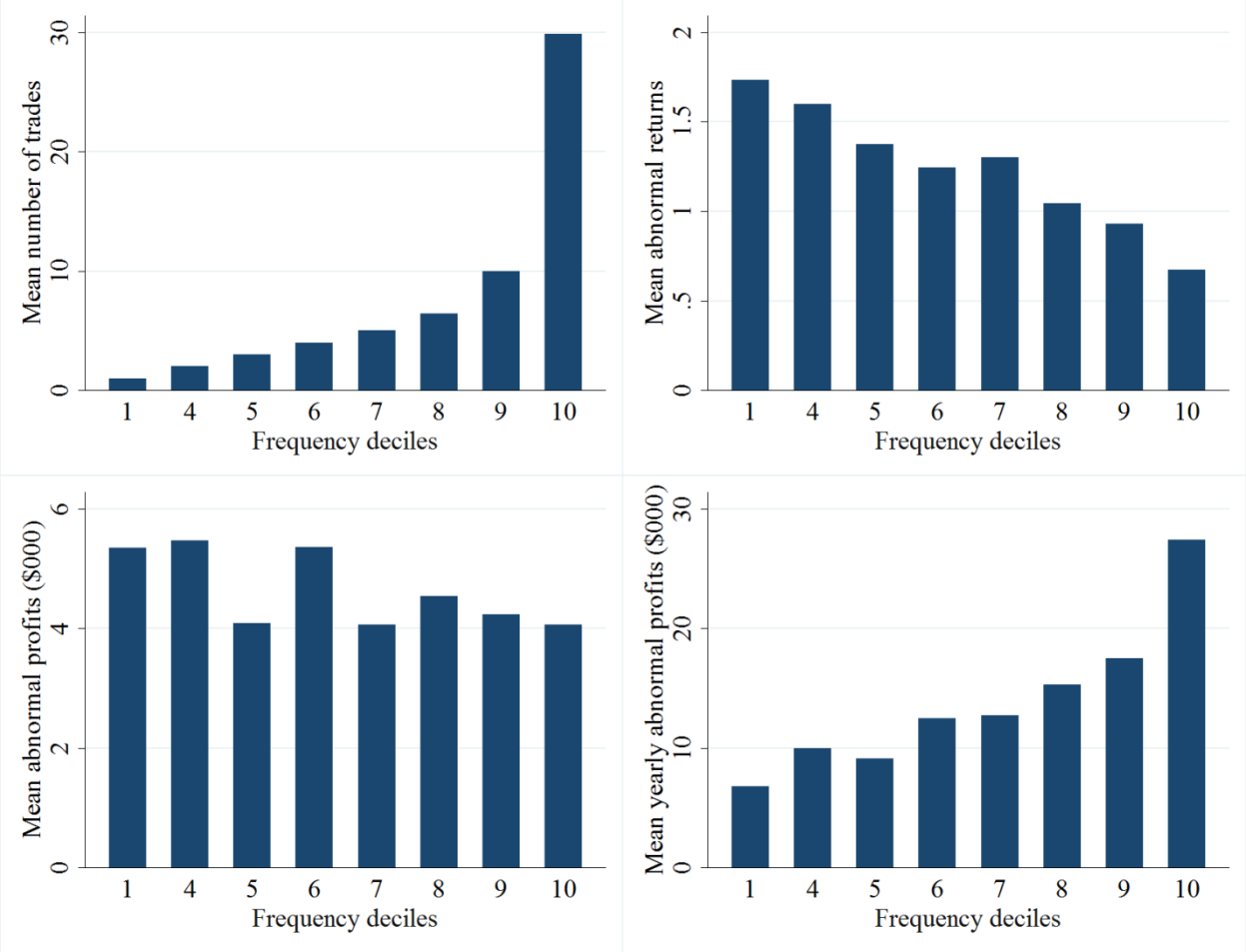
This graph reports the coefficients of a regression of trade size (measured in constant 2013 US dollars) on abnormal returns estimated separately in each year of our sample for observations with abnormal returns greater than or equal to 0.5%. The graph plots the coefficient on abnormal returns (solid line) and the 95% confidence interval (dashed line).



Electronic copy available at: https://ssrn.com/abstract=2887628

Figure 4: Abnormal returns, volume, and dollar profits by frequency deciles

The top left graph shows the mean number of trades over frequency deciles. Frequency deciles are constructed over the number of trades over an insider's lifetime in the sample. Deciles 2 and 3 are missing because 25% of all insiders place only one trade in their lifetime. As a result, all insiders with one trade are in the first decile, which contains 25% of insiders in the population. The top right graph shows mean abnormal returns over frequency deciles. The bottom left graph shows the mean abnormal profits over frequency deciles, while the bottom right graph shows mean yearly abnormal profits. Decile 1 is the decile with the lowest trading frequency, decile 10 is the one with the highest frequency. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.



Electronic copy available at: https://ssrn.com/abstract=2887628

Table 1: Sample summary statistics

This table shows summary statistics of the sample of corporate insider transactions. Panel A shows summary statistics of transaction frequency and size. Panel B reports summary statistics of abnormal returns, trade frequencies, value traded, and dollar profits. Frequencies, yearly value traded, and yearly abnormal profits are summarized at the insider-year level. Panel C shows summary statistics of the control variables used in our regressions. Variable definitions are provided in Appendix A. Our data span 1986-2013. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

Panel A: Sample description

Observations	Number
Transactions	644,643
Buys	148,363
Sells	496,280
Insiders who only buy	20,178
Insiders who only sell	52,817
Insiders trading in both directions	19,763
Unique insiders	92,758
Unique firms	7,643
Insider-years	263,413
Firm-years	52,602

Panel B: Values traded, frequencies, returns, and dollar profits

Variable	Obs.	Mean	St. dev.	10th	25th	Median	75th	90th
Firms per insider	92,758	1.19	0.63	1	1	1	1	2
Insiders per firm	7,643	14.46	13.57	2	5	11	20	32
Transactions per insider	92,758	6.95	14.67	1	1	3	7	15
Buys per insider	92,758	1.60	5.92	0	0	0	1	4
Sells per insider	92,758	5.35	13.28	0	1	2	6	13
Value traded ($000)	644,643	631	1,586	8	32	129	471	1,445
Value traded buys ($000)	148,363	261	1,095	2	7	25	96	380
Value traded sells ($000)	496,280	741	1,690	19	58	189	605	1,728
Frequency	263,413	2.80	5.42	1.00	1.00	1.00	3.00	5.00
Yearly value traded ($000)	263,413	1,845	8,984	14	50	232	995	3,483
Abnormal return (%)	644,643	0.89	10.76	–10.90	–4.60	0.64	6.04	12.85
Abnormal profit	644,643	4.22	84.93	–31.24	–4.60	0.14	7.59	40.97
Yearly abnormal profit	263,413	12.25	182.49	–45.57	–5.16	0.46	13.40	75.62
Profits/salary (%)	45,668	3.47	38.44	–18.21	–2.88	0.37	6.67	27.52
Profits/compensation (%)	42,680	1.16	11.11	–4.12	–0.77	0.11	1.79	6.66

Electronic copy available at: https://ssrn.com/abstract=2887628

Panel C: Summary statistics of independent variables

Variable	Obs.	Mean	St. dev.	10th	25th	Median	75th	90th
Market capitalization (in $ million)	644,643	5,283	21,198	79	224	729	2,543	9,734
Book-to-market	644,643	0.6	0.6	0.1	0.3	0.4	0.7	1.0
Number of analysts	644,643	9.4	8.1	2.0	3.0	7.0	13.0	21.0
Idiosyncratic volatility	644,643	2.5	1.4	1.2	1.6	2.2	3.1	4.2
Salary (in $000)	45,743	523	300	245	317	438	639	938
Total compensation (in $000)	42,697	3,103	4,357	522	878	1,662	3,409	6,877
SEC budget	606,711	769	322	362	436	876	1,007	1,154
Closed 181-200	644,643	0.01	0.08	0.00	0.00	0.00	0.00	0.00
Closed 181-200 in the past	643,558	0.02	0.14	0.00	0.00	0.00	0.00	0.00

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 2: Correlation between returns and profits

This table shows the correlation between volume-weighted returns and profits aggregated at the insider-year level for raw versus risk-adjusted returns to the insider trades as indicated in column 1, various sets of control variables as indicated in columns 2 and 3, and various sample splits, as indicated in the different Panels. In Panel A, Column 4 reports the correlation between returns and profits considering a 20-day horizon after the trade, while column 5 considers round-trip profits. Dollar amounts of trade volumes are inflation-adjusted and expressed in 2013 U.S. dollars. Risk-adjustment indicates whether the returns have been adjusted for exposure to the Fama-French-three-factor model. "Controls" indicates whether the regression controls for the logarithm of market capitalization, book-to-market ratio, the number of analysts and idiosyncratic volatility. Panel A reports the correlations for the entire sample. Panel B (Panel C) splits the sample into three bins based on raw or risk-adjusted returns below –0.5% (–3%), between –0.5% and 0.5% (–3% and 3%) and above 0.5% (3%).

Panel A: Full sample

Risk-adjusted	Controls	Year and firm FE	20-day	Round-trip
(1)	(2)	(3)	(4)	(5)
no	no	no	23.28%	4.50%
no	yes	no	23.12%	4.50%
no	yes	yes	22.28%	4.07%
yes	no	no	22.72%	1.80%
yes	yes	no	22.61%	1.77%
yes	yes	yes	21.97%	5.51%

Panel B. Different bins of returns, splitting at ± 0.5%

Risk-adjusted	Controls	Year and firm FE	≤–0.5%	–0.5% < x < 0.5%	≥ 0.5%
(1)	(2)	(3)	(4)	(5)	(6)
no	no	no	5.83%	20.65%	4.41%
no	yes	no	6.38%	21.64%	3.92%
no	yes	yes	7.69%	33.81%	4.85%
yes	no	no	4.36%	13.99%	4.84%
yes	yes	no	5.21%	3.27%	4.22%
yes	yes	yes	6.50%	7.17%	5.35%
Percentage of sample observations in bin			43.88%	5.38%	50.74%

Panel C. Different bins of returns, splitting at ± 3%

Risk-adjusted	Controls	Year and firm FE	≤–3%	–3% < x < 3%	≥ 3%
(1)	(2)	(3)	(4)	(5)	(6)
no	no	no	1.22%	21.44%	0.42%
no	yes	no	1.89%	20.11%	–0.04%
no	yes	yes	3.50%	18.56%	1.45%
yes	no	no	0.79%	18.27%	2.72%
yes	yes	no	1.90%	14.80%	1.99%
yes	yes	yes	3.78%	13.47%	3.78%
Percentage of sample observations in bin			31.44%	30.93%	37.63%

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 3: Relation between returns and trade quantities

This table shows the outcome of a regression of trade volume on returns for different regions and subsamples. More specifically, we estimate the following regression $Tradevolume_{ijt} = (\beta_1 lowret_{ijt} + \beta_2 medret_{ijt} + \beta_3 highret_{ijt}) \times AR_{ijt} + \gamma_1 lowret_{ijt} + \gamma_2 medret_{ijt} + \gamma_3 highret_{ijt} + \varepsilon_{ijt}$ for various subsamples as indicated below, where $lowret$, $medret$ and $highret$ are dummy variables set to zero if the abnormal return is smaller than or equal to –0.5%, between –0.5% and 0.5% or greater than or equal to 0.5%, respectively, and to zero otherwise. Columns 1, 2 and 3 report the estimates of β_1, β_2 and β_3, and their standard errors in parentheses respectively. Column 4 reports the difference in coefficients for the two subsamples and the respective standard error. Variable definitions are provided in Appendix A. Dollar amounts of trade volumes are inflation-adjusted and expressed in 2013 U.S. dollars. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Sample	≤ –0.5%	–0.5% < x < 0.5%	≥ 0.5%	Difference
	(1)	(2)	(3)	(4)
All	9.76	51.28	–8.40	
	(0.42)	(31.81)	(0.34)	
Panel A: Firm characteristics				
With analyst coverage	9.756	51.276	–8.400	–10.24***
	(0.423)	(31.80)	(0.340)	(0.511)
Without analyst coverage	–1.744	55.370	1.840	
	(0.449)	(44.09)	(0.383)	
High institutional ownership	10.161	51.085	–9.393	–9.342***
	(0.498)	(36.37)	(0.419)	(0.808)
Low institutional ownership	2.409	49.020	–0.051	
	(0.592)	(51.01)	(0.449)	
Poorly governed	13.011	154.844	–2.622	2.144
	(1.343)	(103.2)	(1.138)	(2.230)
Well-governed	4.256	62.914	–4.766	
	(1.499)	(187.9)	(1.395)	
Dual class	3.355	–1,039.000	–1.608	3.088
	(4.147)	(305.6)	(3.056)	(3.403)
No dual class	7.994	90.999	–4.697	
	(1.298)	(82.86)	(1.101)	
Large	7.277	49.550	–5.312	–6.076***
	(0.620)	(40.39)	(0.515)	(0.688)
Small	–1.179	31.205	0.764	
	(0.224)	(17.83)	(0.175)	
High growth	12.431	17.221	–10.373	–4.183***
	(0.567)	(45.95)	(0.475)	(0.697)
Low growth	8.683	93.794	–6.190	
	(0.577)	(38.51)	(0.445)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 3 – continued

Panel B: Insider characteristics				
Late	–0.941	–15.855	3.006	12.383***
	(0.753)	(49.22)	(0.630)	(1.025)
Timely	10.588	56.646	–9.376	
	(0.467)	(34.59)	(0.375)	
Female	10.291	–49.772	–8.428	0.049
	(1.295)	(95.46)	(1.088)	(1.311)
Male	9.744	60.940	–8.477	
	(0.446)	(33.62)	(0.357)	
Top tenure quartile	39.156	–202.043	–24.544	–19.628***
	(3.558)	(211.8)	(2.939)	(2.882)
Bottom tenure quartile	6.641	–35.830	–4.916	
	(1.273)	(101.5)	(1.140)	
Top $ ownership quartile	12.268	55.815	–9.460	–7.535***
	(0.558)	(41.19)	(0.462)	(1.036)
Bottom $ ownership quartile	2.226	108.556	–1.925	
	(0.430)	(36.60)	(0.324)	
Local insider	11.124	30.290	–9.073	–1.767***
	(0.504)	(38.23)	(0.408)	(0.714)
Non-local insider	7.269	95.770	–7.305	
	(0.770)	(57.26)	(0.612)	
Panel C: Regulatory scrutiny				
Pre SOX	–1.787	49.482	0.223	13.374***
	(0.499)	(38.14)	(0.393)	(0.683)
Post SOX	16.892	45.459	–13.151	
	(0.661)	(44.36)	(0.539)	
Top SEC budget quartile	18.812	115.227	–12.953	–11.074***
	(0.901)	(54.98)	(0.729)	(1.394)
Bottom SEC budget quartile	0.418	–21.033	–1.879	
	(0.761)	(43.41)	(0.599)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 4: Regressions of returns, trade frequency, trade value, and dollar profits on a proxy for informed trading

This table shows the results of regressions of returns, frequency, value, and dollar profits on a proxy for informed trading, control variables, year fixed effects, and firm fixed effects. The dependent variable for each regression is reported in the column header. The table only reports the coefficient of the proxy for informed trading. For regressions that are based on insider-year observations, i.e., columns 2, 4, and 6, we replace the buy indicator with a percentage calculated as the mean over all trades for the given insider in a given year. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only	0.920***	–0.479***	–83.712***	–308.902***	0.405	–3.402***
	(0.10)	(0.05)	(15.05)	(64.92)	(0.58)	(1.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Opportunistic	0.507***	–5.657***	26.220	–3798.037***	2.083***	–2.396
	(0.10)	(0.32)	(47.37)	(679.50)	(0.74)	(3.80)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent	0.333***	–4.322***	–286.435***	–4214.903***	–1.135**	–21.834***
	(0.06)	(0.10)	(23.73)	(192.72)	(0.48)	(1.88)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO	0.353***	–0.698***	–163.598***	–957.192***	0.220	–3.813***
	(0.08)	(0.04)	(18.75)	(59.00)	(0.49)	(1.15)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive	0.197***	–0.770***	–54.086***	–858.378***	0.644	–2.588***
	(0.05)	(0.04)	(18.79)	(90.17)	(0.41)	(0.99)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,643	263,414	644,643	263,414	644,643	263,414

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 5: Closing a trade after 181-200 days and future trading behavior and outcomes

This table shows the results of a regression of returns, frequency, value, and dollar profits on an indicator variable *Closed 181-200 in the past* which is equal to 1 if the insider closed a round-trip transaction after 181-200 days in the past, control variables, year fixed effects, and firm fixed effects. The dependent variable for each regression is reported in the column header. In columns 1, 3, and 5 we exclude the first round-trip transaction that the insider closed between 181 and 200 days. In columns 2, 4, and 6, we exclude all observations from the year in which the insider closed her first round-trip transaction between 181-200 days. Panel A compares the trading of insiders who have closed their trades between 181 and 200 days in the past to all other insiders in the sample. Panel B contains regressions that also control for a proxy for informed trading, using the same proxies as in Table 4. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Panel A: Comparison to all other insiders in the population

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Closed 181-200 in the past	0.372*	1.966***	130.477***	1203.594***	3.932**	22.442***
	(0.20)	(0.24)	(43.75)	(247.73)	(1.66)	(5.59)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	643,558	262,218	643,558	262,218	643,558	262,218
R^2	7.4%	14.1%	25.4%	11.3%	4.2%	6.1%
Adjusted R^2	6.3%	11.5%	24.5%	8.7%	3.0%	3.3%

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 5 – continued

Panel B: Controlling for other known proxies for informed insider trading

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only	0.931***	–0.450***	–80.766***	–299.558***	0.488	–3.188***
	(0.10)	(0.05)	(15.17)	(64.29)	(0.59)	(1.00)
Closed 181-200 in the past	0.485**	1.892***	120.629***	1154.013***	3.991**	21.915***
	(0.20)	(0.24)	(43.90)	(247.44)	(1.66)	(5.60)
Opportunistic	0.503***	–5.585***	26.176	–3688.015***	2.060***	–1.335
	(0.10)	(0.32)	(47.36)	(679.41)	(0.74)	(3.77)
Closed 181-200 in the past	0.371*	1.955***	130.438***	1196.483***	3.929**	22.440***
	(0.20)	(0.24)	(43.74)	(248.37)	(1.66)	(5.59)
Infrequent	0.349***	–4.264***	–285.096***	–4149.667***	–1.007**	–20.442***
	(0.06)	(0.10)	(24.00)	(193.63)	(0.48)	(1.86)
Closed 181-200 in the past	0.474**	0.582***	47.603	–143.025	3.639**	15.808***
	(0.20)	(0.23)	(44.66)	(253.95)	(1.67)	(5.55)
CFO	0.354***	–0.680***	–163.238***	–934.469***	0.242	–3.476***
	(0.08)	(0.04)	(18.81)	(59.01)	(0.49)	(1.15)
Closed 181-200 in the past	0.377*	1.960***	128.266***	1195.197***	3.935**	22.411***
	(0.20)	(0.24)	(43.68)	(246.73)	(1.66)	(5.59)
Executive	0.204***	–0.738***	–52.951***	–820.825***	0.700*	–2.156**
	(0.05)	(0.04)	(18.80)	(89.67)	(0.41)	(0.98)
Closed 181-200 in the past	0.396**	1.882***	124.320***	1110.119***	4.013**	22.197***
	(0.20)	(0.24)	(43.80)	(248.39)	(1.66)	(5.58)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 6: Who makes high dollar profits?

This table shows the results of a regression of a dummy variable indicating whether an insider ranks among the top quintile in terms of yearly dollar profits (columns 1 to 3) or whether she has closed a round-trip trade between 181 and 200 days in a given year (columns 4 to 6) on insider characteristics, firm-level control variables, year fixed effects, firm fixed effects, or year-firm fixed effect respectively. Coefficient estimates are multiplied by 100, so that a reported value of 1 corresponds to one percentage point. Panel A is based on a panel that aggregates insider-firm observations at the yearly level. Panel B performs the same analysis, while restricting the samples to trades by executives and directors. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Panel A: All insiders

	Top 20% profits			Closed between 181-200		
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of late filings	–0.460*	–0.081	0.184	0.302***	0.308***	0.365***
	(0.27)	(0.25)	(0.27)	(0.05)	(0.05)	(0.06)
Female	–4.117***	–3.707***	–3.092***	–0.111***	–0.073*	–0.075
	(0.28)	(0.27)	(0.27)	(0.04)	(0.04)	(0.05)
Local insider	–1.347***	–0.462*	–0.919***	–0.034	–0.036	–0.009
	(0.25)	(0.24)	(0.24)	(0.03)	(0.04)	(0.05)
Fraction of buys	–9.746***	–8.145***	–7.610***	–0.763***	–0.943***	–1.190***
	(0.24)	(0.24)	(0.27)	(0.03)	(0.04)	(0.06)
Infrequent trader	–8.383***	–8.795***	–7.983***	–0.348***	–0.422***	–0.412***
	(0.30)	(0.27)	(0.28)	(0.05)	(0.05)	(0.05)
High $ ownership	8.236***	8.227***	7.851***	–0.151***	–0.164***	–0.164***
	(0.20)	(0.19)	(0.21)	(0.03)	(0.03)	(0.04)
Blockholder	16.940***	15.755***	15.398***	0.551***	0.564***	0.528***
	(0.82)	(0.76)	(0.79)	(0.15)	(0.15)	(0.16)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	No
Firm FE	No	Yes	No	No	Yes	No
Firm × year FE	No	No	Yes	No	No	Yes
Observations	261,433	260,959	253,624	261,433	260,959	253,624
Adjusted R^2	0.082	0.128	0.224	0.004	0.011	0.031

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 6 – continued

Panel B: Executives and directors

	Top 20% profits			Closed between 181-200		
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of late filings	–0.241	0.063	0.049	0.290***	0.288***	0.369***
	(0.27)	(0.26)	(0.28)	(0.05)	(0.05)	(0.06)
Female	–3.412***	–3.110***	–3.007***	–0.086**	–0.063	–0.074
	(0.29)	(0.27)	(0.28)	(0.04)	(0.05)	(0.05)
Local insider	–1.161***	–0.484**	–0.434*	0.043	0.027	0.039
	(0.25)	(0.24)	(0.25)	(0.03)	(0.04)	(0.05)
Fraction of buys	–10.490***	–8.532***	–8.015***	–0.797***	–0.974***	–1.219***
	(0.23)	(0.23)	(0.27)	(0.03)	(0.04)	(0.06)
Infrequent trader	–6.531***	–6.813***	–6.704***	–0.176***	–0.249***	–0.259***
	(0.31)	(0.29)	(0.29)	(0.05)	(0.05)	(0.05)
High $ ownership	7.087***	7.041***	7.010***	–0.164***	–0.182***	–0.179***
	(0.20)	(0.19)	(0.21)	(0.03)	(0.04)	(0.04)
Tenure	0.242***	0.308***	0.303***	–0.004	–0.004	–0.002
	(0.04)	(0.03)	(0.03)	(0.00)	(0.00)	(0.01)
Executives	0.151	0.782***	0.926***	–0.206***	–0.196***	–0.188***
	(0.23)	(0.22)	(0.24)	(0.03)	(0.04)	(0.04)
CEO	10.732***	10.222***	10.439***	0.189***	0.173**	0.185**
	(0.39)	(0.39)	(0.40)	(0.07)	(0.07)	(0.08)
CFO	3.495***	2.917***	2.901***	–0.022	0.014	0.038
	(0.37)	(0.37)	(0.39)	(0.07)	(0.07)	(0.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	No
Firm FE	No	Yes	No	No	Yes	No
Firm × year FE	No	No	Yes	No	No	Yes
Observations	236,240	235,710	227,742	236,240	235,710	227,742
Adjusted R^2	0.083	0.128	0.219	0.003	0.008	0.022

Electronic copy available at: https://ssrn.com/abstract=2887628

Table 7: Dollar profits predict future returns

This table shows the results of regressions of abnormal returns to insider trades on yearly dollar profits or a dummy for the top quintile of yearly dollar profits, control variables, year fixed effects, and firm fixed effects. Regressions in columns 1 to 4 use all observations for which insider trades are observed in the prior year, while columns 5 and 6 exclude routine trades. *Yearly dollar profits*$_{t-1}$ denotes the abnormal dollar profits made by the insider in the prior year, *Top quintile yearly dollar profits*$_{t-1}$ is a dummy variable equal to 1 if the insider belongs to the top 20% of yearly abnormal dollar profits in the past year. The remaining variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

	Abnormal returns					
	All trades				Excluding routine	
	(1)	(2)	(3)	(4)	(5)	(6)
Yearly dollar profits$_{t-1}$ (in $m)	–0.386***		–0.384***		–0.423**	
	(0.15)		(0.15)		(0.17)	
Top quintile yearly dollar profits$_{t-1}$		–0.209***		–0.205***		–0.176**
		(0.08)		(0.08)		(0.08)
Opportunisic			0.394***	0.392***		
			(0.11)	(0.11)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	372,747	372,747	372,747	372,747	322,989	322,989
Adjusted R^2	0.070	0.069	0.070	0.070	0.072	0.072

Electronic copy available at: https://ssrn.com/abstract=2887628

Appendix A: Variable definitions

Variable	Definition
Insider trading characteristics and outcomes	
(Year) trade value	Volume of insider transaction in thousands of U.S. dollars (aggregated at the insider-year level), inflation-adjusted using 2013 as a base year
Trade frequency	Number of transactions aggregated at the insider-year level.
Return	Actual stock return of the insider stock over the 20 trading days after the insider trade.
Abnormal return	Actual stock return of the insider stock over the 20 trading days after the insider trade minus the market return over this period.
Dollar profit	Actual stock return of the insider stock over the 20 trading days after the insider trade multiplied the trade value.
Abnormal dollar profit	Abnormal return of the insider stock over the 20 trading days after the insider trade multiplied the trade value.
Round-trip profit	Profits to sales (purchases) are computed by subtracting the share-weighted purchase (sale) price from the actual price of the sale (purchase).
Abnormal round-trip profit	Round-trip profit minus market return multiplied with same transaction volume.
Yearly dollar profit	Dollar profit aggregated at the insider-year level, inflation-adjusted using 2013 as a base year.
Yearly abnormal dollar profit	Abnormal dollar profit aggregated at the insider-year level, inflation-adjusted using 2013 as a base year.
Yearly round-trip profit	Round-trip profit aggregated at the insider-year level, inflation-adjusted using 2013 as a base year.
Yearly abnormal round-trip profit	Abnormal round-trip profit aggregated at the insider-year level inflation-adjusted using 2013 as a base year.
Salary	Salary in thousands of constant 2013 U.S. dollars.
Total compensation	Total compensation (TDC1) in thousands of U.S. dollars, inflation-adjusted using 2013 as a base year.
Profit to salary (total compensation)	Abnormal profit scaled by salary (total compensation).
Yearly dollar $profit_{t-1}$	Yearly abnormal dollar profit of the respective insider in the past year in millions of U.S. dollars, inflation-adjusted using 2013 as a base year.
Top quintile yearly dollar $profits_{t-1}$	Dummy variable that is set to 1 if the insider was in the top quintile in terms of abnormal dollar profits in the past year, and to 0 otherwise.

Electronic copy available at: https://ssrn.com/abstract=2887628

Variable	Definition
Main independent variables	
Analyst coverage	This variable is set to 1 if the company was covered by at least one analyst in the given year according to I/B/E/S, and to 0 otherwise.
Blockholder	This dummy variable is set to 1 if the insider is a director of the firm, 0 otherwise.
Buy only	The dummy variable is set to 1 if the insider bought more shares on the given day than she sold, and to 0 otherwise.
CEO	This dummy variable is set to 1 if the insider is the chief executive officer (CEO), and to 0 otherwise.
CFO	This dummy variable is set to 1 if the insider is the chief financial officer (CFO), and to 0 otherwise.
Closed 181-200 in the past	This dummy variable is set to 1 if the insider has closed a trade after 181-200 days (in the past), and to 0 otherwise.
Dual class	This dummy variable is set to 1 if the company has more than one class of shares, and to 0 otherwise.
Executive	This dummy variable is set to 1 if the insider is an executive of the firm, 0 otherwise.
Female	This dummy variable is set to 1 if the frequency of given names in the population of U.S. births where the individual has a Social Security Number in the National Data is larger for females than for males, and to 0 otherwise.
Fraction of buys	The number of purchases per insider-year scaled by the number of trades in the given insider-year.
Fraction of late filings	Number of trades flagged late in a given insider-year scaled by total number of trades for the given insider-year.
High (low) $ ownership	Dummy variable set to 1 if the insider is among the top quintile in terms of his dollar stake owned in the company in a given year, and to 0 otherwise
High (low) growth	This dummy variable is set to 1 if the firm is in the top (bottom) quintile in terms of Tobin's Q in the given year, and to 0 otherwise.
High (low) institutional ownership	This variable is set to 1 for firms in the top (bottom) quintile in terms of number of shares held by institutional shareholders, 0 otherwise.
High (low) tenure	This variable is set to 1 for insiders in the top (bottom) quintile in terms of tenure as an executive, 0 otherwise.
Infrequent	This dummy variable is set to 1 if the insider has less than 20 trades over the entire sample period, 0 otherwise.
Large (small)	This dummy variable is set to 1 if the firm is in the top (bottom) quintile in terms of market capitalization in the given year, and to 0 otherwise.

Electronic copy available at: https://ssrn.com/abstract=2887628

Variable	Definition
Main independent variables (continued)	
Late	This dummy is set to 1 if the trade has been reported later than mandated by the respective SEC reporting requirement, and to 0 otherwise. In the pre-SOX period, trades are flagged as late if they have been reported later than the first business days after the 10th of the next calendar month. Post SOX trades are flagged as late if they are reported later than 2 business days after the transaction.
Local insider	This dummy variable is set to 1 if the state of the insider's residential address indicated in Form 4 is identical to the firm's headquarter state, and to 0 otherwise.
Opportunistic	This dummy variable is set to 1 if the trade is not routine, that is if the insider has not placed a trade in the same month in the past three years.
Poorly-governed	Dummy variable set to 1 if the firm's G-Index of Gompers, Ishii, and Metrick (2003) is 12 or higher, 0 otherwise.
Pre (post) SOX	This dummy variable is set to 1 if the insider trade occurs before (after) the implementation of the Sarbanes-Oxley Act on August 29, 2002, and to 0 otherwise.
Routine	This dummy variable is constructed at the trade level. The dummy variable is set to 1 if the same insider has placed trades in the same month in the three years preceding the trade.
Tenure	The number of years since the insider started working for the firm according to the ExecuComp database, or first appears as an insider of the firm in the Thomson Reuters database.
Top (bottom) SEC budget quartile	This dummy variable is set to 1 if the enforcement budget of the Securities and Exchange Commission in billions of constant 2013 U.S. dollars (see Del Guercio, Odders-White, and Ready, 2017) is in the top (bottom) quartile, and to 0 otherwise. Available for the period 1986-2012.
Top (bottom) tenure quartile	Dummy variable set to 1 if the insider's tenure is in the top (bottom) quintile in the given year. Tenure is the time since the individual has been employed at the given firm.
Control variables	
Book-to-market	Book value of equity scaled by the market value of equity as in Fama and French (1993).
Idiosyncratic volatility	Standard deviation of return residuals from the Fama-French 3-factor model based on daily observations.
Market capitalization (in $ million)	The number of shares outstanding multiplied by the end-of-fiscal year stock price, inflation-adjusted using 2013 as a base year.
Number of analysts	Number of equity research analysts according to I/B/E/S.

Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix to
"The Dollar Profits to Insider Trading"

This Internet Appendix provides additional analyses and results to supplement the analyses in the paper.

Directory of Tables and Figures

Internet Appendix B: Additional summary statistics A3

Figure A1: Distribution of abnormal returns and dollar profits A3

Table A1: Summary statistics of returns and profits over time A4

Table A2: Summary statistics of longer-term profits A6

Table A3: Alternative return benchmarks A7

Table A4: Summary statistics by role, firm-year, and insider-level aggregation and insider losses A8

Internet Appendix C: Profits from round-trip transactions A10

Table A5: Round-trip profits A12

Table A6: Table 4 regressions using round-trip profits as an outcome variable. A13

Internet Appendix D: Sample selection issues affecting the profits/total compensation ratio and alternative estimates A14

Table A7: The ratio of dollar profits to compensation – alternative estimates A17

Internet Appendix E: Insiders' dollar profits from not trading A19

Table A8: The profits to holding shares (non-trading) in a given year A22

Table A9: Last transactions of insiders before leaving A22

Table A10: The profits to insiders' last transactions A22

Internet Appendix F: Supplementary analyses on the correlation between returns and profits, and returns and trade quantities A23

Table A11: Correlation between returns and profits using alternative bin cutoff values A23

Table A12: Relation between returns and trade quantities using ±1% as return threshold ... A24

Table A13: Relation between returns and trade sizes using ±2% as return threshold A26

Table A14: Relation between returns and trade sizes using ±3% as return threshold A28

Table A15: Relation between returns and trade frequency A30

Internet Appendix G: Supplementary analysis to Section 4 ..... A32

Table A16: Regressions of insider trading returns, volumes and dollar profits – coefficients of the control variables A32

Table A17: Persistence of trading profits A33

Table A18: Regressions of returns, trade frequency, trade value, and dollar profits on a proxy for informed trading – robustness to alternative specifications and subsamples A34

Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix H: Trading ability or risk-taking behavior? A41
Figure A2: Mean abnormal returns and abnormal profits over losses A42
Internet Appendix I: Additional analysis of trading around the short-swing rule A43
Table A19: Bunching around the short-swing threshold of 6-months A46
Figure A3: Frequency of round-trip transactions closed around the short-swing threshold of 6 months A47
Figure A4: Differences between round-trip transactions closed before vs. after the short-swing threshold of 6 months A48
Figure A5: Quantile regressions A49
Internet Appendix J: Who makes high dollar profits? A50
Table A20: Who makes high dollar profits – alternative thresholds for high profits A51
Table A21: Who makes high dollar profits – excluding routine trades A53

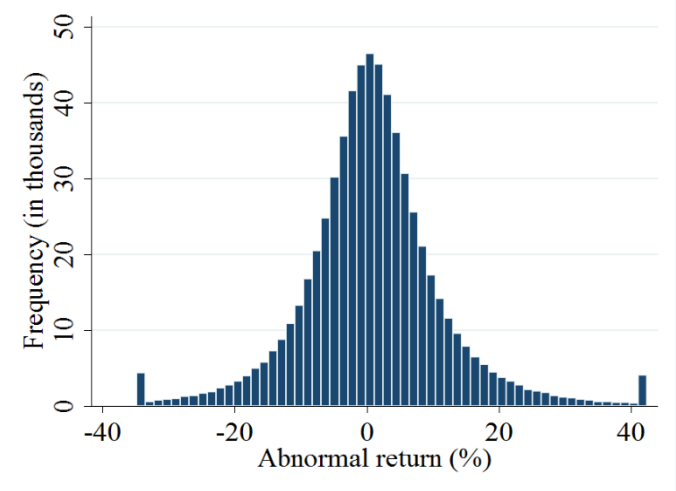
Electronic copy available at: https://ssrn.com/abstract=2887628

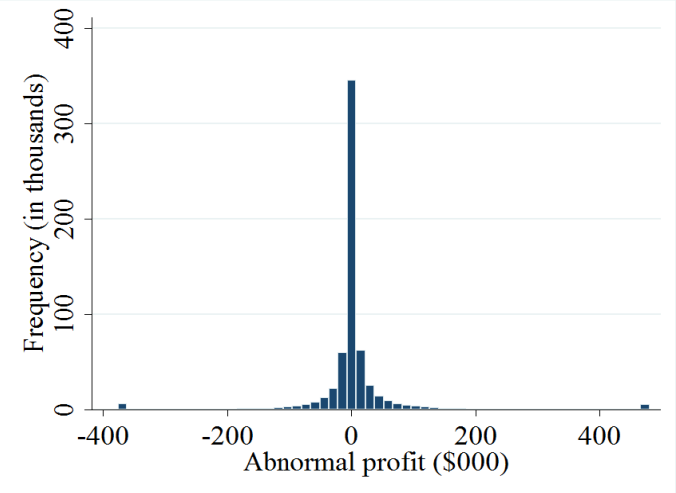
Internet Appendix B: Additional summary statistics

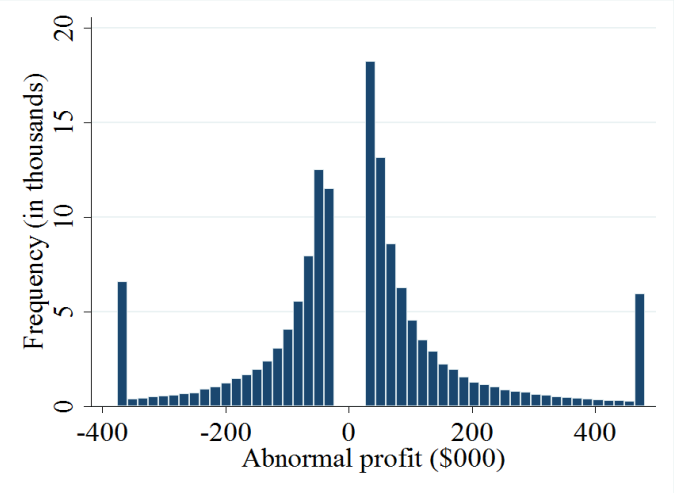
The Figures and Tables below present additional summary statistics about returns, trade quantities and dollar profits to corporate insider trades.

Figure A1: Distribution of abnormal returns and dollar profits

The top figure shows a histogram of abnormal returns. The bottom left graph shows the distribution of trade-level abnormal profits for all sample observations. The bottom right graph shows the distribution of trade-level abnormal profits excluding abnormal profits greater than –$30,000 and smaller than $30,000. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.







Electronic copy available at: https://ssrn.com/abstract=2887628

Table A1: Summary statistics of returns and profits over time

This table shows summary statistics of trade values, abnormal returns, and abnormal profits over time. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

Variable	Statistics	All years	1990-1999	2000-2009	2010-2013
	#trades	644,643	165,433	317,643	134,010
	#companies	7,643	4,096	4,430	3,107
	#insiders	92,758	39,803	49,369	26,793
Valued traded ($000)	5th percentile	8	6	10	13
	25th percentile	32	21	41	49
	50th percentile	129	77	161	182
	75th percentile	471	275	581	605
	90th percentile	1,445	831	1,747	1,771
	Mean	631	392	733	771
	Standard deviation	1,586	1,146	1,723	1,790
Frequency	5th percentile	1	1	1	1
	25th percentile	2	1	2	2
	50th percentile	4	3	4	4
	75th percentile	9	6	11	10
	90th percentile	24	14	32	25
	Mean	11	6	13	11
	Standard deviation	22	11	26	24
Yearly value traded ($000)	5th percentile	14	9	19	27
	25th percentile	50	29	76	100
	50th percentile	232	120	343	393
	75th percentile	995	495	1,374	1,485
	90th percentile	3,483	1,770	4,593	4,721
	Mean	1,845	1,014	2,363	2,315
	Standard deviation	8,984	5,203	10,872	9,536
Abnormal return (%)	5th percentile	-10.90	-11.80	-11.36	-8.55
	25th percentile	-4.60	-5.18	-4.71	-3.68
	50th percentile	0.64	0.59	0.73	0.46
	75th percentile	6.04	6.57	6.32	4.71
	90th percentile	12.85	13.82	13.47	9.88
	Mean	0.89	0.88	0.97	0.60
	Standard deviation	10.76	11.32	11.17	8.57

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A1 – continued

Variable	Statistics	All years	1990-1999	2000-2009	2010-2013
Abnormal profit ($000)	5th percentile	-31	-21	-39	-33
	25th percentile	-5	-3	-6	-5
	50th percentile	0.141	0.081	0.203	0.144
	75th percentile	8	5	10	8
	90th percentile	41	28	52	40
	Mean	4	3	5	4
	Standard deviation	85	71	94	82
Yearly abnormal profit ($000)	5th percentile	-46	-26	-64	-53
	25th percentile	-5	-3	-8	-7
	50th percentile	0.464	0.243	0.813	0.667
	75th percentile	13	8	20	16
	90th percentile	76	47	104	80
	Mean	12	8	16	12
	Standard deviation	182	144	212	178
Round-trip profits ($000)	5th percentile	-9	-11	-8	-11
	25th percentile	0.000	-0.002	0.000	0.000
	50th percentile	8	4	9	12
	75th percentile	65	43	75	74
	90th percentile	265	189	315	286
	Mean	108	83	120	118
	Standard deviation	361	315	378	388
Abnormal round-trip profits ($000)	5th percentile	-67	-54	-79	-62
	25th percentile	-3	-4	-3	-2
	50th percentile	0.634	0.040	0.602	3.254
	75th percentile	39	30	42	47
	90th percentile	220	173	246	229
	Mean	58	56	57	69
	Standard deviation	466	432	483	475
Year abnormal round-trip profits ($000)	5th percentile	-129	-102	-156	-101
	25th percentile	-12	-11	-15	-8
	50th percentile	5	4	5	7
	75th percentile	69	59	72	79
	90th percentile	368	300	417	372
	Mean	128	112	135	135
	Standard deviation	1,063	860	1,167	1,036

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A2: Summary statistics of longer-term profits

This table shows summary statistics of longer-term profits over 3 months, 6 months, and 12 months. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

Variable	Statistics	All years	1990-1999	2000-2009	2010-2013
3m-abnormal profit	10th percentile	-60	-36	-77	-65
	25th percentile	-9	-5	-12	-11
	50th percentile	0.255	0.252	0.248	0.266
	75th percentile	15	11	18	16
	90th percentile	81	62	95	83
	Mean	10	12	9	9
	Standard deviation	163	141	178	161
Yearly 3m-abnormal profit	10th percentile	-89	-44	-133	-109
	25th percentile	-10	-5	-16	-14
	50th percentile	0.946	0.646	1.344	1.593
	75th percentile	28	17	39	35
	90th percentile	159	107	206	175
	Mean	26	26	28	25
	Standard deviation	399	324	457	401
6m-abnormal profit	10th percentile	-86	-52	-109	-98
	25th percentile	-13	-7	-17	-16
	50th percentile	0.372	0.320	0.367	0.471
	75th percentile	22	17	26	25
	90th percentile	120	98	137	124
	Mean	14	20	13	13
	Standard deviation	237	211	254	240
Yearly 6m-abnormal profit	10th percentile	-134	-68	-195	-171
	25th percentile	-14	-7	-23	-23
	50th percentile	1.252	0.806	1.760	2.255
	75th percentile	42	26	57	53
	90th percentile	241	170	306	270
	Mean	39	43	39	37
	Standard deviation	645	525	731	673

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A2 – continued

Variable	Statistics	All years	1990-1999	2000-2009	2010-2013
12m-abnormal profit	10th percentile	-121	-75	-150	-146
	25th percentile	-17	-10	-23	-23
	50th percentile	0.704	0.667	0.638	1.144
	75th percentile	35	29	39	40
	90th percentile	182	163	198	198
	Mean	25	35	21	24
	Standard deviation	347	318	365	365
Yearly 12m-abnormal profit	10th percentile	-196	-100	-280	-268
	25th percentile	-21	-11	-33	-34
	50th percentile	1.442	0.985	1.818	3.360
	75th percentile	62	43	80	84
	90th percentile	369	279	445	443
	Mean	68	77	67	67
	Standard deviation	1,015	857	1,119	1,110

Table A3: Alternative return benchmarks

This table shows returns, profits and yearly profits to insider trading using no risk-adjustment and using market-adjustment. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

Variable	Mean	St. dev.	10th	25th	Median	75th	90th
Raw return (%)	0.22	11.30	-12.49	-5.75	0.00	5.83	13.21
Raw profit ($000)	-1.83	110.44	-52.92	-9.28	0.00	7.76	47.06
Raw yearly profit ($000)	-3.52	307.02	-85.73	-12.68	0.08	12.72	79.55
Market-adjusted return (%)	0.48	10.37	-11.39	-4.95	0.39	5.73	12.35
Market-adjusted profit ($000)	1.43	100.10	-43.43	-6.73	0.09	8.79	47.74
Market-adjusted yearly profit ($000)	4.38	268.46	-65.58	-8.30	0.37	14.46	81.77

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A4: Summary statistics by role, firm-year, and insider-level aggregation and insider losses

Panel A of this table shows summary statistics by insider role. Panel B aggregates summary statistics of transaction volume and profits at the firm-year level. Panel C shows summary statistics of transaction volume and profits at the insider level, i.e., we sum up volume and profits for the entire time that the insider is in the data set. Panel D shows summary statistics for insider losses. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.Variable definitions are provided in Appendix A.

Panel A: Summary statistics of returns and profits by insider role

Variable	Group	Obs.	Mean	St. dev.	10th	25th	Median	75th	90th
Yearly value traded									
	Executive	159,549	1,558	6,507	15	59	269	1,095	3,484
	CEO	17,960	4,221	14,494	32	148	913	3,895	11,167
	CFO	14,821	1,229	2,884	15	60	301	1,156	3,199
	Other exec.	126,874	1,220	4,627	14	53	233	898	2,704
	Blockholder	8,476	11,461	30,494	54	274	1,686	9,104	27,581
	Other	95,388	1,469	7,806	11	37	158	671	2,407
Abnormal return									
	Executive	380,215	0.9	10.5	-10.6	-4.5	0.7	6.0	12.7
	CEO	68,930	1.1	11.3	-11.5	-4.8	0.7	6.5	14.0
	CFO	34,215	1.2	11.0	-10.9	-4.5	0.9	6.4	13.6
	Other exec.	277,411	0.8	10.3	-10.4	-4.4	0.7	5.8	12.2
	Blockholder	50,895	1.0	12.5	-13.4	-5.6	0.8	7.2	15.6
	Other	213,533	0.8	10.7	-10.8	-4.6	0.5	5.9	12.6
Abnormal profit									
	Executive	380,215	5	84	-33	-5	0.192	8	43
	CEO	68,930	8	116	-64	-10	0.332	16	83
	CFO	34,215	4	73	-29	-5	0.228	8	40
	Other exec.	277,411	4	75	-28	-4	0.168	7	36
	Blockholder	50,895	7	128	-72	-10	0.298	16	94
	Other	213,533	3	74	-22	-3	0.074	5	29
Yearly abnormal profit									
	Executive	159,549	11	160	-49	-6	0.616	15	79
	CEO	17,960	31	291	-158	-17	2.054	54	258
	CFO	14,821	11	132	-49	-6	0.984	18	82
	Other exec.	126,874	8	135	-41	-5	0.505	13	63
	Blockholder	8,476	76	505	-331	-33	2.878	120	579
	Other	95,388	9	161	-32	-4	0.243	9	53

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A4 – continued

Panel B: Firm-year level aggregation

Variable	Obs.	Mean	St. dev.	10th	25th	Median	75th	90th
Value traded ($000)	52,602	2,911	6,676	30	121	556	2,443	8,007
Abnormal profits ($000)	52,602	61	621	-189	-15	3	71	397
Abnormal round-trip profits ($000)	52,602	76	1,205	-15	0	0	0	85
3m-abnormal profits ($000)	52,602	130	1,448	-397	-28	7	157	875
6m-abnormal profits ($000)	52,602	195	2,440	-628	-47	9	229	1,366
12m-abnormal profits ($000)	52,602	342	3,999	-1,013	-76	11	341	2,141

Panel C: Insider-level aggregation

Variable	Obs.	Mean	St. dev.	10th	25th	Median	75th	90th
Value traded ($000)	92,758	1,651	4,769	14	54	267	1,179	3,908
Abnormal profits ($000)	92,758	35	413	-72	-7	1	27	157
Annualized round-trip profits ($000)	92,758	43	1,340	0	0	0	0	3
3m-abnormal profits ($000)	92,758	74	836	-132	-11	3	60	336
6m-abnormal profits ($000)	92,758	110	1,398	-196	-16	4	92	512
12m-abnormal profits ($000)	92,758	194	2,306	-280	-21	6	145	811

Panel D: Losses to insider trading

	All	Trading frequency		Trade direction	
Variable		Infrequent	Frequent	Only sell	Others
Percentage of trades	100.0%	28.4%	71.6%	51.4%	48.6%
Percentage of insider-years	100.0%	56.4%	43.6%	49.6%	50.4%
Trades with losses	46.5%	44.7%	47.3%	47.0%	46.0%
Insider years with losses	44.1%	44.1%	44.1%	44.5%	43.7%
Insiders with no profitable trade	4.4%	12.9%	1.0%	5.2%	3.5%
Insiders with no profitable year	11.3%	16.3%	4.8%	13.6%	9.0%
Average year loss conditional on loss	-58	-27	-99	-64	-52
Median year loss conditional on loss	-8	-4	-19	-13	-4

Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix C: Profits from round-trip transactions

To account for the possibility that hypothesized profits differ from actual profits, we also calculate profits from round-trip transactions. For example, if we observe an insider buying 100 shares in January and selling those 100 shares in December, we can calculate the dollar gains or losses on this trade. Because the number of shares bought and sold may not be equal, for each insider with both buys and sells in the sample we compute profits using the value-weighted purchase and sale price. As insiders accumulate a position in a stock, we keep track of the value-weighted purchase price, and compute profits by subtracting that price from the price at which they sold the stock. We adopt the same approach for sale transactions followed by purchases. We track the inventory of both shares purchased and shares sold, and record a round-trip profit of zero if an insider sells (buys), but the inventory indicates that there are no previously bought (sold) shares left to sell (buy).[1] To arrive at abnormal round-trip profits, we subtract profits to a benchmark strategy that earns the returns predicted by the Fama-French 3-factor model. Finally, we set round-trip profits to zero if the two transactions occur within six months, because the short-swing rule requires that insiders pay back any such profits to the company.

While this approach measures actual instead of hypothetical profits, we are able to apply it only to a subset of insiders who have both buys and sells in our sample. The median insider only trades three times in the sample, and often in the same direction (all buys, or all sells).

We now examine round-trip transactions, to see whether profits on these are higher. Table A5 Panel A shows that the median (average) round-trip profit of a trade is $1,000 ($61,000). Aggregating round-trip profits at the insider-year level yields median (average) profits of $5,000 ($125,000). Round-trip profits are higher than 20-day profits for two reasons. First, round-trip

[1] Employees may buy shares of their firm or receive stock-based compensation before becoming top executives and thus entering our insider sample. Hence, it is possible that in our sample, their sequence of trades begins with a sale.

Electronic copy available at: https://ssrn.com/abstract=2887628

profits for a given trade can only be calculated if the insider traded in the opposite direction previously. This is the case for 7.8% of observations, which may represent a non-random subsample of trades. Indeed, Panel B of Table A5 shows that trades for which we are able to construct round-trip profits generate larger abnormal returns. However, round-trip trades are also smaller and less frequent, which is why overall dollar profits are not larger when restricting attention to these trades as shown in Table A5 Panel C. Second, with a median (average) holding period of 579 (882) days, round-trip profits are higher because the holding period is much longer.

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A5: Round-trip profits

This table shows summary statistics for round-trip transactions. A round-trip is defined as a purchase followed by a sale, or a sale followed by a purchase. Panel A shows summary statistics of transaction volume, frequency and profits. Panel B reports summary statistics for trades for which round-trip profits can be calculated, and for trades for which round-trip profits cannot be calculated. The last three columns report difference between the means of the insider trading variables across the two subsamples, and test whether this difference is statistically significant using a two-sample t-test. Panel C regresses returns, quantities and profits on a dummy indicating a round-trip trade, or the fraction of round-trip trades per insider-tear in columns 2, 4 and 6. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

Panel A: Summary statistics of round-trip profits

Variable	Obs.	Mean	St. dev.	10th	25th	Median	75th	90th
Value traded ($000)	50,451	441	1,317	4	18	74	283	909
Frequency	22,767	2	5	1	1	1	2	4
Yearly value traded ($000)	22,767	1,190	7,267	10	37	138	510	1,765
Implied abnormal return (%)	50,451	0.6	2.5	-0.6	-0.1	0.0	0.6	2.0
Abnormal round-trip profit ($000)	50,451	61	477	-74	-4	1	44	238
Yearly abnormal round-trip profit ($000)	22,767	125	981	-106	-9	5	70	354

Panel B: Summary statistics of trades with and without round-trip profits

	With round-trip			Without round-trip					
Variable	Median	Mean	SD	Median	Mean	SD	Dif	t-stat	p-value
Trade value	73	427	1,234	133	629	1,515	-202	-33.7	0.00
Frequency	3	6	12	4	10	22	-4	-47.0	0.00
Abnormal return	1.1	1.7	12.0	0.6	0.8	10.7	0.9	14.6	0.00
Abnormal profit ($000)	0.1	5	75	0.1	4	86	1.2	2.7	0.01
Observations		50,451			594,192				
# unique firms		4,617			3,026				
# unique insiders		17,580			75,178				

Panel C: Multivariate analysis of round-trip returns, trade quantities and dollar profits

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Round-trip	0.361***	-0.284***	-32.600**	-338.289***	0.450	1.488
	(0.09)	(0.04)	(12.92)	(55.58)	(0.59)	(1.18)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644344	262929	644344	262929	644344	262929
Adjusted R^2	0.073	0.136	0.254	0.104	0.041	0.059

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A6: Table 4 regressions using round-trip profits as an outcome variable.

This table shows the results of regressions of abnormal round-trip profits and yearly abnormal round-trip profits on a proxy for informed trading, control variables, year fixed effects, and firm fixed effects. The dependent variable for each regression is reported in the column header. The table only reports the coefficient of the proxy for informed trading. For regressions that are based on insider-year observations, i.e., columns 2, 4, and 6, we replace the buy indicator with a percentage calculated as the mean over all trades for the given insider in a given year. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

	Abnormal round-trip profit	Yearly abnormal round-trip profit	Abnormal round-trip profit	Yearly abnormal round-trip profit
	(1)	(2)	(3)	(4)
Buy only	65.803***	68.039*	69.001***	87.377
	(16.91)	(40.98)	(14.08)	(59.13)
Controls	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes
Opportunistic	20.101	-136.684	2.640	-106.785
	(16.34)	(100.74)	(13.34)	(93.58)
Controls	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes
Infrequent	-60.713***	-192.991*	-77.381***	-291.837***
	(11.31)	(102.46)	(12.41)	(37.78)
Controls	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes
CFO	-22.110**	-141.980	-19.001*	-61.859***
	(9.22)	(101.27)	(10.60)	(23.45)
Controls	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes
Executive	41.267***	-139.024	33.100***	26.942
	(7.96)	(101.97)	(8.97)	(22.65)
Controls	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	No	No
Firm × year FE	No	No	Yes	Yes
Observations	263,414	30,809	263,414	30,809

Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix D: Sample selection issues affecting the profits/total compensation ratio and alternative estimates

The ratio of dollar profits to total compensation calculated in the paper relies on merging our sample to the ExecuComp database. This merged subsample is a selective sample of both firms and of insiders. ExecuComp covers the largest firms in the CRSP/Compustat universe: firms that are, or at some point were in the S&P 500. Further, it generally focuses on the top 5 executives with the highest compensation. These selection issues may lead us to overestimate or underestimate the ratio of dollar profits to total compensation. The question is whether dollar profits (the numerator) decline more for smaller firms and lower-paid insiders as compensation (the denominator) declines. We examine this question in three separate tests.

First, we obtain additional data on compensation using two methods. An additional 9% of our sample observations with missing compensation data are on insiders who have compensation reported in ExecuComp in at least one year.[2] In such cases, we can take the *minimum* compensation that was reported for the years in which we have information in ExecuComp, as a conservative estimate of the insider's compensation in other years. We also find compensation information on an additional 1% of our sample person-years in the BoardEx database.[3] Last, we can combine these approaches to estimate compensation for executives with compensation information in BoardEx in some years but not others. Overall, this approach covers an additional 12% of sample observations. All compensation data are expressed in 2013 dollars.

Table A7 Panel A shows that dollar profits to compensation range between 1.05-1.64% on average and 0.08-0.09% at the median after including these additional observations with estimated

[2] ExecuComp's coverage starts in 1992 and gradually expands until 1995.
[3] See Engelberg, Gao, and Parsons (2013) on matching BoardEx and other databases.

Electronic copy available at: https://ssrn.com/abstract=2887628

compensation data. These figures are similar to the original average of 1.16% and median of 0.11% reported in Table 1 of the main text of the paper.

We next examine whether selection of firms in ExecuComp may affect our results. To do so, we take the 42,680 observations with profits to total compensation ratio reported in Table 1 of the paper and study how the ratio changes if we focus on the smallest firms. Table A7 Panel A reports that the profits to compensation ratio is between 1.54-1.93% on average (0.11-0.16% at the median) in the bottom tercile, quintile, decile, or vigintile of firms. The change in the ratio is not monotonic: it increases moving from the bottom tercile to the bottom decile, but decreases as we move to the bottom vigintile. We conclude that the ratio of profits to total compensation is higher in smaller firms, but remains the same order of magnitude.

The ExecuComp sample also selects the top 5 highest-paid insiders per firm. Table A7 Panel B breaks down the dollar profits to total compensation ratio for executive role titles that account for at least 1% (2,634) of our sample. Strikingly, higher paid executives make *higher* (not lower) dollar profits relative to their total compensation. Chairmen (3.51%), CEOs (2.37%), and COOs (1.72%) all have higher profit/compensation ratios than the average insider. In contrast, vice presidents (0.04%) and general counsel (0.65%) have lower profit/compensation ratios, *despite* making substantially less on average than CEOs, COOs, and chairmen. A likely explanation is that, as we show in Table 6, higher equity stakes are associated with higher dollar profits. Insiders with the highest pay packages likely receive much of that compensation in shares and options and can make large and frequent sales. Overall, these results suggest that insiders with smaller compensation packages (that we can still observe) do not make higher trading profits as a percentage of total compensation. Hence, while our sample from ExecuComp skews towards insiders with the highest pay, this within-firm selection of insiders is unlikely to bias the profits/compensation ratio downwards.

Electronic copy available at: https://ssrn.com/abstract=2887628

Finally, instead of relying on compensation information that is limited, we estimate insider wealth and use it to scale dollar profits. We then compare the results across insiders with vs. without compensation information from ExecuComp. To estimate insider wealth, we start with the total value of the shares held by the insider in the firm, which can be computed using the Thomson Reuters data. We make two assumptions in our calculations. First, Bricker, Moore, and Thompson (2019) show that "financial market instruments" account for approximately 20% of household wealth in the top 90-99% of U.S. households and approximately 30% of wealth in the top 1%. We therefore assume that 25% of each insider's total wealth is in equities. Second, assume that the percentage of company stock within the insider's total wealth in financial market instruments is 50%. As insiders' human capital is also tied to the firm and they have strong incentives to diversify their portfolio, a 50% allocation is likely conservative, leading to an underestimation of insider wealth and an overestimation of the profits/wealth ratio. We are able to estimate total wealth for 72.23% of our overall sample.

Table A7 Panel C summarizes the results. There are two key findings. First, dollar profits to insider trading appear modest as a percentage of total estimated wealth: 0.12% on average, or 0.01% at the median. Second, and more importantly, the profits/wealth ratio is not higher for observations without compensation data from ExecuComp. If anything, the point estimates for both the mean and the median are lower, and the difference in medians (using a Wilcoxon rank-sum test) is statistically significant. We recognize that the level of the profits/wealth ratio is sensitive to the assumptions we made in estimating insider wealth. Nevertheless, the *difference* in the ratio between observations with and without ExecuComp data suggests that profits scaled by total wealth are not higher in the ExecuComp sample.

To summarize, analyzing differences between firms, we find that the profits/compensation ratio is higher at smaller firms that still report compensation data. Nevertheless, the ratio remains

Electronic copy available at: https://ssrn.com/abstract=2887628

modest at 1.54-1.93% on average, and much smaller at the median. Analyzing differences between insiders and, more generally, between observations (firms and insiders) in versus not in ExecuComp, we find no evidence that insiders with lower pay make higher profits relative to their compensation, or wealth. Overall, these tests confirm that dollar profits to insider trading are not an economically meaningful source of compensation or wealth for most insiders.

Table A7: The ratio of dollar profits to compensation – alternative estimates

This table reports descriptive statistics of the ratio of dollar profits to total compensation (Panels A and B) and dollar profits to total wealth (Panel C) measured in percentage points. Panel A reports the dollar profits to total compensation ratio using different estimates of insiders' total compensation from the ExecuComp and the BoardEx databases, and for the smallest firms in the main sample. "Extended based on minimum" means that for insider-firm pairs with available compensation data in some years but not others, we fill in compensation data for the missing years using the minimum compensation across years with available data. "Smallest tercile" (quintile, decile, vigintile) refers to observations in the smallest tercile of firm size, measured as total assets. Panel B displays the ratio of dollar profits to total compensation by different insider types, using the classification provided by Thomson Reuters. The rows are sorted by the number of observations available, from highest to lowest, displaying roles for which at least 3,000 observations are available. Panel C calculates estimated wealth based on the value of shares the insider holds in the firm(s) she is associated with in the database. The null hypothesis for the test statistics is that the (mean or the median of the) dollar profits to total wealth ratio is equal across the ExecuComp and the non-ExecuComp subsamples.

Panel A: Profits to total compensation (%) – extended sample and quantiles based on firm size

	Mean	Median	N	% of observations
Main sample (ExecuComp)	1.16	0.11	42,680	16.20
ExecuComp extended based on minimum	1.05	0.08	67,413	25.59
ExecuComp and BoardEx	1.41	0.12	45,976	17.45
ExecuComp and BoardEx extended based on min	1.64	0.09	74,908	28.44
Main sample (ExecuComp), smallest tercile	1.60	0.15	14,150	5.37
Main sample (ExecuComp), smallest quintile	1.64	0.16	8,490	3.22
Main sample (ExecuComp), smallest decile	1.93	0.16	4,247	1.61
Main sample (ExecuComp), smallest vigintile	1.54	0.11	2,123	0.81

Panel B: Profits to total compensation (%) by role

Role	Mean	Median	N	% of observations
Officer	1.08	0.14	34,032	12.92
CEO	2.37	0.24	29,521	11.21
CFO	1.43	0.20	14,259	5.41
President	0.89	0.07	8,063	3.06
Officer director	0.63	0.11	4,589	1.74
Chairman of the board	3.51	0.23	4,533	1.72
General counsel	0.65	0.15	4,426	1.68
Vice President	0.04	0.04	3,509	1.33
Chief Operating Officer	1.72	0.11	3,172	1.20

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A7 – continued

Panel C: Dollar profits to estimated wealth (%)

	Mean	Median	N	% of obs with wealth data	% of the main sample
ExecuComp subsample	0.125	0.013	29,163	15.33	11.07
Non-Execucomp subsample	0.115	0.009	161,103	84.67	61.16
T-statistic (difference in means)	-1.58				
Wilcoxon test (difference in medians)		-3.09***			

Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix E: Insiders' dollar profits from not trading

We now consider the possibility that insiders gain not by trading, but by choosing *not* to trade, and holding on to the stock instead. Consider an insider who purchases shares and holds them for several years, before leaving the firm and ceasing to be an insider. In this case, the short-term profit measure may underestimate the true gains to holding the position, whereas we would record no round-trip profit.

To tackle the issue of non-trading systematically, we use the information on holdings that insiders disclose to the SEC on Form 4. We track the holdings of each insider and measure the profits to holding shares in years where the insider holds the same number of shares as the year before. As before, we compare the dollar profits to holding the shares (and benefiting from the price appreciation) to holding an identical dollar position in a benchmark (risk-free, market, FF3, or DGTW). By definition, this yields a set of observations different from our main sample. Our main analysis focuses on insider purchases and sales, whereas this additional analysis considers years in which insider ownership does not change. We find 419,324 insider-firm-year observations with no change in insider ownership – note that some insiders may trade in multiple firms – and are able to estimate Fama-French factor betas and calculate abnormal profits for 317,040 of these. Table A8 provides summary statistics for the profits to holding shares.

The median (average) appreciation in portfolio value for insiders who hold the same number of shares from one year to the next is \$660 (\$46,150). However, comparing the profit from holding the asset to potential profit of holding the Fama-French 3-factor benchmark, insiders make a loss both at the median, and on average. Similar to our baseline analysis, we also find that the top 10% of insiders do make large profits. For example, at the 90^{th} percentile, the abnormal dollar profit to holding the insider's position constant is \$116,270.

Electronic copy available at: https://ssrn.com/abstract=2887628

Lack of trading by insiders can be explained by a strategic decision to hold the shares, or by lack of trading acumen, willingness, or ability to exploit private information. The relative symmetry of the distribution of abnormal profits, coupled with the observation that the mean and median abnormal profits are typically negative, suggests that in the majority of cases, lack of trading is not a strategic decision that leads to a profit.

We also use a second, complementary method to investigate whether insiders make large profits by holding stock and refraining from trading towards the end of their tenure. Here, we first measure the number of years the insider spends at the firm without trading, before eventually leaving, and then analyze long-term profits on each insider's last transaction, matching the length of the event window to the length of this gap.

First, Table A9 shows the length of the gap between the insider's last trade and their departure from the firm.[4] We define the departure year as the last year in which the insider is listed in the Thomson Reuters Insider Trading database. Note that insiders may report many transactions other than purchases and sales, such as receiving restricted stock or options. The median (average) time between an insider's last purchase in the sample and their departure is 2 (3.24) years, while the median (average) time between the last sale and the insider's departure is 1 (1.68) years. This is consistent with the idea that insiders buy shares early on, possibly to meet minimum ownership requirements, and sell for diversification purposes later on, also as they accumulate more stock and options as part of their compensation. Based on the gap times reported in the table, we conclude that calculating abnormal profits for a period of two years is sufficient to capture the profits from the last trade of the majority of insiders in our sample.

Looking at insiders who both buy and sell during their spell at a firm, they typically make their last sale in a later year than their last purchase (69%). Only 20% of insiders finish their trading

[4] For this table, the unit of observation is an insider-firm pair, as some insiders in our sample report trades at multiple firms.

Electronic copy available at: https://ssrn.com/abstract=2887628

with a purchase transaction, with the remaining 11% placing both at least one purchase and one sale in their last trading year. We conclude that capturing potential profits from a purchase that is only offset after an insider leaves affects only 31% of our sample insiders.

To more accurately capture the profits to insiders' last trades that may be offset only after the insider leaves and has no further reporting requirements, we analyze long-term profits on each insider's last transaction, matching the length of the event window to the number of years the insider spends at the firm without trading, before eventually leaving. Effectively, this corresponds to "cashing the insider out" at the time of their departure from the firm, and assigning the accrued profits to her last transaction.

Table A10 shows the results. Because by definition, abnormal profits between the last transaction and the insider's departure may be measured over a time horizon of several years (1.77 on average), we divide the abnormal profit by the number of years to obtain an annualized measure. Doing so facilitates comparison with the rest of the numbers in our paper. There are two main takeaways from Table A10. First, the annualized abnormal profit from holding the insider's position between their last trade and their departure is $47,640. This is less than the average yearly 12-months abnormal profit of $68,000 (Table A2), or the yearly abnormal round-trip profit conditional on trading (Table A5, Panel A). The median profit is $1,160. Second, the profits clearly come from insiders whose last transaction is a *sale*. This is possible only if the share price declines, or underperforms its FF3 benchmark. In such cases, it is unlikely that the insider, after departing and no longer having to report, buys any shares, thereby creating a round-trip whose second leg we cannot observe. Holding shares after *purchases* until departure is not a profitable strategy: in fact, it loses $10,200 on an annual basis. Even if insiders sell shares after their departure, on average, these transactions do not appear profitable. We conclude that the dollar profits to holding

Electronic copy available at: https://ssrn.com/abstract=2887628

shares (as opposed to trading) are no greater than the dollar profits we measure in our main analysis, and therefore cannot be a source of bias.

Table A8: The profits to holding shares (non-trading) in a given year

This table shows summary statistics of the yearly raw and abnormal profits of insiders who hold their position unchanged from one year to the next. We obtain information on the number of shares held by insiders from Thomson Reuters and calculate the change in share price from one year to the next. Abnormal profits are calculated relative to the Fama-French 3-factor model. Variables are defined in Table A1 of the appendix. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

	Obs.	Mean	St. dev.	P10	P25	P50	P75	P90
Yearly raw profit	317,040	64.18	4,012.61	-153.14	-14.67	0.66	28.75	224.68
Yearly abnormal profit	317,040	-220.05	2,303.77	-298.78	-39.95	-1.89	9.39	116.27

Table A9: Last transactions of insiders before leaving

This table presents summary statistics of the gap between the last trade of an insider and their departure from the firm, and the sequence of the last purchase and sale transactions. We define an insider to have left the sample in the year when they last appear in the Thomson Reuters Insider Trading database (with any transaction, not necessarily a purchase or sale). Our unit of observation is an insider-firm pair, as certain people are insiders at multiple firms. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

	Obs.	Mean	St. dev.	10th	25th	Median	75th	90th
Gap in years between...								
last purchase and leaving	100,894	3.24	3.79	0	0	2	5	8
last sale and leaving	131,653	1.68	2.42	0	0	1	2	5
last transaction and leaving	197,461	1.77	2.48	0	0	1	2	5
Insiders who have both buys and sales								
Last buy and sale in the same year	35,086	0.11	0.31	0	0	0	0	1
Last sale is after last buy	35,086	0.69	0.46	0	0	1	1	1
Last buy is after last sale	35,086	0.20	0.40	0	0	0	0	1

Table A10: The profits to insiders' last transactions

This table shows summary statistics of the yearly abnormal profits on the last trade for each insider-firm pair in the sample. We define an insider to have left the sample in the year when they last appear in the Thomson Reuters Insider Trading database (with any transaction, not necessarily a purchase or sale). Our unit of observation is an insider-firm pair, as certain people are insiders at multiple firms. We then calculate abnormal profits for the period between the insider's last trade and their departure from the sample, and scale the total abnormal profit by the number of years to obtain a yearly value. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

Yearly abnormal profits	Obs.	Mean	St. Dev	10th	25th	Median	75th	90th
Last transaction is a purchase	20,130	-10.20	159.07	-37.97	-8.07	-0.65	2.32	16.72
Last transaction is a sale	31,553	84.54	358.38	-61.27	-4.43	9.07	75.75	311.09
All transactions	51,683	47.64	300.67	-50.02	-6.39	1.16	29.77	174.63

Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix F: Supplementary analyses on the correlation between returns and profits, and returns and trade quantities

Table A11: Correlation between returns and profits using alternative bin cutoff values

This table shows the correlation between volume-weighted returns and profits aggregated at the insider-year level for raw versus risk-adjusted returns to the insider trades as indicated in column 1, various sets of control variables as indicated in columns 2 and 3, and various sample splits, as indicated in the different Panels. Dollar amounts of trade volumes are inflation-adjusted and expressed in 2013 U.S. dollars. Risk-adjustment indicates whether the returns have been adjusted for exposure to the Fama-French-three-factor model. "Controls" indicates whether the regression controls for the logarithm of market capitalization, book-to-market ratio, the number of analysts and idiosyncratic volatility. Panel A (Panel B) splits the sample into three bins based on raw or risk-adjusted returns below -1% (-2%), between -1% and 1% (-2% and 2%) and above 1% (2%).

Panel A. Different bins of returns, splitting at ± 1%

Risk-adjusted	Controls	Year and firm FE	≤-1%	-1% < x < 1%	≥ 1%
(1)	(2)	(3)	(4)	(5)	(6)
No	No	No	4.47%	17.61%	3.35%
No	Yes	No	5.02%	16.24%	2.87%
No	Yes	Yes	6.43%	22.51%	3.89%
Yes	No	No	3.52%	14.76%	4.34%
Yes	Yes	No	4.46%	7.10%	3.69%
Yes	Yes	Yes	5.95%	7.73%	4.96%
Percentage of sample observations in bin			41.26%	10.74%	48.01%

Panel B. Different bins of returns, splitting at ± 2%

Risk-adjusted	Controls	Year and firm FE	≤-2%	-2% < x < 2%	≥ 2%
(1)	(2)	(3)	(4)	(5)	(6)
No	No	No	2.44%	20.82%	1.64%
No	Yes	No	3.02%	18.70%	1.20%
No	Yes	Yes	4.55%	19.43%	2.38%
Yes	No	No	2.38%	16.62%	3.64%
Yes	Yes	No	3.41%	11.57%	2.93%
Yes	Yes	Yes	5.09%	10.62%	4.43%
Percentage of sample observations in bin			36.17%	21.13%	42.70%

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A12: Relation between returns and trade quantities using ±1% as return threshold

This table shows the outcome of a regression of trade volume on returns for different regions and subsamples as in Table 3, but with a cutoff of ±1% for the subsamples. We estimate the following regression $Tradevolume_{ijt} = (\beta_1 lowret_{ijt} + \beta_2 medret_{ijt} + \beta_3 highret_{ijt}) \times AR_{ijt} + \gamma_1 lowret_{ijt} + \gamma_2 medret_{ijt} + \gamma_3 highret_{ijt} + \varepsilon_{ijt}$ where *lowret*, *medret*, and *highret* are dummy variables set to one if the abnormal return is smaller than -1%, between -1% and 1%, or greater than 1%, respectively, and to zero otherwise, for various subsamples as indicated below. Columns 1, 2 and 3 report the estimates of β_1, β_2 and β_3, and their standard errors in parentheses respectively. Column 4 reports the difference in coefficients for the two subsamples and the respective standard error. Variable definitions are provided in Appendix A. Dollar quantities of trade volumes are inflation-adjusted and expressed in 2013 U.S. dollars. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Sample	≤ -1%	-1% < x < 1%	≥ 1%	Difference
	(1)	(2)	(3)	(4)
All	9.74	-1.04	-8.31	
	(0.44)	(11.2)	(0.35)	
Panel A: firm characteristics				
With analyst coverage	9.736	-1.037	-8.314	-9.911***
	(0.435)	(11.19)	(0.348)	(0.523)
Without analyst coverage	-1.541	21.488	1.597	
	(0.464)	(14.96)	(0.395)	
High institutional ownership	10.131	-5.008	-9.344	-9.436***
	(0.528)	(13.16)	(0.429)	(0.826)
Low institutional ownership	2.292	3.965	0.120	
	(0.606)	(18.69)	(0.456)	
Poorly governed	13.238	57.998	-2.105	2.507
	(1.363)	(39.04)	(1.166)	(2.305)
Well-governed	4.432	6.412	-4.612	
	(1.535)	(55.84)	(1.442)	
Dual class	2.872	-211.495	-1.094	3.201
	(4.293)	(98.44)	(3.131)	(3.479)
No dual class	7.641	-1.542	-4.295	
	(1.334)	(30.20)	(1.129)	
Large	7.248	-4.196	-5.147	-5.807***
	(0.640)	(14.21)	(0.528)	(0.702)
Small	-1.157	-3.046	0.660	
	(0.233)	(5.756)	(0.182)	
High growth	12.407	-4.432	-10.160	-3.891***
	(0.582)	(16.03)	(0.485)	(0.712)
Low growth	8.537	1.089	-6.269	
	(0.592)	(13.94)	(0.455)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A12 – continued

Panel B: insider characteristics				
Late	-1.116	-38.794	2.942	12.236***
	(0.770)	(20.52)	(0.645)	(1.046)
Timely	10.625	2.034	-9.294	
	(0.481)	(12.11)	(0.384)	
Female	10.392	-26.003	-8.512	-0.139
	(1.324)	(33.98)	(1.113)	(1.343)
Male	9.717	1.922	-8.373	
	(0.459)	(11.82)	(0.365)	
Top tenure quartile	41.104	32.187	-24.186	-19.517***
	(3.681)	(75.39)	(3.010)	(2.938)
Bottom tenure quartile	6.689	20.604	-4.669	
	(1.320)	(35.87)	(1.156)	
Top $ ownership quartile	12.281	-6.586	-9.351	-7.431***
	(0.574)	(14.54)	(0.473)	
Bottom $ ownership quartile	2.370	31.592	-1.920	
	(0.444)	(12.42)	(0.330)	
Local insider	11.195	7.655	-8.910	-1.536***
	(0.519)	(13.31)	(0.416)	(0.730)
Non-local insider	7.077	-19.711	-7.374	
	(0.791)	(20.59)	(0.627)	
Panel C: time-variation in external monitoring				
Pre SOX	-1.851	3.551	0.255	-13.426***
	(0.514)	(14.22)	(0.401)	(0.698)
Post SOX	17.114	-7.729	-13.171	
	(0.681)	(15.39)	(0.553)	
Top SEC budget quartile	19.091	-1.211	-12.958	-11.034***
	(0.929)	(18.98)	(0.749)	(1.429)
Low SEC budget quartile	0.416	-17.083	-1.924	
	(0.781)	(17.56)	(0.612)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A13: Relation between returns and trade sizes using ±2% as return threshold

This table shows the outcome of a regression of trade volume on returns for different regions and subsamples as in Table 3, but with a cutoff of ±2% for the subsamples. We estimate the following regression $Tradevolume_{ijt} = (\beta_1 lowret_{ijt} + \beta_2 medret_{ijt} + \beta_3 highret_{ijt}) \times AR_{ijt} + \gamma_1 lowret_{ijt} + \gamma_2 medret_{ijt} + \gamma_3 highret_{ijt} + \varepsilon_{ijt}$ where *lowret*, *medret*, and *highret* are dummy variables set to one if the abnormal return is smaller than -2%, between -2% and 2%, or greater than 2%, respectively, and to zero otherwise, for various subsamples as indicated below. Columns 1, 2 and 3 report the estimates of β_1, β_2, and β_3, and their standard errors in parentheses respectively. Column 4 reports the difference in coefficients for the two subsamples and the respective standard error. Variable definitions are provided in Appendix A. Dollar quantities of trade volumes are inflation-adjusted and expressed in 2013 U.S. dollars. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Sample	≤ -2%	-2% < x < 2%	≥ 2%	Difference
	(1)	(2)	(3)	(4)
All	9.43	-8.66	-8.28	
	(0.46)	(4)	(0.36)	
Panel A: firm characteristics				
With analyst coverage	9.434	-8.659	-8.283	-9.477***
	(0.460)	(3.997)	(0.364)	(0.549)
Without analyst coverage	-1.355	8.701	1.193	
	(0.495)	(5.407)	(0.417)	
High institutional ownership	9.622	-11.301	-9.292	-9.406***
	(0.543)	(4.562)	(0.450)	(0.863)
Low institutional ownership	2.673	-0.024	0.114	
	(0.649)	(6.234)	(0.481)	
Poorly governed	12.733	-13.321	-3.591	1.228
	(1.437)	(13.58)	(1.235)	(2.467)
Well-governed	5.188	-1.921	-4.819	
	(1.647)	(19.10)	(1.522)	
Dual class	7.589	-40.431	-1.957	2.857
	(4.716)	(31.20)	(3.358)	(3.696)
No dual class	7.363	-17.787	-4.815	
	(1.421)	(10.72)	(1.201)	
Large	6.950	-9.420	-5.015	-5.505***
	(0.683)	(5.085)	(0.558)	(0.734)
Small	-0.986	-0.131	0.490	
	(0.252)	(2.055)	(0.194)	
High growth	12.115	-11.360	-9.998	-3.73***
	(0.615)	(5.703)	(0.508)	(0.746)
Low growth	7.968	-1.896	-6.268	
	(0.623)	(5.039)	(0.476)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A13 – continued

Panel B: insider characteristics				
Late	-0.479	-3.635	2.635	11.888***
	(0.833)	(7.110)	(0.684)	(1.093)
Timely	10.222	-10.048	-9.253	
	(0.509)	(4.338)	(0.402)	
Female	9.979	-24.028	-8.963	-0.664
	(1.400)	(11.80)	(1.182)	(1.410)
Male	9.423	-7.085	-8.299	
	(0.485)	(4.228)	(0.382)	
Top tenure quartile	40.640	-32.659	-24.796	-19.641***
	(3.910)	(27.14)	(3.195)	(3.106)
Bottom tenure quartile	6.650	0.755	-5.155	
	(1.410)	(12.18)	(1.224)	
Top $ ownership quartile	11.871	-13.339	-9.256	-7.304***
	(0.608)	(5.219)	(0.496)	
Bottom $ ownership quartile	2.592	8.006	-1.953	
	(0.467)	(4.508)	(0.343)	
Local insider	11.025	-6.362	-8.840	-1.423***
	(0.548)	(4.721)	(0.436)	(0.764)
Non-local insider	6.526	-13.638	-7.417	
	(0.836)	(7.458)	(0.657)	
Panel C: time-variation in external monitoring				
Pre SOX	-1.334	0.481	-0.171	-12.964***
	(0.553)	(4.934)	(0.423)	(0.731)
Post SOX	16.648	-15.819	-13.135	
	(0.720)	(5.535)	(0.581)	
Top SEC budget quartile	18.661	-10.288	-12.546	-10.03***
	(0.983)	(6.846)	(0.788)	(1.496)
Low SEC budget quartile	0.461	-13.399	-2.516	
	(0.841)	(6.035)	(0.657)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A14: Relation between returns and trade sizes using ±3% as return threshold

This table shows the outcome of a regression of trade volume on returns for different regions and subsamples as in Table 3, but with a cutoff of ±3% for the subsamples. We estimate the following regression $Tradevolume_{ijt} = (\beta_1 lowret_{ijt} + \beta_2 medret_{ijt} + \beta_3 highret_{ijt}) \times AR_{ijt} + \gamma_1 lowret_{ijt} + \gamma_2 medret_{ijt} + \gamma_3 highret_{ijt} + \varepsilon_{ijt}$ where *lowret*, *medret*, and *highret* are dummy variables set to one if the abnormal return is smaller than -3%, between -3% and 3%, or greater than 3%, respectively, and to zero otherwise, for various subsamples as indicated below. Columns 1, 2 and 3 report the estimates of β_1, β_2 and β_3, and their standard errors in parentheses respectively. Column 4 reports the difference in coefficients for the two subsamples and the respective standard error. Variable definitions are provided in Appendix A. Dollar quantities of trade volumes are inflation-adjusted and expressed in 2013 U.S. dollars. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Sample	≤ -3%	-3% < x < 3%	≥ 3%	Difference
	(1)	(2)	(3)	(4)
All	9.44	-1.62	-7.88	
	(0.49)	(2.22)	(0.38)	
Panel A: firm characteristics				
With analyst coverage	9.437	-1.623	-7.878	-9.229***
	(0.488)	(2.215)	(0.382)	(0.575)
Without analyst coverage	-1.466	11.095	1.351	
	(0.528)	(3.107)	(0.438)	
High institutional ownership	9.558	-1.375	-8.742	-9.113***
	(0.595)	(2.606)	(0.472)	(0.904)
Low institutional ownership	2.619	-1.119	0.371	
	(0.679)	(3.522)	(0.505)	
Poorly governed	13.664	3.733	-3.609	0.970
	(1.523)	(7.502)	(1.300)	(2.646)
Well-governed	5.284	-5.681	-4.579	
	(1.627)	(12.27)	(1.609)	
Dual class	8.280	-40.460	-1.234	3.696
	(5.104)	(17.37)	(3.567)	(3.928)
No dual class	8.055	-6.202	-4.930	
	(1.531)	(5.882)	(1.279)	
Large	7.143	-1.321	-4.383	-4.696***
	(0.731)	(2.827)	(0.590)	(0.769)
Small	-1.003	-1.504	0.314	
	(0.268)	(1.180)	(0.209)	
High growth	11.829	-2.617	-9.095	-2.658***
	(0.649)	(3.176)	(0.531)	(0.783)
Low growth	8.148	1.883	-6.437	
	(0.667)	(2.744)	(0.505)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A14 – continued

Panel B: insider characteristics				
Late	0.229	0.415	2.481	11.338***
	(0.898)	(3.984)	(0.727)	(1.140)
Timely	10.185	-2.788	-8.857	
	(0.540)	(2.402)	(0.422)	
Female	9.779	-7.900	-8.450	-0.549
	(1.484)	(6.632)	(1.232)	(1.482)
Male	9.445	-0.986	-7.901	
	(0.515)	(2.340)	(0.401)	
Top tenure quartile	37.379	-34.498	-24.736	-20.343***
	(4.111)	(15.27)	(3.395)	(3.279)
Bottom tenure quartile	7.577	12.721	-4.393	
	(1.530)	(6.719)	(1.283)	
Top $ ownership quartile	11.821	-3.614	-8.686	-6.812***
	(0.646)	(2.897)	(0.522)	(1.152)
Bottom $ ownership quartile	2.561	2.493	-1.873	
	(0.483)	(2.567)	(0.354)	
Local insider	10.955	-3.090	-8.474	-1.55***
	(0.581)	(2.617)	(0.458)	(0.800)
Non-local insider	6.694	1.581	-6.925	
	(0.890)	(4.129)	(0.688)	
Panel C: time-variation in external monitoring				
Pre SOX	-1.082	2.459	-0.132	-12.721***
	(0.590)	(2.783)	(0.445)	(0.767)
Post SOX	17.026	-5.626	-12.854	
	(0.767)	(3.061)	(0.613)	
Top SEC budget quartile	18.998	-2.406	-11.633	-8.962***
	(1.048)	(3.804)	(0.831)	(1.568)
Low SEC budget quartile	1.265	-0.874	-2.671	
	(0.921)	(3.313)	(0.696)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A15: Relation between returns and trade frequency

This table shows the outcome of a regression of yearly trade frequency on volume-weighted yearly average returns for different regions and subsamples. We estimate the following regression $Tradefrequency_{ijt} = (\beta_1 lowret_{ijt} + \beta_2 medret_{ijt} + \beta_3 highret_{ijt}) \times AR_{ijt} + \gamma_1 lowret_{ijt} + \gamma_2 medret_{ijt} + \gamma_3 highret_{ijt} + \varepsilon_{ijt}$ where *lowret*, *medret*,and *highret* are dummy variables set to one if the abnormal return is smaller than -0.5%, between -0.5% and 0.5% or greater than 0.5%, respectively, and to zero otherwise, for various subsamples as indicated below. Columns 1, 2 and 3 report the estimates of β_1, β_2, and β_3, and their standard errors in parentheses respectively. Column 4 reports the difference in coefficients for the two subsamples and the respective standard error. Variable definitions are provided in Appendix A. Dollar quantities of trade volumes are inflation-adjusted and expressed in 2013 U.S. dollars. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Sample	≤ -0.5%	-0.5% < x < 0.5%	≥ 0.5%	Difference
	(1)	(2)	(3)	(4)
All	0.080	-0.233	-0.063	
	(0.002)	(0.196)	(0.001)	
Panel A: firm characteristics				
With analyst coverage	0.080	-0.233	-0.063	0.005
	(0.077)	(-0.32)	(-0.06)	(0.003)
Without analyst coverage	0.077	-0.325	-0.068	
	(0.140)	(-1.01)	(-0.10)	
High institutional ownership	0.078	-0.270	-0.065	-0.010**
	(0.003)	(0.213)	(0.002)	(0.004)
Low institutional ownership	0.081	-0.362	-0.055	
	(0.006)	(0.551)	(0.004)	
Poorly governed	0.047	-0.153	-0.054	0.014
	(0.006)	(0.410)	(0.006)	(0.009)
Well-governed	0.090	0.372	-0.069	
	(0.005)	(0.395)	(0.003)	
Dual class	0.112	-2.400	-0.074	-0.010
	(0.031)	(2.561)	(0.015)	(0.013)
No dual class	0.082	0.338	-0.064	
	(0.007)	(0.533)	(0.004)	
Large	0.083	-0.255	-0.068	0.007*
	(0.003)	(0.215)	(0.002)	(0.003)
Small	0.093	-0.121	-0.074	
	(0.005)	(0.464)	(0.003)	
High growth	0.093	-0.117	-0.075	-0.026***
	(0.003)	(0.282)	(0.002)	(0.003)
Low growth	0.062	-0.349	-0.049	
	(0.003)	(0.263)	(0.002)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A15 – continued

Panel B: insider characteristics				
Late	0.140	-1.014	-0.103	-0.046***
	(0.009)	(0.654)	(0.006)	(0.005)
Timely	0.071	-0.101	-0.057	
	(0.002)	(0.200)	(0.001)	
Female	0.058	0.064	-0.048	0.017**
	(0.063)	(-0.05)	(-0.05)	(0.007)
Male	0.082	-0.262	-0.065	
	(0.058)	(0.063)	(-0.04)	
Top tenure quartile	0.123	0.317	-0.085	-0.05***
	(0.082)	(-0.26)	(-0.06)	(0.007)
Bottom tenure quartile	0.041	-0.713	-0.035	
	(0.123)	(0.317)	(-0.08)	
Top $ ownership quartile	0.101	-0.374	-0.081	-0.058***
	(0.004)	(0.276)	(0.003)	(0.005)
Bottom $ ownership quartile	0.032	-0.049	-0.023	
	(0.002)	(0.160)	(0.001)	
Local insider	0.071	-0.163	-0.055	0.025***
	(0.003)	(0.219)	(0.002)	(0.004)
Non-local insider	0.098	-0.375	-0.080	
	(0.005)	(0.391)	(0.004)	
Panel C: time-variation in external monitoring				
Pre SOX	0.054	0.058	-0.042	-0.037***
	(0.002)	(0.264)	(0.002)	(0.003)
Post SOX	0.103	-0.450	-0.079	
	(0.004)	(0.275)	(0.003)	
Top SEC budget quartile	0.090	-0.110	-0.078	-0.039***
	(0.005)	(0.282)	(0.004)	(0.007)
Low SEC budget quartile	0.046	-0.140	-0.039	
	(0.005)	(0.308)	(0.003)	

Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix G: Supplementary analysis to Section 4

Table A16: Regressions of insider trading returns, volumes and dollar profits – coefficients of the control variables

Panel A of this table reports the results of regressions of abnormal returns and abnormal profits on the control variables used in Tables 3, 6, and 7 of the paper and year fixed effects. Panel B reports the results of the same regressions with firm fixed effects. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Panel A: Without firm fixed effects

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Log market capitalization	0.063	-0.086***	326.569***	737.322***	2.979***	4.052***
	(0.04)	(0.02)	(14.36)	(43.80)	(0.28)	(0.59)
Book-to-market	0.660***	-0.311***	-14.923	-252.975***	2.781***	2.938***
	(0.11)	(0.04)	(12.00)	(45.16)	(0.45)	(0.78)
Number of analysts	-0.013*	0.001	2.583	14.038	-0.229***	-0.129
	(0.01)	(0.00)	(3.03)	(8.97)	(0.06)	(0.12)
Idiosyncratic volatility	0.394***	0.290***	94.264***	455.944***	2.151***	6.319***
	(0.06)	(0.02)	(7.90)	(30.16)	(0.31)	(0.74)
Firm FE	No	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,643	263,413	644,643	263,413	644,643	263,413
Adj. R-squared	0.50%	1.10%	13.40%	2.80%	0.30%	0.40%

Panel B: With firm fixed effects

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Log market capitalization	0.351***	0.033	414.314***	961.643***	6.017***	6.271***
	(0.06)	(0.03)	(26.67)	(97.91)	(0.49)	(1.03)
Book-to-market	0.810***	-0.096***	30.861*	125.706*	3.724***	4.055***
	(0.16)	(0.03)	(15.98)	(64.49)	(0.72)	(1.19)
Number of analysts	0.052***	-0.017***	-11.335***	-31.588**	0.057	0.682***
	(0.01)	(0.00)	(3.92)	(13.34)	(0.11)	(0.23)
Idiosyncratic volatility	0.352***	0.033	38.099***	88.647***	2.014***	4.250***
	(0.07)	(0.03)	(7.17)	(31.03)	(0.42)	(1.13)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,643	263,413	644,643	263,413	644,643	263,413
R-squared	7.40%	13.90%	25.40%	11.10%	4.20%	6.10%
Adj. R-squared	6.30%	11.30%	24.50%	8.40%	3.00%	3.20%

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A17: Persistence of trading profits

Panel A of this table shows the results of a linear regression of returns and profits on their lagged values from the last period aggregated at the firm level. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level. Panel B reports the F-value, p-value, degrees of freedom, and the R-squared and adjusted R-squared of a linear regression of returns and profits on firm fixed effects, while controlling for the standard set of control variables and year fixed effects. The F-test investigates the null hypothesis that the coefficients of firm fixed effects are jointly equal to zero. Columns 7 and 8 show the contribution to the (adjusted) R-squared, when firm fixed effects are added to the regression model.

Panel A: Regression of returns and profits on lagged values

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Lag abnormal return	1.000***					
	(0.00)					
Lag trade frequency		0.324***				
		(0.01)				
Lag trade value			0.993***			
			(0.00)			
Lag yearly trade value				0.265***		
				(0.03)		
Lag abnormal profit					0.998***	
					(0.00)	
Lag yearly abnormal profit						0.482***
						(0.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,643	263,414	644,643	263,414	644,643	263,414
Adj. R-squared	27.70%	22.80%	39.80%	17.20%	19.90%	23.30%

Panel B: F-tests of the joint significance of firm fixed effects and contribution in (adjusted) R^2

Dependent variable	F-value	P-value	Df.	Obs.	R^2	Adj. R^2	R^2 contrib.	Adj. R^2 contrib.
Abnormal returns	6.134	0.000	7,642	644,643	7.37%	6.25%	6.82%	5.71%
Trade frequency	4.976	0.000	7,640	263,413	4.15%	3.00%	3.85%	2.70%
Trade value	13.453	0.000	7,642	644,643	6.06%	3.25%	5.70%	2.90%
Yearly trade value	3.138	0.000	7,640	263,413	26.38%	12.74%	25.05%	11.50%
Profits	3.352	0.000	7,642	644,643	12.53%	6.43%	11.79%	5.75%
Yearly profits	2.032	0.000	7,640	263,413	6.06%	3.25%	5.70%	2.90%

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A18: Regressions of returns, trade frequency, trade value, and dollar profits on a proxy for informed trading – robustness to alternative specifications and subsamples

This table repeats the regressions in Table 4 of the paper changing the fixed effects, measuring returns and profits. The table shows the results of a regression of returns, frequency, value, and dollar profits on a proxy for informed trading, control variables, year fixed effects and firm fixed effects. Panel A reports the results of Table 3 without including firm fixed effects, while Panel B adds firm × year fixed effects to the model. Panel C excludes control variables. Panel D uses a 6-month horizon for the calculation of abnormal returns and profits. Panel E reports the results based on a sample that excludes option related sales, while Panels F and G report the results for purchases only and sales only. Panel H excludes routine trades defined following Cohen, Malloy and Pomorski (2012), while Panel I shows the standard errors under various clustering choices. The table only reports the coefficient of the proxy for informed trading. Each panel reports a separate set of regressions. For regressions that are based on insider-year observations, i.e., columns 2, 4, 6, 7 and 8, we replace the buy indicator with a percentage calculated as the mean over all trades for the given insider in a given year. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Panel A: Without firm FE

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy	0.750***	-0.512***	-63.520***	-388.022***	-0.044	-3.737***
	(0.10)	(0.05)	(19.14)	(60.53)	(0.62)	(0.90)
Controls, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Opportunistic	0.963***	-6.431***	84.996	-3933.305***	4.001***	1.918
	(0.10)	(0.36)	(57.52)	(700.23)	(0.62)	(3.60)
Controls, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent	0.562***	-4.468***	-206.016***	-4062.314***	-0.063	-20.430***
	(0.06)	(0.11)	(26.64)	(194.02)	(0.46)	(1.91)
Controls, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO	0.347***	-0.642***	-162.153***	-838.580***	0.031	-3.486***
	(0.09)	(0.04)	(18.91)	(51.70)	(0.49)	(1.12)
Controls, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive	0.193***	-0.842***	-112.308***	-986.259***	0.380	-3.916***
	(0.06)	(0.05)	(21.72)	(84.33)	(0.48)	(1.07)
Controls, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,643	263,414	644,643	263,414	644,643	263,414

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A18 – continued

Panel B: With firm × year FE

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only	0.818***	-0.435***	-161.419***	-451.866***	1.086	-4.626***
	(0.12)	(0.07)	(12.60)	(81.80)	(0.77)	(1.33)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Opportunistic	0.370***	-5.600***	9.176	-4117.935***	1.591**	-1.579
	(0.09)	(0.36)	(42.28)	(842.43)	(0.76)	(4.29)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent	0.168***	-4.125***	-305.638***	-4199.009***	-2.245***	-20.192***
	(0.05)	(0.11)	(23.20)	(218.25)	(0.47)	(2.03)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO	0.340***	-0.652***	-144.142***	-897.614***	0.365	-3.167**
	(0.07)	(0.05)	(18.24)	(64.92)	(0.52)	(1.33)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive	0.142***	-0.694***	11.090	-725.768***	0.481	-2.328**
	(0.05)	(0.05)	(18.28)	(109.11)	(0.39)	(1.13)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,643	263,414	644,643	263,414	644,643	263,414

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A18 – continued

Panel C: Without controls

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only	0.907***	-0.482***	-192.379***	-554.286***	-0.779	-4.607***
	(0.10)	(0.05)	(13.55)	(59.77)	(0.59)	(1.03)
Controls	No	No	No	No	No	No
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Opportunistic	0.504***	-5.656***	25.105	-3815.965***	2.064***	-2.437
	(0.10)	(0.32)	(49.51)	(682.70)	(0.74)	(3.80)
Controls	No	No	No	No	No	No
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent	0.345***	-4.320***	-272.501***	-4193.033***	-0.932**	-21.699***
	(0.06)	(0.10)	(23.55)	(191.76)	(0.47)	(1.87)
Controls	No	No	No	No	No	No
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO	0.349***	-0.698***	-157.950***	-961.259***	0.263	-3.882***
	(0.08)	(0.04)	(18.89)	(59.57)	(0.49)	(1.15)
Controls	No	No	No	No	No	No
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive	0.197***	-0.767***	-33.402*	-822.866***	0.865**	-2.428**
	(0.05)	(0.04)	(18.67)	(88.68)	(0.41)	(1.00)
Controls	No	No	No	No	No	No
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,643	263,414	644,643	263,414	644,643	263,414

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A18 – continued

Panel D: Calculating returns and profits over a 6-month horizon

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only	0.571	-0.478***	-83.549***	-307.945***	-9.834***	-33.356***
	(0.37)	(0.05)	(15.08)	(65.26)	(2.02)	(3.80)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Opportunistic	1.844***	-5.619***	25.583	-3763.188***	8.470***	19.292
	(0.35)	(0.32)	(47.42)	(680.29)	(2.62)	(14.67)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent	1.567***	-4.308***	-287.270***	-4196.366***	1.306	-38.259***
	(0.21)	(0.10)	(23.79)	(192.88)	(1.72)	(6.75)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO	1.201***	-0.694***	-164.031***	-951.007***	0.937	-8.170**
	(0.26)	(0.04)	(18.80)	(59.10)	(1.60)	(3.75)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive	1.214***	-0.763***	-54.311***	-849.519***	3.820***	2.375
	(0.17)	(0.04)	(18.81)	(90.29)	(1.43)	(3.46)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	642,712	262,328	642,712	262,328	642,712	262,328

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A18 – continued

Panel E: Excluding option-related sales

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only (d)	1.073***	-0.830***	-182.514***	-958.944***	0.662	-6.804***
	(0.12)	(0.05)	(16.68)	(79.14)	(0.73)	(1.92)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Opportunistic (d)	0.686***	-5.430***	-5.821	-3562.803***	2.267**	-4.367
	(0.13)	(0.40)	(43.72)	(806.60)	(0.93)	(7.28)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent (d)	0.470***	-5.929***	-437.257***	-6212.196***	-2.300***	-42.661***
	(0.09)	(0.17)	(37.05)	(416.37)	(0.73)	(5.52)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO (d)	0.544***	-0.904***	-247.808***	-1129.393***	-0.732	-8.987***
	(0.12)	(0.05)	(15.92)	(63.65)	(0.56)	(1.59)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive (d)	0.223***	-0.845***	-169.086***	-1215.522***	-0.550	-8.191***
	(0.07)	(0.06)	(19.85)	(112.58)	(0.51)	(1.79)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel F: Purchases only

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Opportunistic (d)	0.700***	-5.466***	-31.497	-2246.435***	2.619**	-16.620
	(0.23)	(0.48)	(23.62)	(392.63)	(1.19)	(11.76)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent (d)	0.336**	-3.221***	-262.290***	-2537.454***	-3.926***	-38.647***
	(0.14)	(0.13)	(25.84)	(209.44)	(0.81)	(5.25)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO (d)	0.849***	-0.531***	-138.143***	-584.669***	-1.197**	-8.052***
	(0.20)	(0.05)	(15.00)	(83.79)	(0.51)	(2.05)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive (d)	0.414***	-0.613***	-100.668***	-624.717***	-0.851**	-7.464***
	(0.11)	(0.05)	(11.60)	(62.70)	(0.42)	(1.54)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A18 – continued

Panel G: Sales only

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Opportunistic (d)	0.320***	-4.486***	48.049	-3570.608***	1.817**	0.370
	(0.10)	(0.35)	(58.50)	(839.99)	(0.91)	(5.84)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent (d)	0.255***	-3.425***	-272.887***	-3599.466***	-0.580	-13.833***
	(0.06)	(0.10)	(28.02)	(213.33)	(0.54)	(2.55)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO (d)	0.227***	-0.424***	-161.850***	-789.008***	0.663	-1.508
	(0.08)	(0.05)	(22.53)	(70.15)	(0.61)	(1.57)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive (d)	0.250***	-0.337***	-62.846**	-499.850***	1.249**	0.866
	(0.06)	(0.05)	(24.42)	(119.96)	(0.52)	(1.61)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel H: excluding routine trades

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only	0.920***	-0.464***	-100.796***	-327.264***	0.107	-3.518***
	(0.09)	(0.05)	(13.46)	(61.70)	(0.52)	(0.99)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent	0.252***	-4.263***	-293.680***	-4204.720***	-1.647***	-22.500***
	(0.06)	(0.09)	(20.92)	(184.78)	(0.50)	(1.87)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO	0.369***	-0.660***	-147.662***	-921.082***	0.191	-3.649***
	(0.08)	(0.04)	(16.51)	(54.24)	(0.51)	(1.15)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive	0.178***	-0.737***	-39.330**	-816.191***	0.614	-2.597***
	(0.05)	(0.04)	(16.07)	(83.26)	(0.41)	(0.98)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	583,160	258,467	583,160	258,467	583,160	258,467

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A18 – continued

Panel I: sensitivity to clustering choice

	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit
	(1)	(2)	(3)	(4)	(5)	(6)
Buy only	0.920***	-0.479***	-83.712***	-308.905***	0.405	-3.401**
Clustered by firm	(0.10)	(0.05)	(14.96)	(63.97)	(0.58)	(1.00)
Clustered by firm and by year	(0.18)	(0.08)	(19.58)	(93.96)	(0.66)	(1.55)
Clustered by insider	(0.07)	(0.07)	(11.82)	(79.88)	(0.48)	(1.02)
Clustered by insider and by year	(0.18)	(0.09)	(17.77)	(99.38)	(0.63)	(1.52)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Opportunistic	0.506***	-5.657***	26.220	-3798.031***	2.083***	-2.396
Clustered by firm	(0.10)	(0.32)	(47.09)	(669.58)	(0.74)	(3.74)
Clustered by firm and by year	(0.10)	(0.45)	(50.06)	(744.70)	(0.73)	(4.45)
Clustered by insider	(0.09)	(0.29)	(29.92)	(595.85)	(0.68)	(3.91)
Clustered by insider and by year	(0.10)	(0.44)	(34.70)	(668.39)	(0.69)	(4.42)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Infrequent	0.325***	-4.322***	-286.435***	-4214.896***	-1.135**	-21.834***
Clustered by firm	(0.06)	(0.10)	(23.59)	(189.90)	(0.47)	(1.85)
Clustered by firm and by year	(0.06)	(0.17)	(32.99)	(366.05)	(0.53)	(3.59)
Clustered by insider	(0.05)	(0.11)	(17.12)	(215.74)	(0.39)	(2.02)
Clustered by insider and by year	(0.04)	(0.18)	(29.04)	(376.27)	(0.47)	(3.61)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
CFO	0.343***	-0.698***	-163.598***	-957.094***	0.220	-3.813***
Clustered by firm	(0.08)	(0.04)	(18.64)	(58.13)	(0.49)	(1.13)
Clustered by firm and by year	(0.08)	(0.06)	(18.41)	(80.43)	(0.47)	(1.31)
Clustered by insider	(0.07)	(0.05)	(16.76)	(68.48)	(0.50)	(1.24)
Clustered by insider and by year	(0.06)	(0.07)	(16.17)	(86.23)	(0.44)	(1.30)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Executive	0.193***	-0.770***	-54.086**	-858.359***	0.644	-2.588*
Clustered by firm	(0.05)	(0.04)	(18.68)	(88.85)	(0.40)	(0.98)
Clustered by firm and by year	(0.05)	(0.07)	(22.00)	(128.76)	(0.47)	(1.28)
Clustered by insider	(0.04)	(0.05)	(13.87)	(97.70)	(0.36)	(0.98)
Clustered by insider and by year	(0.05)	(0.07)	(18.44)	(132.03)	(0.45)	(1.28)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,643	263,414	644,643	263,414	644,643	263,414

Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix H: Trading ability or risk-taking behavior?

What are the potential sources of insider gains? Do insiders generate higher profits because they have superior ability in identifying the most profitable trading opportunities? Or do they generate higher profits because they are willing to take more risk? To assess both of these explanations, we examine whether the insiders that make the largest losses are also the ones to make the largest profits. Panel A of Figure A2 shows the mean largest gain of an insider in a given year over deciles sorted by the largest loss by insider and year. Under the risk-taking hypothesis, we expect that the individuals with the largest gains are also the ones with the highest losses. For the graph, this would imply a U-shaped pattern. Under the skill hypothesis, we expect that the individuals with the largest losses are those with the smallest gains. We would hence expect a declining relationship. The graph in Panel A of Figure A2 exhibits a U-shaped relationship, which supports the notion that – at the trade level – differences in the ability and willingness to take risk affects abnormal returns. Observations in the decile with the largest losses actually generate the largest abnormal gain.

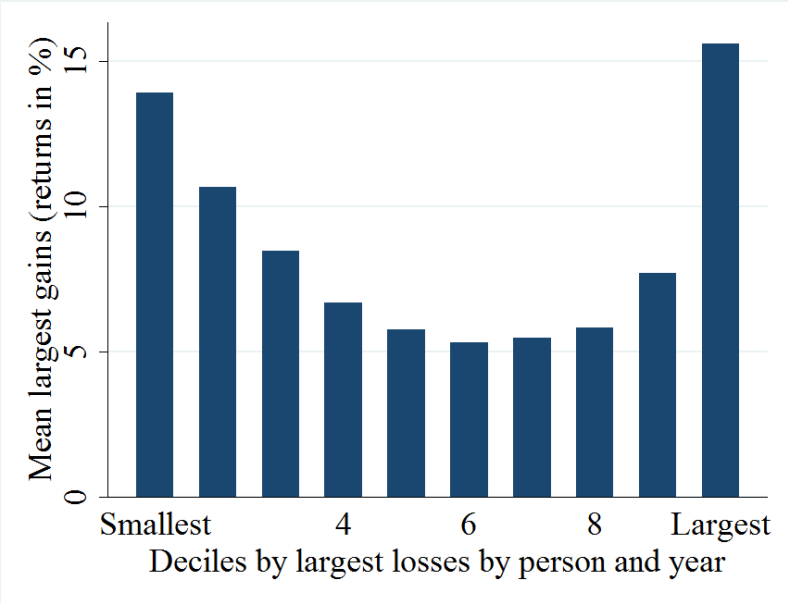
Given that insiders choose different transaction sizes and trade with different frequencies, we analyze the relationship between largest and smallest gains at the yearly abnormal dollar profit level in Panel B of Figure A2. Here, we find little evidence for the risk-absorption hypothesis. The mean largest gains decline with largest losses by person for all but the last decile, where we observe a slight increase in largest gains from the ninth to the tenth decile. On balance, the empirical evidence provides more support for the idea that differences in trading profits are, at least in part, related to trading ability, and provides less support for the notion that large yearly profits accrue to corporate insiders who take risky gambles.

Electronic copy available at: https://ssrn.com/abstract=2887628

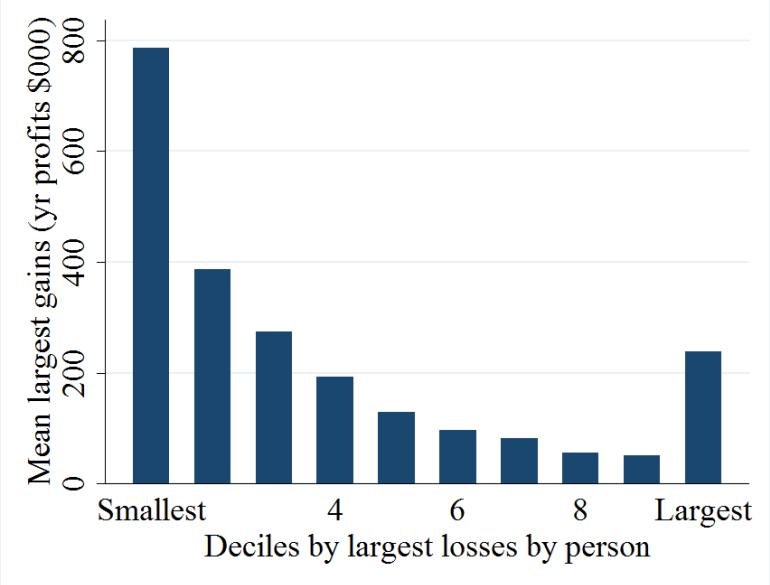
Figure A2: Mean abnormal returns and abnormal profits over losses

This figure plots the mean largest gains over deciles sorted by the largest losses. Panel A shows the mean value of the maximum return for each insider-year for sorted by loss decile. The deciles are constructed based on the minimum trade-level return for each insider-year. Decile 1 (10) consists of insider-years with the smallest (largest) loss in terms returns. Panel B shows the mean value of the maximum profit of an insider for deciles sorted by losses. The deciles are constructed based on the minimum year profit of each insider over their entire trading history. Decile 1 (10) consists of insiders with the smallest (largest) loss in terms of year profits. Variable definitions are provided in Table A1 of the Appendix. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.

Panel A: Mean largest abnormal return over loss deciles



Panel B: Mean largest dollar profit over loss deciles



Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix I: Additional analysis of trading around the short-swing rule

We are first interested in the continuity of the distribution of trades around the short-swing rule threshold of 6 months, i.e., whether there is bunching to the right of the threshold. Under the null hypothesis that corporate insiders do not choose to close their trades later to retain the profits, we expect a similar number of round-trip transactions to be closed just short of the threshold (after 170-180 days), compared to just after it. Figure A3 shows the number of round-trip trades closed after 100-260 days across 10-day bins. The vertical line at 180 days indicates the threshold imposed by the short-swing rule. The number of round-trips closed ranges between 329 and 406 in each of the bins to the left of the threshold. There are 392 round-trips closed just short of the threshold, after 171-180 days. In contrast, there are 1,299 round-trip trades closed just after the threshold, after 181-190 days. The number of round-trips closed after 191-200 days is also high, at 844. Thus, there is obvious bunching to the right of the 6-month threshold set by the short-swing rule: we find a large increase in the number of round-trip trades closed immediately after 6 months.[5]

In Table A19, we test whether the difference in the density to the left and to the right of the threshold is significant using the method suggested by McCrary (2008), and the local polynomial density estimator of Cattaneo, Jansson, and Ma (2017), which uses a data-driven bandwidth selector. Table A19 shows that the estimate of the change in density – the log difference – is 104%. Insiders are 104% more likely to close a round-trip transaction just after the 6-month threshold than just before it. Both the McCrary (2008) test and the robust t-test of Cattaneo, Jansson, and Ma (2017) reject the null hypothesis that the density is continuous around the threshold of 180 days with t-statistics of 24.79 and 10.54 respectively.

[5] Certain trades, such as those made in employee stock purchase plans, are exempt from the short-swing profit recovery rule. Because our analysis focuses only on open market purchases and sales (transaction codes P and S), trades to the left of the threshold are not exempt from the short-swing profit recovery rule.

Electronic copy available at: https://ssrn.com/abstract=2887628

An interval of 6 months may vary in length depending on which months it contains. Our results are similar in size and statistical significance for thresholds of 181 or 182 days. Trading around the 6-month threshold may reflect a natural time interval for the insider to evaluate their trading position. We show that there is no similar bunching around equally natural evaluation periods of 30, 60, 90, 100, 365, or 730 days. Overall, these tests suggest that insiders are significantly more likely to close a round-trip just after 6 months, when they can retain the proceeds from the round-trip trade, and that the 6-month threshold is unique in this regard.

Finally, we show that trades closed just after the 6-month threshold earn higher profits than those closed just short of the threshold. Figure A4 shows a significant discontinuity in profits. Round-trip trades closed after 171-180 days earn an average profit of $44,000, whereas those closed between 181-190 days earn significantly higher average profits of $100,000.[6] Therefore, the number of trades closed just *before* the threshold provides a useful benchmark for how many insiders are not closing a profitable position to capture the profits (instead are trading for, e.g., liquidity or signaling motives) or are inattentive.[7] We conclude that insiders are aware of the short-swing rule and wait to close more profitable positions. As we document in the paper, the distribution of abnormal profits has a long right tail. We run quantile regressions using the same specification as in Table 5 in the paper to examine the explanatory power of our profit-seeking dummy across the entire distribution. Figure A5 summarizes the regression coefficients of the profit-seeking dummy across these quantile regressions from the 5th to the 95th percentile and the corresponding 95% confidence intervals. The coefficients are positive and significant for all percentiles above the median. They monotonically increase when estimating higher percentiles of

[6] We examine whether the difference in profits around the 6-month threshold is due to returns, trade values, or both. We find that trades closed just after 6 months have higher implied abnormal returns (calculated as the ratio of abnormal dollar profits to trade value), and are also larger. These results are unreported for brevity.
[7] It is still possible that insiders closing a trade before the threshold do so to avoid future losses.

Electronic copy available at: https://ssrn.com/abstract=2887628

all outcome variables. This increase is especially pronounced for yearly trade value, profits, and yearly profits. We conclude that our measure is more accurate in predicting the right tail of the distribution of returns, frequencies, and profits.

There may be alternative explanations for insiders closing a trade right after the expiration of the short-swing rule. First, it may be the case that some insiders mechanically make the offsetting trade 6 months after the threshold to fully comply with these regulations. Second, the insider may want to hedge her exposure as early as possible without incurring a loss due to the short-swing rule. However, neither of these alternative stories can explain why the *same* insiders also trade more frequently and more profitably in the future. Any alternative hypothesis would have to explain simultaneously (i) the bunching of trades after the threshold, (ii) why trades closed right after the threshold are more profitable, (iii) why insiders closing trades right after the threshold also trade more frequently and more profitably in future years, and also (iv) why this relation is more pronounced for higher quantiles of the distribution.

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A19: Bunching around the short-swing threshold of 6-months

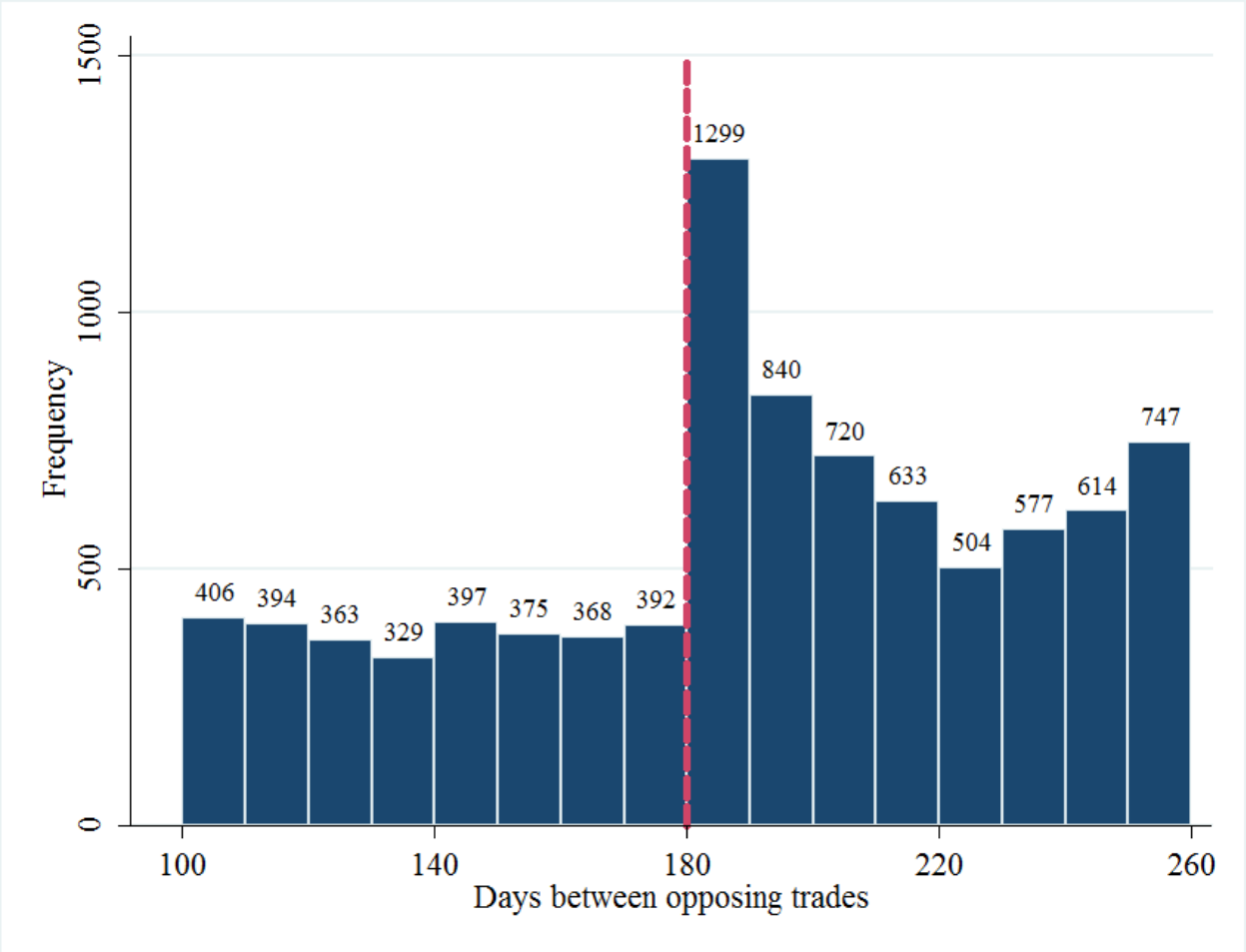
This table shows the log densities of the McCrary test for round-trip transactions placed by insiders. A round-trip is defined as a purchase followed by a sale, or a sale followed by a purchase. The threshold of 6 months is imposed by the short-swing profit recovery rule in section 16(b) (15 U.S.C. § 78p) of the Securities Exchange Act of 1934. The local linear regression is estimated using the bandwidth suggested by McCrary (2008). The fourth column shows an alternative, robust t-test based on the nonparametric, data-driven bandwidth selector method proposed by Cattaneo, Jansson, and Ma (2017). The table contains results for placebo thresholds of 1, 2, 3 months, 100 days, and 1-2 years.

	McCrary (2008)			Cattaneo et al. (2017)
Threshold (days)	**Log density**	**s.e.**	**t**	**t**
		Short-swing rule		
180	1.042	0.042	24.789	10.537
181	1.029	0.042	24.470	12.139
182	1.011	0.042	24.179	12.479
		Placebo thresholds		
30	-0.650	0.033	-19.442	-2.999
60	-0.337	0.039	-8.638	-1.920
90	0.106	0.050	2.136	1.678
100	-0.120	0.053	-2.238	-0.641
365	-0.004	0.042	-0.097	-0.411
730	0.070	0.061	1.147	0.437

Electronic copy available at: https://ssrn.com/abstract=2887628

Figure A3: Frequency of round-trip transactions closed around the short-swing threshold of 6 months

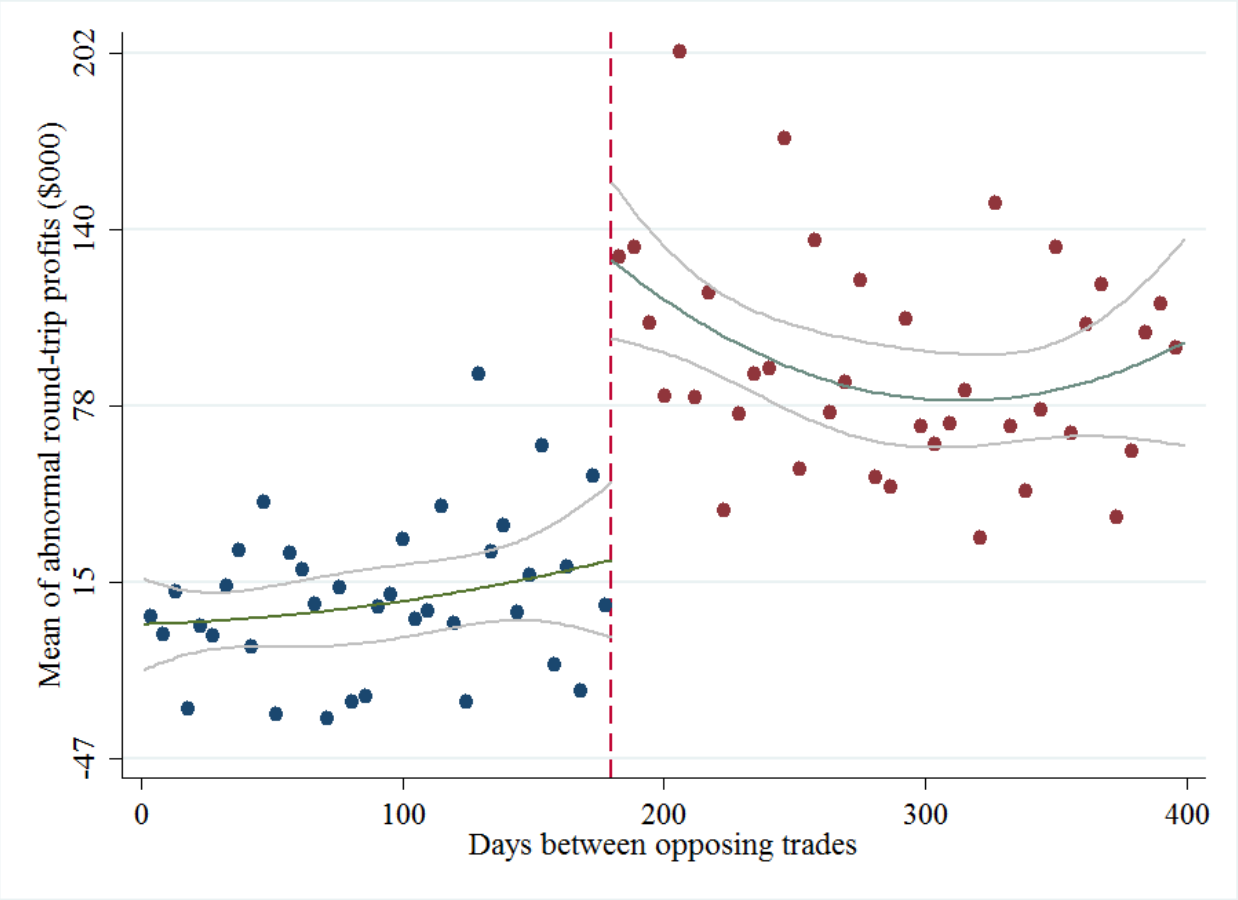
This histogram shows the number of round-trip transactions closed as a function of the distance between the two offsetting transactions. A round-trip is defined as a purchase followed by a sale, or a sale followed by a purchase. Each bar shows the number of round-trip transactions closed in the corresponding 10-day bin, 101-110 days, 111-120 days, etc. The dashed vertical line at 180 days indicates the cutoff of 6 months imposed by the short-swing profit recovery rule in section 16(b) (15 U.S.C. § 78p) of the Securities Exchange Act of 1934.



Electronic copy available at: https://ssrn.com/abstract=2887628

Figure A4: Differences between round-trip transactions closed before vs. after the short-swing threshold of 6 months

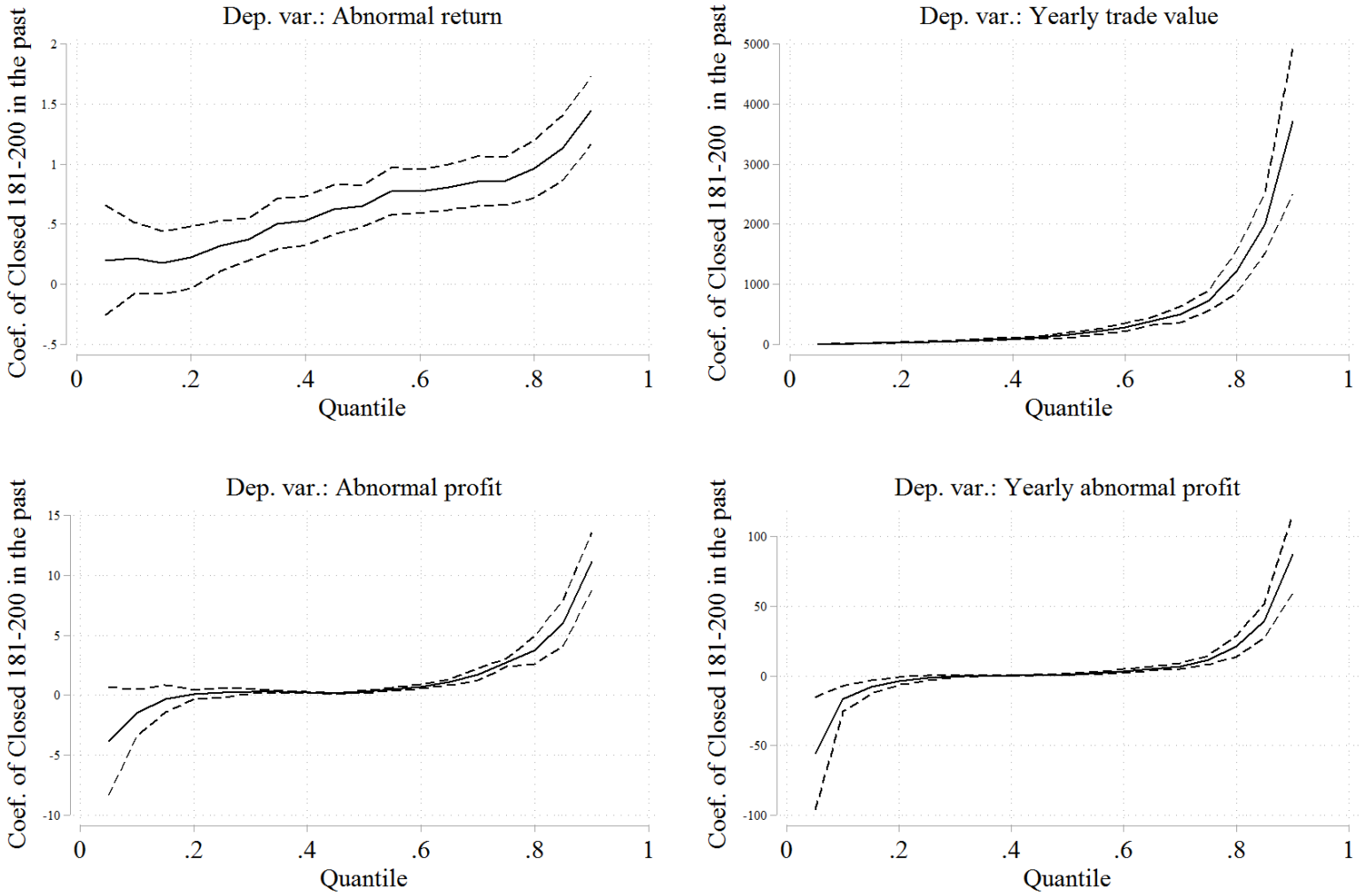
The outcome variable is abnormal round-trip dollar profits, measured in thousands of dollars. A round-trip is defined as a purchase followed by a sale, or a sale followed by a purchase. The dashed vertical line at 180 days indicates the cutoff of 6 months imposed by the short-swing profit recovery rule in section 16(b) (15 U.S.C. § 78p) of the Securities Exchange Act of 1934. The solid lines show polynomial of order 4 fit to the data, separately to the left and to the right of the threshold, and the corresponding 95% confidence intervals. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars.



Electronic copy available at: https://ssrn.com/abstract=2887628

Figure A5: Quantile regressions

This figure summarizes the results of quantile regressions for the quantiles starting from the 0.05 quantile to the 0.95 quantile, using increments of 0.05. We regress returns, yearly trade value, per-trade and yearly dollar profits on an indicator variable for having closed a round-trip between 181-200 days in the past (excluding the first such trade, or year, respectively), control variables, year fixed effects, and firm fixed effects as in Table 6. Variable definitions are provided in Appendix A. Standard errors are clustered at the firm level. The figure shows the coefficient estimates for the given quantile (solid line) and the upper and lower limits of the 95% confidence intervals.



Electronic copy available at: https://ssrn.com/abstract=2887628

Internet Appendix J: Who makes high dollar profits?

This Appendix reports robustness tests for the analysis in Section 5.2 of the paper. We repeat the tests shown in Table 6 columns 1-3 choosing different thresholds to flag an insider-year as having high profits. In Table A21 columns 1-3 we flag an insider-year as high profit if the yearly abnormal profits are in the top decile of that year. In columns 4-6, we use the top 15% of profits as the cutoff. The results confirm those shown in Table 6 of the paper using the top 20% as a threshold: high profits are more likely observed for men, non-locals, insiders that sell, trade frequently, have high dollar ownership, or are blockholders.

Table A22 repeats the analysis shown in Table 6, while excluding transactions classified as routine according to Cohen, Malloy and Pomorski (2012). The empirical patterns documented in Table 6 also persist when we exclude routine transactions.

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A20: Who makes high dollar profits – alternative thresholds for high profits

This table shows the results of a regression of a dummy variable indicating whether an insider ranks among the top 10% in terms of yearly dollar profits (columns 1 to 3) or the top 15% (columns 4 to 6) on insider characteristics, firm-level control variables, year fixed effects, firm fixed effects, or year-firm fixed effect respectively. Coefficient estimates are multiplied by 100, so that a reported value of 1 corresponds to one percentage point. Panel A is based on a panel that aggregates insider-firm observations at the yearly level. Panel B performs the same analysis, while restricting the samples to trades by executives and directors. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Panel A: All insiders

	Top 10% profits			Top 15% profits		
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of late filings	0.166	0.301	0.337	0.114	0.374	0.529**
	(0.21)	(0.20)	(0.21)	(0.24)	(0.23)	(0.25)
Female	-3.275***	-2.991***	-2.958***	-3.939***	-3.584***	-3.382***
	(0.21)	(0.20)	(0.21)	(0.25)	(0.24)	(0.25)
Local insider	-0.840***	-0.335*	-0.394**	-1.166***	-0.461**	-0.503**
	(0.19)	(0.19)	(0.19)	(0.22)	(0.22)	(0.23)
Fraction of buys	-3.822***	-3.002***	-3.046***	-6.797***	-5.585***	-5.440***
	(0.17)	(0.17)	(0.20)	(0.21)	(0.21)	(0.24)
Infrequent trader	-7.339***	-7.771***	-7.742***	-8.274***	-8.696***	-8.664***
	(0.26)	(0.24)	(0.24)	(0.29)	(0.26)	(0.27)
High $ ownership	5.216***	5.211***	5.377***	6.933***	6.901***	7.018***
	(0.14)	(0.14)	(0.15)	(0.17)	(0.17)	(0.18)
Blockholder	18.262***	17.337***	16.311***	17.883***	16.891***	15.746***
	(0.85)	(0.72)	(0.71)	(0.83)	(0.74)	(0.76)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	No
Firm FE	No	Yes	No	No	Yes	No
Firm × year FE	No	No	Yes	No	No	Yes
Observations	261,433	260,959	253,624	261,433	260,959	253,624
Adjusted R^2	0.073	0.118	0.19	0.08	0.126	0.207

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A20 – continued

Panel B: Executives and directors

	Top 10% profits			Top 15% profits		
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of late filings	0.352*	0.417**	0.287	0.312	0.507**	0.526**
	(0.20)	(0.19)	(0.21)	(0.24)	(0.23)	(0.26)
Female	-2.437***	-2.299***	-2.335***	-3.170***	-2.925***	-2.806***
	(0.21)	(0.20)	(0.21)	(0.25)	(0.24)	(0.25)
Local insider	-0.449**	-0.016	-0.122	-0.847***	-0.317	-0.365
	(0.18)	(0.18)	(0.19)	(0.22)	(0.22)	(0.23)
Fraction of buys	-4.583***	-3.482***	-3.348***	-7.534***	-5.996***	-5.686***
	(0.16)	(0.16)	(0.19)	(0.20)	(0.20)	(0.24)
Infrequent trader	-5.213***	-5.509***	-5.459***	-6.259***	-6.534***	-6.457***
	(0.25)	(0.24)	(0.25)	(0.29)	(0.27)	(0.28)
High $ ownership	4.120***	4.061***	4.071***	5.747***	5.663***	5.602***
	(0.14)	(0.14)	(0.15)	(0.17)	(0.17)	(0.18)
Tenure	0.223***	0.281***	0.272***	0.243***	0.309***	0.297***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)
Executive	-0.781***	-0.223	-0.089	-0.212	0.446**	0.557**
	(0.17)	(0.17)	(0.18)	(0.20)	(0.20)	(0.22)
CEO	8.925***	8.746***	9.188***	10.456***	10.107***	10.401***
	(0.34)	(0.34)	(0.36)	(0.37)	(0.37)	(0.39)
CFO	1.454***	1.199***	1.189***	2.868***	2.448***	2.465***
	(0.27)	(0.28)	(0.29)	(0.33)	(0.33)	(0.35)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	No
Firm FE	No	Yes	No	No	Yes	No
Firm × year FE	No	No	Yes	No	No	Yes
Observations	236,240	235,710	227,742	236,240	235,710	227,742
Adjusted R^2	0.067	0.111	0.18	0.078	0.123	0.202

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A21: Who makes high dollar profits – excluding routine trades

This table shows the results of a regression of a dummy variable indicating whether an insider ranks among the top quintile in terms of yearly dollar profits (columns 1 to 3) or whether she has closed a round-trip trade between 181 and 200 days in a given year (columns 4 to 6) on insider characteristics, firm-level control variables, year fixed effects, firm fixed effects, or year-firm fixed effect respectively. The regressions exclude insider-years classified as routine using the algorithm of Cohen, Malloy, and Pomorski (2012). Coefficient estimates are multiplied by 100, so that a reported value of 1 corresponds to one percentage point. Panel A is based on a panel that aggregates insider-firm observations at the yearly level. Panel B performs the same analysis, while restricting the samples to trades by executives and directors. Variable definitions are provided in Appendix A. Dollar quantities are inflation-adjusted and expressed in 2013 U.S. dollars. Standard errors are clustered at the firm level. The table reports coefficients and standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Panel A: All insiders

	Top 20% profits			Closed between 181-200		
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of late filings	-0.476*	-0.088	0.194	0.307***	0.310***	0.363***
	(0.27)	(0.26)	(0.27)	(0.05)	(0.05)	(0.06)
Female	-4.132***	-3.704***	-3.033***	-0.114***	-0.072	-0.079
	(0.28)	(0.27)	(0.27)	(0.04)	(0.04)	(0.05)
Local insider	-1.333***	-0.446*	-0.902***	-0.035	-0.039	-0.009
	(0.25)	(0.24)	(0.25)	(0.04)	(0.04)	(0.05)
Fraction of buys	-9.783***	-8.183***	-7.606***	-0.768***	-0.949***	-1.204***
	(0.24)	(0.24)	(0.27)	(0.03)	(0.04)	(0.06)
Infrequent trader	-8.537***	-8.900***	-8.053***	-0.356***	-0.427***	-0.419***
	(0.30)	(0.28)	(0.28)	(0.05)	(0.05)	(0.05)
High $ ownership	8.232***	8.240***	7.867***	-0.154***	-0.168***	-0.175***
	(0.20)	(0.19)	(0.21)	(0.03)	(0.03)	(0.04)
Blockholder	16.931***	15.725***	15.339***	0.556***	0.560***	0.512***
	(0.83)	(0.76)	(0.79)	(0.15)	(0.15)	(0.16)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	No
Firm FE	No	Yes	No	No	Yes	No
Firm × year FE	No	No	Yes	No	No	Yes
Observations	257,024	256,537	249,125	257,024	256,537	249,125
Adjusted R^2	0.083	0.129	0.224	0.004	0.011	0.028

Electronic copy available at: https://ssrn.com/abstract=2887628

Table A21 – continued

Panel B: Executives and directors

	Top 20% profits			Closed between 181-200		
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of late filings	-0.253	0.059	0.056	0.292***	0.287***	0.367***
	(0.27)	(0.26)	(0.29)	(0.05)	(0.05)	(0.06)
Female	-3.444***	-3.126***	-2.973***	-0.091**	-0.066	-0.081
	(0.29)	(0.28)	(0.28)	(0.04)	(0.05)	(0.05)
Local insider	-1.170***	-0.495**	-0.456*	0.043	0.026	0.039
	(0.25)	(0.24)	(0.25)	(0.04)	(0.04)	(0.05)
Fraction of buys	-10.483***	-8.522***	-7.986***	-0.804***	-0.982***	-1.234***
	(0.23)	(0.23)	(0.27)	(0.04)	(0.04)	(0.06)
Infrequent trader	-6.673***	-6.917***	-6.799***	-0.177***	-0.249***	-0.259***
	(0.32)	(0.29)	(0.30)	(0.05)	(0.05)	(0.05)
High $ ownership	7.091***	7.061***	7.012***	-0.167***	-0.186***	-0.191***
	(0.20)	(0.20)	(0.21)	(0.04)	(0.04)	(0.04)
Tenure	0.244***	0.310***	0.305***	-0.004	-0.004	-0.002
	(0.04)	(0.03)	(0.03)	(0.00)	(0.00)	(0.01)
Executive	0.233	0.852***	1.009***	-0.211***	-0.202***	-0.197***
	(0.23)	(0.22)	(0.24)	(0.04)	(0.04)	(0.04)
CEO	10.666***	10.170***	10.415***	0.195***	0.180**	0.186**
	(0.39)	(0.39)	(0.41)	(0.07)	(0.07)	(0.08)
CFO	3.722***	3.121***	3.095***	-0.024	0.012	0.038
	(0.38)	(0.38)	(0.40)	(0.07)	(0.07)	(0.08)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	No
Firm FE	No	Yes	No	No	Yes	No
Firm × year FE	No	No	Yes	No	No	Yes
Observations	232,389	231,848	223,786	232,389	231,848	223,786
Adjusted R^2	0.083	0.128	0.218	0.003	0.008	0.018

Electronic copy available at: https://ssrn.com/abstract=2887628