Perks or Peanuts? The Dollar Profits to Insider Trading

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Abstract

While prior research has documented large percentage returns to insider trading, it is not clear whether insiders make large dollar profits on their trades. This is the first paper to present large-sample, comprehensive evidence on the dollar profits from legal insider trading. We show that dollar profits are economically insignificant for a typical insider, the median insider in our sample earning abnormal profits of $464 per year. Insiders with high abnormal returns on their trades do not make large dollar profits. We exploit the discontinuity imposed by the short-swing rule to show that insiders are 104% more likely to close round-trip trades if they are allowed to retain the profits. These trades are also significantly larger and more profitable than those closed just short of the 6-month threshold implied by the rule. Finally, we use variation in SEC budgets over time and the implementation of SOX to assess whether governance can reduce insider-trading profits. Here, we show that while returns decrease with higher enforcement intensity or stricter reporting requirements, dollar profits do not always decrease significantly. Overall, while trades of corporate insiders may predict future returns as prior research has shown, our results indicate that the typical insider benefits little from this information in dollar terms.

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The notion that corporate insiders possess more information about their firm than outside investors do plays an important role in models of financial markets. There is already ample empirical evidence that supports this idea. For instance, much of the empirical literature uses the returns to corporate insider trading to measure the extent of insiders' informational advantage. A stylized fact going back at least to Seyhun (1986) is that such returns are economically large, suggesting that inside information has substantial economic value.[1] Surprisingly, however, there has been little research examining insiders' *dollar profits*, even though it is dollar profits, rather than percentage returns, that insiders themselves likely care about.

In principle, high abnormal returns need not lead insiders to make high dollar profits. In addition to abnormal returns, profits are also determined by trade size and trade frequency. And those determinants may vary substantially across insiders and in turn be correlated with abnormal returns. Empirical analysis is thus required to shed light on the extent and determinants of dollar profits.

In this paper, we provide the first such empirical analysis. To that end, we take advantage of a dataset consisting of all insider trades reported to the SEC during 1986-2013, working on the basis that insiders have access to valuable nonpublic information – an assumption we share with most, if not all, the academic literature. The question we pose is: given that information, how much money do insiders earn from it? Addressing this question matters for two key reasons: First, it helps shed light on whether corporate insider trading presents a meaningful source of private benefits, and thereby a form of implicit compensation. Second, against the backdrop that informed trading is thought to impose costs on outside market participants (e.g., as argued

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[1] More recently, Lakonishok and Lee (2001), Jeng, Metrick, and Zeckhauser (2003), Ravina and Sapienza (2010), Cohen, Malloy, and Pomorski (2012), Alldredge and Cicero (2015), and Cicero and Wintonki (2015) reach the same conclusion.

theoretically in Copeland and Galai (1983), or Glosten and Milgrom (1985)), our analysis helps to evaluate the magnitude of these costs by focusing on corporate insider trading, which represents a subset of all informed trading activity.

We start by documenting the magnitude and range of the economic profits that insiders make when trading their company stock. Here, we use two methods to calculate the dollar profits. First, we calculate hypothetical profits that insiders make by multiplying abnormal returns by trade value. Second, for a subset of insiders who place round-trip trades (e.g., a buy followed by a sell), we can also calculate *actual* profits, and compare those to the profits the insider would have made if she had traded a benchmark portfolio instead.

Our main findings are three-fold. First, dollar profits are small for the typical corporate insider. The median insider in our sample earns annual abnormal profits of $464 per year. Focusing on round-trip transactions, which have an average holding period of 2.4 years, we find that insiders placing such trades realize average (median) abnormal dollar profits equal to $125,000 ($5,000) per year. However, only 7.8% of trades in our sample are round-trip transactions and only 8.6% of insider-year observations have round-trip profits. If we take this into account and compute the average round-trip profit across all insider-years with trades, the average remains small, at $15,000. Moreover, 44% of insider-years incur losses, and 11% of insiders make a loss on their insider trading each year.

Second, we shed light on insiders' intentions exploiting a legally imposed discontinuity. Irrespective of the size of insider trading profits, it is not clear whether insiders actually view these profits as compensation and *intend* to retain them. Section 16(b) of the Securities Exchange Act of 1934 requires 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 to must

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return these profits – referred to as short-swing profits – to the company. We find that insiders are 104% more likely to close round-trip trades right after the 6-month threshold than they are to do so right before. The McCrary (2008) test rejects the null hypothesis of no change in the density around the 6-month threshold with a t-value of over 24.

Not only are there more round-trip trades completed just after the 6-month threshold, we also find that such trades earn dollar profits that are more than twice as large as trades closed just before the threshold. Comparing insiders around the threshold, we see that insiders closing trades just after the threshold have significantly higher compensation. CEOs and chairmen (CFOs) are more (less) likely to close transactions just after 6 months than they are to do so just short of 6 months. Insiders closing trades just after the threshold of 6 months are at firms that have lower book-to-market values, exhibit lower volatility, and are covered by more analysts.

This test based on the short-swing rule can only evaluate the alleged trade intention of trades around the 6-months cutoff. To obtain a more global comparison, we use closing a trade just after 6 months as an indicator at the insider-year level, thereby exploiting the discontinuity in the distribution of trades as a revelation mechanism. If an insider places at least one trade in a given year that is closed just after the 6-month-threshold, we label all of her transactions in the subsequent year as "profit-seeking". Comparing such profit-seeking observations to all other observations with round-trip trades, we find that insiders who complete a round-trip transaction after 181-200 days have higher abnormal returns on their trades in general, trade more frequently, trade higher dollar values on a yearly basis, and reap higher dollar profits on their trades in general. All of these patterns are consistent with the notion that insiders who complete a round-trip transaction just after the 6-month threshold care about their trading profits.

Third, we show that abnormal returns and dollar profits do not go hand in hand: High percentage returns do not imply high dollar profits. Holding percentage returns per trade constant, the size of dollar profits depends on two factors: trade volume and trade frequency. Dollar profits to insider trading are small in part because insiders with the most informative trades (i.e., the ones who generate larger abnormal returns) are also the ones who trade infrequently, and in relatively modest amounts. As a result, average dollar profits cannot be straightforwardly estimated by multiplying average trade size with average abnormal returns.

The observation that abnormal returns and dollar profits do not go hand in hand is also reflected in the cross-sectional and time-series patterns in dollar profits. We show that while informed trading proxies established by the existing literature indeed predict abnormal returns, most of them are uncorrelated with dollar profits. Further, using variation in SEC budgets over time (e.g., Del Guercio, Odders-White, and Ready (2015)) and speedier reporting requirements on insider trading contained in the Sarbanes-Oxley Act (SOX) of 2002 (e.g., Brochet (2009)), we examine how dollar profits vary with market-wide changes in litigation risk or monitoring. Here, we find that as litigation risk and monitoring increase, abnormal returns decrease, whereas overall profits do not always decrease, and decrease only for insiders who are more likely to trade on private information.

There are caveats to our study. One may argue that the most profitable trades (or at least the most blatantly illegal ones) would not be submitted to the SEC and would not make it into our sample. We agree. This means that our analysis may understate the total dollar profits that insiders make, as we do not account for unreported trades or information tipped to family members and friends. However, this is a feature we share with existing papers on the topic – trades not revealed to the SEC do not make it into the research databases and are thus omitted

from analysis.[2] In this regard, our analysis complements studies of information leakage and strategic trading (e.g., Tookes (2008), Augustin, Brenner, and Subrahmanyam (2014), Augustin et al. (2015), Kacperczyk and Pagnotta (2015), Mehta, Reeb, and Zhao (2015)).

Our paper contributes to several strands of the academic literature. First, we contribute to the literature on insider trading by examining how much insiders actually make on their trades. To the best of our knowledge, this is the first large-scale study on the dollar profits to insider trading. The study closest to ours in this regard is Skaife, Veenman, Wagerin (2014) who analyze a sample of firms with an audit opinion on ICFR 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. We develop and analyze several measures of insider trading profits in the full sample of all U.S. firms over a period of 28 years, and examine both cross-sectional and time-series variation in trading profits. Aggregating profits at the insider-year level facilitates the measurement and comparison of trading profits, as some insiders trade very frequently (see also, e.g., Klein, Maug, and Schneider (2017) or Betzer et al. (2015)). Even if per-trade levels are small, in total they may add up. In addition, Cohen et al. (2012) show that it is the insiders who trade infrequently who generate very large abnormal returns.[3] These findings suggest that the relationship between abnormal returns and abnormal dollar profits is not trivial. Insiders who generate large returns do not necessarily generate the largest abnormal

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[2] Meulbroek (1992) and Bhattacharya and Marshall (2014) study such illegal inisder trades.
[3] Cohen et al. (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.

dollar profits. Our study is also the first to measure not only hypothetical, but also actual profits to insider trading using an inventory method to track profits to round-trip transactions.

Second, our paper also adds to the literature on insider trading as a source of private benefits. Since some insiders earn large dollar profits on their trades, one could consider insider trading as a form of executive compensation. This mechanism has been proposed in a number of studies (e.g., Roulstone (2003), Henderson (2011), and Cziraki et al. (2014)). Manne (1966) and Hu and Noe (2001) argue that allowing corporate insiders to trade generates desirable incentives and income for them. Roulstone (2003) examines the relationship between insider trading restrictions and executive pay in the U.S., and finds that firms that restrict insider trading pay a premium in total compensation. Denis and Xu (2013) study the relationship in an international setting. We add to this literature in two ways. First, by measuring the dollar profits insiders enjoy from their trading directly. Our results suggest that only a small fraction of insiders enjoy trading profits that are high enough to represent a meaningful fraction of their compensation. Second, by exploiting the discontinuity imposed by the short-swing rule, we show that some insiders clearly trade with the objective of retaining the profits, and likely view trading profits as compensation.

Third, our paper contributes to the literature studying the relation between corporate governance and insider trading (Roulstone (2007), Ravina and Sapienza (2010), Cziraki, de Goeij, and Renneboog (2014)). We show that high percentage returns do not necessarily lead to high dollar profits for insider trades. Our results suggest that while monitoring and governance reduce the profitability of insider trading for insiders who are more likely informed, they do not reduce profits of insiders who are less likely to place informed trades.

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 that have to be 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, we work with outright buys and sells, identified as transaction codes "P" and "S." When the same insider makes multiple transactions 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.

Our main object of interest, dollar trading profits, depends on both the transaction price and the quantity traded. Thus, we need to be careful when imposing any filters that affect these two variables. On the transaction price, we preserve both the price reported by the insider and the transaction day high, low, and closing prices from CRSP. We drop all trades for which the reported transaction price is below the low or above the high price, or more than 20% away from the closing price of the day.[4] Moreover, since we carried out our tests both on reported prices and on CRSP closing prices, the impact of such outliers is limited to only some of our analyses.

As for transaction size, the only information we have is what insiders self-report. We take these numbers as given as long as the number of shares traded is lower than both the trading day's total volume reported in CRSP and half of the total market capitalization of the company, also available from CRSP. Finally, a small subsample of transactions feature dates on which exchanges are closed (e.g., on Sundays). Whenever that happens, we use CRSP data from the first trading day following the reported transaction date. We merge the insider trade sample with

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

financial statement information from Compustat and the number of analysts covering the firm's stock from I/B/E/S. We winsorize all variables at the 1st and 99th percentiles.

Panel A of Table 1 describes the resulting sample. Overall, we are left with 644,608 transactions, about a quarter of which are purchases.[5] Table 1 provides basic summary statistics of our sample. We have data on 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 trades), although some insiders trade much more and trade stock of more than one company.

2.2. Trade size, returns and dollar profits

We know from prior studies that insiders realize substantial percentage returns on their investments. To evaluate their profits, we multiply these returns by the size of the trade insiders make. We compute this as the product of the number of shares traded from the Thomson Reuters database and the end of day share price from CRSP.[6] Since the trade size is generally not discussed in the literature, we provide more detailed summary statistics of this variable.

Panel B of Table 1 reports the average and median value traded for the overall sample. To make comparisons easier, all quantities are expressed in real terms, in end-of-2013 dollars. The estimates show that the value traded is highly skewed. Insiders transact roughly $129,000 per trade at the median, but the average trade is much larger at $798,000.[7]

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[5] 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).

[6] As discussed above, our results remain similar if we use the transaction price from Thomson Reuters instead.

[7] We provide time-series information on volumes, returns and profits in the Appendix in Figure A1 and Table A2. The value transacted by insiders shown in the top left graph of Figure A1 – measured in constant 2013 dollars – is increasing over time. This increase is particularly pronounced for the higher percentiles of the distribution; for

We report the abnormal return to each insider trade in the 20 days after the trade, thereby following the trading horizon choice of Cohen et al. (2012), using the Fama-French three-factor model as our return benchmark. We estimate factor betas using monthly data for the 36 months preceding the trade. In all of our tests, we multiply returns on insider sales by –1, to facilitate comparison with insider purchases. Panel B of Table 1 shows that on average corporate insiders generate small, positive returns of 0.9% (median of 0.6%) within a 20-day window. The distribution of abnormal returns, which is shown in the top graph of Figure 1, roughly follows a normal distribution, though it has a higher kurtosis.

We continue our analysis by measuring the size of dollar profits insiders earn from their trades. This is a simple question, but surprisingly it has yet to be addressed in the extant literature. The majority of papers that study insider trading focus exclusively on the returns insiders earn, but do not estimate total dollar profits. This would be an innocuous omission if all insiders traded similar dollar values: the dollar profits would then be proportional to the level of expected returns estimated in these prior studies. However, the stylized fact above indicates that the amounts traded are highly variable, suggesting that dollar profits insiders make may be substantially different across insiders and across companies.

We use two complementary approaches to measure the dollar profits to insider trading. The initial approach we take in our analysis is the one taken in all prior studies: given an insider transaction, we evaluate the return over a pre-specified period after the transaction, regardless of whether an insider traded again over that period or did not. The difference between our work and

example, the 75th percentile of the value traded in a transaction more than doubled from below $200,000 in the late 1980s to more than $500,000 at the end of our sample. Moreover, there are a few spikes in the distribution of value traded. Most notably, insiders traded in unprecedented volume at the end of the 1990s, with the 90th percentile of value traded exceeding $2 million in 2000. This is driven by the technology boom, and insiders of newly listed companies liquidating their stocks.

prior studies is that we also multiply the return by the dollar value the insider traded in the first place. We use abnormal returns, intended to capture profits beyond those expected from trading a given stock.

The benefit of this approach is that we are able to use all insider transactions in our inference. The most obvious drawback is that the profits are only hypothetical and may not correspond to the dollar gains any particular insider realizes. We recognize this as a weakness although, to our knowledge, we share this weakness with many other studies of insider trading. However, this approach approximates the true dollar profits insider could have realized and this, coupled with being able to use all data, suggests that the tradeoff is worthwhile.

To measure the actual profits that insiders make on their trades more accurately, our second approach is to 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 they made on this trade.[8] 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 share-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 also track the inventory of both shares purchased

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[8] With sufficiently detailed and comprehensive data, we could measure insider profits exactly. Unfortunately, the usual data (e.g., the Thomson Reuters database of insider trades) only allow us to approximate these profits. First, we only observe trades made by people who are considered by the SEC to be corporate insiders. We have no information about the trades of such people before they become and after they stop being corporate insiders. However, some insiders may have accumulated holdings of their company stock before they became an insider; if they end their tenure as an insider with outstanding holdings, they are likely to liquidate them outside of our sample. We do not observe such trades, making it impossible for us to calculate the exact profits they earn.

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).[9]

While using round-trip transactions gives us a more precise measure of dollar profits, we are able to apply it only to insiders who have both buys and sells in our sample. Moreover, it gives us a more precise idea of profits for insiders who have multiple such transactions in the database. Unfortunately, this is not the case for the majority of insiders. The median insider in the Thomson Reuters data only trades three times in the sample, and these trades are often in the same direction (all buys, or all sells). We cannot compute realized round-trip profits for such insiders. We calculate abnormal round-trip profits as the actual profits realized on the round-trip transaction less the profits to a benchmark strategy that earns the returns predicted by the Fama-French three-factor model, estimated using the same method as for 20-day profits above. Finally, we set round-trip profits to zero if the two transactions in the round-trip occurred within six months. The short-swing rule, described in section 16(b) of the Securities Exchange Act of 1934, requires that insiders pay back any such profits to the company.[10]

Surprisingly, as shown in Panel B of Table 1, abnormal dollar profits are small: per trade, insiders generate a median (average) abnormal profit of approximately $141 ($4,000). We note that there is a substantial difference between the median and the mean value. This right-skew is caused by the long right tail of the distribution of abnormal profits, plotted in the bottom right graph of Figure 2.[11]

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[9] The majority of such cases are sales, which is clearly because insiders sell shares that they have received as compensation, rather than bought in the open market. Since our goal is to quantify the dollar profits insiders make when trading the firm's shares thanks to their superior information, we abstract from this compensation component.
[10] See 15 U.S.Code Section 78p(b).
[11] The top graph of Panel B shows the distribution of the entire sample, while the bottom graph shows the distribution of abnormal profits excluding values that lie between –$30,000 and $30,000 to show the longer right tail.

Next, we examine dollar profits aggregated at the yearly level because certain insiders tend to split up their trades into several smaller chunks and trade over several days. Focusing on dollar profits at the trade level may therefore lead to an underestimation of the dollar profits accruing to these insiders. Yearly abnormal dollar profits are larger, but still rather small with a median value of $464. Again, the distribution of yearly abnormal dollar profits is skewed to the right, stemming from the longer right tail. The mean value is significantly larger than the median at $12,000, and the 90th percentile is $76,000.[12]

Next, we scale abnormal dollar profits by total salary and total compensation to investigate the importance of these profits relative to standard sources of executive compensation. As shown in Panel B of Table 1, typical insider trading profits are small relative to executive compensation: on average, they represent 2.5% of total salary with a much smaller median value of 0.3%. However, for a smaller subgroup, the 75th percentile, dollar profits seem to be an economically meaningful source of compensation as they amount to 4.1% of total salary. For the top 90th percentile, insider trading profits even amount to 16.4% of salary. Expressed relative to total compensation, these values are even smaller: on average, insider trading profits account for 0.7% of total compensation, while at the 75th and 90th percentiles, trading profits makes up for 1.1%, and 4.1% of total compensation respectively. In summary, short-term insider trading profits do not represent a meaningful source of compensation for the typical insider, but only for a small subset of insiders.

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[12] Table A3 in the Appendix shows trade-level and yearly abnormal profits for longer trading horizons of 3, 6, and 12 months. These profits are calculated as the trading volume multiplied by the abnormal buy-and-hold returns using the Fama-French three-factor model as a benchmark. The yearly profits range from a median of $946 for a 3-month horizon to a median profit of $1,442 for a 12-months 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.

Panel C of Table 1 breaks down trade values, returns and profits by insider type. We distinguish between executives (CEO, CFO, and other executives), blockholders, and other insiders. Blockholders trade the largest volumes, with an average volume of $9 million per year, followed by CEOs ($4 million). CFOs have the largest abnormal returns (1.2%), followed by CEOs (1.1%) and blockholders (1.0%), confirming the findings of Wang, Shin, and Francis (2012). In contrast, for trade-level abnormal profits, we find that those of the CEO are the largest with a mean of $8,000, while the average abnormal profit of blockholders is $7,000 and that of CFOs $4,000. In terms of yearly abnormal profits, we find that these are largest for blockholders ($77,000), less than half of that for CEOs ($31,000) and even smaller for CFOs ($11,000). Comparing the median, the 75th or the 90th percentiles, we find a similar hierarchy in terms of profits. Finally, Panel D of Table 1 shows the summary statistics of the firm-level control variables used in the empirical analysis.

Next, in Table 2, we summarize profits to round-trip trades. Round-trip profits are larger than 20-day profits: 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). The large difference between the mean and median values indicates that the high average value stems primarily from a longer right tail of the distribution. There are two reasons that round-trip profits are higher than 20-day profits. First, round-trip 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 selection of trades. We expect that corporate insiders are more likely to close a transaction if the transaction is profitable. Panel B of Table 2 shows that trades for which we are able to construct round-trip profits differ from the other trades: round-trip trades are substantially smaller, but generate larger abnormal returns. As

a result, round-trip profits are available for trades that tend to be more profitable, and therefore represent an upper bound of insider profits.

Second, with an average (median) holding period of 882 (579) days, round-trip profits are higher because the holding period is much longer. Moreover, even these statistics underestimate the holding periods, because for a sequence of purchases followed by a sale, in most cases, we cannot exactly tell "which" of the purchased shares the insider is selling. In such cases, we examine the distance between the last purchase before the sale, leading to an underestimation of holding periods – the intuition is the same for a sequence sales followed by a purchase. Considering that only 8.6% of our insider-year observations have round-trip trades, we calculate round-trip profits following the assumption that insider-years without round-trip trades incur zero profits. This assumption seems reasonable because insiders who do not close their transactions do not monetize their "book gains". The median value is zero, as the vast majority of insider-years do not have any round-trip trades, and the average value of $15,000 is small. In sum, considering round-trip profits as a measure for the actual profits that insiders pocket, estimated dollar profits are significantly larger than looking at abnormal profits in a 20-day window subsequent to the trade. However, taking into account that we only observe round-trip transactions for 8.6% of insider-years in which there are trades, the typical dollar profits are again very modest.

In Panel A of Table A4 in the Appendix, we aggregate insider trading profits at the firm level. This analysis sheds light on the value of informed trading profits that outside investors may lose when they trade against corporate insiders as their counterparty. The median value of yearly abnormal profits at the firm level is $3,000, while the average value is much larger at $61,000. Median (average) round-trip profits, assuming that these profits are zero for firm-years

without round-trip profits, are $0 ($76,000). Further, we aggregate dollar profits at the insider level, to obtain an estimate of the amount that an insider generates over her lifetime. The median (average) abnormal dollar profit is $1,000 ($35,000), while the corresponding values for abnormal round-trip profits are $0 and $43,000. Overall, the observation that typical dollar profits are rather small holds also when we aggregate profits at the firm-year and insider-lifetime level.

The summary statistics in Panel C of Table A4 show that there are many insiders who make losses. We investigate these losses further in Panel G of Table 1. Approximately half of all trades (47%) incur losses. We distinguish between infrequent traders who trade less than 20 times over the sample period and constitute 28.4% of observations, and frequent traders who trade at least 20 times or more. The percentage of loss making trades is only slightly smaller for infrequent traders (44.7% versus 47.3%), but very similar for insiders who place only sales and insiders who place at least one purchase transaction. Conditional on making a loss, the median yearly loss is $8,000, and the average loss is $58,000. These values are much larger for frequent traders, with a median loss of $19,000 and an average loss of $99,000. Losses are slightly larger for insider-years in which an insider only sells. This result is consistent with the notion that sales are more likely to be driven by alternative motives such as diversification and liquidity needs.

2.3. The relation between trade size and dollar profits

What is the relation between returns and profits? Do insiders allocate their resources to the most profitable trading opportunities? To answer this question, we sort the observations into vigintiles based on abnormal returns. The top left graph of Figure 2 shows the mean abnormal return for each vigintile. The top right graph Figure 2 shows the mean transaction volume over the

abnormal return vigintiles. The column chart exhibits a hump-shaped relationship: transaction volume initially increases with abnormal returns, remains flat for medium-sized abnormal returns, and decreases for large positive abnormal returns.[13]

This pattern suggests that it is neither the largest trades, nor the ones with the highest abnormal returns, that generate the highest profits. We address this further in the bottom left graph of Figure 2, which shows the implications of the relationship between abnormal returns and transaction volume for dollar profits. Trades with the largest dollar profits are in the vigintiles with medium-sized abnormal returns. After the 17th vigintile, abnormal dollar profits flatten out and actually decrease for the largest abnormal returns, which is due to the drop in transaction sizes.

We re-examine this relation in a simulated data set where we impose no correlation between abnormal returns and trade size. The bottom right graph of Figure 2 shows the relationship between dollar profits and abnormal returns, where actual trading volume is randomly assigned to individual trades. As expected, this figure reveals a positive, approximately linear relationship between abnormal dollar profits and abnormal returns. The stark difference between the patterns on the bottom left and bottom right emphasizes that the non-monotonic pattern documented in the bottom left graph is indeed due to the specific relationship between abnormal returns and transaction volume. In summary, these findings suggest that corporate insiders allocate less resources to the most profitable trades. One potential explanation is that insiders reduce the transaction volume of their most profitable trades in an attempt to mitigate litigation risk. Large trades could potentially attract greater public and regulatory scrutiny. We examine the relation between litigation risk and dollar profits further in Section 5.

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[13] The fact that the highest volume trades are not the ones with the highest abnormal returns has been also noted by Jeng et al. (2003).

2.4. The relation between trading frequency and dollar profits

Trading frequency is a further determinant of dollar profits, in addition to abnormal returns and transaction volume. Next, we examine 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 3 shows the mean number of trades for each decile.[14] The growth over deciles is slow and approximately linear for all but the top two deciles: While the mean number of trades in the bottom decile is 1, it increases to a mean number of trades of 5 for the fifth decile up to an average of 10 trades for the ninth decile. There is a substantial increase in the average number of trades in the top decile to an average of 30 trades per insider.

The top right graph shows an inverse relation between trading frequency and average abnormal returns: the more frequently insiders trade, the lower are their average abnormal returns. The most informative trades are not placed by insiders who trade very frequently. The bottom left graph displays the mean abnormal profit over the frequency deciles. There does not seem to be any significant relation between trading frequency and average trade-level abnormal profits. If anything, trade-level abnormal profits are lower for the upper deciles. However, looking at the average yearly abnormal profits reveals a strong relation: there is a positive relation between trading frequency and yearly average dollar profits. Even though abnormal trades are smaller for insiders that trade frequently, overall yearly profits appear to be mainly driven by trade frequency rather than average abnormal returns. This analysis further supports the notion that abnormal returns do not line up with dollar profits.

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[14] 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.

3. Do insiders intend to make a profit? Evidence from the discontinuity around the short-swing rule

3.1. Distribution of trades around the short-swing rule

So far, our analysis examines whether insiders are able to earn large dollar profits from their trades, and whether such profits are large enough to be viewed as compensation. We now consider whether the *objective* of insiders is to earn profits from their trades.

To do so, we exploit a threshold set by law. Under section 16(b) (15 U.S.C. § 78p) of the Securities Exchange Act of 1934, 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 – referred to as short-swing profits – to the company.[15] An immediate implication of this law is that if an insider wishes to keep the profits resulting from a round-trip transaction, they need to wait more than 6 months after a purchase (sale) to make the offsetting sale (purchase).

We are first interested in the continuity of the distribution of trades around this threshold: Is the the number of round-trip transactions closed just short of the 6-month threshold, e.g. 170-180 days, similar to the number of round-trips closed just after the 6-month threshold? Under the null hypothesis that corporate insiders do not care about trading profits, we expect the distribution to be continuous around the threshold. Figure 4 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 180-day threshold, after 171-180 days. In contrast, there are 1,299 round-trip trades closed

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[15] 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)).

just after the 180-day threshold, after 181-190 days. The number of round-trips closed after 191-200 days is also high, at 844. Thus, we find a large increase in the number of round-trip trades closed immediately after the 6-month threshold set by the short-swing rule.

In Table 3 Panel A, we test whether the difference in the density to the left and to 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 A 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.

An interval of 6 months may vary in length depending on which months it contains. Our results are similar in size and statistical significance when we use a threshold of 181, or 182 days. We also examine the idea that trading around the 6-month threshold reflects a natural evaluation period for the insider, after which they might evaluate their trading position. Against this hypothesis, we show that there is no similar bunching in the density around thresholds of 30, 60, 90, 100, 365, or 730 days, which may equally (if not more) natural evaluation periods. The differences in log density are negative for 30 and 60 days, suggesting that there are more trades just *before* the threshold (rather than after it). We find a difference of 10.6% around the threshold of 90 days. While the difference is statistically significant according to one test, the economic magnitude is one tenth of the effect we find around the 6-month threshold, and it actually reverses when we look at the 100-day threshold. Finally, we find no significant bunching around the thresholds of 365 or 730 days. Overall, these tests suggest that insiders are significantly more

19

likely to close a round-trip just after 6 months, when they can retain the proceeds from the round-trip trade. The placebo analysis shows that the 6-month threshold is unique in this regard.

Table 3 Panel B examines the change in density around the 6-month threshold for subsamples of firms, insiders, and trades. The largest change is 131% for CEOs, and the smallest is 70% for CFOs. The change in density around the threshold is similar across subsamples: round-trips ending with sales and with buys, at small and large firms, firms with low and high institutional ownership, before and after the Sarbanes-Oxley Act (SOX), and in periods when the SEC budget is high and low.

Next, we show that trades closed just after the 6-month threshold earn higher profits than those closed just short of the threshold. Figure 5 Panel A shows a significant discontinuity in profits. Round-trip trades closed after 171-180 days earn an average profit of $44,000 dollars, whereas those closed between 181-190 days earn significantly higher average profits of $100,000 dollars. To understand the source of these profits in more detail, we ask whether they are driven by higher returns, larger trade values, or both. We find that trades closed just after 6 months have higher implied abnormal returns (calculated as abnormal the ratio of abnormal dollar profits to trade value, shown in Figure 5, Panel B), and are also larger (Figure 5, Panel C). The difference is significant for both variables, and larger for returns.

3.2. Characteristics of profit-seeking insiders

Having documented the bunching around the threshold of 6 months, we now ask whether certain insider or firm characteristics are associated with a higher probability of closing a round-trip transaction just after as opposed to just before the threshold. Table 3 Panel C reports the results. Insiders who close transactions just after 6 months have significantly higher salary and overall

compensation than insiders who close transactions just before the threshold. CEOs (12% vs. 8.6%) and chairmen (3.8% vs. 2.4%) have more round-trip trades closed just above the threshold than just below, while the opposite is true for CFOs (5.7% vs. 8.2%).

Turning to firm characteristics, insiders are likely to close trades just after the threshold of 6 months at firms that have higher sales, have lower book-to-market values, exhibit lower volatility, and are covered by more analysts. On the one hand, insiders who close trades just after 6 months are at firms that have higher ownership both overall, and by long-term institutions (Chen, Harford and Li (2007)), although the difference appears to be small in economic terms. We also see that a higher percentage of these was closed after the passage of SOX (45% vs. 41%), although the difference is significant only at the 10% level.

3.3. Broader comparison of profit-seeking insiders to others

So far, we have focused on contrasting round-trip trades just after the 6-month reporting threshold with those just before the threshold. In Table 4, we compare the trading of insiders who complete a round-trip transaction after 181-200 days to the trading of all other insiders in the sample who have round-trips. We define an indicator variable, *profit-seeking*, to equal 1 in a given year (*t*) if we observe that she completed a round-trip transaction after 181-200 days in the preceding year (*t-1*). We use this as an indicator of whether the insider is interested in retaining the profits from her trading activity. Then, we regress the same dependent variables as before on this indicator variable, and our set of control variables.

We find that insiders who complete a round-trip transaction after 181-200 days have higher abnormal returns on their trades, trade more frequently, trade higher dollar values on a yearly basis, and reap higher dollar profits on their trades in general than do other insiders who

have round-trip transactions. 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 in general. Finally, we control for firm fixed effects in all regressions, allowing us to conclude that trading with the apparent goal of maximizing profits is a trait specific to insiders.

As we show in Table 2, not all insiders have round-trip transactions. Thus, to draw an even broader comparison, in Table 4 Panel B, we compare the trading of profit-seeking insiders to that of *all* other insiders in the population. Our findings remain similar: profit-seeking insiders make higher abnormal returns, trade more frequently, and trade larger amounts than other insiders in the population. As a result, they also realize higher profits on their trades, both on a per-trade, and on a yearly basis.[16]

When viewed alongside the results of Figures 4-5 and Table 3, the results in Table 4 indicate that not only are insiders significantly more likely to close round-trip trades if they can retain the profits, but also that the trades they choose to close are significantly more profitable. Overall, these results help to gauge the extent to which insiders trade with the objective of retaining the profits, and the size of these profits.

4. Who makes a lot on their trades? Cross-sectional analysis of insider trading profits

4.1. Informed versus uninformed trading

Sections 3.2 and 3.3 above document that abnormal returns and abnormal dollar profits do not necessarily line up. In this section, we examine whether informed trading proxies that have been shown or argued by the existing literature to predict abnormal returns also predict abnormal

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[16] We obtain similar results if we define profit-seeking behavior as an insider trait that applies to all past and future trades of the insider. However, this definition admits the interpretation that an insider *becomes* profit-seeking after placing several large and profitable trades. Our insider-year definition of the profit-seeking indicator circumvents this issue.

dollar profits. Our first result is that the percentage returns to insider trading – which is what almost all of the prior literature has looked at – do not line up with dollar profits. In Table 5, we regress returns, volumes 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. Table 5 only reports the coefficients and standard errors for the respective informed trading proxies for brevity.[17] Because the buy dummy is a trade-level proxy, in columns 2, 4, and 6-8, we use the mean of the variable for the given insider-year observation (i.e. the percentage of buys) instead of a dummy. For most proxies of informed trading, we find higher percentage returns (as expected), but also lower trading frequency, lower trade value, and, as a result, lower dollar profits. In Table 4, column 1, we show that abnormal returns are higher for purchase transactions, higher for opportunistic traders (Cohen et al. (2012)), infrequent traders using our cutoff value of 20 trades, CFOs (Wang et al. (2012)), and executives (Ravina and Sapienza (2010)). However, in columns 2 and 3, we show that insiders in each of these categories trade less frequently, and trade smaller amounts (with the exception of opportunistic traders).

Finally, columns 6 and 7 show that yearly abnormal trading profits and round-trip trading profits are lower for insiders who are more informed: infrequent traders, CFOs, executives, and insiders other than blockholders. Yearly abnormal profits and round-trip profits are also lower

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[17] Table A5 in the Appendix reports the coefficients for the firm-level control variables. In Panel A, we regress the dependent variables on year fixed effects and firm-level control variables. In Panel B, we add firm fixed effects to the regressions. 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 A6 documents that there is substantial 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 A6, we test the null hypothesis that the firm fixed effects are jointly equal to zero. This null is rejected for all dependent variables, indicating that there is substantial firm-level heterogeneity. The results of Table 5 are qualitatively and quantitatively similar if we remove firm fixed effects from the regressions. Table A7 in the Appendix contains these results.

for opportunistic traders, although not significantly so. It is only for insider-years with a high percentage of purchase transactions that we find significantly higher yearly abnormal round-trip profits. However, in these cases, the profits come at the cost of exacerbating the insider's lack of diversification, and the insider needs to cash out on the purchased shares at a later time. Overall, we conclude that insiders who are more likely to be informed make lower dollar profits on their insider trading, despite making higher percentage returns.

4.2. 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 of the Appendix 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 occur to corporate insiders who take risky gambles.

5. Monitoring and the dollar profits to insider trading

In this section we investigate whether and how insider trading returns, frequency, trade size and profits respond to variation in litigation risk and monitoring. First, we follow the approach by Del-Guercio, Odders-White and Ready (2016) who use the SEC budget in constant U.S. dollars as a resource-based measure of the enforcement intensity.[18] There is substantial variation in the SEC budget over time: in real terms the budget has increased six-fold over the sample period. The authors argue that the variation in the SEC budget can be viewed as independent of the severity of actual trading based on inside information, since it is primarily determined through idiosyncratic political budgeting processes, which mitigates potential concerns of reverse causality.

Panel A of Table 6 reports the results of the regressions of returns, frequency, trade size and profits on SEC enforcement intensity.[19] For a one-standard-deviation ($313M) increase in the SEC budget, abnormal returns decrease by 0.13 percentage points (column 1). The negative and statistically significant coefficients of the SEC budget in columns 2 and 3 suggest that both

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[18] Del Guercio et al. (2016) find a negative relationship between the SEC enforcement intensity and run-ups prior to the announcement of takeover and earnings as a proxy for illegal insider trading.

[19] The number of observations is reduced since the SEC figures are only available up to and including 2012.

trade frequency and average trade size decrease with higher SEC budgets. Per-trade profits also decrease by $21 for a one-standard-deviation change in the SEC budget. We do not find any significant relation between yearly abnormal profits and enforcement intensity. The coefficient is negative but small and not statistically significant. Relative to total compensation, profits decrease by 0.4% for a one-standard deviation chance in the SEC budget.

Panels B-G of Table 6 interact SEC budgets with our six proxies for informed trading. In all of these panels, the interaction term in column 1 shows that trades that (or insiders who) are more likely to be informed earn lower returns in years when the SEC budget is higher. However, columns 6 and 7 show that when we also take trade size and trade frequency into account, a higher SEC budget is not always associated with lower yearly abnormal (round-trip) profits for informed trade(r)s. Panel B shows that it is yearly profits from sales, not from purchases, that decrease significantly when SEC budgets are high. Even if purchases are more likely to be informed, as indicated by the positive coefficient on the buy dummy variable, the general litigation concerns are typically higher for insider sales (see Cheng and Lo (2006)).[20] We find no evidence that higher SEC budgets are associated with lower yearly profits for opportunistic traders (Panel C), executives (Panel F), or insiders other than blockholders (Panel G). If anything, blockholders trade larger amounts and more frequently when SEC budgets are high, and earn higher yearly abnormal profits. In contrast, infrequent traders (Panel D) and CFOs (Panel E) earn both lower returns and lower yearly abnormal profits when SEC budgets are high.

The Sarbanes-Oxley Act (SOX) marked a substantial change in the enforcement regime applicable to corporate insider trading. Before SOX, rules governing legal corporate insider

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[20] As argued by Cheng and Lo, insider sales are more likely to be subject to litigation, because shareholders can claim that they suffered a loss from the price decline, which arose from managers not disclosing the piece of information that was responsible for the price decline early enough. Price increases after insider purchases only present lost opportunities for shareholders and are therefore less likely to be subject to litigation.

trading and the enforcement of these rules were rather lax. Corporate insiders had substantial leeway to report their transactions. By law, they had until the 10th of the month following the month of the trade – i.e. potentially up to 42 days – to disclose their transactions and even these lax standards were weakly enforced. Since the implementation of SOX, corporate insiders have to report their trades within two business days. In addition to these concrete changes in the rules, the post-SOX period is characterized by stricter regulatory monitoring of the actual compliance with existing rules (see e.g. Brochet (2009), or Betzer et al. (2015)).

In Table 7, we use a dummy variable that is set to 1 after the implementation of SOX on August 29, 2002 as an alternative proxy for regulatory monitoring intensity. The results from these regressions confirm that litigation risk has a negative effect on the returns to insider trading. The coefficient of the Post SOX dummy variable in column 1 is negative, but not statistically significant at conventional levels.[21] This result is consistent with the existing evidence by Brochet (2009) who documents that insiders are less likely to exploit their knowledge of future negative stock returns or negative earnings news. Both per trade and yearly trade values are smaller in the post-SOX era, as indicated by the negative coefficients in columns 3 and 4. However, it appears that insiders trade more frequently post SOX, more specifically, they place 0.2 more trades in a given year post SOX. In contrast to the results on returns, we find mixed evidence on whether abnormal trading profits are affected by the implementation of

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[21] The results of our test using SOX may be affected by a change in the nature of the information content of the disclosure. Brochet (2009) finds that the market response to the disclosure of insider trades increases in the post-SOX era, because trades have to be – and indeed are – disclosed more quickly. This change may also affect the abnormal return measurement in our sample. For a certain fraction of transactions pre-SOX, more specifically, the subsample of transactions that were reported more than 20 business days after the trade, the abnormal return does not include the impact of the disclosure, whereas for most transactions post-SOX the abnormal return does include the impact of the disclosure, because trades are disclosed within 2 business days. This change may result in larger abnormal returns after SOX leading us to underestimate of the coefficient of the Post SOX dummy variable. Hence, our estimate of the coefficient is rather conservative.

SOX.[22] The negative coefficient of the Post SOX dummy variable in column 5 is statistically significant at the 10% level, indicating that per-trade profits are $1,900 smaller after SOX. Profits scaled by total compensation appear to decrease slightly in the post SOX era, by 0.6 percentage points.

In Panels B-G of Table 7, we interact our proxies for informed trade(r)s from Table 6 with the Post SOX dummy to investigate whether there is heterogeneity among insiders in their response to litigation risk, depending on their ex ante propensity to engage in informed trading. Panel B shows that abnormal returns on purchases – which are more likely driven by information – increase while abnormal returns on sales decrease after SOX. Columns 6 and 7 show that yearly abnormal (round-trip) profits for purchases do not decline after SOX, if anything, they increase. Returns and profits to opportunistic traders do not change signifncantly after SOX (Panel C). Yearly abnormal profits of infrequent traders (Panel D), CFOs (Panel E), and insiders other than blockholders (Panel G) are significantly lower after SOX, while yearly abnormal round-trip profits are unchanged. Finally, Panel G shows that blockholders trade more frequently, trade larger amounts, and realize higher yearly abnormal profits after SOX.

Overall, the evidence in Tables 6 and 7 suggests that trades that are more likely to be based on private information, and traders who are more likely to trade on private information, respond strongly to litigation risk. Both their per trade and yearly profits shrink in the presence of higher litigation risk. However, we do not find any evidence that the returns or yearly abnormal profits of more likely uninformed trades and traders decrease with litigation risk. We find that the overall profits of blockholders even appear to increase with stronger enforcement.

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[22] In further robustness checks, we exclude the years 1999 to 2001 around the so called "dotcom-bubble", repeat our analyses and find comparable results.

The analyses in Tables 6 and 7 consider the population of all insider trades. We highlight that the last four rows of Table 3 Panel B examine whether insiders are more likely to trade just after, as opposed to just before, the short-swing threshold of 6 months, and in particular whether this difference changes after SOX or with the SEC budget. Here, we find that the jump in log density after the 6-month threshold is larger after SOX (116% vs. 96%), and when the SEC budget is above the median (113% versus 96%). We conclude that the implementation of SOX, and increasing SEC budgets do not alter insiders' *intention* to turn a profit, but they seem to reduce insiders' ability to do so.

6. Conclusion

It has long been shown that insiders realize significant positive abnormal returns on their transactions. How much insiders make on their trades in dollar terms, and whether trading profits are a meaningful source of private benefits for the average insider, has received less attention. We provide large-sample, comprehensive evidence on the dollar profits from legal insider trading, using data for publicly listed U.S. firms for the period 1986-2013.

We show that dollar profits from trading are small for a typical insider. The median (average) insider in our sample earns annual abnormal profits of $464 ($12,000). When we focus on insiders with round-trip trades, the median (average) abnormal profit is $5,000 ($125,000), accrued over an average holding period of 2.4 years. However, considering that only 8.6% of insider-years in our sample actually have round-trip transactions, the average across all insiders remains small, with a median profit of $0 and an average of $15,000.

We test whether insiders trade with the objective of retaining the profits exploiting the discontinuity imposed by the short-swing profit recovery rule. Insiders are 104% more likely to close round-trip trades right after the 6-month threshold than they are to do so right before. Round-trip trades completed just after the 6-month threshold earn dollar profits that are more than twice as large as trades closed just before the threshold. These patterns are consistent with the notion that insiders who complete a round-trip transaction just after 6 months care about trading profits.

Finally, we show that abnormal returns and dollar profits do not go hand in hand: High percentage returns do not imply high dollar profits. Similarly, the cross-sectional and time-series patterns in percentage returns and dollar profits are different. Naturally, the question arises whether an increased level of monitoring reduces dollar trading profits. Using variation in the SEC budget over time, and the passage of the Sarbanes-Oxley Act as changes to the enforcement and the regulation of insider trading, we show that while stricter regulation and enforcement are associated with lower returns, they are not always associated with lower yearly dollar profits.

Our results provide important insights for insider trading regulation, and for firm-level policies on insider trading. On the one hand, firms and regulators may wish to prevent insiders from trading on information and enjoying large gains at the expense of uninformed investors. We show that the magnitude of such gains on reported insider trades is moderate. On the other hand, with the increase in stock-based compensation over the past decades, it is important to permit corporate insiders to sell their shares. By showing new and comprehensive evidence on the distribution of the dollar profits, our work hopes to provide insights for firms and regulators on the extent to which insider trading actually benefits insiders.

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Figure 1: 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 in the bottom right graph and the distribution of sample observations excluding abnormal profits greater than –$30,000 and smaller than $30,000 in the bottom graph. Variable definitions are provided in Table A1 in the Appendix.
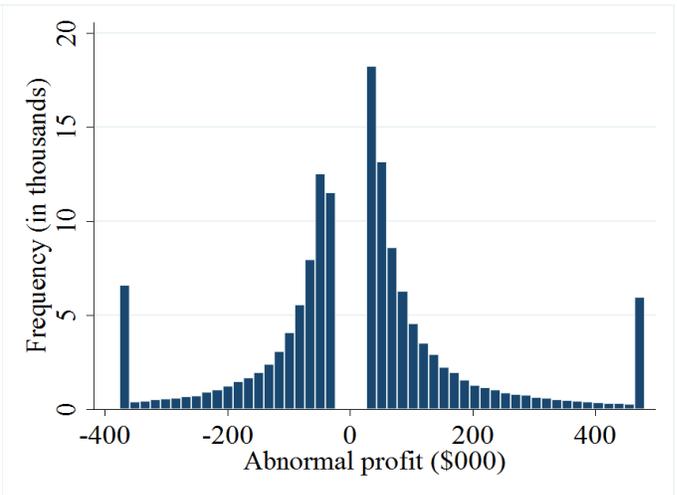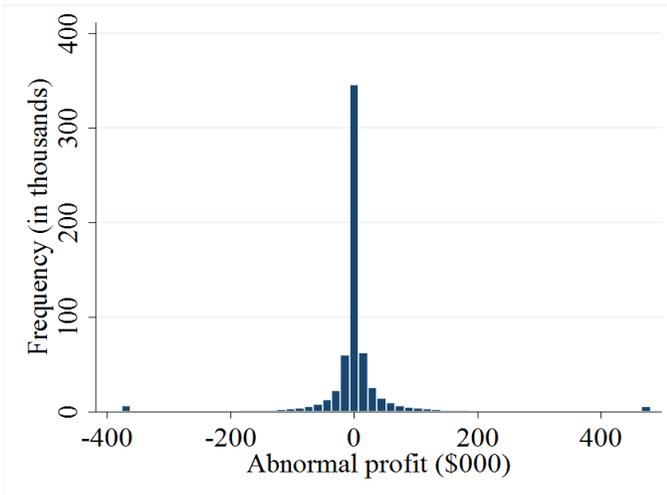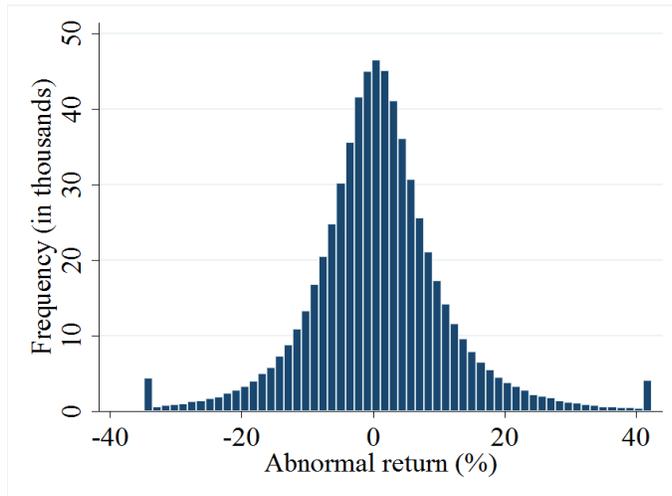
Figure 2: Abnormal returns, volume, and dollar profits by abnormal return vigintiles

This figure shows the average value of mean abnormal returns (top left), transaction volume (top right), and abnormal dollar profits (bottom left) over vigintiles based on the abnormal returns of these transactions. The bottom right graph shows simulated abnormal dollar profits, which are calculated under a random allocation of actual trade volume over transactions. Vigintile 1 is the vigintile with the smallest abnormal return, vigintile 20 is the one with the highest abnormal return.
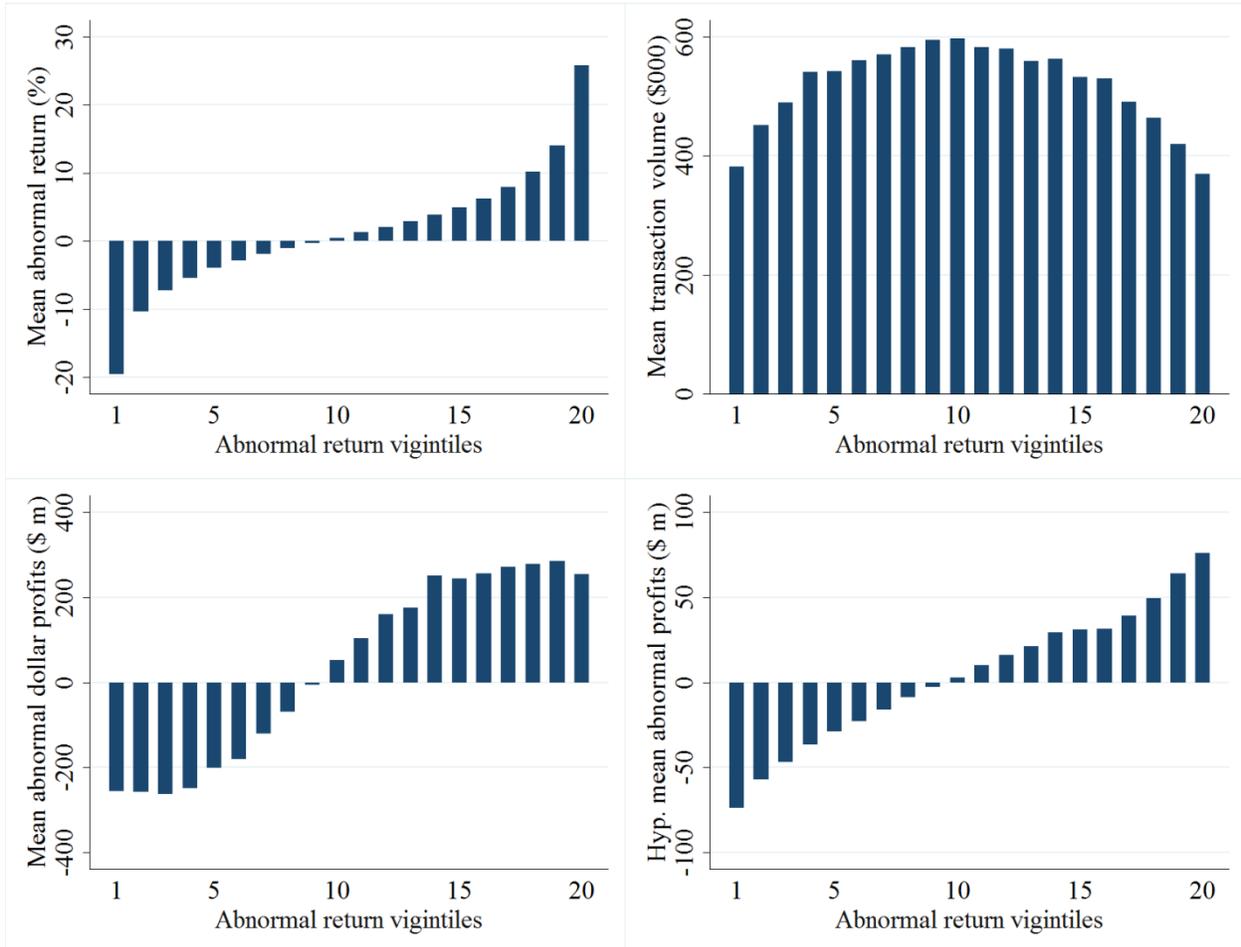
Figure 3: Abnormal returns, volume, and dollar profits by frequency deciles

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 the average value of 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.
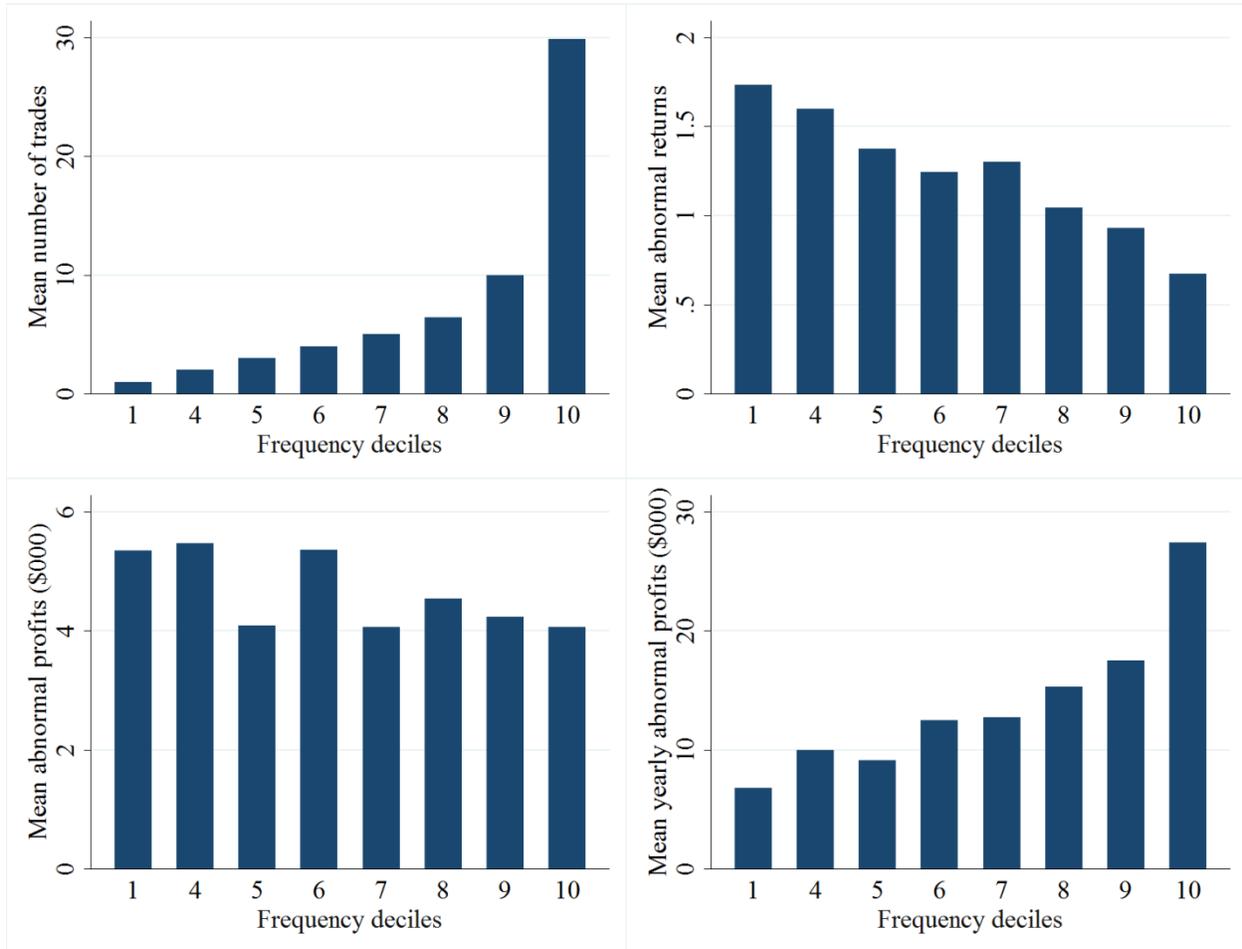
Figure 4: Frequency of round-trip transactions closed around the short-swing threshold of 6 months

This histogram shows the number of round-trip transactions 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.
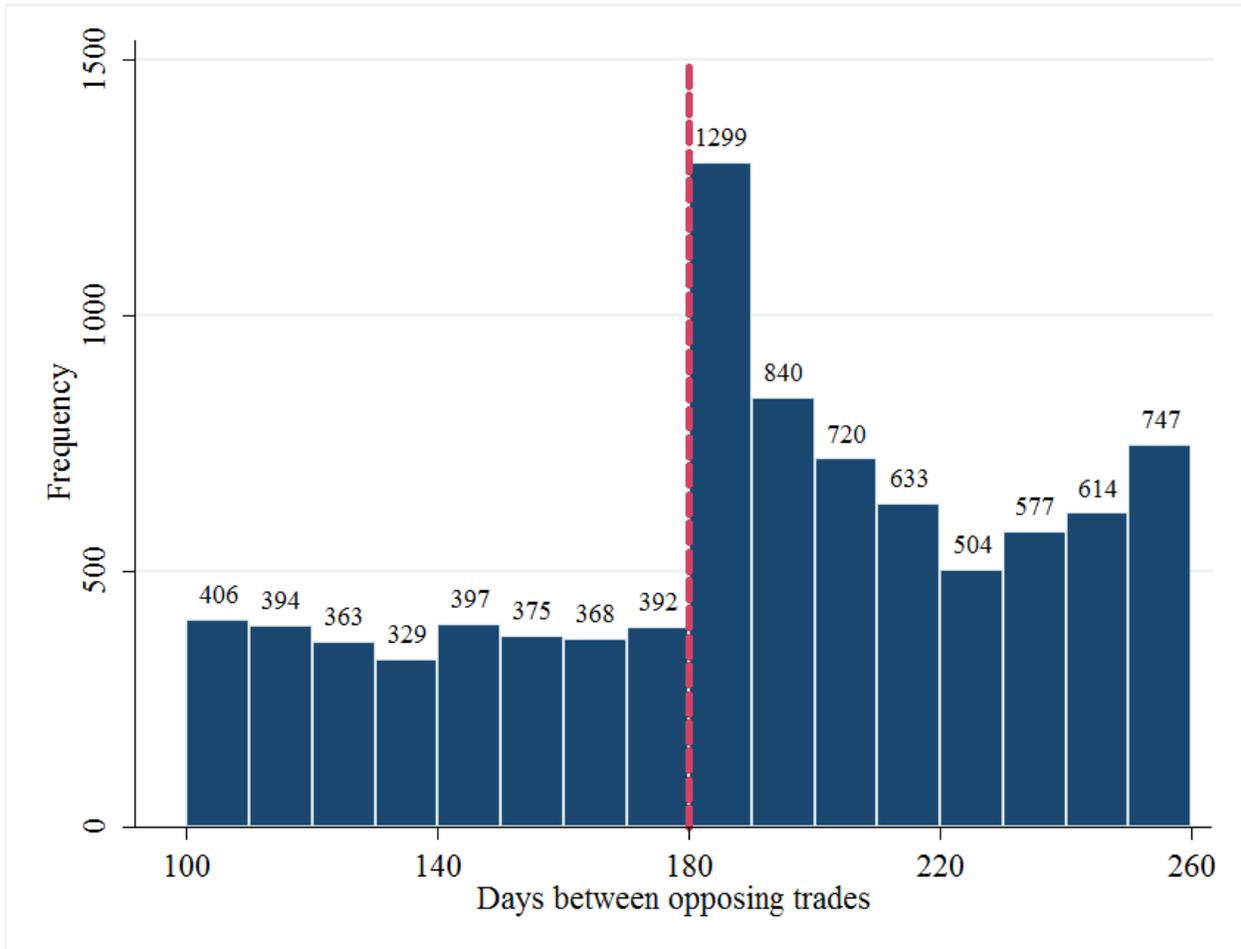
Figure 5: Differences between round-trip transactions closed before vs. after the short-swing threshold of 6 months

The outcome variable is abnormal dollar profits in Panel A, the implied abnormal return in Panel B, and trade value in Panel C. Abnormal dollar profit and trade value are measured in thousands of dollars. We calculate implied abnormal returns as the ratio of abnormal dollar profits to trade value. 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.

Panel A: Abnormal dollar profits

38
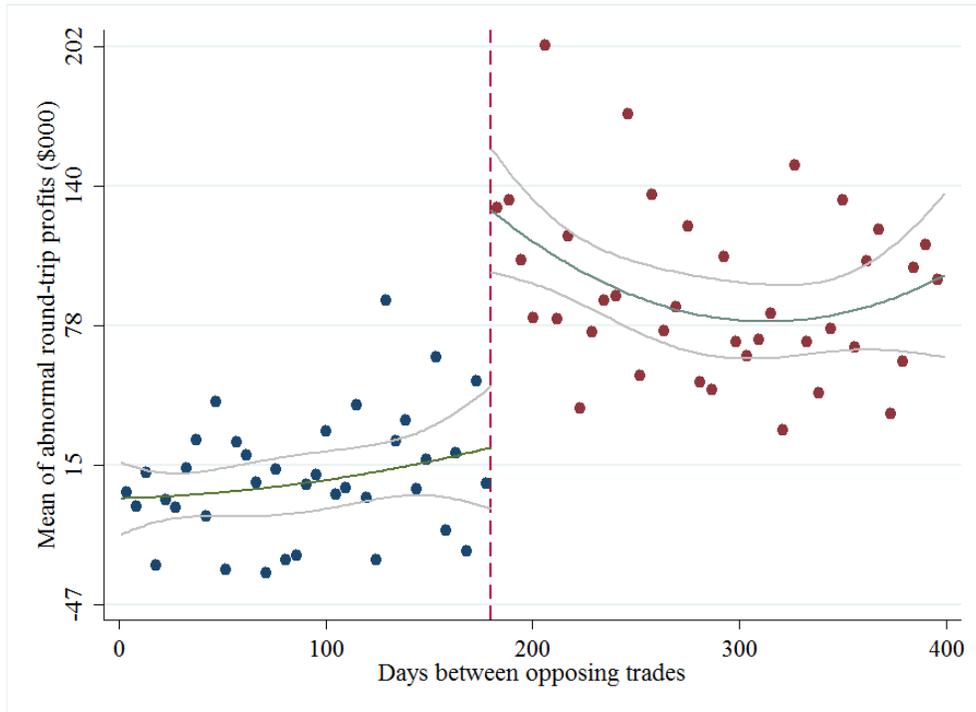
Panel B: Implied abnormal returns
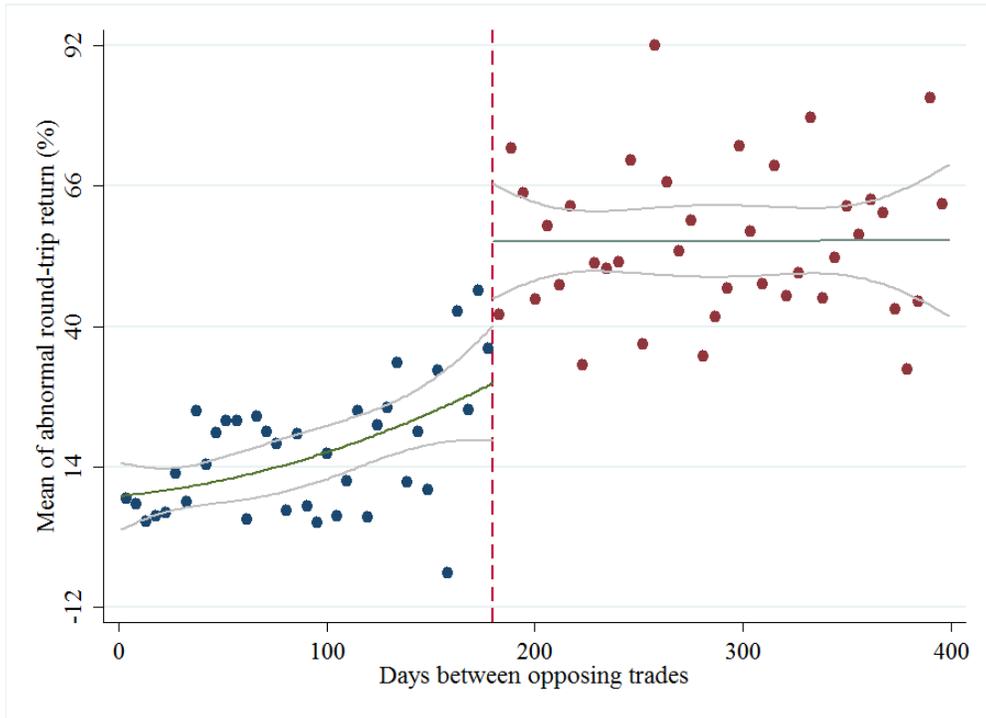
Panel C: Trade value
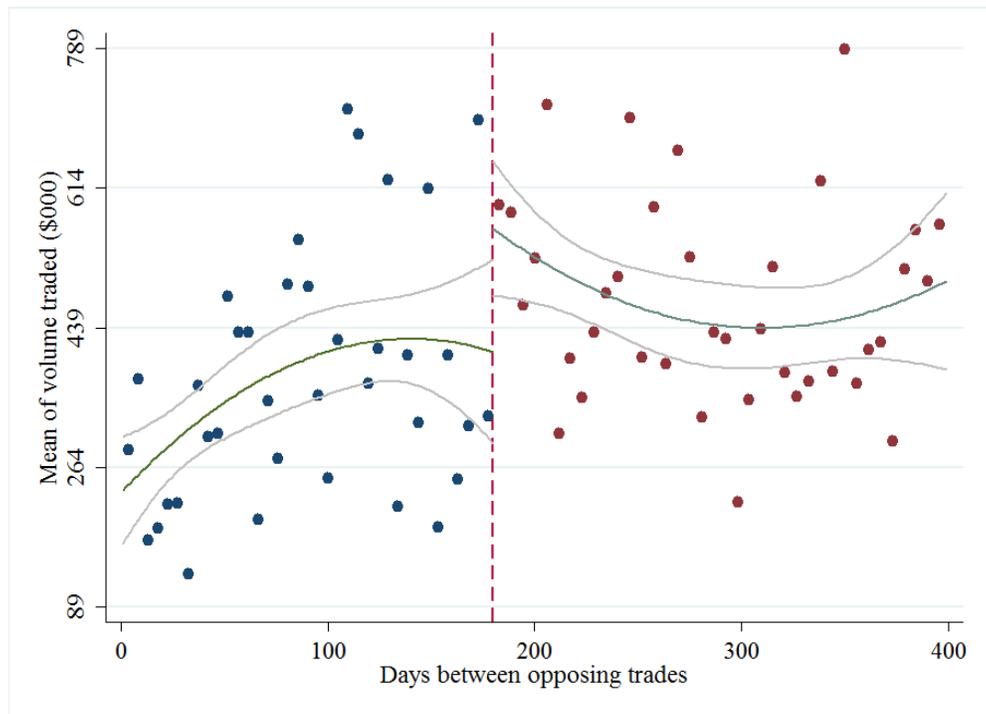
Table 1: Sample summary statistics

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 and dollar profits. Panel C reports volumes, returns and profits by insider type. Panel D reports summary statistics of yearly profits aggregated at the firm level. Variable definitions are provided in Table A1 in the Appendix. Our data span 1986-2013.

Panel A: Transaction frequency and size

Variable	Mean	St. dev.	10th	25th	Median	75th	90th
Number of transactions per insider	7	15	1	1	3	7	15
Value traded ($000) - constant 2013 dollars	618	1,502	8	32	129	471	1,445
Number of buys per insider	2	6	0	0	0	1	4
Value traded ($000) - constant 2013 dollars	254	1,033	2	7	25	96	380
Number of sells per insider	5	13	0	1	2	6	13
Value traded ($000) - constant 2013 dollars	727	1,600	19	58	189	605	1,728
Number of firms per insider	1.2	0.6	1	1	1	1	2
Number of insiders per firm	14.5	13.6	2	5	11	20	32
Transactions	644,608						
Buys	148,342						
Sells	496,266						
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	263,407						
Firm-years	52,602						

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

Variable	Obs	Mean	St. dev.	10th	25th	Median	75th	90th
Value traded ($000)	644,608	798	5,505	8	32	129	471	1,445
Frequency	263,407	2.6	4.7	1	1	1	3	5
Yearly value traded ($000)	263,407	1,680	7,722	13	49	223	956	3,324
Abnormal return (%)	644,608	0.9	10.8	-10.9	-4.6	0.6	6.0	12.9
Abnormal profit	644,608	4	85	-31	-5	0.141	8	41
Yearly abnormal profit	263,407	12	182	-46	-5	0.464	13	76
Profits/salary (%)	45,667	2.5	23.0	-9.3	-1.5	0.3	4.1	16.4
Profits/compensation (%)	42,680	0.7	5.8	-2.2	-0.4	0.1	1.1	4.1

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

Variable	Group	Obs	Mean	St. dev.	10th	25th	Median	75th	90th
Yearly value traded									
	Executive	159,547	1,507	6,024	15	58	265	1,075	3,422
	CEO	17,960	4,038	13,315	31	142	885	3,820	10,553
	CFO	14,821	1,196	2,770	15	58	294	1,133	3,142
	Other exec.	126,872	1,185	4,315	14	52	229	886	2,668
	Blockholder	8,475	9,031	24,827	46	232	1,393	7,044	21,020
	Other	95,385	1,317	6,652	11	35	149	628	2,223
Abnormal return									
	Executive	380,209	0.9	10.5	-10.6	-4.5	0.7	6.0	12.7
	CEO	68,929	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.	277,406	0.8	10.3	-10.4	-4.4	0.7	5.8	12.2
	Blockholder	50,881	1.0	12.5	-13.4	-5.6	0.8	7.2	15.6
	Other	213,518	0.8	10.7	-10.8	-4.6	0.5	5.9	12.6
Abnormal profit									
	Executive	380,209	5	84	-33	-5	0.192	8	43
	CEO	68,929	8	116	-64	-10	0.332	16	83
	CFO	34,215	4	73	-29	-5	0.228	8	40
	Other exec.	277,406	4	75	-28	-4	0.168	7	36
	Blockholder	50,881	7	128	-72	-10	0.298	16	94
	Other	213,518	3	74	-22	-3	0.074	5	29
Yearly abnormal profit									
	Executive	159,547	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.	126,872	8	135	-41	-5	0.505	13	63
	Blockholder	8,475	77	505	-331	-33	2.879	120	579
	Other	95,385	9	161	-32	-4	0.243	9	53

Panel D: Summary statistics of control variables

Variable	Obs.	Mean	St. dev.	10th	25th	Median	75th	90th
Market capitalization ($m)	644,608	5,283	21,198	79	224	729	2,543	9,735
Book-to-market	644,608	0.6	0.6	0.1	0.3	0.4	0.7	1.0
Number of analysts	644,608	9.4	8.1	2.0	3.0	7.0	13.0	21.0
Idiosyncratic volatility	644,608	2.5	1.4	1.2	1.6	2.2	3.1	4.2
Salary ($000)	45,742	523	300	245	317	438	639	938
Total compensation ($000)	42,697	3,103	4,357	522	878	1,662	3,409	6,877

**Table 2: Round-trip profits**

This table shows summary statistics of the sample of corporate insider transactions. Panel A shows summary statistics of transaction volume, frequency and profits. In the last two rows, we calculate descriptive statistics setting abnormal round-trip profits to zero for insiders who have insider trades but no round-trip trades in a given year. 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. Variable definitions are provided in Table A1 in the Appendix.

Panel A: Summary statistics of round-trip profits

Variable	Obs	Mean	St. dev.	10th	25th	Median	75th	90th
Value traded ($000)	50,450	408	1,063	4	18	74	283	909
Frequency	22,768	2	2	1	1	1	2	3
Yearly value traded ($000)	22,768	631	2,355	8	30	113	393	1,270
Implied abnormal return (%)	50,450	0.6	2.5	-0.6	-0.1	0.0	0.6	2.1
Abnormal round-trip profit	50,450	61	477	-74	-4	1	44	238
Yearly abnormal round-trip profit	22,768	125	981	-106	-9	5	70	354
Abnormal round-trip profit - all	644,608	5	135	0	0	0	0	0
Yearly abnormal round-trip profit - all	263,407	15	366	0	0	0	0	0

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	0.1	5	75	0.1	4	86	1.2	2.7	0.01
Observations	50,450			594,158					
# unique firms	4,617			3,026					
# unique insiders	17,580			75,178					

Table 3: Discontinuity results

Panels A and B 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 last column shows an alternative, robust t-test based on the nonparametric, data-driven bandwidth selector method proposed by Cattaneo, Jansson, and Ma (2017). Panel A shows results for the full sample and contains results for placebo thresholds of 1, 2, 3 months, 100 days, and 1-2 years. Panel B shows results in subsamples of firms, insiders, and trades. The categorization of buys and sales refers to the second (i.e. closing) transaction in the round-trip. Subsamples of firm size (market capitalization) and SEC budget are defined as observations above/below the median value. Panel C summarizes characteristics of insiders and firms with round-trip trades closed just above (181-200 days) and just below (161-180 days) the 6-month threshold. The third column of Panel C contains the result of a t-test whose null hypothesis is that the mean of the variable just above the threshold is equal to the mean just above the threshold. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, level. Variable definitions are provided in Table A1 in the Appendix.

Panel A: Discontinuity around the 6-month threshold and various placebo thresholds

Threshold (days)	McCrary (2008)			Cattaneo et al. (2017)
	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

Panel B: Discontinuity around the 6-month threshold across subsamples

| Subsample | Threshold (days) | McCrary (2008) | | | Cattaneo et al. (2017) |
		Log density	s.e.	t	t
CEO	180	1.310	0.138	9.486	7.647
CFO	180	0.699	0.157	4.445	4.630
Blockholder	180	0.994	0.163	6.113	2.838
Executives	180	1.075	0.057	18.774	13.557
Independent directors	180	0.964	0.074	12.993	8.449
Buys	180	1.039	0.066	15.836	8.366
Sales	180	1.044	0.055	18.930	9.308
Small firms	180	1.037	0.058	17.793	7.552
Large firms	180	1.047	0.061	17.104	10.149
Low institutional ownership	180	0.966	0.063	15.410	6.974
High institutional ownership	180	1.144	0.070	16.269	10.454
Post SOX	180	1.156	0.066	17.551	9.394
Pre SOX	180	0.958	0.055	17.395	8.386
Low SEC budget	180	0.962	0.054	17.759	8.141
High SEC budget	180	1.134	0.070	16.281	9.108

Panel C: Characteristics of insiders and firms above and below the 6-month threshold

	Above (181-200 days)	Below (161-180 days)	Difference
Insider characteristics			
Salary ($000)	544	407	***
Total compensation ($000)	2,947	2,124	**
Tenure	6.62	6.42	
CEO (d)	0.12	0.09	***
CFO (d)	0.06	0.08	**
Chairman of the board (d)	0.04	0.02	*
Blockholder (d)	0.06	0.07	
Executive (d)	0.38	0.36	
Independent director (d)	0.31	0.34	
Other role (d)	0.01	0.01	
Firm characteristics			
Book-to-market	0.66	0.72	*
Market capitalization ($000)	2,256	2,967	
Institutional ownership (%) - long-term	31.00	29.16	*
Institutional ownership (%) - total	49.71	47.16	**
Volatility	3.75	3.91	*
Market beta	1.09	1.01	***
Number of analysts	7.65	6.89	**
Post SOX	0.45	0.41	*
SEC budget	672	664	

Table 4: Comparing profit-seeking insiders to all other insiders

This table shows the results of a regression of returns, frequency, value, and dollar profits on an indicator variable for profit-seeking behavior, control variables, year fixed effects and firm fixed effects. We define an insider as profit-seeking in a given year t if they completed a round-trip transaction just after the short-swing threshold of 6 months, after 181-200 days in the preceding year $t-1$. For regressions that are based on insider-year observations, that is 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. Panel A compares the trading of profit-seeking insiders to other insiders who also complete at least one round-trip transaction. Panel B compares the trading of profit-seeking insiders to all other insiders in the population. Variable definitions are provided in Table A1 in the Appendix. 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 of profit-seeking insiders to all other insiders who complete round-trip transactions

Dep. var.:	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Profit-seeking (d)	1.147***	1.319***	68.661	1547.918**	6.329*	33.917***	187.320***	-0.359
	(0.44)	(0.30)	(54.12)	(715.08)	(3.42)	(10.26)	(57.04)	(0.56)
Log market capitalization	0.612	-2.505	-26.134	-3166.144	8.791	34.596	-168.251*	
	(2.03)	(1.64)	(232.09)	(2538.49)	(11.69)	(55.33)	(98.91)	
Book-to-market	-1.393	0.030	215.830	-558.389	18.038**	27.190	-245.957**	
	(1.25)	(0.78)	(147.94)	(1127.70)	(8.59)	(20.89)	(101.61)	
Number of analysts	-1.900	-0.718	222.135*	-320.786	7.210	-6.437	-242.765***	
	(1.27)	(0.62)	(135.02)	(917.14)	(9.06)	(18.43)	(88.59)	
Idiosyncratic volatility	-1.633	-0.706	199.944	-408.577	9.275	-19.295	-156.733*	
	(1.20)	(0.60)	(123.84)	(929.63)	(8.92)	(21.51)	(88.84)	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	63,918	24,948	63,918	24,948	63,918	24,948	22,584	4,065
R-squared	17.9%	44.4%	32.0%	23.6%	13.8%	25.2%	27.8%	43.8%
Adj. R-squared	11.7%	32.2%	26.8%	6.8%	7.2%	8.7%	10.7%	12.6%

Panel B: Comparison of profit-seeking insiders to all other insiders in the population

Dep. var.:	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Profit-seeking (d)	1.378***	2.176***	153.497***	2241.319***	6.852**	37.922***	165.954***	-0.760**
	(0.39)	(0.27)	(51.52)	(560.74)	(3.03)	(9.35)	(55.13)	(0.36)
Log market capitalization	0.804*	-0.432***	581.897***	1365.330***	14.978***	7.533	-160.057*	
	(0.45)	(0.15)	(98.22)	(345.73)	(2.44)	(5.02)	(92.04)	
Book-to-market	1.152***	-0.042	510.130***	1335.440***	15.539***	11.760**	-227.707**	
	(0.34)	(0.15)	(89.35)	(325.48)	(2.19)	(4.77)	(91.32)	
Number of analysts	1.345***	-0.019	482.209***	1237.532***	15.691***	10.505**	-228.258***	
	(0.36)	(0.14)	(89.81)	(324.89)	(2.21)	(4.79)	(81.15)	
Idiosyncratic volatility	0.975***	-0.054	463.337***	1147.579***	15.598***	8.676*	-137.559*	
	(0.33)	(0.14)	(76.41)	(286.87)	(2.12)	(4.67)	(81.17)	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	644,608	263,407	644,608	263,407	644,608	263,407	30,808	42,680
R-squared	7.4%	14.0%	25.4%	11.1%	4.1%	6.1%	26.5%	12.5%
Adj. R-squared	6.3%	11.4%	24.5%	8.5%	3.0%	3.3%	12.8%	6.4%

Table 5: Regressions of returns, trade frequency, trade value, and dollar profits on a proxy for informed trading

This 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. The table only reports the coefficient of the proxy for informed trading. For regressions that are based on insider-year observations, that is 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 Table A1 in the Appendix. 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	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Buy (d)	1.371***	-0.173***	-118.963***	-54.376	0.773	1.773	322.516***	-0.518***
	(0.10)	(0.04)	(16.53)	(68.28)	(0.57)	(1.28)	(20.31)	(0.09)
Opportunistic (d)	0.506***	-5.202***	28.876	-3350.508***	2.049***	-2.413	-74.411	0.184
	(0.10)	(0.30)	(42.49)	(600.38)	(0.74)	(3.80)	(86.68)	(0.16)
Infrequent (d)	0.551***	-2.933***	-191.925***	-2298.620***	0.821**	-12.976***	-126.403***	-0.086
	(0.05)	(0.04)	(11.11)	(72.96)	(0.35)	(1.02)	(15.57)	(0.06)
CFO (d)	0.353***	-0.559***	-153.126***	-790.510***	0.221	-3.819***	-73.541***	0.019
	(0.08)	(0.04)	(17.62)	(52.36)	(0.49)	(1.15)	(19.19)	(0.08)
Executive (d)	0.197***	-0.496***	-47.298***	-573.529***	0.640	-2.599***	22.899	-0.140
	(0.05)	(0.04)	(17.41)	(79.50)	(0.41)	(0.99)	(16.88)	(0.13)
Non-blockholder (d)	0.197	-5.476***	-783.050***	-8343.004***	-4.172***	-64.988***	-529.485***	
	(0.17)	(0.23)	(52.89)	(544.40)	(1.54)	(7.77)	(123.50)	

Table 6: Regressions of returns, trade frequency, trade value, and dollar profits on a proxy for informed trading and the SEC budget

This table shows the results of a regression of returns, frequency, value, and dollar profits on a proxy for informed trading, the SEC budget as a measure of litigation risk, an interaction between the informed trading proxy and the SEC budget, control variables, and firm fixed effects. The panels of the table only report the coefficient of the SEC budget, the proxy for informed trading, and the interaction term. Each panel also reports the difference between the two interaction terms, and the result of the F-test of the difference between the interaction terms. For regressions that are based on insider-year observations, that is columns 2, 4, 6, 7, and 8, and that use a trade-level indicator of informed trading (Panel A and Panel C), the informed trading proxy is calculated as the mean over all trades for the given insider and the given year. Variable definitions are provided in Table A1 in the Appendix. 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	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: No interactions								
SEC budget	-0.430**	-0.180*	-191.795***	-598.664***	-5.599***	-2.339	25.120	-1.309***
	(0.21)	(0.10)	(50.64)	(166.54)	(1.83)	(3.80)	(47.71)	(0.24)
Panel B: Buys vs. sells								
Buy	0.80***	-0.24**	-67.90**	-454.54**	-1.38	8.10**	-57.00	-0.78***
	(0.21)	(0.12)	(34.07)	(230.01)	(1.22)	(4.09)	(63.88)	(0.27)
SEC budget × buy	0.17	-0.04	-250.93***	-487.59***	-3.65*	-5.78	65.29	-1.40***
	(0.30)	(0.09)	(62.12)	(139.44)	(1.91)	(4.11)	(46.99)	(0.25)
SEC budget × sell	-0.62***	1.43***	-163.60***	-9888.87***	-6.16***	-93.39***	-325.86**	-7.16***
	(0.22)	(0.21)	(48.67)	(906.26)	(1.98)	(11.05)	(141.24)	(0.82)
Dif (sell-buy)	-0.79***	1.47*	87.33*	-9401.3	-2.51	-87.61***	-391.15**	-5.76**
F-value	(8.41)	(3)	(2.89)	(0.02)	(2.1)	(14.98)	(4.66)	(4.93)
Panel C: Opportunistic vs. routine trades								
Opportunistic	0.91***	-6.79***	-135.00*	-3422.69***	7.07**	14.59	106.86	0.80
	(0.28)	(0.80)	(75.71)	(1041.16)	(2.87)	(12.39)	(205.49)	(0.65)
SEC budget × opportunistic	-0.44**	-0.16**	-169.31***	-558.96***	-5.91***	-3.03	21.41	-1.33***
	(0.21)	(0.08)	(46.50)	(143.29)	(1.79)	(3.76)	(47.60)	(0.24)
SEC budget × routine	-0.00	-2.02**	-364.25***	-715.22	-0.39	16.78	217.27	-0.63
	(0.37)	(0.81)	(95.94)	(960.44)	(3.93)	(14.22)	(228.27)	(0.67)
Dif (routine-opportunistic)	0.44	-1.86**	-194.94**	-156.26	5.52*	19.81	195.9	0.7
F-value	(1.85)	(5.34)	(6.51)	(0.03)	(2.71)	(2.14)	(0.76)	(1.12)

Table 6 – continued

Panel D: Infrequent traders

Infrequent	0.63***	-2.34***	-19.08	-439.05***	3.32***	-2.25	-57.95	0.07
	(0.12)	(0.07)	(23.15)	(110.04)	(0.84)	(2.39)	(39.13)	(0.21)
SEC budget × infrequent	-0.49**	-0.33***	-336.33***	-1451.63***	-7.72***	-8.14**	-13.45	-1.39***
	(0.22)	(0.07)	(52.87)	(164.33)	(1.67)	(3.30)	(42.11)	(0.25)
SEC budget × frequent	-0.39*	0.45***	-111.17**	987.68***	-4.53**	6.41	76.20	-1.20***
	(0.22)	(0.11)	(48.51)	(165.61)	(2.00)	(4.99)	(61.71)	(0.27)
Dif (frequent - infrequent)	0.1	0.78**	225.2**	2439.31***	3.19***	14.55***	89.65*	0.19
F-value	(0.43)	(70.06)	(41.27)	(183.67)	(8.33)	(21.71)	(3.38)	(0.72)

Panel E: Chief Financial Officers (CFOs)

CFO	0.68**	-0.60***	-172.42***	-689.68***	2.65	4.51	-35.26	-0.15
	(0.27)	(0.08)	(31.69)	(97.31)	(1.74)	(3.53)	(50.37)	(0.29)
SEC budget × CFO	-0.79**	-0.04	-169.92***	-620.12***	-8.42***	-11.97**	-17.59	-1.16***
	(0.34)	(0.11)	(52.38)	(161.00)	(2.49)	(5.26)	(64.71)	(0.34)
SEC budget × non CFO	-0.42**	-0.08	-182.11***	-456.99***	-5.45***	-1.70	27.70	-1.33***
	(0.21)	(0.08)	(47.63)	(141.26)	(1.83)	(3.82)	(48.59)	(0.24)
Dif (non CFO - CFO)	0.37	0.04	-12.19	163.1	2.97	10.27**	45.29	-0.17
F-value	(1.84)	(0.15)	(0.08)	(1.64)	(2.54)	(6.68)	(0.57)	(0.33)

Panel F: Executives

Executive	0.49***	-0.74***	-155.44***	-631.37***	2.47***	2.46	62.65	0.04
	(0.13)	(0.06)	(26.50)	(92.48)	(0.93)	(2.02)	(43.43)	(0.42)
SEC budget × executive	-0.58***	0.01	-129.50***	-486.59***	-6.55***	-5.36	0.04	-1.33***
	(0.22)	(0.08)	(48.85)	(153.91)	(1.82)	(3.85)	(50.81)	(0.24)
SEC budget × non-executive	-0.19	-0.29***	-267.22***	-531.96***	-4.16**	2.01	53.92	-1.10**
	(0.23)	(0.11)	(54.36)	(168.55)	(2.07)	(4.30)	(58.07)	(0.46)
Dif (non-executive - executive)	0.39***	-0.3***	-137.72***	-45.37	2.39*	7.37***	53.88	0.23
F-value	(6.8)	(10.65)	(11.37)	(0.08)	(3.6)	(7.12)	(1.01)	(0.28)

Panel G: Blockholders

Non-blockholder	0.56	-1.24***	-109.59	2200.75***	3.28	43.35***	172.52	
	(0.39)	(0.42)	(82.82)	(727.16)	(3.42)	(14.85)	(267.37)	
SEC budget × nonblockholder	-0.47**	-0.22***	-246.53***	-831.70***	-6.27***	-6.08	-17.98	
	(0.21)	(0.08)	(46.73)	(137.11)	(1.81)	(3.74)	(43.69)	
SEC budget × blockholder	0.13	5.93***	639.59***	14640.51***	3.85	156.45***	917.97**	
	(0.55)	(0.74)	(135.48)	(1496.72)	(5.28)	(26.02)	(375.24)	
Dif (blockholder - non-blockholder)	-0.6	6.15***	886.12***	15472***	10.12**	162.53***	935.95**	
F-value	(1.36)	(69.54)	(47.04)	(104.7)	(4.03)	(40.35)	(6.38)	

Table 7: Regressions of returns, trade frequency, trade value, and dollar profits on a proxy for informed trading and litigation risk

This table shows the results of a regression of returns, frequency, value, and dollar profits on a proxy for informed trading, the post SOX dummy as a measure of litigation risk, an interaction between the informed trading proxy and the post SOX dummy, control variables, and firm fixed effects. The panels of the table only report the coefficients of the post SOX dummy, the proxy for informed trading, and the interaction term. Each panel also reports the difference between the two interaction terms, and the result of the F-test of the difference between the interaction terms. For regressions that are based on insider-year observations, that is columns 2, 4, 6, 7, and 8, and that use a trade-level indicator of informed trading (Panel A and Panel C), the informed trading proxy is calculated as the mean over all trades for the given insider and the given year. Variable definitions are provided in Table A1 in the Appendix. 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	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: No interactions								
Post SOX	-0.15	0.23***	-46.96**	-22.30	-1.91*	-1.20	23.96	-0.64***
	(0.12)	(0.06)	(23.21)	(85.16)	(1.03)	(2.23)	(29.52)	(0.14)
Panel B: Buys vs. sells								
Buy	1.07***	-0.08*	-105.61***	-67.05	-0.37	-2.26	371.97***	-0.75***
	(0.13)	(0.04)	(17.99)	(63.04)	(0.71)	(1.49)	(27.92)	(0.13)
Post SOX × buy	0.34*	0.07	-68.67**	-1.99	-0.39	5.77**	-25.98	-0.25*
	(0.19)	(0.07)	(30.14)	(120.08)	(1.03)	(2.34)	(38.38)	(0.14)
Post SOX × sell	-0.30**	0.28***	-35.89	-2.97	-2.36**	-3.73	30.84	-0.72***
	(0.13)	(0.05)	(24.04)	(76.11)	(1.17)	(2.52)	(29.14)	(0.15)
Dif (sell-buy)	-0.64***	0.21***	32.78	-0.98	-1.97*	-9.5***	56.82	-0.47***
F-value	(11.81)	(6.88)	(1.1)	(0)	(3.08)	(15.5)	(2.56)	(7.96)
Panel C: Opportunistic vs. routine trades								
Opportunistic	0.76***	-5.39***	-68.92	-3117.77***	4.69***	6.77	-5.27	0.27
	(0.17)	(0.46)	(44.03)	(639.17)	(1.55)	(7.81)	(136.19)	(0.41)
Post SOX × opportunistic	-0.17	0.16***	-33.97	-53.08	-2.13**	-1.56	21.43	-0.64***
	(0.12)	(0.04)	(21.83)	(72.59)	(1.02)	(2.20)	(29.51)	(0.14)
Post SOX × routine	0.19	-0.14	-176.47***	218.59	1.47	11.12	132.09	-0.54
	(0.23)	(0.56)	(45.02)	(541.75)	(2.28)	(9.77)	(172.32)	(0.46)
Dif (routine-opportunistic)	0.39	-0.3***	-142.5***	271.67***	3.60***	12.6***	110.66*	0.10
F-value	(0.91)	(97.71)	(46.55)	(173.89)	(11.36)	(12.05)	(3.39)	(0.85)

Table 7 – continued

Panel D: Infrequent traders

Infrequent	0.60***	-2.58***	-111.75***	-1448.94***	2.22***	-8.91***	-92.53***	-0.02
	(0.08)	(0.04)	(11.88)	(62.11)	(0.49)	(1.51)	(23.04)	(0.12)
Post SOX × infrequent	-0.21	-0.07*	-146.60***	-693.90***	-3.64***	-4.57**	-7.99	-0.70***
	(0.13)	(0.04)	(25.42)	(78.52)	(0.93)	(1.79)	(24.13)	(0.15)
Post SOX × frequent	-0.12	0.58***	-0.46	845.78***	-1.16	2.94	51.13	-0.57***
	(0.13)	(0.07)	(23.42)	(102.37)	(1.15)	(3.12)	(39.19)	(0.16)
Dif (frequent - infrequent)	0.09*	0.65	147.06***	1539.7	2.48*	7.51	59.12	0.13
F-value	(3.06)	(0.3)	(12.91)	(0.25)	(3.2)	(1.85)	(0.42)	(0.04)

Panel E: Chief Financial Officers (CFOs)

CFO	0.52***	-0.53***	-156.54***	-705.54***	1.33	0.06	-59.06*	-0.12
	(0.16)	(0.04)	(17.97)	(53.64)	(1.04)	(2.03)	(31.48)	(0.17)
Post SOX × CFO	-0.38*	0.18***	-47.60	-149.15*	-3.64**	-6.75**	3.61	-0.50**
	(0.22)	(0.06)	(31.50)	(88.58)	(1.47)	(3.04)	(41.82)	(0.21)
Post SOX × non CFO	-0.14	0.23***	-43.06*	10.58	-1.81*	-0.83	25.51	-0.66***
	(0.12)	(0.05)	(22.00)	(70.08)	(1.04)	(2.25)	(30.18)	(0.14)
Dif (non CFO - CFO)	0.24	0.05	4.54	159.7**	1.83	5.92**	-21.9	-0.16
F-value	(1.84)	(0.51)	(0.03)	(4.5)	(2.37)	(5.82)	(0.3)	(0.68)

Panel F: Executives

Executive	0.34***	-0.57***	-91.19***	-580.52***	1.55***	-0.25	33.48	0.01
	(0.08)	(0.04)	(16.14)	(64.67)	(0.56)	(1.32)	(25.52)	(0.25)
Post SOX × executive	-0.25*	0.27***	-12.26	-3.40	-2.52**	-2.95	14.00	-0.65***
	(0.13)	(0.05)	(23.55)	(75.37)	(1.05)	(2.22)	(29.25)	(0.14)
Post SOX × non-executive	0.00	0.13*	-90.82***	-28.31	-1.00	1.44	35.96	-0.45
	(0.14)	(0.07)	(27.34)	(100.73)	(1.20)	(2.72)	(38.82)	(0.30)
Dif (non-exec - exec)	0.25**	-0.14**	-78.56***	-24.91	1.52*	4.39**	21.96	0.20
F-value	(6.21)	(4.75)	(9.51)	(0.06)	(3.38)	(5.06)	(0.39)	(0.5)

Panel G: Blockholders

Non-blockholder	0.31	-3.77***	-509.78***	-4418.42***	-1.08	-27.16***	-215.15
	(0.22)	(0.21)	(49.50)	(389.48)	(1.87)	(8.67)	(157.86)
Post SOX × non-blockholder	-0.16	0.11***	-83.69***	-257.01***	-2.33**	-3.68*	-7.49
	(0.12)	(0.04)	(21.88)	(67.60)	(1.02)	(2.15)	(24.99)
Post SOX × blockholder	0.06	3.92***	421.09***	8520.27***	3.35	81.40***	556.55**
	(0.33)	(0.49)	(77.19)	(908.99)	(3.32)	(17.58)	(232.56)
Dif (blockholder - non-blockholder)	0.22	3.81***	504.78***	8777.3***	5.68*	85.26***	564.04**
F-value	(0.52)	(61.74)	(44.46)	(91.89)	(3.12)	(24.4)	(6.05)

52

Appendix

Figure A1: Distribution of trade size, returns, and dollar profits over time

This figure presents the distribution of trade size, returns, and dollar profits over time. Panel A shows trade size, Panel B shows the distribution of abnormal returns, Panel C shows the distribution of abnormal dollar profits, Panel D shows the distribution of abnormal dollar profits aggregated annually and Panel E presents annual abnormal profits scaled by total compensation over time. The graphs show the median values and the 10th, 25th, 75th and 90th percentiles. Variable definitions are provided in Table A1 of the Appendix.
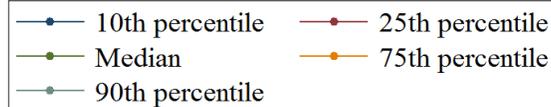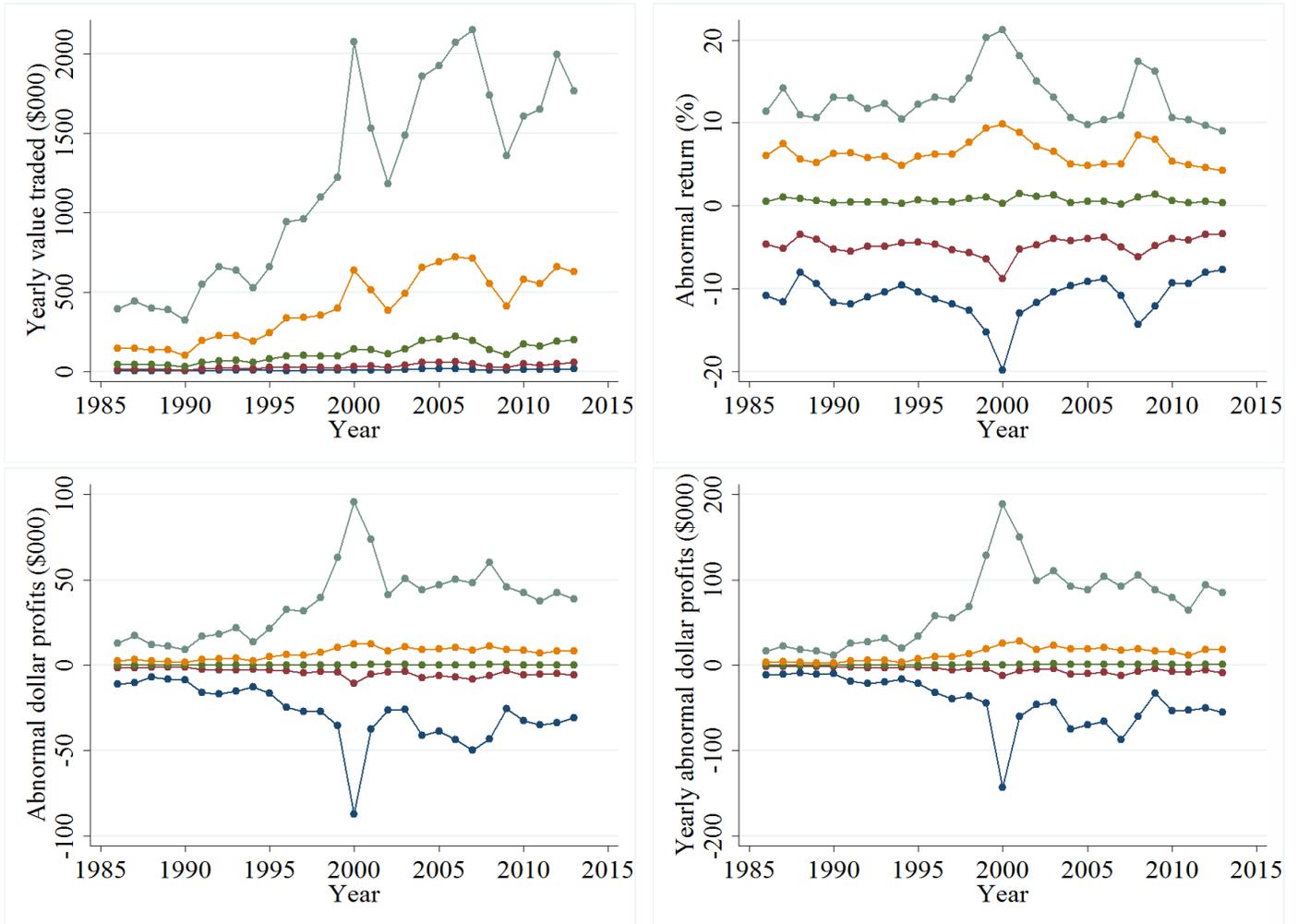
Figure A2: Mean abnormal returns and abnormal profits over losses

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.

Panel A: Mean largest abnormal return over loss deciles
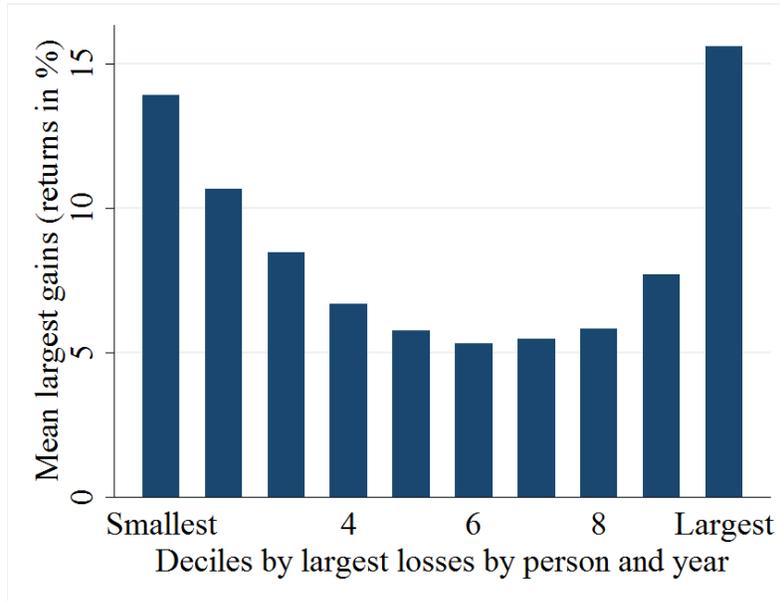
Panel B: Mean largest dollar profit over loss deciles

54
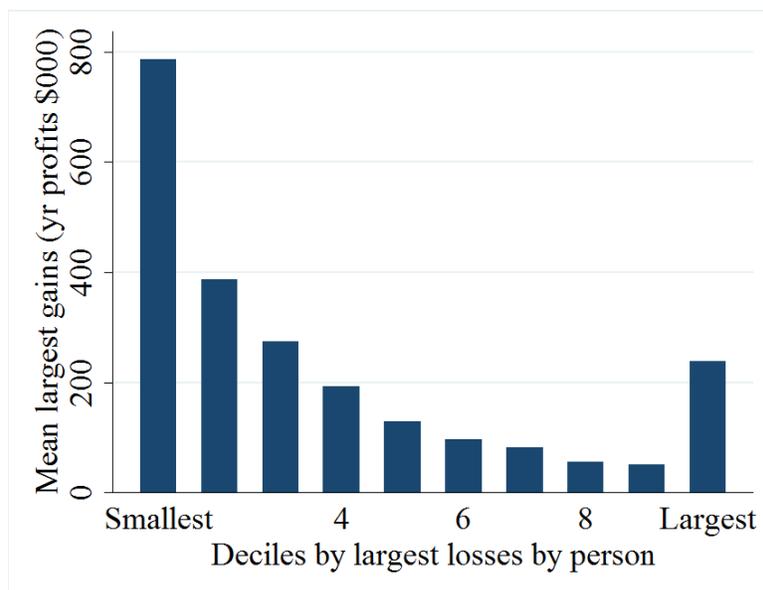
Table A1: Variable Descriptions

Variable	Definition
Insider trading characteristics and outcomes	
Trade value	Volume of insider transaction in thousands of constant 2013 U.S. dollars.
Year trade value	Trade value aggregated at the insider-year level.
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.
Roundtrip profit	According to this method, the share-weighted purchase (sale) price is tracked over time. Profits to sales (purchases) are computed by subtracting that price from the actual price of the sale (purchase).
Abnormal roundtrip profit	Roundtrip profit minus market return multiplied with same transaction volume.
Yearly dollar profit	Dollar profit aggregated at the insider-year level.
Yearly abnormal dollar profit	Abnormal dollar profit aggregated at the insider-year level.
Yearly roundtrip profit	Roundtrip profit aggregated at the insider-year level.
Yearly abnormal roundtrip profit	Abnormal roundtrip profit aggregated at the insider-year level.
Salary	Salary in thousands of constant 2013 U.S. dollars.
Total compensation	Total compensation (TDC1) in thousands of constant 2013 U.S. dollars.
Profit to salary	Abnormal profit scaled by salary.
Profit to total compensation	Abnormal profit scaled by total compensation.
Main independent variables	
SEC budget	The enforcement budget of the Securities and Exchange Commission in thousands of constant 2013 U.S. dollars (see Del Guercio, Odders-White and Ready (2015).
Post SOX (d)	This dummy variable is set to 1 if the insider trade occurs after the implementation of the Sarbanes-Oxley Act on August 29, 2002, and to 0 otherwise.
CEO (d)	This dummy variable is set to 1 if the insider is the chief executive officer (CEO), and to 0 otherwise.
CFO (d)	This dummy variable is set to 1 if the insider is the chief financial officer (CFO), and to 0 otherwise.

Table A1 – continued

Routine (d)	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.
Opportunistic (d)	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.
Executive (d)	This dummy variable is set to 1 if the insider is an executive of the firm, 0 otherwise.
Blockholder (d)	This dummy variable is set to 1 if the insider is a director of the firm, 0 otherwise.
Infrequent trader (d)	This dummy variable is set to 1 if the insider has less than 20 days over the entire sample period, 0 otherwise.
Control variables	
Market capitalization (in $ million)	Market capitalization is calculated as the number of shares outstanding multiplied by the end-of-fiscal year stock price.
Book-to-market	Book value of equity scaled by the market value of equity as in Fama and French (1993).
Number of analysts	Number of equity research analysts according to I/B/E/S.
Idiosyncratic volatility	Standard deviation of return residuals from the Fama-French three factor model based on daily observations.
G-index	Counts the number of firm-level takeover defenses (see Gompers, Iishi, and Metrick (2003)).

Table A2: Summary statistics of returns and profits over time

This table shows summary statistics of longer-term profits over 3 months, 6 months and 12 months. Variable definitions are provided in Table A1 in the Appendix. Standard errors are clustered at the firm level.

Variable	Statistics	All years	1990-1999	2000-2009	2010-2013
	#trades	644,608	165,427	317,617	134,009
	#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	630	392	733	771
	Standard deviation	1,586	1,146	1,722	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	23	13	30	24
	Mean	10	6	12	11
	Standard deviation	21	10	25	24
Yearly value traded ($000)	5th percentile	13	9	19	26
	25th percentile	49	28	73	98
	50th percentile	223	114	332	387
	75th percentile	956	465	1,327	1,465
	90th percentile	3,324	1,636	4,415	4,607
	Mean	1,715	909	2,186	2,243
	Standard deviation	8,154	4,599	9,731	9,199
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
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

Table A2 – continued

Variable	Statistics	All years	1990-1999	2000-2009	2010-2013
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	0.635	0.040	0.603	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

Table A3: 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 Table A1 in the Appendix. Standard errors are clustered at the firm level.

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

Table A3 – 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 A4: Firm-year and insider-level aggregation and insider losses

Panel A of this table shows summary statistics of transaction volume and profits at the firm-year level. Panel B of this table 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 C shows summary statistics for insider losses. All trade values and profits are reported in thousands of constant 2013 dollars. Variable definitions are provided in Table A1 in the Appendix.

Panel A: Firm-year level aggregation

Variable	Obs	Mean	St. dev.	10th	25th	Median	75th	90th
Value traded ($000)	52,602	2,801	6,163	30	121	557	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	3,998	-1,013	-76	11	341	2,141

Panel B: Insider-level aggregation

Variable	Obs	Mean	St. dev.	10th	25th	Median	75th	90th
Value traded ($000)	92,758	1,588	4,340	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	1,341	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	2,304	-280	-21	6	145	811

Panel C: Losses to insider trading

Variable	All	Trading frequency		Trade direction	
		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

Table A5: Regression of insider trading returns, volumes and dollar profits

Panel A of this table reports the results of a regression of abnormal returns and abnormal profits on control variables and year fixed effects. Panel B reports the results of the same regressions with firm fixed effects. Variable definitions are provided in Table A1 in the Appendix. 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

Dep. var.:	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log market capitalization	0.064	-0.086***	326.538***	737.241***	2.978***	4.053***	-8.969	0.002***
	(0.04)	(0.02)	(14.36)	(43.79)	(0.28)	(0.59)	(7.97)	(0.00)
Book-to-market	0.660***	-0.310***	-14.833	-252.397***	2.779***	2.935***	1.368	0.001**
	(0.11)	(0.04)	(12.00)	(45.12)	(0.45)	(0.78)	(10.76)	(0.00)
Number of analysts	-0.013*	0.001	2.583	14.063	-0.229***	-0.129	7.634***	-0.000***
	(0.01)	(0.00)	(3.03)	(8.97)	(0.06)	(0.12)	(1.63)	(0.00)
Idiosyncratic volatility	0.394***	0.290***	94.168***	455.577***	2.152***	6.320***	66.839***	0.004***
	(0.06)	(0.02)	(7.89)	(30.15)	(0.31)	(0.74)	(7.95)	(0.00)
Constant	-1.169*	2.344***	-3962.804***	-9594.220***	-39.529***	-61.976***	-53.308	-0.032***
	(0.60)	(0.22)	(187.65)	(603.43)	(3.64)	(7.52)	(104.14)	(0.01)
Firm FE	No	No	No	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,608	263,407	644,608	263,407	644,608	263,407	30,808	42,680
Adj. R-squared	6.20%	11.30%	24.50%	8.50%	3.00%	3.20%	12.70%	6.40%

Panel B: With firm fixed effects

Dep. var.:	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log market capitalization	0.352***	0.033	414.262***	961.629***	6.020***	6.271***	-43.686***	0.007***
	(0.06)	(0.03)	(26.67)	(97.92)	(0.49)	(1.03)	(14.67)	(0.00)
Book-to-market	0.811***	-0.096***	30.910*	125.588*	3.721***	4.058***	10.072	0.003***
	(0.16)	(0.03)	(15.98)	(64.48)	(0.72)	(1.19)	(17.14)	(0.00)
Number of analysts	0.052***	-0.017***	-11.358***	-31.672**	0.059	0.682***	10.917***	0.000
	(0.01)	(0.00)	(3.92)	(13.34)	(0.11)	(0.23)	(3.01)	(0.00)
Idiosyncratic volatility	0.351***	0.033	38.149***	88.844***	2.008***	4.257***	31.360**	0.002***
	(0.07)	(0.03)	(7.17)	(30.97)	(0.42)	(1.13)	(14.21)	(0.00)
Constant	-5.401***	1.879***	-4599.077***	-10539.287***	-75.723***	-91.686***	417.452**	-0.089***
	(0.81)	(0.29)	(289.47)	(1064.45)	(5.75)	(12.20)	(168.29)	(0.01)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,608	263,407	644,608	263,407	644,608	263,407	30,808	42,680
R-squared	7.40%	13.90%	25.40%	11.10%	4.10%	6.10%	26.40%	12.50%
Adj. R-squared	6.20%	11.30%	24.50%	8.50%	3.00%	3.20%	12.70%	6.40%

63

Table A6: 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 Table A1 in the Appendix. Standard errors are clustered at the firm level. The table reports coefficients and t-statistics in parentheses. Except for dummy variables, the coefficient indicates the change in the dependent variable for a one-standard-deviation change of the independent variable. *, **, 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

Dependent variable	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag abnormal return	0.526*** (5682.04)							
Lag trade frequency		0.471*** (23.21)						
Lag trade value			0.626*** (854.96)					
Lag yearly trade value				0.390*** (8.85)				
Lag abnormal profit					0.445*** (3130.04)			
Lag yearly abnormal profit						0.480*** (55.60)		
Lag yearly abnormal round-trip profits							0.800*** (49.93)	

Table A6 Panel A – continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag profit to total comp								0.640***
								(110.10)
Log market capitalization	0.020***	-0.017***	0.019***	0.078***	0.022***	0.018***	-0.006*	0.036***
	(13.07)	(-5.08)	(21.42)	(8.80)	(18.67)	(5.90)	(-1.69)	(6.66)
Book-to-market	0.003***	-0.007***	0.002***	-0.007***	0.003***	0.002*	-0.002	-0.004
	(9.08)	(-3.73)	(10.15)	(-4.19)	(10.76)	(1.73)	(-0.95)	(-1.47)
Number of analysts	-0.012***	-0.007**	-0.011***	-0.007**	-0.013***	-0.008***	0.010***	-0.021***
	(-12.78)	(-2.29)	(-17.84)	(-2.14)	(-17.54)	(-3.00)	(2.84)	(-4.40)
Idiosyncratic volatility	0.005***	0.028***	0.005***	0.035***	0.005***	0.018***	0.006	0.024***
	(11.19)	(9.57)	(12.29)	(9.41)	(13.65)	(7.22)	(1.63)	(4.72)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	644,608	263,406	644,608	263,406	644,608	263,406	30,808	42,680
Adj. R-squared	27.70%	22.80%	39.80%	17.10%	19.80%	23.20%	64.20%	41.20%

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	6.131	0.000	7,642	644,608	7.36%	6.25%	6.81%	5.70%
Trade frequency	4.581	0.000	7,640	263,406	13.03%	10.42%	11.90%	9.30%
Trade value	13.503	0.000	7,642	644,608	25.93%	25.04%	12.00%	11.11%
Yearly trade value	2.833	0.000	7,640	263,406	10.93%	8.26%	7.54%	4.88%
Profits	3.343	0.000	7,642	644,608	4.14%	2.99%	3.84%	2.69%
Yearly profits	2.033	0.000	7,640	263,406	6.07%	3.25%	5.70%	2.90%
Yearly abnormal round-trip profits	1.848	0.000	4,785	30,808	26.38%	12.74%	25.05%	11.51%
Profits to total comp	1.950	0.000	2,757	42,680	12.53%	6.43%	11.79%	5.75%

Table A7: Regressions of returns, trade frequency, trade value, and dollar profits on a proxy for informed trading without firm FE

This 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. The table only reports the coefficient of the proxy for informed trading. For regressions that are based on insider-year observations, that is 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 Table A1 in the Appendix. 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.

Dep. var.:	Abnormal return	Trade frequency	Trade value	Yearly trade value	Abnormal profit	Yearly abnormal profit	Yearly abnormal round-trip profits	Profit to total comp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Buy (d)	1.142***	-0.272***	-92.688***	-204.672***	0.504	1.436	327.816***	-0.649***
	(0.10)	(0.04)	(18.42)	(60.07)	(0.60)	(1.12)	(18.42)	(0.07)
Opportunistic (d)	0.959***	-5.946***	89.131*	-3464.443***	3.936***	1.907	-24.311	0.487***
	(0.10)	(0.34)	(51.76)	(619.47)	(0.61)	(3.60)	(73.19)	(0.13)
Infrequent (d)	0.744***	-3.114***	-194.834***	-2383.592***	1.170***	-12.740***	-150.295***	-0.080
	(0.05)	(0.04)	(15.90)	(81.68)	(0.36)	(1.05)	(15.39)	(0.06)
CFO (d)	0.347***	-0.507***	-151.627***	-673.913***	0.024	-3.492***	-92.225***	0.037
	(0.09)	(0.03)	(17.85)	(46.15)	(0.49)	(1.12)	(16.25)	(0.08)
Executive (d)	0.193***	-0.559***	-103.263***	-689.802***	0.368	-3.927***	10.769	-0.109
	(0.06)	(0.04)	(20.30)	(74.31)	(0.48)	(1.07)	(16.74)	(0.12)
Non-blockholder (d)	0.209	-5.684***	-746.438***	-8221.516***	-3.574**	-66.811***	-434.464***	
	(0.18)	(0.24)	(55.45)	(530.52)	(1.68)	(8.45)	(104.94)	