

Insiders' Other Trades¹

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April 2019

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Abstract

We study trading by corporate insiders in stocks where they are not insiders and the moderating role of the governance in their own firms. Insider trading is illegal in most countries, but it is difficult to enforce. Research finds that governance is effective in constraining insiders from utilizing their private information to trade profitably in their own stock. However, to the extent that their information has spillovers in the form of industry news or peer firm news, insiders can trade in these other stocks. We find that controlling for individual stock-picking ability, insiders earn higher abnormal profits in stocks from their own industry (related stocks) relative to stocks from other industries (unrelated stocks). The information advantage of insiders in related stock arises from industry news rather than firm-specific news. Insiders in better-governed firms trade less profitably in their own stock but exploit industry-specific information better while trading in related stocks. Our results suggest that strong governance may drive an insider to trade in related stocks instead of trading in their own stock. We also show that the insider's information advantage is higher when accounting comparability between the insider's own stock and related stock is high.

Key Words: Insiders, Informed trading; Private information, Information spillover, Governance

JEL Codes: D4, D82, G14, K22

1. Introduction

Insider trading laws typically restrict insiders from using their superior information to trade in their own stock. Despite these laws, studies show that, on average, insiders earn abnormal profits from trading in their own stock (for example, see Cohen, Malloy, and Pomorski, 2012 among many others). In addition to insider trading laws, strong corporate governance in the insider's firm could be an effective mechanism for restricting profitable insider trading (Dai et al., 2016). Indeed, Ravina and Sapienza (2010) find that insiders do not earn abnormal profits from their insider trades in firms with strong governance. If strong corporate governance deters insiders from trading in their own stocks, are there other ways they can exploit their information advantage? An insider's intimate knowledge about their own firm can have information spillover in two ways – information about prospects of the industry and firm-specific information about the peers. Ben-David, Birru, and Rossi (2018) find that insiders trade profitably in other peer firms and these trades appear to be based on industry-wide news of the insider, rather than peer-specific news. Thus, we conjecture that strong governance would drive insiders to use their information and trade in peer stocks which are not subject to insider trading laws. We find that insiders in firms with strong governance earn superior returns on related stocks while earning insignificant returns on their own stock and the information advantage appears to be largely driven by industry news.

Our study sheds light on the nature of information advantage insiders have and channels through which they can exploit it. It also highlights the trade-off between exploiting more precise information about one's own firm at some legal costs and using noisier information about related firms. Insiders who are unable to use their superior information to trade in their own stock can still earn abnormal profits in related stocks. The extent to which insiders can substitute peer stock trades for own stock trades depends on how fungible their information is. Such trades potentially have

implications for the incentives of insiders whose wealth is exposed not only to their own stock but also that of their competitors. Our findings suggest that insider trading regulations and strong governance do not fully prevent insiders from unfairly exploiting their superior information for personal gains.

While understanding how insiders trade in other stocks is interesting, there hasn't been much research in this area because insiders are not required to report their trades in stocks other than those for which they are considered insiders. Ben-David et al. (2018) use a novel dataset of insider trades in other stocks, inferred from a discount brokerage database of trades in the U.S. and Johannesson (2017) uses a database from Sweden examine trades by insiders after they leave the company. We construct a novel dataset using insider trades on the Bombay Stock Exchange (BSE), a major stock exchange in India. The Indian setting is useful because enforcement of insider trading laws is not as strong as in the US and therefore firm-level corporate governance is an important mechanism for disciplining firm insiders.

We construct our dataset by matching the insiders' reported trades in their own stock to a rich, trader-level dataset of all trades on the stock exchange for 2009-2011. We identify trades by corporate insiders in all stocks by matching information from reported insider trades to a proprietary dataset of all trades on the BSE. The BSE trades data contains all intra-day transactions, masked trader identifiers and trader categories. We match the trade quantity, price and broker identity from the own company trades reported by the insiders under SEBI (Prohibition of Insider Trading) Regulations, 1992 to the BSE trades data. Having linked a masked trader identifier to a specific corporate insider, we then extract all trades transacted by that corporate insider. This yields a final sample of 1231 insiders corresponding to 60,127 trades, 56% of which are buy transactions. We classify all trades into three categories – own stock trades, trades in other stocks from the same

industry as the own stock (related stock trades), and trades in other stocks from other industries (unrelated stock trades). We construct the abnormal returns over 3-month and 6-month horizons for each of the insider trades using size, book-to-market, and momentum adjusted benchmark portfolios, following Daniel, Grinblatt, Titman, Wermers (1997). To ensure that the benchmark does not subsume industry average returns, we orthogonalize the benchmark factors with respect to industry.

We first establish some baseline results in the sample based on prior findings. There is a large literature showing that insiders' trades in their own stock are profitable (see Lorie and Niederhoffer, 1968, Jaffe, 1974, Seyhun, 1998, and Lakonishok and Lee, 2001, among many others). In Indian context too, Krishnan and Rangan (2016) find that insiders trade profitably in their own stock. More recently, Ben-David, Birru, and Rossi (2018) find that insiders also earn positive returns on stocks in their own industry relative to other stocks. We examine these results in our sample. Following the prior literature, we focus on buy transactions of insiders in our tests. Jeng, Metrick, and Zeckhauser (2003) argue that buy trades are more likely to be driven by information than sell trades because insiders sell shares to meet their liquidity needs or to achieve diversification. Similarly, due to the short sale constraints, an insider may not always be able to sell other stocks based on the negative information. However, she will always be able to buy other stocks based on the positive information. Thus, buy trades constitute a better setting to study information-based trading.

We find that, on average, insiders' purchases in their own stock earn abnormal profits of around 3% over the 3-month and around 5.9% over 6-month windows. This is consistent with prior literature. Next, we examine the profitability of other stocks, i.e., stocks that are not their own and compare the profitability of related stocks (identified as stocks in the same industry) to unrelated

other stocks. We find that on average, buys in related stocks are more profitable than buys in unrelated stocks, consistent with the information transfer explanation, though it is statistically significant only for the 6-month period. However, the nature of the information used to trade in own stock is more likely to be firm-specific whereas other stock trades are likely to be based on the industry-wide information. We, therefore, parse the overall abnormal profit from each trade into its two components – the average industry and the firm-specific components. We find that the average industry returns are significantly better for insiders' related trades relative to unrelated trades, over both 3- and 6-month windows. On the other hand, trades in own stocks appear to be based on firm-specific news.

We then examine the effect of good governance on the profitability of the different types of trades. While insider trading laws exist in most countries, it is difficult to enforce and, as noted earlier, there is evidence of profitable insider trading in the US and around the world. However, insider trading imposes significant costs to dispersed shareholders, and therefore governance mechanisms are likely to enforce the restrictions on insider trading. While governance will play a role in discouraging insider trading around the world, its role is more important in regimes where insider trading regulation or its enforcement is weak. Bhattacharya and Daouk (2009) argue that enforcement is key to the effectiveness of insider trading regulation. Thompson (2013), in a global comparison of insider trading regulations, notes that enforcement in India has been weaker compared to other developed markets. Thus, it particularly makes sense to look at the profitability of insiders' other trades conditional on governance in the Indian context.

Absent legal or governance related ramifications of insider trading, insiders would prefer to trade in their own stock for which they are likely to have more precise information. Yet, when faced

with restrictions because of good governance, they likely trade in related stocks using less precise industry information.

We use three measures of firm-level corporate governance – board independence, the fraction of foreign institutional investors, and the fraction of non-promoter institutional investors. For board independence, we divide insiders into two groups based on whether they have at least 50% of independent directors (better governance) versus less than 50% (poor governance). We find that insiders' ability to profit from trading in own stocks is lower for firms with better governance – significantly so over a 3-month window. This effect is driven by the firm-specific component of the abnormal return. On the other hand, insiders subject to stronger governance in their own firm earn significantly higher industry-specific returns in related stocks over the 3- and 6-month return windows. Insiders do not earn abnormal firm-specific returns for related stock, and this result is invariant to the level of governance. Thus, the insiders in better-governed firms seem to forgo opportunities to trade profitability in their own stocks but appear to use industry component of their information to trade profitably in related stocks.

Ferreira and Matos (2008) argue that, compared to domestic and related institutional investors, foreign and independent institutional investors are better monitors of the firms since they potentially have fewer business ties with the firm. So, we use a high fraction (higher than 75th percentile) of foreign institutional investors (FIIs) and non-promoter institutional investors in the insider's own firm as measures of good corporate governance. We find that for firms with weaker governance, insiders earn significantly higher firm-specific returns in their own stock. When faced with strong governance, insiders earn significantly higher industry returns on related stock. These results hold for both measures of institutional ownership. Taken together, our results show that the

strength of governance in the insiders' firms affects how they use their information advantage for personal trading gains.

Next, we examine the potential source of information advantage that insiders have when they trade in related stock. De Franco, Kothari, and Verdi (2011) argue that when accounting comparability between firms is high, information about one firm reduces the information gathering costs for the other firm. Since insiders have access to private information about their own firms, then can use this to infer information about related firms with comparable financials, at a relatively low cost. We therefore expect that insiders are likely to earn higher profits as the comparability with peer stocks increases. Using De Franco et al (2011) methodology for computing accounting comparability, we divide related stocks into two groups based on the median level of accounting comparability. We find that the abnormal profits for related stocks are driven by stocks with high accounting comparability and that profits from related stocks with low accounting comparability are not statistically distinguishable from profits earned on unrelated stocks. Thus, if the underlying information advantage is own firm news, then insiders would use it to trade in comparable stocks mainly when strict governance prevents them from using it for insider trading. Consistent with this intuition, we find that when own firm governance is high, insiders make abnormal profits on comparable stocks.

Our paper extends the literature on insider trading and more generally informed trading. The literature has almost exclusively focused on insiders' trades in their own stocks. A few recent papers examine insider trading from the angle of information spillover to other stocks (Ben-David, Birru, and Rossi, 2018; Johansson, 2017; Mehta, Reeb, and Zhao, 2015; Alldredge and Cicero, 2015). Our paper provides a mechanism for when information spillovers motivate insider

trades. When governance mechanisms limit insiders' ability to trade profitably in their own stocks, we find that they use the industry component of their information to trade in related stocks.

Our results have several important implications. First, insider trading restrictions or governance do not prevent insiders from profiting from their superior information; they only prevent them from doing so at the expense of their own shareholders. Second, we uncover an aspect of the opportunistic nature of insider trading. In the absence of deterrence for insider trading, they trade in their own stock maximizing their information advantage. However, when better governance discourages them from doing so, they use the industry component of their information to trade profitably in related stocks. Third, trading in related stocks may distort or minimize the effect of incentives provided by insider's own firm. Finally, we have identified another type of informed trader who could potentially improve stock price efficiency in capital markets - insiders in other stocks.

2. Data

Our broad approach to constructing our sample involves matching the reported insider trades to a detailed transaction level Bombay Stock Exchange (BSE) Trade Data. We first describe the reported insider trade data, then the BSE Trade Data and finally the matching process.

2.1 Insider trading data

Regulation 13 of the Prohibition of Insider Trading Act 1992 mandates that directors and officers and substantial shareholders in a listed Indian company report the trades in the stock of that company that are above a certain threshold, to the stock exchange. We obtain the scanned copies of these forms, which are uploaded in PDF format on the website of the BSE. The disclosure includes date of the transaction, insider's name, stock identifier, exchange where the trade was

executed, mode of acquisition or sale, number of shares transacted, total value of the trade (INR), and name of the broker executing the trade. We start with the filings where insider's name, date of transaction, number of shares and stock identifier are not missing.

We download all the insider trade filings from the BSE website, around 40,000 in number. An insider may report multiple transactions in a single filing. We use a PDF reader to extract 45,346 distinct transactions from the legible of these filings. Many filings deviate from the format specified by SEBI and follow custom formats which requires additional manual correction of the transformed PDFs. The filings can pertain to transactions other than a trade on an exchange such as allotment of shares under employee stock ownership plans, off-market transactions, and exercise of employee stock options. After the correction, we only retain secondary market insider trades executed on BSE because the transaction level data of all trades is only available for BSE. This results in 9,053 distinct transactions - 6,265 purchases and 2,788 sales.

2.2 BSE Trade Data

We use proprietary data about all the trades that have been executed on the BSE over a period of three years, from 2009 to 2011. The details include the date of the trade, stock identifier, number of shares, trade price, the order number of the seller, order number of the buyer, ids of the seller's and the buyer's brokers, client ids for the seller and the buyer. We can uniquely identify a trader based on the broker id - client id pair. The client and the broker ids are masked, and we cannot trace who they are. But, to the extent, an investor trades through the same broker, we can track her entire trading activity on BSE for our sample period. This feature is particularly valuable as it allows us to match insider trades more accurately to a trader, which is not possible using typical

publicly available transaction databases (for example, Inci, Lu and Sehyun, 2010, use the TAQ data to match to the reported insider trades).

2.3 Sample construction

We follow the approach in Khatri (2018) to match the reported insider trades to the BSE data. First, we identify all the traders in the BSE data that have traded in the insiders' own firm on the reported date. We separately aggregate the number of shares bought and the number of shares sold by each trader on the transaction day. We then match the daily aggregate number of shares bought to the reported buy trades and that of shares sold to the reported sell trades. We match the number of shares aggregated at the daily level for a trader to account for the possibility that investors may split their trades while executing but report the total number in the filings.

All the traders matched in this way to a reported transaction form the set of potential insider accounts. At this stage, there are three possible outcomes: a reported insider trade i) matches uniquely to an account, ii) matches to multiple accounts, or iii) does not match to any trading account. In case of a unique match, we attribute that trader account in the BSE data to the corresponding insider. 62.4% (5,648) of the 9,053 reported insider trades are matched uniquely to an account on BSE. Out of these unique matches, for the filings that mention the broker's name, we map the broker names to the broker ids in the BSE data. We find a consistent, one-to-one mapping between the broker names and the broker ids. This gives us further confidence in the quality of the match.

If the reported insider trade matches to multiple accounts but one of those accounts has been matched to that insider via a unique match on another day, we attribute the insider trade to that account. For example, Ms. I, an insider, reports that she bought 1,000 shares of Stock S on Day

D1. In BSE data, three traders, XA, XB and YC have bought 1,000 shares of Stock S on Day D1. However, Ms. I has reported another trade for Day D2 which has been uniquely matched to trader XA. Then, we attribute the trade by Ms. I to trader XA for Day D1 as well. While this approach does not result in mapping more insiders to traders in the BSE data than those identified through a unique match, it reaffirms the accuracy of the unique matches.

If out of the multiple matches, no trader has been matched uniquely to that insider on another day, and a broker name is mentioned in the filing, we check if there is a unique match based on the broker. For this, we use the mapping of broker names and broker ids created using unique matches as described above. Again, suppose that Ms. I's trade of 1,000 shares in Stock S on D1 matches to XA, XB and YC but none of these accounts are uniquely matched to Ms. I on another day. For these account ids, suppose that the first letters (X and Y) stand for broker ids and the second (A, B and C) for client ids. Ms. I's filing mentions a Broker B who is mapped to broker id Y based on unique matches for other insiders. Then, since there is a unique match based on the broker for this trade, we map account YC to Ms. I.

The trades with multiple matches that cannot be mapped to a BSE trader based on either of the above approaches are not part of our final sample. Further, around 15% of the reported trades do not have a single match to any trader account in the BSE data on the day of the reported transaction. One possible reason could be that the insider split the reported trade across multiple accounts with the same broker or across different brokers. Another reason could be possible errors in reported date and exchange on which the trade took place.

Table 1 reports the descriptive statistics of reported and matched trades. Overall, 76% of reported trades (6,861 out of 9,053) and 73% of the reporting insiders (1,232 out of 1,683) are mapped to

an account in the BSE data. This match percentage is much higher than that achieved in Geczy and Yan (2006) and Inci, Lu and Sehyun (2010).

Once a trader account in the BSE data is mapped to an insider, we track all the trading through this account, enabling us to identify trades by insiders in stocks other than their own. Overall, we have 86,094 total trades – 6,861 in own stocks and 79,233 in other stocks. There are 46,651 buy trades (41,835 in other stocks) and 39,443 sell trades (37,398 in other stocks). We aggregate each insider’s multiple trades in each stock on a day into a single observation, trim extreme observations at 0.1 and 99.9 percentiles and match the stocks to the CMIE’s Prowess Database to get information about the characteristics of the stocks and returns. After these steps, we are left with 33,820 observations for net purchases and 26,307 for daily net sales. Table 2 provides further break up of these transactions into own and other trades. It also provides descriptive statistics for the trades in our sample. Over our sample period, an average insider has 13 purchases and 6 sales of her own stock and 43 purchases and 38 sales of other stocks.¹

3. Informativeness of insiders’ other trades

First, to establish the baseline, we examine if, in our sample, insiders can trade profitably in their own stocks as well as related stocks.

We calculate abnormal returns for each trade using the approach in Daniel et al. (1997). In particular, each day we construct 125 portfolios by sorting the universe of the stocks based on quintiles of industry-adjusted log market capitalization, industry-adjusted book-to-market ratio, and industry-adjusted momentum. Next, the DGTW-adjusted return for a stock is calculated by

¹ From our sample, we exclude an insider who made large seemingly distressed sales because the insider’s whose family was involved in a high-profile corruption case.

subtracting from the stock's buy-and-hold return the value-weighted buy-and-hold return for the portfolio to which the stock belongs. We calculate DGTW-adjusted returns for 3-month and 6-month horizons. We industry-adjust all the characteristics because we want to separately examine if the profitability of insiders' other trades is driven by the industry-specific or firm-specific component of returns. We calculate the industry-specific component of abnormal return for a stock as the average of all DGTW-adjusted returns for all the stocks in that industry. The firm-specific component is the stock's DGTW-adjusted return minus the industry DGTW-adjusted return described above.

Our regressions include insider fixed effects to control for individual insider's stock-picking ability. The standard errors are clustered at the stock-day level where the dependent variable is a stock's DGTW-adjusted return or the firm-specific component of DGTW-adjusted return. They are clustered at the industry-day level where the dependent variable is abnormal industry return.

Table 3 presents baseline results where we examine the profitability of insiders' trades in their own stock and related stocks. Consistent with prior literature, (for example, see Jeng, Metrick, and Zeckhauser, 2003), we find that insiders' purchases of their own stock are profitable but not sales. Thus, insiders don't seem to have an information advantage while selling their own stock, possibly because insiders sell shares to meet their liquidity needs or to achieve diversification. Similarly, we see that insiders' related purchases are profitable, but related sales are not. Given that we are interested in the information spillover of insider's information, we focus on their purchases for the rest of the paper.

In Table 4, we separately examine if the profitability of the trades is coming from the industry-wide component of returns or firm-specific component. Interestingly, the profitability of purchases

on own stock comes entirely from firm-specific component while the profitability of purchases of related stocks comes entirely from the industry-wide component. These results are consistent with the hypothesis that the spillover of insiders' information advantage into the other stocks in the same industry is driven by the industry-specific component of the information.

The results so far broadly confirm the findings in Ben-David, Birru, and Rossi (2016), who document that insiders trade in stocks in their own industry are profitable. Next, we examine if the profitability of insiders' trades varies depending on the governance at her own firm.

4. Corporate governance and related trades

The role of corporate governance is to monitor managers and align their incentives so that they act in the best interest of the shareholders. If managers exploit their private information by trading in their own firm's stock, they benefit at the expense of other shareholders. Then, as Dai et al. (2016) argue, corporate governance is likely to restrict managers' ability and incentive to engage in insider trading. Indeed, Ravina and Sapienza (2010) find that the profitability of directors' trades is lower for the firms with strong governance. Results in Jagolinzer et al. (2011) suggests that strong internal control processes are able to deter informed trading by the insiders.

If strong corporate governance discourages insiders from trading in their own stock, they may choose the next best alternative to exploit their information – trading in the stocks of related firms. Indeed, our results so far and those in Ben-David, Birru, and Rossi (2016) show that insiders do have information advantage about the other firms in the same industry. Thus, we test the hypothesis that insiders in firms with strong corporate governance trade less profitably in their own stocks but more profitably in related stocks. Further, we expect that the profitability of the related trades is driven by the industry-level component of the information.

Large literature, surveyed in Bebchuk and Weisbach (2010), has empirically demonstrated the effectiveness of board independence as a mechanism of corporate governance. Ferreira and Matos (2008) examine institutional ownership and various aspects of firm performance across 27 countries. They conclude that foreign and independent institutional investors do a better job monitoring the firm since they are less likely to have other business relationships with the firm. Motivated by this evidence, we measure corporate governance in three ways – the fraction of independent board members, the fraction of foreign institutional ownership and the fraction of non-promoter institutional ownership.

Specifically, we define an indicator variable “Ind Board” which takes the value of 1 if the fraction of independent board members in the insider’s own firm is greater than or equal to 50%. We augment the specification in Table 4 by interacting “Ind Board” with the indicator variables for own and related trades. Again, we examine industry-wide returns as well as firm-specific returns. Table 5 presents these results. We see that own trades generate significantly positive idiosyncratic returns when the insider’s own firm is poorly governed. The coefficient for indicator variable “Own” for firm-specific return is 5.35% and 7.77% over 3 and 6 months respectively. However “Own*Ind Board” is negative – -3.68% and statistically significant over 3 months and -1.7% over 6 months. This means that when an insider’s firm is well governed, the profitability of her trades in her own stocks is lower. This evidence is consistent with the findings in Ravina and Sapienza (2010) and Dai et al. (2016). Our results further show that this effect is driven primarily by idiosyncratic return.

Table 5 also shows that insider’s related trades are not significantly profitable when her firm is poorly governed. The coefficient for the variable “Related” is not statistically significant. But the profitability due to industry-wide return improves significantly when the insider’s firm is better

governed. The coefficient “Related*Ind Board” positive and significant, generating 1.02% over 3 months and 1.86% over 6 months in industry-wide returns.

These results taken together support the notion that that better governance at insider’s firm deters information-based trading by her in her own stock. In that case, the insider successfully exploits her information advantage by trading in the stocks in the same industry using the common, industry-wide component of the information.

In Table 6 we use the fraction of ownership by foreign institutional investors (FII) as a measure of better governance. The indicator variable “High FII” is set to 1 if the fraction of FII ownership is higher than 5 percent. Again, we find that insiders’ trades in their own stock earn higher idiosyncratic returns when their firm is poorly governed. But this profitability is lower for well-governed firms. The coefficient for “Own*High FII” is negative and significant for 6-month firm-specific returns. Similar to Table 5, an insider’s trades in related stocks earn significantly higher industry-wide returns, when her firm is better governed. The magnitude is 0.6 % over 3 months and 1 % over 6 months. The results are robust to using an alternate cut-off of 10 percent for high foreign institutional ownership (un-tabulated).

We repeat the analysis with the variable “High NPII” as the measure of governance. It is 1 when the fraction of ownership by non-promotor institutional investors (NPII) is higher than 5 percent. These results are tabulated in Table 7. We observe consistent results for an alternate cut-off of 10 percent for high non-promoter institutional ownership as well (un-tabulated). The results are similar to those in Tables 5 and 6. Better governance is associated with the reduced profitability of own trades via lower idiosyncratic return and improved profitability of related trades due to higher industry-wide returns.

4. Mechanism

The results so far establish that when the insiders' own firm is better governed, their trades in related stocks are more profitable. There are two possible interpretations of this result. One is that when own firm is better governed the cost of trading in own stock are higher for insiders. So they choose the second-best alternative and trade on their information using related stocks. We call this explanation "information spillover effect". It is useful to note that good governance in the related firm does not impose additional costs of trading on the insider and they can still trade profitably in related stocks using their superior information. However, an alternative interpretation is that opportunities for profitable trades are limited when the *traded* stock has better governance. This may be because there is greater transparency for the better-governed firms and so there is less private information to exploit. Thus, when the own firm is better-governed there is less profit to be made by trading in it. But related stocks could be better- or worse-governed. Hence, on an average, there are more profitable trading opportunities in related stocks when the own firm is better-governed. We call this explanation "governance of the traded stock" effect. To disentangle these two effects, we create a subsample where the other stocks in which the insider trades has same level of governance as the insider's own firm. This approach allows us to control for differences in governance between the insiders' own firm and related firms. We describe the specifics below.

In the previous section, we categorize insiders' firms into high or low governance bucket based on three measures- fraction of independent board members, fraction of foreign institutional investors and fraction of non-promoter institutional investors. We employ the same cut-offs to categorize all the other (non-own) firms in which an insider has traded. Hence, first, we create governance based indicator variables, namely "Ind Board", "High FII" and "High NPII" for non-own firms for all

insiders. Second, we construct a subsample of all the trades by insiders where insiders' own firms' governance indicators have the same value as that of the non-own firms. For example, if insider's firm has an independent board and this insider trades in another firm which also has an independent board, we retain this trade in the subsample.

Effectively, by restricting the related stocks to be subject to the same level of governance as the insider's own firm, we control for the governance effect. If the results in Table 5, Table 6 and Table 7 are driven by the "governance of the traded stock" effect, we expect those results to vanish for this subsample. However, if our prior results persist in this subsample, we can infer that the results are at least partially driven by the "information spillover effect".

We re-run the model in Section 3 using the governance-controlled sub-sample. In untabulated results, we continue to find that insiders earn lower idiosyncratic returns on own-stock trades when their own firm is better-governed. Further, we again find that, when the own-firm is better governed, the insiders earn higher industry returns on the trades of related firms, even though these related firms are also now better-governed. The findings are consistent across all the three measures of corporate governance. The magnitudes are 1.42%, 1% and 0.7% over 6 months for governance measures based on board independence, fraction of foreign institutional investors and fraction of non-promoter institutional investors respectively. These results support the predictions of the information spillover effect.

5. Information Source

Insiders could get valuable information about related stocks through two alternative channels. First, as part of competitive intelligence gathering, they may acquire information about their peer firms. Under such a scenario, insiders could trade on peer-specific information regardless of their

own firm governance. Second, they could infer peer information from their own information. The noise in the peer firm information depends on the extent of comparability between the insider's own firm and the peer firm. Under this second source of information, the information provides news primarily about the insider's own firm and noisily about a peer firm. Therefore, the first choice for the insider would be to trade in their own stock based on the information and insiders will use the information to trade on related stocks only when strict governance precludes insider trades. The transferability of information from own stock to the peer firm would depend on the accounting comparability between the two firms (De Franco et al. 2011).

We measure accounting comparability between the insider's own firm and all other related stocks and sort them into two groups based on the median level of comparability. We first expand the specification in Table 4 for the 6-month window by interacting *Related* with *High Acctg Comp*. This interaction term would capture the incremental profitability of trades in related firms with an above-median comparability with the insider's own stock. The results are reported in Table 8. We find that all of the significant abnormal industry returns are concentrated in the high accounting comparability firms and low comparability firms are no more profitable than unrelated firms. Therefore, to avoid creating too many stock categories, we combine low accounting comparability related firms with other unrelated firms and they are captured in the intercept.

We next examine the effect of own firm governance, measured as independent boards, on the profitability from trading in high accounting comparability firms. The results are reported in Table 9. While we find that firms make positive significant industry returns from trading in high accounting comparability firms when their own firm governance is low, there is an incremental positive return from trading in these stocks when own firm governance is high. Interestingly we find that firms-specific returns are positive significant for high accounting comparability firms and

this is likely because the insider is able to predict some idiosyncratic news when accounting comparability is high.

6. Conclusion

This study investigates the profitability of trades by insiders in stocks where they are not insiders. We put together a unique dataset from India that combines hand-collected insider trade filings and a proprietary database of all trades on the Bombay Stock Exchange. We find that insider purchases of stocks in the same industry as her own stock are profitable over 3- and 6-month horizons. This profitability is primarily driven by industry-specific component.

Our results further show that, for insiders in better-governed firms, the profitability of own trades is lower while that of related trades is higher. The first effect is due to idiosyncratic return while the second is due to industry-wide return. As governance deters insiders from trading on information in their own stock, they trade in stocks in the same industry to exploit the industry-specific component of their information advantage. We also find that the insiders likely get their information advantage by applying their own stock information to related firms with high accounting comparability with their own stock.

Our results emphasize the limitation of insider trading regulation as well as corporate governance in preventing insiders from exploiting their information advantage. It highlights the trade-off insiders face – whether to take advantage of superior information but violate the insider trading norms or to use noisier, industry-level information to trade in related stocks. We find that the insiders resolve this trade-off differently based on the implicit cost of trading in their own stock which, in turn, depends on how well-governed their own firm is.

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TABLE 1: Reported Insider Trades in Own Stock

This table represents information on the trades by firm insiders in the stocks of their own firm. The column “*Reported*” shows the numbers for the trades executed on and reported to the Bombay Stock Exchange by the insiders. The column “*Matched*” shows the numbers for a subset of those trades identified in the BSE trade data. *Number of firms* reports the number of distinct firms to which the insiders belong.

Variable	Reported	Matched
Number of total trades	9,053	6,861
Number of buy trades	6,265	4,816
Number of sell trades	2,788	2,045
Number of firms	724	620
Number of insiders	1,683	1,232

TABLE 2: Identified Trades by Firm Insiders

This table represents the information on all the trades through the accounts of identified firm insiders. Panel A presents the total number of trades and stocks. Panel B presents the descriptive statistics for the trades. *P5* and *P95* depict the values for 5th and 95th percentile respectively.

Panel A: Total Number of Trades and Unique Stocks

Variable	
Total number of trades by insiders	60,127
Total number of purchases by insiders	33,820
Total number of sales by insiders	26,307
Total number of firms in which insiders trade	2,093
Number of own firm trades by insiders	13,193
Number of own firm purchases by insiders	9,434
Number of own firm sales by insiders	3,759
Number of own firms of insiders	568
Number of other firm trades by insiders	46,934
Number of other firm purchases by insiders	24,386
Number of other firm sales by insiders	22,548
Number of other firms for insiders	2,536

Panel B: Descriptive Statistics for Trades by Insiders

Variable	Mean	StdDev	Median	P5	P95
Number of trades per insider	52	232	12	1	186
Number of own firm purchases per insider	13	27	4	1	44
Number of own firm sales per insider	6	11	3	1	26
Number of other firm purchases per insider	43	184	8	1	156
Number of other firm sales per insider	38	146	8	1	139
Transaction value of trades per insider (INR)	10,900	82,500	471	31	25,500
Transaction value of own firm purchases per insider (INR)	9,965	68,200	389	13	16,600
Transaction value of own firm sales per insider (INR)	29,100	2,13,000	1,115	44	89,500
Transaction value of other firm purchases per insider (INR)	1,689	12,700	163	8	3,183
Transaction value of other firm sales per insider (INR)	2,201	13,200	172	10	3,637

TABLE 3: Profitability of Insider Own Stock and Other Trades

This table presents the test results for whether profitability of the trades by firm insiders depends on the relatedness of the traded stocks to their own firms. Dependent variables are the buy and hold stock returns over 3 and 6 months for trades by firm insiders. The returns are adjusted against a benchmark developed using a characteristic-based benchmark method used in Daniel et al. (1997). “*Own*” is an indicator variable that takes a value of 1 if the stock is insider's own firm stock and 0 otherwise. “*Related*” is an indicator variable that takes the value of 1 if the traded firm belongs to the same industry group as that of the insider's own firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors clustered at the stock-day level are in parentheses.

	Purchase		Sale	
	3-month	6-month	3-month	6-month
Own	0.0296*** (0.00584)	0.0586*** (0.00855)	-0.0118 (0.00753)	-0.0169 (0.0103)
Related	0.00270 (0.00476)	0.0191*** (0.00684)	-0.0131** (0.00513)	-0.0237*** (0.00747)
Constant	-0.0194*** (0.00207)	-0.0443*** (0.00298)	0.0178*** (0.00183)	0.0367*** (0.00268)
Insider Fixed Effects	Yes	Yes	Yes	Yes
No. of Observations	33,823	33,823	26,305	26,305
R-squared	0.134	0.165	0.122	0.145

TABLE 4: Profitability of Insider Own Stock and Other Trades: Return Decomposition

This table shows regression of industry abnormal return and firm-specific abnormal returns for trades by insiders. The returns are benchmark adjusted using methodology in Daniel et al. (1997). "Own" is an indicator variable that takes a value of 1 if insider trades in her own firm. "Related" is an indicator variable which takes a value of 1 if the insider trades in a related firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. They are clustered at the stock-day level for firm-specific return regressions and at the industry-day level for the industry return regressions.

VARIABLES	3-month industry return	6-month industry return	3-month firm-specific return	6-month firm-specific return
Own	-0.00325** (0.00140)	-0.00272 (0.00208)	0.0336*** (0.00574)	0.0624*** (0.00820)
Related	0.00316*** (0.00122)	0.00744*** (0.00171)	-0.000139 (0.00468)	0.0122* (0.00664)
Constant	1.007*** (0.000838)	1.017*** (0.00120)	-1.027*** (0.00205)	-1.062*** (0.00292)
Insider fixed effects	Yes	Yes	Yes	Yes
No. of Observations	33,823	33,823	33,823	33,823
R-squared	0.204	0.219	0.128	0.154

TABLE 5: Profitability of Insider Own Stock and Other Trades: Board Independence

This table shows regression of industry abnormal return and firm-specific abnormal returns for trades by insiders. The returns are benchmark adjusted using methodology in Daniel et al. (1997). “*Own*” is an indicator variable that takes a value of 1 if insider trades in her own firm. “*Related*” is an indicator variable which takes a value of 1 if the insider trades in a related firm. “*Ind Board*” is an indicator variable that is 1 if the fraction of independent board members in the insider’s own firm is greater than or equal to 50%. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. They are clustered at the stock-day level for firm-specific return regressions and at the industry-day level for the industry return regressions.

VARIABLES	3-month industry return	6-month industry return	3-month firm-specific return	6-month firm-specific return
Own	-0.00220 (0.00174)	-0.00334 (0.00271)	0.0535*** (0.00780)	0.0777*** (0.0109)
Own* Ind Board	-0.000588 (0.00222)	0.00355 (0.00334)	-0.0368*** (0.00944)	-0.0170 (0.0137)
Related	-9.28e-05 (0.00136)	0.00169 (0.00195)	-0.00321 (0.00600)	0.0101 (0.00833)
Related* Ind Board	0.0102*** (0.00204)	0.0186*** (0.00298)	0.00707 (0.00970)	0.00869 (0.0137)
Ind Board	-0.000816 (0.00147)	-0.000389 (0.00219)	-0.0274*** (0.00632)	-0.0269*** (0.00871)
Constant	1.007*** (0.000784)	1.016*** (0.00118)	-1.016*** (0.00345)	-1.053*** (0.00477)
Insider fixed effects	Yes	Yes	Yes	Yes
No of observations	31,705	31,705	31,705	31,705
R-squared	0.204	0.220	0.136	0.163

TABLE 6: Profitability of Insider Own Stock and Other Trades: FII Ownership

This table shows regression of industry abnormal return and firm-specific abnormal returns for trades by insiders. The returns are benchmark adjusted using methodology in Daniel et al. (1997). “*Own*” is an indicator variable that takes a value of 1 if insider trades in her own firm. “*Related*” is an indicator variable which takes a value of 1 if the insider trades in a related firm. “*High FII*” is an indicator variable that is 1 if the fraction of shares owned by the foreign institutional investors (FII) in the insider’s own firm is greater than 5 percent. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. They are clustered at the stock-day level for firm-specific return regressions and at the industry-day level for the industry return regressions.

VARIABLES	3-month industry return	6-month industry return	3-month firm-specific return	6-month firm-specific return
Own	-0.00371*** (0.00140)	-0.00354* (0.00210)	0.0321*** (0.00608)	0.0715*** (0.00879)
Own* High FII	0.00201 (0.00286)	0.00417 (0.00442)	0.00782 (0.0167)	-0.0615*** (0.0225)
Related	0.00157 (0.00124)	0.00493*** (0.00175)	-0.00430 (0.00556)	0.00718 (0.00781)
Related* High FII	0.00600*** (0.00204)	0.00986*** (0.00312)	0.0132 (0.0102)	0.0184 (0.0145)
High FII	0.00298 (0.00219)	0.00605* (0.00317)	-0.0303*** (0.0103)	-0.0394*** (0.0140)
Constant	1.007*** (0.000649)	1.016*** (0.000980)	-1.021*** (0.00291)	-1.055*** (0.00407)
Insider fixed effects	Yes	Yes	Yes	Yes
No of observations	33,637	33,637	33,637	33,637
R-squared	0.205	0.220	0.129	0.156

TABLE 7: Profitability of Insider Own Stock and Other Trades: Non-promotor Institutional Ownership

This table shows regression of industry abnormal return and firm-specific abnormal returns for trades by insiders. The returns are benchmark adjusted using methodology in Daniel et al. (1997). “*Own*” is an indicator variable that takes a value of 1 if insider trades in her own firm. “*Related*” is an indicator variable which takes a value of 1 if the insider trades in a related firm. “*High NPII*” is an indicator variable that is 1 if the fraction of shares owned by the non-promoter institutional investors (NPII) in the insider’s own firm is greater than 5 percent. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. They are clustered at the stock-day level for firm-specific return regressions and at the industry-day level for the industry return regressions.

VARIABLES	3-month industry return	6-month industry return	3-month firm-specific return	6-month firm-specific return
Own	-0.00439*** (0.00155)	-0.00385* (0.00232)	0.0288*** (0.00661)	0.0687*** (0.00963)
Own* High NPII	0.00387 (0.00249)	0.00393 (0.00384)	0.0179 (0.0123)	-0.0231 (0.0173)
Related	0.00108 (0.00131)	0.00467** (0.00185)	-0.00652 (0.00583)	0.00557 (0.00820)
Related* High NPII	0.00657*** (0.00198)	0.00921*** (0.00298)	0.0188* (0.00982)	0.0217 (0.0138)
High NPII	0.00367 (0.00229)	0.00869** (0.00344)	0.00847 (0.0112)	-0.00256 (0.0155)
Constant	1.006*** (0.000814)	1.014*** (0.00124)	-1.029*** (0.00380)	-1.062*** (0.00533)
Insider fixed effects	Yes	Yes	Yes	Yes
No of observations	33,637	33,637	33,637	33,637
R-squared	0.206	0.221	0.129	0.155

TABLE 8: Profitability of Insider Own Stock and Other Trades: Accounting Comparability

This table shows regression of industry abnormal return and firm-specific abnormal returns for trades by insiders. The returns are benchmark adjusted using methodology in Daniel et al. (1997). “*Own*” is an indicator variable that takes a value of 1 if insider trades in her own firm. “*Related*” is an indicator variable which takes a value of 1 if the insider trades in a related firm. “*High Acctg Comp*” is an indicator variable which takes a value of 1 if the accounting comparability between the insider’s own firm and the related firm is above median. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. They are clustered at the stock-day level for firm-specific return regressions and at the industry-day level for the industry return regressions.

VARIABLES	(1) 6 month industry return	(2) 6 month firm-specific return
High Acctg Comp x Related	0.0145*** (0.00262)	0.0110 (0.0122)
Related	-0.000760 (0.00221)	0.00685 (0.0103)
Own	-0.00280 (0.00194)	0.0617*** (0.00810)
Constant	1.017*** (0.000699)	-1.062*** (0.00291)
Insider Fixed Effects	Yes	Yes
Observations	33,553	33,553
R-squared	0.220	0.154

TABLE 9: Profitability of Insider Own Stock and Other Trades: Accounting Comparability and Independent Board

This table shows regression of industry abnormal return and firm-specific abnormal returns for trades by insiders. The returns are benchmark adjusted using methodology in Daniel et al. (1997). “*Own*” is an indicator variable that takes a value of 1 if insider trades in her own firm. “*High Acctg Comp*” is an indicator variable which takes a value of 1 if the accounting comparability between the insider’s own firm and the related firm is above median. “*Ind Board*” is an indicator variable that is 1 if the fraction of independent board members in the insider’s own firm is greater than or equal to 50%. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. They are clustered at the stock-day level for firm-specific return regressions and at the industry-day level for the industry return regressions.

VARIABLES	(1) 6 month industry return	(2) 6 month firm-specific return
High Acctg Comp	0.0127*** (0.00241)	0.0302*** (0.0101)
Ind_Board x High Acctg Corr	0.00821** (0.00364)	-0.0239 (0.0167)
Own	-0.00309 (0.00258)	0.0875*** (0.0103)
Ind_Board	-0.00584 (0.00462)	-0.0119 (0.0201)
Constant	1.016*** (0.000711)	-1.064*** (0.00304)
Insider fixed effects	Yes	Yes
No. of Observations	31,477	31,477
R-squared	0.220	0.162