Do foreign institutional investors follow and exploit information content of insiders' trade in emerging markets?[1]

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Abstract

We examine the information content of opportunistic and routine insiders' buy and sell stock trades in emerging market (EM) and test whether foreign institutional investors (FIIs) exploit such information and themselves contribute to insiders' trade. Using insiders trading data in the Indian emerging market, our empirical examination reveals that opportunistic insiders' trading earn significant abnormal returns compared to routine insiders' trading. Importantly, exploiting a unique trade-level transaction data we find that FIIs follow past opportunistic insiders' buy trades and earn superior abnormal returns on these trades. Finally, our results also reveal that FIIs themselves contribute liquidity to contemporaneous insiders' routine trades.

Keywords: Opportunistic and Routine Insiders' Trading; Information Content; Abnormal Return; Foreign Institutional Investors; Mimicking; Liquidity.

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1 Introduction

A growing body of literature related to information content of insider trading has turned their attention towards distinguishing *opportunistic* versus *routine* trading of insiders. These studies mostly focus on developed markets and show that opportunistic trading of insiders is informative about firm's future prospects whereas routine trading is not. As a result, the opportunistic trading based information could be exploited to generate higher abnormal returns compared to non-informative routine trading (Cohen, Malloy and Pomorski, 2012). In this study we argue that the information content of insider trading in emerging markets (EM) could be more valuable compared to developed markets as the former markets are characterized with higher degree of informational inefficiency, macro and micro opaqueness, ownership concentration, and lax enforcement of insider trading regulations (see Khanna and Palepu, 2000; Bhattacharya and Daouk, 2002; Lins, 2003; Allen, Qian and Qian, 2005; Gelos and Wei, 2005; Khwaja and Mian, 2005; Douma, George and Kabir, 2006; Bhaumik and Selarka, 2012). These characteristics also imply that foreign institutional investors (referred to as FIIs hereafter) in emerging markets are argued to face greater degree of information asymmetry challenge in EM compared to domestic institutional investors (referred to as DIIs hereafter) and FIIs in the developed markets (see Brennan and Cao, 1997; Hau, 2001; Choe, Kho and Stulz, 2005; Dvořák, 2005).

Given the possibility of high predictive ability of opportunistic insiders' trading and the information disadvantage of FIIs, we examine the characteristics of insider trading in emerging markets and their link with FIIs' trading. Specifically, our study investigates four key issues. First, we scrutinise whether the opportunistic and routine insiders' trade affects the abnormal returns associated with these trades. Second, we test whether FIIs trade in the same direction as past opportunistic insiders, labelled as "mimicking hypothesis". Thirds, we investigate whether FIIs, who follow insiders' opportunistic trades, earn superior abnormal return. Finally, we also examine whether FIIs themselves provide liquidity to contemporaneous routine insiders' trades, coined as the "liquidity hypothesis".

Classifying insiders' trading into routine and opportunistic insiders' trading and using granular trading level data of FIIs in the Indian emerging market, our study reports the following findings. First, the investigation on the information content of routine and opportunistic insiders' trade show that the cumulative abnormal returns (CARs) associated with opportunistic insiders' buy trades is higher than routine insiders' buy trades. Likewise, we find that the negative CARs for opportunistic insiders' sell transaction is generally lower than routine insiders' sell transaction (at least in 1-20 event period). We also find that the only past opportunistic insiders' buy and sell trades (not routine) predict the future abnormal stock returns.

Second, our results reveal that FIIs' trading are significantly and positively related to past opportunistic insiders' buy trades. We find that FIIs follow opportunistic insiders' buy trades within 15 days after the disclosure. Further, the investigation on the trading behaviour who mimic opportunistic insiders' trades reveals that compared to the comparable control firms (in which insiders do not trade), FIIs trade of the treatments firms (comparable firms in which insiders trade) is immediate and in the same direction as that of opportunistic insiders' buy transactions.

Third, the examination of abnormal returns related to FIIs' trade show that the CARs based on opportunistic insiders' buy trades of the treatment group (comparable firms in which insiders trade) is significantly higher than that of the control group (comparable firms in which insiders do not trade). Likewise, we find that the CARs on opportunistic insiders' sell transactions of treatment group is significantly lower than the CARs of control group, although only observed for a small window periods (1-5 and 1-20 days).

Finally, to examine whether FIIs provide liquidity to contemporaneous insiders' trades, we regress the FIIs' net equity trading (scaled by previous day's shares outstanding) on the contemporaneous opportunistic and routine insiders' trade (i.e. traded shares on the actual trading day scaled by previous day's shares outstanding). Our results reveal that FIIs themselves provide liquidity to both contemporaneous routine insiders' buy and sell trades.

Given the findings, our study makes a number of contributions to the literature. First, we add to the literature on insiders' trading in emerging markets. Despite the large body of literature analysing the information content in US, UK and other developed markets, surprisingly, there is lack of empirical evidence on the informativeness of insiders' trading in emerging market. Fernandes and Ferreira (2008) suggest that insiders' trading plays important role in emerging market and is a useful source of new information. Bhattacharya *et al.* (2000) and Bhattacharya and Daouk (2002) suggest that the lack of presence of strict insider trading regulations as well as the lower probability of persecution in emerging markets encourages insiders to trade based on private information. Since emerging markets do not behave in same way as developed markets[1], examination of informativeness of insiders' trading becomes more relevant in such markets.

Second, to the best of our knowledge, our study is first to segregate the information content of insider trading in an emerging market into routine and opportunistic trading. Most of the earlier studies analyse the characteristics and trading behaviour in developed countries to distinguish insiders' trading motivated by liquidity needs or private information (Rozanov, 2008; Cohen, Malloy and Pomorski, 2012; Cziraki, De Goeij and Renneboog, 2013; Tirapat

[1] Due to informational inefficiencies, higher degree of micro and macro market opaqueness, higher concentrated and cross-holding ownership, and less stringent enforcement of regulations. (See Khanna and Palepu (2000), Bekaert and Harvey (2002), Lins (2003), Allen, Qian and Qian (2005), Gelos and Wei (2005), Khwaja and Mian (2005), Douma, George and Kabir (2006), Bae *et al.* (2012) and Bhaumik and Selarka (2012))

and Visaltanachoti, 2013; Kraft, Lee and Lopatta, 2014). However, following the methodology of Cohen, Malloy and Pomorski (2012) we provide robust evidence of the superior information content of opportunistic insiders' trading over the routine insiders' trading in an emerging market setting.

Finally, the current literature focuses on outside investors' response to insiders' trades and generally finds they mimic the insiders' trades (Cornell and Sirri, 1992; Bettis, Vickrey and Vickrey, 1997; Chang and Suk, 1998). Cohen, Malloy and Pomorski (2012) provide anecdotal suggestive evidence that institutional investors may follow past opportunistic insiders' trades and may provide liquidity to contemporaneous routine insiders' trades. However, empirical evidence suggests that among various outside investors and institutional investors, FIIs in an emerging market face constraints of severe information asymmetry compared to their DII counterparts and FIIs in developed markets (Kang and Stulz, 1997; Choe, Kho and Stulz, 2005; Dvořák, 2005). As a result, insiders' trading in emerging market provides a vital source of superior information to FIIs. FIIs view opportunistic insiders' trading as an indication of superior information about the firm performance. However, to the best of our knowledge, there is no evidence whether informationally challenged FIIs in emerging markets actually respond to the disclosure of insiders' trading, particularly the opportunistic insiders' trading. Our study extends existing literature by documenting that FIIs' indeed respond to opportunistic insiders' trading and earn superior return.

Our study has implications for both FIIs and policymakers. The study provides valuable insights into FIIs' trading behaviour as the information content of opportunistic insiders' trading enable them to reduce the information asymmetry. More importantly, identifying opportunistic insiders' trading that possess information superiority would enable policymakers to clamp down large profits made by managers at the expense of the shareholders. The behaviour of FIIs in relation to the insiders' trading is also particularly important to the policymakers because FIIs are among the largest and most active (holds around 40% of freely floated shares) shareholders in India and play important role in security pricing, liquidity, cost of capital as well as corporate monitoring.

This study proceeds as follows. Literature review and the development of hypotheses are presented in Section 2. Section 3 discusses the dataset and provide summary of the variables. Empirical analysis and the associated robustness tests are discussed in Section 4 and finally Section 5 concludes the paper.

2 Related Literature and Hypothesis Development

2.1 Insider trading and abnormal return: Opportunistic vs. routine trading

The "information content" of insiders' trading literature contends that insiders' trading convey new information into the market, thereby resulting in positive abnormal returns following the disclosure of the trading. This strand of literature generally concur that stocks purchased by insiders earn positive abnormal returns but stocks sold by insiders either do not exhibit the same level of negative abnormal returns or do not earn abnormal returns at all (Lakonishok and Lee, 2001; Friederich *et al.*, 2002; Jeng, Metrick and Zeckhauser, 2003; Fidrmuc, Goergen and Renneboog, 2006).[2]

Recently, a growing sphere of related literature disentangles insiders' trading into routine and opportunistic insiders' trading based on the objective of the trading (see Rozanov, 2008; Cohen, Malloy and Pomorski, 2012; Cziraki, De Goeij and Renneboog, 2013; Khan and Lu, 2013; Tirapat and Visaltanachoti, 2013; Jia, Lent and Zeng, 2014; Kraft, Lee and Lopatta,2014;

[2] While Lakonishok and Lee (2001) and Jeng, Metrick and Zeckhauser (2003) analyse the longer-horizon abnormal returns (3 to 12 months), Friederich *et al.* (2002) and Fidrmuc, Goergen and Renneboog (2006) analyse the shorter-horizon abnormal returns (up to 5 to 20 days). This literature argues that share prices may adjust rapidly to the announcement of insiders' trades as stock markets are informationally efficient at least to some extent, hence, longer-horizon returns may not capture the immediate price reaction to such insiders' trades. As a result, our study focusses on the short-term return.

Reeb, Zhang and Zhao, 2014).[3] Cohen, Malloy and Pomorski (2012)[4] use the ex-ante identification and defines a trade as routine if the insider places a trade within the same calendar month for at least three preceding years and these trades are primarily executed for the sake of diversification and liquidity needs. All other trades are defined as opportunistic trades. They find that opportunistic trades yield higher abnormal returns relative to routine trades. Although evidence show that opportunistic insiders' trades can predict future abnormal return, routine trades do not contain any private information about firm and thus cannot predict future abnormal returns (Cohen, Malloy and Pomorski, 2012; Tirapat and Visaltanachoti, 2013; Kraft, Lee and Lopatta, 2014).[5]

These above noted evidences are largely based on the insiders' trading in developed markets with little evidence in the context of emerging markets. However, the information content of insider trading is agued to be more prominent in emerging markets compared to developed markets for the following two reasons. First, relative to their developed counterpart, emerging capital markets are characterized of being informationally less efficient (Bekaert and Harvey, 2002; Bae *et al.*, 2012), more opaque (Gelos and Wei, 2005) and are less stringent on the enforcement of securities and insider trading regulations (Khanna and Palepu, 2000; Allen, Qi an and Qian, 2005; Khwaja and Mian, 2005). For example, Bhattacharya and Daouk (2002) find that though one out of five emerging markets has insider trading law on the books, only

[3] Different studies uses different proxies of opportunistic trading. For example, Rozanov (2008) defines opportunistic insiders' trading as a trade by corporate insiders which is based on non-public information and uses the proxy coined as "PricePattern" to gauze the likelihood of insiders' opportunistic trade. The 'PricePatterm' is computed as (log of) the ratio of the market-adjusted gross return over 20 trading days following the insider transaction to the market-adjusted gross return over 20 trading days before the insider transaction. The high value of 'PricePattern' indicates increased likelihood of opportunistic insiders' trades. On the other hand, Tirapat and Visaltanachoti (2013) propose a framework to identify an opportunistic insiders' trades based on the measures of information asymmetry and speed of adjustment to market efficiency. Likewise, Kraft, Lee and Lopatta (2014) use exclusive trades as a proxy for opportunistic insiders' trades. Exclusive insiders' trades are those trades where only senior officers' trades with no other insiders' trades.

[4] Khan and Lu (2013), Jia, Lent and Zeng (2014), and Reeb, Zhang and Zhao (2014) all follow Cohen, Malloy and Pomorski (2012) for the classification of insiders' trading into the routine and the opportunistic insiders' trading.

[5] In this study, we follow Cohen, Malloy and Pomorski (2012) to classify insiders' trades into opportunistic and routine insiders' trades.

25 percent have had prosecutions related to insider trading. Consequently, despite the existence of insider trading laws, the lack of effective enforcement do not deter insiders to trade on private information (Bhattacharya *et al.*, 2000). Given the unlikely likelihood of prosecution and significant market opaqueness, the information content of insider trading could thus be argued to more valuable in emerging market.

Second, emerging markets firms generally operate in relatively poor investor protection environment with firms having concentrated and cross-holding ownerships structure with majority of the stakes held by founding families (Lins, 2003; Douma, George and Kabir, 2006; Bhaumik and Selarka, 2012). Such ownership structures ensure that the insiders have access to reliable private information that are not disclosed/leaked but could potentially be implied from insider trading. As a result, the trade of the insiders should convey material private information. Thus, based on the evidence on the informativeness of insiders' buy and sell transactions and the classification of opportunistic trades and routine trades, we develop the following set of benchmark hypotheses to be tested in the emerging market setting:

HYPOTHESIS 1:

(a) The CARs of opportunistic and routine insiders' buy trades is positive.

(b) The CARs of opportunistic and routine insiders' sell trades is negative.

(c) The absolute CARs of opportunistic insiders' buy trades is larger than that of opportunistic insiders' sell trades.

(d) The CARs of opportunistic insiders' buy (sell) trades is higher (lower) than that of the routine insiders' buy (sell) trades.

2.2 *Mimicking behaviour of FIIs*

Although there is a huge body of literature that focuses on the information content of insiders' trades and determines the excess returns based on the portfolio replicating these insiders' trades, there is paucity of empirical evidence on whether outside investors, and more so FIIs actually mimic these trades. Given evidence that opportunistic insiders' trades are able to predict superior abnormal return in the market compared to routine insiders' trades, it can be expected that outside investors should follow the trade of opportunistic insiders' transaction. For example, Cohen, Malloy and Pomorski (2012) provide suggestive evidence that institutional investors are aware of these informed insiders' trading and follow the past opportunistic insiders' trades. Based on such anecdotal evidence, we expect that FIIs, particularly in emerging markets, are likely to follow the trading of these opportunistic insiders. We back our prediction drawing on the following three reasons.

First, the informational disadvantage of FIIs over their domestic counterparts makes them trend followers (Brennan and Cao, 1997; Choe, Kho and Stulz, 1999; Griffin, Nardari and Stulz, 2004; Richards, 2005). Since FIIs do not have access to private information, past returns may contain signals about the private information of informed investors, such as those of opportunistic insiders (Wang, 1993). We argue that superior abnormal returns generated from the trading of opportunistic insiders are thus an important source of information when FIIs have less reliable public information and when the pace of information incorporation in prices is slow due to limited market efficiency. Second, as long as FIIs find it cost-effective to take a long (short) position, they will trade more following superior abnormal return earned immediately after the opportunistic insiders' trade. Third, it is well established that FIIs are momentum traders who buy following positive and sell after negative stock returns (Froot, O'Connell and Seasholes, 2001). Consequently, if the stock return is driven by the opportunistic insiders' trades, we would expect FIIs' trading to be positive (negative) following opportunistic insiders' buy (sell) trades. In light of these three arguments, we develop the following set of hypotheses:

HYPOTHESIS 2:

(a) FIIs trade in the same direction as past opportunistic insiders' buy trades.

(b) FIIs trade in the same direction as past opportunistic insiders' sell trades.

2.3 FIIs and CARs based on Insider Trading

The current empirical literature examining whether outside investors earn superior abnormal return by mimicking insiders' trades offers contradicting results. Earlier evidence by Seyhun (1986) and Rozeff and Zaman (1988) suggest that outsiders do not earn superior return by imitating insiders' trades. Bettis, Vickrey and Vickrey (1997), however, suggest that outside investors can earn profit, net of transaction costs, using publicly available insiders' trading information about large trades conducted by top executives. In a sense, these large trades by top executives could be driven by opportunities to exploit private information rather than their liquidity needs. For instance, Tirapat and Visaltanachoti (2013) report significant return for portfolio following the opportunistic insider buy compared to the market return. Similarly, Cohen, Malloy and Pomorski (2012) find that the portfolio strategy that solely focuses on the trades made by opportunistic traders earn large and significant returns while the portfolio strategy that solely focuses on the routine trades does not.

Thus, if opportunistic insiders' trades provide superior market reaction and if outside investors, such FIIs, trade in the same direction as the past opportunistic insiders' transaction, it is economically rational to contend that FIIs should benefit from their trading strategy. As put forward in the following set of hypotheses, we should expect a better return for a long strategy on shares bought by opportunistic insiders and for a short strategy on shares sold by opportunistic insiders.

HYPOTHESIS 3:

(a) *FIIs earn superior abnormal return on long stock strategy bought by opportunistic buyers.*

(b) FIIs earn superior abnormal return on short stock strategy sold by opportunistic sellers.

2.4 FII as liquidity provider to insider trading

Finally, we also examine the "liquidity hypothesis" proposed by Sias and Whidbee (2010) who suggest that the institutional demand is inversely related to the contemporaneous insiders' demand. They argue that given the relatively large size of the typical insider transaction, institutional investors themselves are in a much better position to provide liquidity for insiders to trade. Cohen, Malloy and Pomorski (2012) provide suggestive evidence that institutional investors themselves provide liquidity to contemporaneous routine trades. Based on the suggestive evidence by Cohen, Malloy and Pomorski (2012), we argue and test the following hypothesis which conjectures that FIIs in emerging markets themselves provide liquidity to contemporaneous routine trades of insiders.

HYPOTHESIS 4:

FIIs themselves provide liquidity to contemporaneous routine insiders' buy and sell trades.

3 Data and Summary Statistics

3.1 Data

Our database is drawn from several sources. The first set of database we obtain is the insiders' trading data from Bombay Stock Exchange (BSE) which is available publicly.[6] This database provides information on the firm identification (name and security code), acquirer name, the mode of trade (open market transactions, ESOP and gifts etc.), the quantity of trade, side of the trade (buy or sell), traded date, and reported date. Although the database reports the trading data 1990 onwards, almost 99.99% of transactions are conducted after 2004. As such, we do not consider trading data prior to 2004. We limit our analysis until the end of 2014 due to two reasons.

First, on 15th January 2015 Securities Exchange Board of India (SEBI) introduced a new "Prohibition of Insider Trading Regulations, 2015" repealing previous regulation established in 1992.[7] The new regulation significantly widened its definition of insiders, the scope of applicability, widened the restrictions on insiders with possession of unpublished price sensitive information, formulated the trading plan approved by the compliance officer, and broadened the monitoring obligations of the firm. Second, FIIs' equity trading was significantly affected by the tax threat on the incomes earned by FIIs that came to light in April 2015. Marshall *et al.* (2017) find that following the additional tax threat FIIs immediately withdrew from the market, which resulted in the disruptive effect on stock liquidity, volatility and prices. These two events could potentially affect the trading behaviour of both insiders and FIIs. Since the classification of insiders' trading requires the historical trading data by individual insiders for at least three years, our partitionable universe of insiders' trading ranges from 2007 to 2014.

We apply a number of well-established and standard filtrations to clean the data. First, following insiders' trading literature, we only focus on open market transactions excluding

[6] http://www.bseindia.com/corporates/Insider_Trading.aspx
[7] The regulation came into effect on 15th May 2015.

options exercises and private transactions. Second, Securities Exchange Board of India (SEBI) require every listed firm and director to disclose their interest or holdings as an initial disclosure under regulation 13(1) and 13(2) of *Prohibition of Insider Trading Regulations 1992*. Since the disclosure is not an outcome of the open market transaction we exclude them from our analysis. Third, we exclude any observations with a difference of more than 30 days between the reported date and the actual transaction date.[8] Fourth, the database lacks consistency with respect to the names of insiders. As a result, for each firm we ensure that the names of the traders are consistent throughout the sample.[9]

The second set of dataset we collect is the trading level data of FIIs from the SEBI endorsed National Securities Depository Limited (NSDL).[10] This database contains details of all the trading conducted by FIIs since 1st January 2003. It includes each transaction identification, scrip name, international security identification number, transaction date, transaction type (buy or sell), stock exchange traded, traded rate, quantity, value, and instrument types. Since the sample period of our study ranges from 2007 to 2014, we only include transaction data of FIIs during this sample period. 99.98% of all transactions are conducted on the BSE and National Stock Exchange (NSE), and 99.36% of all traded securities are equities. Our analysis is based on the purchase and sale of equities on NSE and BSE covering 99.34% of all transactions.

As we use event study analysis to evaluate the information content of insiders' trading, the third set of database we collect is the stock returns data from *Prowess* database, maintained by the *Centre for Monitoring Indian Economy* (CMIE). We use MSCI India Index return as a

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[8] 75% of insiders' trading transactions are reported within a week, 90% within 15 days and 95% within 30 days.
[9] We conduct exhaustive exercise to ensure the names of the insiders are consistent for each firm. For example, the name of insider could be entered as Mr. Harish Shetty or Harish Shetty or Harish Shety for a certain firm. We ensure that the name is consistent (such as Harish Shetty) for the firm throughout the insider universe. The exercise results in 14,003 unique insiders compared to 18,445 unique insiders before the correction.
[10] https://www.fpi.nsdl.co.in/web/StaticReports/FIITradeWise2008/FIITradeWise2008.htm

proxy for the market return which we source from Thomson Reuters' database. All other firm level characteristics are collected from the Prowess database.

3.2 Main Variable Definition and Construction

Our principal variables of interest are opportunistic and routine insiders' trading as the independent variables and FIIs' net equity trading as the main dependent variable. First, we follow Cohen, Malloy and Pomorski (2012) to classify insiders' trades into opportunistic and routine insiders' trades. For the classification, an insider must make at least one trade in each of three preceding years. A routine trader is an insider who places a trade in the same calendar month for at least three consecutive years. Otherwise, the trader is considered as an opportunistic. We thus classify an insider as either routine or opportunistic trader at the beginning of each calendar year. All the subsequent trades that are made once we classify each insider as either routine or opportunistic are then classified as (a) "opportunistic trades (*OT*)" and (b) "routine trades (*RT*)". Once classified and as shown in Equation 1 and 2, we calculate the OT and RT as the ratio of number of shares purchased minus number of shares sold by opportunistic (routine) insider *j* on day *t* of the firm *i* scaled by the previous day's number of shares outstanding of firm *i* (in basis point)*:*

$$OT_{j,i,t} = \frac{Number\ of\ shares\ bought_{j,i,t} - Number\ of\ shares\ sold_{j,i,t}}{Number\ of\ shares\ outstanding_{i,t-1}} \tag{1}$$

$$RT_{j,i,t} = \frac{Number\ of\ shares\ bought_{j,i,t} - Number\ of\ shares\ sold_{j,i,t}}{Number\ of\ shares\ outstanding_{i,t-1}} \tag{2}$$

$Opputnistic\ Trading$ $(OT_{j,i,t})$ is further classified into $Opportunistic\ Buy_{j,i,t}$ for positive value and $Opportunistic\ Sell_{j,i,t}$ for negative value. Similar is the case for $Routine\ Trading_{j,i,t}$ $(RT_{j,i,t})$. As a result of the classification each insider's trades are placed into one of four buckets: (a) "Opportunistic Buy", (b) "Opportunistic Sell", (c) "Routine Buy", and (d) "Routine Sell".

Second, we define FIIs' Net Equity Trading (*FNET*) as the ratio of number of shares purchased minus number of shares sold by FIIs in day *t* of the firm *i* scaled by previous day's number of shares outstanding of firm *i* (in basis point):

$$FNET_{it} = \frac{Number\ of\ shares\ bought_{i,t} - Number\ of\ shares\ sold_{i,t}}{Number\ of\ shares\ outstanding_{i,t-1}} \quad (3)$$

3.3 Summary Statistics

Table 1 presents the summary statistics for our sample. The table presents the overview of the entire universe of insiders' trading data as well as the partitionable universe of insiders' trading data for which we can define the "routine" and "opportunistic" trades. Panel A of Table 1 indicates that after the classification of insiders' trades into routine and opportunistic trades, our final sample (partitionable universe) represents about 28% of the entire sample of insider transactions. Our sample is also representative of the larger universe of all insiders' trades in terms of percentage of insider buys (79% in our sample and 74% in the entire sample) and percentage of insider sells (21% in our sample and 26% in the entire sample). In our sample, we classify 82% of insider buy and 75% of insider sell as opportunistic trades; hence, 18% of insider buy and 25% of insider sell are classified as routine trades. Overall, trades made by opportunistic traders comprise 80% of the partitionable universe while trades made by routine traders comprise 20% of the partitionable universe. Buy trade size of the partitionable universe

(18.92 bps) is comparable to the entire sample (19.12 bps); though the sell trade size of the partitionable universe (-39.49 bps) is smaller than the entire sample (-56.42 bps).

[Insert Table 1 about here]

Panel B of Table 1 shows the number of unique companies in partitionable universe represents around one-third of the entire universe sample which is similar to results reported by Cohen, Malloy and Pomorski (2012). It shows that our sample is titled towards the bigger firms in terms of their assets and their size measured using market capitalization. However, other firm characteristics such as price-to-book ratios, return on assets, cash holdings, current ratio, firm age, board size and board independence are fairly representative of the entire universe.

4 Empirical Analysis

4.1 Information Content of Opportunistic and Routine Insiders' Trades

4.1.1 Event Study Approach

In this section, we compute the cumulative abnormal returns (CARs) by using the market model for a period of 41 days centred on the reported day of opportunistic and routine insiders' trades.[11] The market return is proxied by the MSCI India Index.[12] The estimation period for the market model is from -200 to -21 days prior to the disclosure of the opportunistic and routine insiders' trades. To test the null hypothesis that the CARs are equal to zero for a sample of *N* securities, we use two parametric tests statistics: *t-test B*, based on Boehmer, Masumeci and Poulsen (1991) and *t-test K,* based on Kolari and Pynnönen (2010).

Table 2 reports the market reaction to opportunistic and routine trades. The table also reports the market reaction based on the intensity of these trades. For the classification of

[11] We also use the Market Adjusted Return model to calculate the CARs and find similar results.
[12] MSCI India Index measures the performance of large and medium cap segments of the Indian market and it covers approximately 85% of the Indian equity universe.

insiders' trading intensity, we sort entire sample for each category of insiders' trades into terciles and define the top 33rd percentile as the *Large* insiders' trading intensity, bottom 33rd percentile as the *Small* insiders' trading intensity and rest as the *Medium*.

[Insert Table 2 about here]

The results in Table 2 strongly support the Hypothesis 1(a) and (b), which states that the CARs of Opportunistic Buy and Routine Buy are positive and CARs of Opportunistic Sell and Routine Sell are negative. For overall Opportunistic Buy trades, the 5-day CAR based on the reported day from the market model is 0.506% that increases to 1.308% for the 20-day period and the CAR is strongly significantly different from zero regardless of the test statistic used. Likewise, for overall Routine Buy trades, the 5-day and 20-day CARs based on the reported day from the market model is 0.347% and 0.651% respectively. Conversely, CAR is not significant over the 20 days prior to the reported date of Opportunistic and Routine Buy. This suggests that insiders are able to time their purchases.

Likewise, Table 2 shows that market reacts negatively to the announcement of both Opportunistic and Routine Sell. The CARs for Opportunistic Sell and Routine Sell measured over the reported day and after the 5-day (20-day) period is -0.32% (-0.75%) and -0.378% (-0.04%) respectively and is significantly different from zero. The positive CARs follow a period of positive abnormal returns of about 1.68% for Opportunistic Sell and 2.12% for Routine Sell over the 20 days preceding the reported day. As with buy trades, insiders seem to be able to time their sales very well. We conclude that both buy and sell trades are informative and can be interpreted as a signal for negative news. With regards to the Hypothesis 1(c), we find that the absolute market reaction to insiders' purchases (both opportunistic and routine) is higher than that to sales (both opportunistic and routine). The results are in line with Lakonishok and Lee (2001) and Fidrmuc, Goergen and Renneboog (2006) and support our hypothesis.

To examine the Hypothesis 1(d) which states that the CARs of opportunistic buy is higher than the routine buy and the CARs of opportunistic sell is lower than the routine sell, we calculate the difference in abnormal return between the Opportunistic Buy and Routine Buy as well as between the Opportunistic Sell and Routine Sell. We find that the CARs for Opportunistic Buy is higher than the Routine Buy and there is a significant difference in CARs between these two trades. For example, the difference in CAR for the 20-day period after the reported day is 0.656% and it is significantly different from zero. However, there is no significant difference in CARs between Opportunistic and Routine Sell up to the 10-day period after the reported date, though the difference is significant for the 20-day period. The reason for this pattern may be that markets attach less informational content to sales because some of the sales may be made due to insider's liquidity needs rather than bad news. We also conduct a similar analysis for large, medium and small insider sales.[13] Overall, our results remain qualitatively similar.

4.1.2 Robustness Test: Using Regression

In this section, we conduct a robustness test to examine the future return predictability of corporate insiders. Our tests employ regressions of future returns for three window period (5-days, 10-days and 20-days period after the reported date) on the Opportunistic Buy, Routine Buy, Opportunistic Sell and Routine Sell variables. The classification of these trades is discussed in Section 3.2. We use the abnormal returns (ARs in basis points) calculated using the market model and the raw stock return (in basis points) as a proxy for returns. We run pooled regressions with standard errors clustered at the firm and time level; we also include

[13] We find the higher market reaction to larger insiders' trades compared to the smaller insiders' trades. Furthermore, the CARs for all Opportunistic Buy (Routine Buy) is on average 70% (87%) of that of large Opportunistic Buy (Routine Buy), while the CARs for all Opportunistic Sell (Routine Sell) is on average 54% (29%) of that of large Opportunistic Sell (Routine Sell).

time and firm fixed effects. In addition, we include controls for well-known determinants of stock returns.[14]

[Insert Table 3 about here]

Table 3 presents the regression results which show that both opportunistic buys and opportunistic sells are strong predictors of future returns, while routine buys and sells are not. For example, the coefficient on Opportunistic Buy in Model 1 (1-5 days window period) indicates that one-basis point increase in Opportunistic Buy yields an incremental 0.2688 (t=2.24) basis points return next day relative to all insiders' trades, which is statistically significant. The difference in the coefficients on Opportunistic Buy and Routine Buy (=0.267) is statistically significant (F-test=5.22, p-value=0.03). The results are similar to other window periods. Likewise for sells: Model 1 shows that one-basis point increase in Opportunistic Sells earns an incremental 0.0018 (t=2.11) basis points return next day. Again, this difference between Opportunistic Sells and Routine Sells is large (=-0.020) but statistically insignificant (F-test=0.01, p-value=0.92). The results are qualitatively similar to larger window periods.

These results demonstrate that opportunistic trades have predictive ability relative to the routine trades and most of this predictive ability is derived from the superior performance of opportunistic insiders' buy trades compared to other trades, which is consistent with the literature that often finds evidence that insider buy trades predict higher future returns.

4.2 Mimicking Hypothesis

Our findings on the informational content of opportunistic insiders' trades raise an

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[14] Brennan, Chordia and Subrahmanyam (1998) suggest that past stock returns affect the expected return of the stock, hence, we include previous day's stock return (denoted as *Stock Return*) in the analysis. We also include the return from lagged MSCI India Index (*Market Return*) to control the effect of lagged market return on stock returns. Similarly, Fama and French (1995) and Jensen, Johnson and Mercer (1997) suggest that stock expected returns are negatively related to the size and the price-to-book ratio. Correspondingly, we include the log of previous day's market capitalization *(Size)* and previous day's *Price-to-Book* ratio. Further, Chordia, Subrahmanyam and Anshuman (2001) and Amihud (2002) find a negative relation between stock returns and liquidity measures. Thus, we include previous day's *Turnover* as a proxy for the liquidity measure.

important question of whether other outside investors in the financial markets are aware of this type of informed trading. Cohen, Malloy and Pomorski (2012) provide suggestive evidence that institutional investors react strongly to past opportunistic trades (buy and sell) than to past routine trades (buy and sell). To investigate the link, Cohen, Malloy and Pomorski (2012) regress the change in institutional ownership of a stock on the (log of the) number of opportunistic and routine trades in that stock in the past two quarters. Their approach has few limitations. First, change in institutional holdings in a quarter does not take account the buy and sell trades conducted by institutional investors within a quarter that may result in same (similar) level of institutional holdings at the end of the quarter. Second, the number of opportunistic and routine insiders' trades in past quarter do not consider the intensity of insiders' trading. A single large opportunistic trade may have a significant impact on the institutional trading. Third, they are not able to observe the immediate reaction by institutional investors to the opportunistic insiders' trading as they examine the quarterly changes. To overcome the limitation, in this section, we explore the connection between institutional trading, particularly FIIs, and opportunistic insiders' trading using daily trade level data. Our focus on FIIs is motivated by the fact that FIIs are largely at an informational disadvantage compared their domestic counterparts and we are able to observe their daily trading behaviour. Hence, FIIs should have a higher incentive to explore the predictive ability of opportunistic insiders' trades.

To examine the potential connection between FIIs trading and opportunistic trading, we follow the trades conducted by FIIs up to 15, 20 and 30 days immediately after opportunistic insiders' trade. To do so, we regress the Net Equity Trading (NET_{it}) of FIIs on the past opportunistic trades and past routine trades. We also control for various competing factors that could affect the FIIs' trading as discussed below.

Empirical evidence suggests that there is a positive link between net foreign flows and lagged stock returns. Brennan and Cao (1997) suggest that purchase of foreign assets is high when the return on such assets is high. We control for this effect at the firm level by controlling the previous day's return on individual stocks that FIIs trade on a particular day. We source this data from the Prowess database that provides total stock returns including dividend and capital gains. We denote this as *Stock Return* in our analysis. Likewise, we also control for a vector of variable referred to as "pull factors", home characteristics that attract or deter foreign inflows. Since, the foreign equity flow in the host country increases with the return of the host country's stock market (Griffin, Nardari and Stulz, 2004), we include daily market return proxied by return on MSCI India Index. These indices are obtained from Thomson Reuters and denoted as *Market Return* in our model. Further, recent empirical evidence suggests that the riskiness of the host market, such as volatility of local returns, also influences the decision of foreign investors to invest in that market (Ülkü, 2015). As a proxy of host market riskiness, we include the daily standard deviation of market return using previous 90 days return on MSCI India Index. We label it as *Market Volatility* in our model. Likewise, Hau and Rey (2006) note that exchange rate appreciation also has a positive impact on the equity flows into the foreign market. We control the exchange rate fluctuation by including the USD/INR daily standard deviation of the exchange rate using the previous 90 days' figures (denoted as *USD Volatility*). The exchange rate is sourced from Reserve Bank of India (RBI).

Next, we also include various "push factors", characteristics external to host economies, in our analysis (Stulz, 1999; Griffin, Nardari and Stulz, 2004). Richards (2005) argues that changes in global and emerging market returns, that directly affect foreign investors' wealth, has significant implications for investment in an emerging market. We use the previous day's return on the MSCI Total World Market Index (labelled as *MSCI Return*) as a proxy of global return, and previous day's return on the MSCI Total Emerging Market Index (indicated as

MSCI EM Return) as a proxy of emerging market return (sourced from Thomson Reuters). Likewise, recent evidence suggests that interests rate in US market is one of the major push factors that influence the flow of foreign capital into emerging markets (Ülkü, 2015; Sarno, Tsiakas and Ulloa, 2016). To control for this effect, we factor in the previous day's return on one year US Treasury Bill rate (labelled as *US TB Rate*) sourced from Thomson Reuters. Finally, Fratzscher (2012) and Sarno, Tsiakas and Ulloa (2016) suggest that investors' risk aversion may also explain the flow of equity capital from home countries into host countries. We factor in the investors' risk aversion by using the daily return on Global VIX Index (denoted as *Global VIX Return*) that we source from Thompson Reuters. Global VIX Index is based on the one-month model-free implied volatility of the S&P 500 equity index.

Table 4 provides the descriptive statistics of all the control variables. The mean (median) stock return during the sample period is 0.076% (0.000%) whereas the average (median) market return during the same period is around 0.039% (0.044%). The average return on Indian equity market is higher than mean (median) return on emerging markets which is at -0.004% (0.026%) as well as mean (median) global return which is at 0.038% (0.073%). The average (median) local market return volatility is at 1.045% (0.901%) which is considerably higher than the return on global VIX which is at -0.056% (-0.194%). This suggests higher local market riskiness but lower global investors' riskiness.

[Insert Table 4 about here]

Table 5 present the regression results with the control variables for three window periods. In Model 1 we follow FIIs' net equity trading up to 15 days after the reporting of insiders' trading, in Model 2 we follow up to 20 days and in Model 3 we follow up to 30 days. In Model 4-6, we re-run our analysis for large insiders' trades.[15] To control for firm-level heterogeneity,

[15] We sort the entire sample trades for each category of insider's trades into terciles and designate the top 33rd percentile as the large insiders' trades.

we use firm fixed effects and to account for time fixed effects we also include time (days) fixed effects. We also double cluster our standard error at the firm and time (day) level. Consistent with the Hypothesis 2(a), we find that FIIs follow opportunistic insiders' buy trades. Most importantly, we find that FIIs do appear to react more strongly to past opportunistic insiders' buy trades than to past routine insiders' buy trade. Their reaction is immediate as they follow the opportunistic insiders' buy transactions within 15 days after the reporting of such transactions. The predictive power of past opportunistic insiders' buy trade for future FIIs net equity trading is statistically significant even after including controls for past stock returns, pull and push factors as well as firm and day fixed effects (coefficient ranges from 0.0021 to 0.0034 with *t*-statistics from 2.93 to 6.77). However, we do not find the similar reaction in the case of past opportunistic insiders' sell transactions. The predictive power of past opportunistic insiders' sell transactions is not statistically significant. The result does not provide support to Hypothesis 2(b) which suggest that FIIs trade in the same direction as past opportunistic insiders' sell. Nonetheless, even when limiting the sample to the large insiders' trades in Model 4-5, we find similar and stronger relation between FIIs' net equity trading and large opportunistic insiders' buy trade.

Collectively, these tests highlight a strong positive association between FIIs' net equity trading and opportunistic insiders' buy trades partly supporting our mimicking hypothesis. It suggests that FIIs value the information content of opportunistic buy trades and trade in the same direction. However, the FIIs do not seem to accord same informational content for opportunistic sell trades and do not seem to follow these trades. Recall that we do not find significant differences in CARs between opportunistic sell and routine sell trades which may partly explain the lack of support for the mimicking hypothesis in relation to opportunistic sell.

[Insert Table 5 about here]

For the control variables, we find evidence of return-chasing behaviour/momentum trading at the firm level as well as at the market level suggesting that FIIs use recent stock and market returns to extract information about the future returns. Further, consistent with Ülkü (2015), we also find the strong negative impact of market volatility on FIIs' net equity trading which implies that increase in market uncertainty reduces the FIIs equity flow in the market. We find the positive association between emerging market returns and FIIs equity flow that suggest that increase in return in emerging market pushes the FIIs equity flow towards the emerging market such as India. Moreover, we find evidence of negative impact of US Treasury bills rate supporting the results of (Ülkü, 2015).

4.3 Equity Trading and Abnormal Return of the Mimickers

In this section, we re-analyse the second hypothesis that FIIs follow opportunistic insiders' trade. We also examine our third hypothesis which postulates that FIIs earn a superior abnormal return when they take long strategy on stocks traded by opportunistic insiders' buyers and when they take short strategy on stocks traded by opportunistic insiders' sellers. To conduct this analysis, we compare the equity trading and the CARs of FIIs who trade on the same firm where insiders trade (the treatment group) with the equity trading and the CARs of FIIs who trade on the similar firm where insiders do not trade (the control group) for the opportunistic insiders' buy trades and sell trades.

We construct a treatment group and a control group using propensity score matching. We start by identifying firms where both FIIs and insiders trade and firms where FIIs trades but insider do not. Out of 2,192 firms where FIIs trade, we find 722 firms where both FIIs and insiders trade during the sample period and 1,470 firms where only FIIs trade during the sample period.[16] We then employ propensity score matching algorithm to identify matches between

[16] There were 163 firms where insiders' trade but not the FIIs.

these two groups of firms. We first estimate the probit model where the dependent variable is equal to one if the firm belongs to the treatment group and zero otherwise. We use various firm level characteristics as a control variable such as firm size, leverage, return on equity, cash holdings, current ratio, firm age, board size and board independence. These variables are included to help satisfy the parallel trend assumptions as there should not be any firm-specific differences in characteristics between treatment and control group. Model 1 of Table 6 Panel A presents the probit model estimates with industry fixed effects and standard error clustered at the industry level. The specification reveals some of the independent variables are statistically significant suggesting significant variation in firms' characteristics between treatment and control group. We then use the propensity scores, from Model 1 to perform nearest-neighbour propensity score matching within a 0.01 caliper. We end up with 462 unique pairs of matched firms.

[Insert Table 6 about here]

We conduct few diagnostic tests to verify that we do not violate the parallel trend assumptions. First, we re-run the probit model to the matched sample of firms and find that none of the independent variables is statistically significant (as shown in Model 2 of Table 6 Panel A). It suggests that there is no observable difference in firm characteristics between the treatment and the control group. Second, we examine the difference between the propensity scores of the treated group firms and those of the matched control group firms. Panel B of Table 6 shows a very small difference in the propensity scores. Finally, we report the univariate comparisons of firms' characteristics between the treatment and control group and their corresponding *t*-statistics in Panel C of Table 6. As shown, none of the mean differences in the firms' characteristics between the treatment group firms and control group firms is significant. Overall, the diagnostic tests reveal that our approach of using propensity score matching process removes meaningful observable differences between firms where both FIIs and insiders trade and firms only FIIs trade.

[Insert Table 7 about here]

In Panel A of Table 7, we look at the mean difference in the net equity trading by FIIs between the treatment group and their propensity score matched control group. In Panel A.1., we present the mean difference in the net equity trading for the Opportunistic Buy trades and in Panel A.2., we present the mean difference in the net equity trading for the Opportunistic Sell trades. Column (2) reports the average change in FIIs' net equity trading before and after the reported date of opportunistic insiders' buy trades and sell for the treatment group and Column (3) reports the average change for the control group. In Column (4), we report the DiD estimator which is the difference in net equity trading between the control and treatment group before and after the reported date of opportunistic insiders' buy and sell trades. Corresponding *t*-statistics are presented in the parentheses.

Two important findings emerge. First, for the treatment group the net equity trading by FIIs increases following the reporting of opportunistic insiders' buy trades whereas the net equity trading by FIIs decreases following the reporting of opportunistic insiders' sell trades, which is consistent with our mimicking hypothesis. Second, and most importantly, the increase in the FIIs' net equity trading after reporting of opportunistic insiders' buy trades is larger for the treatment group than for the control group as the DiD estimator is positive and statistically significant at 5% level for -15-to-15 days window period and at 1% for larger window periods. Interestingly, the decrease in the FIIs' net equity trading after reporting of opportunistic insiders' sell trades is larger than for the treatment group than for the control group is statistically significant at 5% for -30-to-30 days window period only. The results are consistent with our main findings that FIIs' mostly trade in the same direction when opportunistic insiders buy stocks.

We also show the dynamics of DiD estimator results in a regression framework. We retain the FIIs' trading level data for both treatment and control firms centred on the reporting date for three window periods: 15 days, 20 days and 30 days. Our main dependent variable is FIIs' net equity trading, defined in Section 3.2. Our main independent variable is either $Opp\ Buy\ Event_t \times TRMT_i$ or $Opp\ Sell\ Event_t \times TRMT_i$. The variable $Opp\ Buy\ Event_t$ is the dummy variable equal to 1 for the days after the reporting of opportunistic insiders' buy trades and 0 otherwise. Similarly, $Opp\ Sell\ Event_t$ is the dummy variable equal to 1 for the days after the reporting of opportunistic insiders' sell trades and 0 otherwise. $TRMT_i$ is the dummy variable equal to 1 for the firms in the treatment group and 0 for the firms in the control group. The results are reported in Panel B of Table 7. In Model 1-3 we report the regression results for opportunistic insiders' buy trades and in Model 4-6 we report the regression the regression results for opportunistic insiders' sell trades. All the control variables are similar to the control variables used in Table 5 and defined in notes to Table 4. We control for time and firm fixed effects and cluster the errors at the time and the firm level. In Model 1-3, we observe statistically significant positive coefficients for our main independent variable and in Model 4-6 we observe statistically insignificant negative coefficients for our main independent variable. The results suggest that, compared to control firms, FIIs buy shares immediately after observing the opportunistic insiders' buy trades providing support to our main findings that FIIs follow the opportunistic insiders' buy trades but do not follow the opportunistic insiders' sell trades.

Next, we examine our fourth hypothesis in two ways. First, we conduct an event study and compare the CARs earned after reporting of opportunistic insiders' buy and sell trades for treatment and control group and examine the difference in the CARs. Second, we perform a regression analysis with the abnormal returns (along with stock returns) for three window periods: 5, 10 and 20 days after the reporting of opportunistic insiders' buy and sell trades as the dependent variable and with the interaction variable between the treatment dummy and the event dummy for each category of opportunistic insiders' trade as the explanatory variable. The regression allows us to control for other factors such previous days' stock return, previous day's market return, previous day's market capitalization, previous day's price-to-book ratio and previous day's stock turnover that might affect the abnormal (stock) returns.

[Insert Table 8 about here]

We present the results of our event study in Panel A of Table 8. We calculate CARs using the market model discussed in detail in Section 4.1.1. First, we report the CARs for opportunistic insiders' buy trades for both control and treatment group for a period centred around 41 days on the reported day. The CARs for Opportunistic Buy trades is positive and significant for both treatment and control group. More importantly, the CARs for treatment group is higher than the CARs for control group and difference in the CARs is statistically significant. For example, the difference in CARs ranges from 0.493% to 1.086% after the reporting of opportunistic insiders' buy trades. This support our hypothesis 4(a) that FIIs earn superior abnormal return by taking long position on the stock bought by the opportunistic insiders. Likewise, we also report the CARs for opportunistic insiders' sell trades for both control and treatment group. The CARs for opportunistic sell trades is negative for treatment group and statistically significant; positive for control group and statistically significant at 10% for 1-5 days window period only. The difference in CARs between treatment and control group ranges from -0.575% to -0.563% and it is statistically significant at 5% level. This again provides support to our hypothesis that FIIs earn a superior abnormal return by taking the short position on the stocks sold by opportunistic insiders.

We present the regression results in the Panel B of Table 8. Panel B shows the result of regressions between various proxies of return and the DiD estimator for opportunistic buy trades (Panel B.1) and opportunistic sell trades (Panel B.2) for different window periods. We use abnormal return and stock return (in %) as the main dependent variables. The main independent variable is $Opp\ Buy\ Event_t \times TRMT_i$ in Panel B.1. and $Opp\ Sell\ Event_t \times TRMT_i$ in Panel B.2 defined previously. The control variables are similar to Table 3. We also control for time and firm fixed effects and standard errors are corrected for clustering at the firm and time level.

The results in Panel B.1 show that our main explanatory variable is positive and statistically significant even after controlling for various factors that may affect the return of the stock. The coefficient for Model 1 suggests that FIIs can earn 0.3407% higher abnormal return on treatment firms, compared to control firms, when they take a long position on stocks bought by opportunistic insiders. The results support our Hypothesis 3(a) that FIIs can earn superior abnormal return for long strategy on stocks bought by opportunistic insiders. The results in Panel B.2 show that the main explanatory variable is not statistically significant after controlling for factors that affect the return of the stock. The results do not provide support to our Hypothesis 3(b). The result may be driven by the fact we show in our study that FIIs do not follow the opportunistic insiders' sell trades. Taken as a whole, we find that FIIs follow opportunistic insiders' buy trades that enable to earn superior return.

4.4 Liquidity Contribution Hypothesis

Hypothesis 4, the liquidity hypothesis, postulates that FIIs provide liquidity to contemporaneous routine trades. We test this hypothesis by performing a regression analysis with FIIs net equity trading as the dependent variable and contemporaneous opportunistic and routine insiders' trades as explanatory variables. The contemporaneous opportunistic and routine insiders' trades are trades conducted on the same day as FIIs' equity trading.[17] The

[17] The information about buyer and seller are not disclosed at the time of trading, hence, counterparty to a transaction is not known at that time. Further, FIIs may not necessarily directly transact with the insider. It may be the case that an insiders' trades with a market maker and then the market maker unwinds at least a portion of the trade sometime later the same day with FIIs.

regression allows us to control for other factors such as recent stock returns, push factors and pull factors discussed in the previous section.

[Insert Table 9 about here]

Table 9 summarizes the regression results. In Model I, we regress the FIIs' net equity trading on contemporaneous opportunistic insiders' buy trades and contemporaneous routine insiders' sell trades. In Model 2, we use contemporaneous opportunistic insiders' sell trades and contemporaneous routine insiders' sell trades. In Model 3, we include all contemporaneous opportunistic and routine insiders' trades along with control variables. In Model 4, we re-run the Model 3 for the large trades. Model 1 of Table 9 provides strong evidence of a negative relation between FIIs' net equity trading and contemporaneous routine insiders' buy trades with a coefficient of -0.036 (statistically significant at the 1% level) but do not find evidence of a significant relationship with contemporaneous opportunistic insiders' buy trades. Model 2 shows that the coefficient of contemporaneous routine insiders' sell trades is also negative (-0.045) and statistically significant at the 1% level but not for contemporaneous opportunistic insiders' sell trades. We find similar results in Model 3. The inverse relation between the FIIs' net equity trading and the contemporaneous routine insiders' buy and sell trades reveal that FIIs provide liquidity to the routine insiders. Nonetheless, in Model 4 we document stronger inverse relation between large contemporaneous routine trades and FIIs net equity trading. Taken as a whole, we find evidence consistent with the liquidity hypothesis.

4.5 Robustness Tests

In this section, we conduct a battery of additional test to ensure that our results related to our hypotheses are robust.

4.5.1 Alternative Definition of Opportunistic and Routine Trades

We use an alternative definition of opportunistic and routine trades to test the robustness of our main results. First, following Cohen, Malloy and Pomorski (2012) we use the trade-level measure to define the opportunistic and routine insiders' trades, as opposed to the trader-level measure used so far. As suggested by Cohen, Malloy and Pomorski (2012), the trade-level measure allows an insider to be both routine and opportunistic trades. In this trade-level measure, we look at the previous three years' trading history of an insider, and we only categorize the insider's subsequent trade on the same month as routine trade and on different month as opportunistic trade. For example, an insider may be classified as a routine insider if he has three straight March trades. In this trader-level measurement, we only classify his subsequent March trades as routine trades and his trades on other months as opportunistic trades. Table 10 presents the trade-level results. We test the mimicking hypothesis, and liquidity hypothesis in Panel A and Panel B of Table 10 respectively. Even in this alternative setting, we still find the results to be similar to our main results.

[Insert Table 10 about here]

We also use a more stringent definition to identify the routine and opportunistic insiders' trades. In our main analysis, we tracked the insiders' trading for three preceding years for the classification. As an alternative test, we track an insider's trading for five preceding years and classify them as routine insiders if they placed a trade in the same calendar month for at least five consecutive years. Otherwise, the trader is considered as an opportunistic trader. This stringent classification reduces the number of classified trades from 18,626 to 10,264. We present the results in the Appendix, where we test both mimicking and liquidity hypothesis. We still find the results similar to our main results. These results demonstrate that our identification of opportunistic versus routine insiders' trading is robust to reasonable changes in the classification procedure.

4.5.2 Alternative Definition of FIIs' Trading

To further verify the robustness of our results, we follow Cohen, Malloy and Pomorski (2012) and use change in FIIs' ownership of a stock as an alternative measure of FIIs' trading activity. We measure the change in FIIs' ownership at a quarterly frequency and regress it on the (log of the) number of opportunistic and routine trades in that stock. To analyse the mimicking hypothesis, FIIs trade in the same direction as past opportunistic insiders' trades, we explore the lagged response (i.e. the impact of opportunistic and routine trades over the past two quarters on the change in the FIIs' holdings this quarter). Further, to analyse the liquidity hypothesis, FIIs provide liquidity to contemporaneous routine insiders' trades, we explore the contemporaneous response (i.e. the impact of opportunistic and routine trades this quarter on the change in FIIs' holdings this quarter). Sias and Whidbee (2010) also conduct similar tests and find a strong negative relation between insiders' trading and institutional demand in the same quarter and over the previous year.

We also control for several factors that might that might have confounding effects on the change in FIIs' holdings. Kang and Stulz (1997), Dahlquist and Robertsson (2001), Aggarwal, Klapper and Wysocki (2005) and Ferreira and Matos (2008) suggest that foreign investors prefer the firms that are larger in size, lower leverage, hold large cash balances, higher return on equity, and better current ratio. Correspondingly, we include log of market capitalization (*Size), Leverage, Return on Equity, Cash Holdings* scaled by total assets, and *Current Ratio* in our analysis. Miletkov, Poulsen and Wintoki (2014) find that FIIs show a preference for investing in firms with more independent boards and younger firms. Following Miletkov, Poulsen and Wintoki (2014) we also control for the (log of) *Board Size,* the *Board Independence,* and the (log of) *Firm Age*. All these variables are lagged based on previous quarter and are sourced from Prowess database.

[Insert Table 11 about here]

The results, using this alternative definition of FIIs' trading, are presented in Table 11. Our main dependent variable is the change in institutional holdings of FIIs. In Model 1-3 we use Past Number of Opportunistic and Routine Trades where as in Model 4-6 we use Contemporaneous Number of Opportunistic and Routine Trades. In addition to the control variables, we also control for time and fixed effects and cluster the errors at the firm and time level. Even in this alternative setting we find evidence in support of our mimicking and liquidity hypothesis. Similar to the results reported by Cohen, Malloy and Pomorski (2012), Model 3 of Table 8 shows that the predictive power of opportunistic buys for future holdings of FIIs is statistically significant (coefficient 0.128, t=3.53). The result also demonstrates the predictive power of opportunistic sells in explaining the future holdings of FIIs (coefficient=-0.211, t=2.87). Taken together, the results support our main outcomes and suggest that FIIs do understand the differential informativeness of opportunistic and routine trades, hence, follow the trades of opportunistic insiders.

For contemporaneous responses, in Model 6 of Table 8, we find strong evidence that FIIs appear to provide liquidity for routine insiders' buys trades and routine insiders' sell trades but not for opportunistic buy and opportunistic insiders' sell trades. Collectively, these tests provide support to our earlier evidence that FIIs mimic the trades of past opportunistic insiders but provide liquidity to contemporaneous routine insiders' trades.[18]

4.5.3 Reverse Causality, Portfolio Pumping and Window Dressing

In this section, we conduct additional robustness tests to analyse whether past FIIs' trading affects the present insiders' trading. Sias and Whidbee (2010) explore the

[18] The results are qualitatively similar when using alternative definition of opportunistic and routine insiders trading discussed in Section 4.5.1.

“characteristics hypothesis” that suggest the security characteristics that attract insiders deter the institutional investors. Empirical evidence suggests that insiders prefer value stocks and stocks that have recently declined in value (Jenter, 2005; Piotroski and Roulstone, 2005; Sias and Whidbee, 2010). On the other hand, FIIs prefer growth stock, chase stocks with recent positive stock return performance and avoid high dividend paying firms (Gompers and Metrick, 2001; Ferreira and Matos, 2008). These repelling preferences may suggest an inverse relation between the insiders’ trading and lag FIIs’ equity trading. To test the possibility whether lagged FIIs’ net equity trading may explain the insiders’ trading behaviour, we regress the lag net equity trading by FIIs before the disclosure of insiders’ trading with the opportunistic and routine insiders’ trades over our sample period. We also control for other factors that might influence the FIIs equity trading as discussed in Section 4.2. The results are presented in Table 12 (Models 1-3) where we include the time and day fixed effects. The standard errors are clustered at the time and the firm level.

In Model 1, we regress the 15-day lag FIIs’ net equity trading with the Opportunistic Buy, Routine Buy, Opportunistic Sell and Routine Sell. In Model 2, we use 20-day lag FIIs’ net equity trading and in Model 3, we use 30-day lag FIIs’ net equity trading. In all the models, we do not find any statistical significance for our main explanatory variables, eliminating any concerns about the possibility that insiders react to past FIIs’ net equity trading directions.

[Insert Table 12 about here]

Next, we also examine the possibility that portfolio pumping and window dressing may provide alternative explanations for the identified behaviour of FIIs. Evidence suggests that institutional investors engage in trades to manipulate the prices of securities via excessive buying of the securities (usually at the quarter-end or year-end) that they already own, known as portfolio pumping (Carhart *et al.*, 2002; Ben-David *et al.*, 2013). Likewise, institutional investors also tend to buy (sell) securities that have performed well (poor) towards the end of the quarter or year, to make investors believe those were their holdings throughout the quarter or year, known as window dressing (Meier and Schaumberg, 2006; Morey and O'Neal, 2006). Using daily institutional investors' trading data, Hu *et al.* (2014) find evidence of year-end price inflation due to the institutional selling rather than buying but do not find evidence of window dressing by institutional investors. To address this concern, we re-conduct our main analysis in Table 5 excluding all month-end trading by FIIs.[19] The results are presented in Models 4-6 in Table 12. Even in this alternative setting, the results are consistent and robust to our main results, supporting our mimicking hypothesis.[20]

5 Conclusion

Empirical evidence on whether insiders' trading contain superior information about their company has been mixed. Recently, it has been argued that uninformative trades conducted by insiders, such as those which are routine in nature and for liquidity needs, do not earn abnormal return or predict future returns. Stripping such insiders provides the information-rich opportunistic insiders whose trading are more informative and result in higher market reaction. On the flip side, FIIs are at information disadvantage compared to DIIs. FIIs tend to follow the market trends, exhibit herd behaviour, and chase the recent stock returns due to such information asymmetry. Since, FIIs have greater incentive to provide attention to the opportunistic insiders' trading behaviour due to their information inferiority, in this study, we examine whether FIIs follow the trading direction of the past opportunistic insiders and if so, do they earn superior abnormal return. We also test whether FIIs provide liquidity to the contemporaneous routine trades.

[19] Month-end trading is defined by FIIs' net equity trading conducted during the last 5 days of one calendar month and the first 5 days of the following month.
[20] The results are qualitatively similar when using alternative definition of opportunistic and routine insiders trading discussed in Section 4.5.1.

First, we find evidence of FIIs mimicking the opportunistic insiders' buy trades but not the sell trades. The result may be driven due to the fact that we do not find significant differences between the abnormal return of opportunistic insiders' sell trades and routine insiders' sell trades. This suggests that FIIs still view sell by insiders (whether routine or opportunistic) as uninformative. Second, comparing the abnormal return of firms where both FIIs and insiders trade and firms where only FIIs trade, we find significant abnormal return after the reporting of insiders' trades for both long strategy on stocks bought by opportunistic insiders and short strategy on stocks sold by opportunistic insiders. Finally, we also find evidence of FIIs providing liquidity to contemporaneous routine trades.

References

Aggarwal, R., Klapper, L. and Wysocki, P. D. (2005) Portfolio preferences of foreign institutional investors, *Journal of Banking & Finance* **29**, 2919-2946.

Allen, F., Qian, J. and Qian, M. (2005) Law, finance, and economic growth in China, *Journal of Financial Economics* **77**, 57-116.

Amihud, Y. (2002) Illiquidity and stock returns: cross-section and time-series effects, *Journal of Financial Markets* **5**, 31-56.

Bae, K.-H., Ozoguz, A., Tan, H. and Wirjanto, T. S. (2012) Do foreigners facilitate information tranmission in emerging markets?, *Journal of Financial Economics* **105**, 209-227.

Bekaert, G. and Harvey, C. R. (2002) Research in emerging markets finance: looking to the future, *Emerging Markets Review* **3**, 429-448.

Ben-David, I., Franzoni, F., Landier, A. and Moussawi, R. (2013) Do hedge funds manipulate stock prices?, *The Journal of Finance* **68**, 2383-2434.

Bettis, C., Vickrey, D. and Vickrey, D. W. (1997) Mimickers of corporate insiders who make large-volume trades, *Financial Analysts Journal* **53**, 57-66.

Bhattacharya, U. and Daouk, H. (2002) The world price of insider trading, *The Journal of Finance* **57**, 75-108.

Bhattacharya, U., Daouk, H., Jorgenson, B. and Kehr, C.-H. (2000) When an event is not an event: the curious case of an emerging market, *Journal of Financial Economics* **55**, 69-101.

Bhaumik, S. K. and Selarka, E. (2012) Does ownership concentration improve M&A outcomes in emerging markets? Evidence from India, *Journal of Corporate Finance* **18**, 717-726.

Boehmer, E., Masumeci, J. and Poulsen, A. B. (1991) Event-study methodology under conditions of event-induced variance, *Journal of Financial Economics* **30**, 253-272.

Brennan, M. J. and Cao, H. H. (1997) International portfolio investment flows, *The Journal of Finance* **52**, 1851-1880.

Brennan, M. J., Chordia, T. and Subrahmanyam, A. (1998) Alternative factor specifications, security characteristics, and the cross-section of expected stock returns, *Journal of Financial Economics* **49**, 345-373.

Carhart, M. M., Kaniel, R., Musto, D. K. and Reed, A. V. (2002) Leaning for the tape: Evidence of gaming behavior in equity mutual funds, *The Journal of Finance* **57**, 661-693.

Chang, S. and Suk, D. Y. (1998) Stock prices and the secondary dissemination of information: The wall street journal's “insider trading spotlight” column, *Financial Review* **33**, 115-128.

Choe, H., Kho, B.-C. and Stulz, R. M. (1999) Do foreign investors destabilize stock markets? The Korean experience in 1997, *Journal of Financial Economics* **54**, 227-264.

Choe, H., Kho, B.-C. and Stulz, R. M. (2005) Do domestic investors have an edge? The trading experience of foreign investors in Korea, *The Review of Financial Studies* **18**, 795-829.

Chordia, T., Subrahmanyam, A. and Anshuman, V. R. (2001) Trading activity and expected stock returns, *Journal of Financial Economics* **59**, 3-32.

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

Cornell, B. and Sirri, E. R. (1992) The reaction of investors and stock prices to insider trading, *The Journal of Finance* **47**, 1031-1059.

Cziraki, P., De Goeij, P. and Renneboog, L. (2013) Corporate governance rules and insider trading profits, *Review of Finance* **18**, 67-108.

Dahlquist, M. and Robertsson, G. (2001) Direct foreign ownership, institutional investors, and firm characteristics, *Journal of Financial Economics* **59**, 413-440.

Douma, S., George, R. and Kabir, R. (2006) Foreign and domestic ownership, business groups, and firm performance: evidence from a large emerging market, *Strategic Management Journal* **27**, 637-657.
Dvořák, T. (2005) Do domestic investors have an information advantage? Evidence from Indonesia, *The Journal of Finance* **60**, 817-839.
Fama, E. F. and French, K. R. (1995) Size and book-to-market factors in earnings and returns, *The Journal of Finance* **50**, 131-155.
Fernandes, N. and Ferreira, M. A. (2008) Insider trading laws and stock price informativeness, *The Review of Financial Studies* **22**, 1845-1887.
Ferreira, M. A. and Matos, P. (2008) The colors of investors' money: The role of institutional investors around the world, *Journal of Financial Economics* **88**, 499-533.
Fidrmuc, J. P., Goergen, M. and Renneboog, L. (2006) Insider trading, news releases, and ownership concentration, *The Journal of Finance* **61**, 2931-2973.
Fratzscher, M. (2012) Capital flows, push versus pull factors and the global financial crisis, *Journal of International Economics* **88**, 341-356.
Friederich, S., Gregory, A., Matatko, J. and Tonks, I. (2002) Short-run returns around the trades of corporate insiders on the london stock exchange, *European Financial Management* **8**, 7-30.
Froot, K. A., O'Connell, P. G. and Seasholes, M. S. (2001) The portfolio flows of international investors, *Journal of Financial Economics* **59**, 151-193.
Gelos, R. G. and Wei, S.-J. (2005) Transparency and international portfolio holdings, *The Journal of Finance* **60**, 2987-3020.
Gompers, P. A. and Metrick, A. (2001) Institutional investors and equity prices, *The Quarterly Journal of Economics* **116**, 229-259.
Griffin, J. M., Nardari, F. and Stulz, R. M. (2004) Are daily cross-border equity flows pushed or pulled?, *The Review of Economics and Statistics* **86**, 641-657.
Hau, H. (2001) Location matters: An examination of trading profits, *The Journal of Finance* **56**, 1959-1983.
Hau, H. and Rey, H. (2006) Exchange rates, equity prices, and capital flows, *The Review of Financial Studies* **19**, 273-317.
Hu, G., McLean, R. D., Pontiff, J. and Wang, Q. (2014) The Year-end trading activities of institutional investors: Evidence from daily trades, *The Review of Financial Studies* **27**, 1593-1614.
Jeng, L. A., Metrick, A. and Zeckhauser, R. (2003) Estimating the returns to insider trading: A performance-evaluation perspective, *The Review of Economics and Statistics* **85**, 453-471.
Jensen, G. R., Johnson, R. R. and Mercer, J. M. (1997) New evidence on size and price-to-book effects in stock returns, *Financial Analysts Journal* **53**, 34-42.
Jenter, D. (2005) Market timing and managerial portfolio decisions, *The Journal of Finance* **60**, 1903-1949.
Jia, Y., Lent, L. V. and Zeng, Y. (2014) Masculinity, testosterone, and financial misreporting, *Journal of Accounting Research* **52**, 1195-1246.
Kang, J.-K. and Stulz, R. M. (1997) Why is there a home bias? An analysis of foreign portfolio equity ownership in Japan, *Journal of Financial Economics* **46**, 3-28.
Khan, M. and Lu, H. (2013) Do short sellers front-run insider sales?, *The Accounting Review* **88**, 1743-1768.
Khanna, T. and Palepu, K. (2000) Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups, *The Journal of Finance* **55**, 867-891.
Khwaja, A. I. and Mian, A. (2005) Unchecked intermediaries: Price manipulation in an emerging stock market, *Journal of Financial Economics* **78**, 203-241.

Kolari, J. W. and Pynnönen, S. (2010) Event study testing with cross-sectional correlation of abnormal returns, *The Review of Financial Studies* **23**, 3996-4025.

Kraft, A., Lee, B. S. and Lopatta, K. (2014) Management earnings forecasts, insider trading, and information asymmetry, *Journal of Corporate Finance* **26**, 96-123.

Lakonishok, J. and Lee, I. (2001) Are insider trades informative?, *The Review of Financial Studies* **14**, 79-111.

Lins, K. V. (2003) Equity ownership and firm value in emerging markets, *Journal of Financial and Quantitative Analysis* **38**, 159-184.

Marshall, A., Neupane, B., Neupane, S. and Thapa, C. (2017) Tax threat and disruptive power of foreign portfolio investors, Unpublished Work. University of Strathcldye, Scotland, United Kingdom.

Meier, I. and Schaumberg, E. (2006) Do funds window dress? Eidence for US domestic equity mutual funds, HEC Montreal, Working Paper.

Miletkov, M. K., Poulsen, A. B. and Wintoki, M. B. (2014) The role of corporate board structure in attracting foreign investors, *Journal of Corporate Finance* **29**, 143-157.

Morey, M. R. and O'Neal, E. S. (2006) Window dressing in bond mutual funds, *Journal of Financial Research* **29**, 325-347.

Piotroski, J. D. and Roulstone, D. T. (2005) Do insider trades reflect both contrarian beliefs and superior knowledge about future cash flow realizations?, *Journal of Accounting and Economics* **39**, 55-81.

Reeb, D. M., Zhang, Y. and Zhao, W. (2014) Insider trading in supervised industries, *The Journal of Law and Economics* **57**, 529-559.

Richards, A. (2005) Big fish in small ponds: The trading behavior and price impact of foreign investors in Asian emerging equity markets, *Journal of Financial and Quantitative Analysis* **40**, 1-27.

Rozanov, K. A. (2008) Corporate governance and insider trading. **PhD**, Massachusetts Institute of Technology.

Rozeff, M. S. and Zaman, M. A. (1988) Market efficiency and insider trading: New evidence, *The Journal of Business*, 25-44.

Sarno, L., Tsiakas, I. and Ulloa, B. (2016) What drives international portfolio flows?, *Journal of International Money and Finance* **60**, 53-72.

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

Sias, R. W. and Whidbee, D. A. (2010) Insider trades and demand by institutional and individual investors, *The Review of Financial Studies* **23**, 1544-1595.

Stulz, R. M. (1999) Globalization of equity markets and the cost of capital. Working Paper, Ohio State University.

Tirapat, S. and Visaltanachoti, N. (2013) Opportunistic insider trading, *Pacific-Basin Finance Journal* **21**, 1046-1061.

Ülkü, N. (2015) The interaction between foreigners' trading and stock market returns in emerging Europe, *Journal of Empirical Finance* **33**, 243-262.

Wang, J. (1993) A model of intertemporal asset prices under asymmetric information, *The Review of Economic Studies* **60**, 249-282.

Table 1: Summary Statistics

This table presents an overview of the sample we use in this paper for partitionable universe compared to the entire insider universe over the period 2007-2014. Each year, the partitionable universe is that universe of insiders who have at least one trade in each of the preceding three years (so that routine traders and opportunistic traders can be defined). We follow Cohen, Malloy and Pomorski (2012) to classify insiders' trades into opportunistic and routine insiders' trades. For the classification, an insider must make at least one trade in each of three preceding years. A routine trader is an insider who placed a trade in the same calendar month for at least three consecutive years. Otherwise, the trader is considered as an opportunistic. An insider will be classified as either routine or opportunistic at the beginning of each year and all subsequent trades after the classification are then classified as either routine buy (sell) or opportunistic buy (sell) trades. Panel A presents the insider-level characteristics whereas Panel B provide firm-level characteristics. All numbers are full sample averages (medians), except for #, which is the total number over the entire sample period. Size is defined as the market capitalization of the firm in millions of Indian Rupees (INR). Price-to-Book Ratio is the ratio of price per share to the book value per share of the firm. Turnover is the percentage of total number of shares traded by the total number of shares outstanding of the firm. Total Assets is defined as the value of total assets of the firm in millions of INR. Leverage is defined as the ratio of total debt to shareholders' equity capital of the firm. Return on Equity is the annualized return on shareholders' equity capital of the firm. Cash Holdings is defined as the total cash and cash equivalents of fund scaled by the total assets of the firm. Current ratio is defined the ratio of current assets to current liabilities of the firm. Firm Age is the difference of current year and the year of establishment of the firm. Board Size is the number of the members in the board of the firm and Board Independence is the percentage of independent directors in the board of the firm.

Panel A: Insider-Level Characteristics		**Partitionable Universe**		**Insider Universe**	
		Mean	**Median**	**Mean**	**Median**
# of insiders' trades		18,626		67,261	
# of insider buy		14,824		46,230	
% of insider buy that are opportunistic		81.75%			
% of insider buy that are routine		18.25%			
# of insider sell		3,802		21,031	
% of insider sell that are opportunistic		75.04%			
% of insider sell that are routine		24.96%			
% of all trades that are opportunistic		79.59%			
% of all trades that are routine		20.41%			
Buy trade size (bps)		18.92	3.71	49.12	4.30
Opportunistic buy trade size (bps)		19.94	3.95		
Routine buy trade size (bps)		14.38	2.66		
Sell trade size (bps)		-39.49	-0.24	-76.42	-3.61
Opportunistic sell trade size (bps)		-50.84	-0.55		
Routine sell trade size (bps)		-5.39	-0.01		
Panel B: Firm-Level Characteristics	**Frequency**				
Number of unique companies	Daily	885		2,542	
Size (INR Million)	Daily	2,052.14	41.19	1,304.15	46.61
Price-to-Book Ratio (Times)	Daily	2.40	1.13	3.29	1.32
Turnover (%)	Daily	0.28%	0.80%	0.50%	0.11%
Total Assets (INR Million)	Quarterly	272,456.50	9,323.50	60,105.58	4,751.70
Leverage (%)	Quarterly	99.39%	48.30%	173.92%	56.74%
Return on Equity (%), annualized	Quarterly	7.46%	5.83%	8.57%	5.91%
Cash Holdings (%)	Quarterly	5.66%	2.53%	6.42%	2.78%
Current Ratio (Times)	Quarterly	4.35	1.37	5.76	1.28
Firm Age (Years)	Quarterly	30.63	25	28.79	23
Board Size (#)	Quarterly	10.31	10	9.79	9
Board Independence (%)	Quarterly	48.49%	50.00%	47.76%	46.67%

Table 2: Market Reaction to Routine and Opportunistic Insiders' Trades

This table reports the cumulative abnormal return (CARs) for opportunistic trades (buy and sell) and routine trades (buy and sell) around the reported dates of such trades based on all insiders' trades and based on intensity of insiders' trading using market model. MSCI India Index return is used as a proxy for the market return. The estimation period is from -200 to -21 days prior to the disclosure of insiders' trading. We analyse CARs for different event period ranging from 20 days before the disclosure of insiders' trades and five, 10 and 20 days after the disclosure of insiders' trades. See notes to Table 1 for the definition of opportunistic and routine trades. For the classification of insiders' trading intensity, we sort entire sample for each category of insider's trades into terciles and define the top 33rd percentile as the *Large* insiders' trading intensity, bottom 33rd percentile as the *Small* insiders' trading intensity and rest as the *Medium. t-test B* and *t-test K* denotes the standardized cross-sectional test statistics proposed by Boehmer et al. (1991) and Kolari (2010) respectively. *t-test* is the test statistics for the difference in CARs of opportunistic and routine trades. *, **, and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Overall				**Insiders' Trading Intensity**											
					Large				**Medium**				**Small**			
	(-20,-1)	**(1,5)**	**(1,10)**	**(1,20)**	**(-20,-1)**	**(1,5)**	**(1,10)**	**(1,20)**	**(-20,-1)**	**(1,5)**	**(1,10)**	**(1,20)**	**(-20,-1)**	**(1,5)**	**(1,10)**	**(1,20)**
Opportunistic Buy (1)	0.428	0.506	0.735	1.308	1.109	0.804	1.329	1.444	0.533	0.662	1.084	1.602	-0.931	0.509	0.559	1.139
t-test B	*-0.30*	*5.24****	*5.03****	*5.67****	*1.2*	*5.55***	*6.26***	*4.99****	*0.52*	*3.63****	*4.02****	*4.19****	*-4.77****	*2.77****	*3.13****	*5.41****
t-stat K	*-0.27*	*4.64****	*4.36****	*4.84****	*1.85**	*5.22***	*5.97**	*4.19****	*0.46*	*3.04****	*3.28****	*3.43****	*-4.01****	*2.32***	*2.63****	*4.41****
Routine Buy (2)	0.404	0.347	0.409	0.651	1.114	0.347	0.478	0.877	0.881	0.361	0.762	-0.080	-1.720	-0.149	0.092	0.890
t-test B	*-1.27*	*2.18***	*3.29****	*2.67****	*-0.66*	*2.83****	*2.70****	*3.10****	*1.52*	*1.16*	*1.75**	*-0.62*	*-3.44****	*-0.29*	*0.15*	*1.20*
t-stat K	*-1.14*	*1.97**	*2.98****	*2.41***	*-0.59*	*2.52***	*2.29***	*2.75****	*1.32*	*1.00*	*1.51*	*-0.54*	*-3.16****	*-0.27*	*0.14*	*1.10*
Diff (1-2)	0.024	**0.159**	**0.326**	**0.656**	0.494	**0.457**	**0.851**	**0.566**	-0.347	**0.301**	**0.321**	**1.683**	0.789	**0.658**	**0.467**	**0.249**
t-test	*0.90*	***2.02****	***2.11****	***2.86*****	*0.71*	***2.41****	***3.86*****	***2.00****	*-0.58*	***2.01****	***2.77*****	***3.75*****	*1.46*	***2.35****	***2.89*****	***1.86****
Opportunistic Sell (3)	1.678	-0.378	-0.454	-0.749	-0.499	-0.603	-1.169	-1.251	3.484	-0.222	-0.136	-0.617	1.963	-0.181	-0.096	-0.402
t-test B	*6.59****	*-3.82****	*-3.80****	*-4.59****	*-1.68**	*-3.16****	*-3.59****	*-3.37****	*9.09****	*-2.04***	*-1.62*	*-2.96****	*8.58****	*-1.06*	*-0.59*	*-2.47****
t-stat K	*5.84****	*-3.38****	*-3.36****	*-4.07****	*-1.34*	*-2.51***	*-2.85****	*-2.68****	*7.68****	*-1.72**	*-1.37*	*-2.50***	*7.77****	*-0.96*	*-0.53*	*-2.33****
Routine Sell (4)	2.122	-0.319	-0.215	-0.039	3.096	-0.769	-0.645	-0.309	1.809	-0.178	-0.185	-0.159	1.462	-0.143	0.188	0.350
t-test B	*7.43****	*-3.40****	*-2.05***	*-1.97**	*4.93****	*-3.41****	*-2.52***	*-2.49***	*3.62****	*-1.09*	*-1.22*	*-1.33*	*4.24****	*-1.37*	*0.20*	*0.40*
t-stat K	*7.17****	*-3.28****	*-1.98***	*-1.90**	*4.24****	*-2.93****	*-2.17***	*-2.14***	*3.15****	*-0.95*	*-1.07*	*-1.16*	*3.99****	*-1.29*	*0.19*	*0.38*
Diff (3-4)	-0.445	-0.059	-0.240	**-0.711**	-3.595	0.166	-0.524	**-0.942**	1.675	-0.044	0.049	**-0.458**	0.501	-0.038	-0.284	**-0.752**
t-test	*-1.07*	*-0.34*	*-0.96*	***-1.87****	*-3.47****	*0.40*	*-0.84*	***-1.96*****	*2.81****	*-0.17*	*0.14*	***-1.93****	*1.37*	*0.21*	*-0.79*	***-2.20*****

Table 3: Robustness: Performance of Routine and Opportunistic Insiders' Trades

This table shows the result of regressions between return and the opportunistic and routine trades over the sample period 2007-2014. We use abnormal return calculated using the market model as discussed in Table 2 and stock return as the main dependent variables. The main independent variables are Opportunistic Buy, Routine Buy, Opportunistic Sell and Routine Sell. Opportunistic Buy (Sell) is the number of shares bought (sold) by opportunistic insiders scaled by previous day's number of shares outstanding of the firm on the reported date. Routine Buy (Sell) is the number of shares bought (sold) by routine insiders scaled by previous day's number of shares outstanding of the firm on the reported date. Stock Return is the previous day's return on the firm. Market Return is the previous day's market return calculated using MSCI India Index. Size is the log of market capitalization of the firm. Price-to-Book Ratio is the ratio of the previous day's price per share to the previous day's book value per share of the firm. Turnover is the percentage of previous day's total shares traded to the previous day's number of shares outstanding of the firm. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Window Period (1, 5)		**Window Period (1, 10)**		**Window Period (1, 20)**	
	Model 1 Abnormal Return	**Model 2 Stock Return**	**Model 3 Abnormal Return**	**Model 4 Stock Return**	**Model 5 Abnormal Return**	**Model 6 Stock Return**
Opportunistic Buy	0.2688**	0.2176**	0.2265***	0.1978**	0.1544***	0.1330**
	(2.24)	(2.55)	(2.82)	(2.39)	(2.97)	(2.58)
Routine Buy	-0.0861	-0.0625	-0.0669	-0.0692	-0.0772	-0.0864
	(-1.08)	(-0.77)	(-1.00)	(-1.01)	(-1.16)	(-1.51)
Opportunistic Sell	0.0018**	0.0128**	0.0228**	0.0323**	0.0221**	0.0295**
	(2.11)	(2.58)	(2.47)	(2.45)	(2.28)	(2.67)
Routine Sell	-0.0662	0.1574	-0.0110	0.2877	-0.0657	0.0913
	(-0.12)	(0.24)	(-0.06)	(1.33)	(-0.37)	(0.44)
Stock Return	-1.9918	0.9658	19.8230	32.3473	40.6283	46.8293
	(-0.01)	(0.01)	(0.13)	(0.20)	(0.24)	(0.27)
Market Return	1187.4139***	1571.9169***	1067.2412***	1574.5200***	1091.1675***	1697.2534***
	(6.79)	(5.87)	(5.33)	(6.44)	(4.66)	(6.54)
Size	-38.5410***	-20.6489**	-36.1833***	-20.7026**	-41.1127***	-27.6409***
	(-4.06)	(-2.14)	(-4.31)	(-2.57)	(-5.16)	(-3.68)
Price-to-Book Ratio	4.1324	3.8453	2.9025	2.7534	2.9249	2.7524
	(1.40)	(1.27)	(1.13)	(1.07)	(1.31)	(1.21)
Turnover	-187.4588	-101.9939	-254.6702	-171.9744	-282.3719	-156.3419
	(-0.47)	(-0.24)	(-0.89)	(-0.54)	(-1.45)	(-0.76)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.02356	0.02555	0.01808	0.02123	0.01732	0.02065
Number of Firms	855	855	860	860	863	863
Number of Observations	51,119	51,119	109,838	109,838	220,746	220,746

Table 4: Summary Statistics of Control Variables

This table shows the overall summary statistics of control variables used in this study of control variables used in this study over the sample period 2007-2014. Stock Return is the previous day's return on the firm. Market Return is the previous day's market return calculated using MSCI India Index. Market Volatility is the daily standard deviation of market return calculated using previous 90 days return on MSCI India Index. USD Volatility is the daily standard deviation of USD/IRS exchange rate constructed using previous 90 days' figure. MSCI EM Return is the previous day's return on emerging markets calculated using MSCI Emerging Markets Index. MSCI Return is the previous day's return on world market calculated using MSCI Index. US TB Rate is the previous day's one-year Treasury Bills rate. Global VIX Return is the previous day's return on the Chicago Board Options Exchange Volatility Index. *S.D.* denotes the standard deviation.

Control Variables	Mean	Median	S.D.	25^{th} Percentile	75^{th} Percentile
Stock Return (%)	0.0762	0.0000	2.4728	-1.1162	1.1533
Market Return (%)	0.0393	0.0443	1.1636	-0.5998	0.6903
Market Volatility (%)	1.0455	0.9010	0.4335	0.7788	1.1957
USD Volatility (%)	0.5166	0.4600	0.2019	0.3603	0.6369
MSCI EM Return (%)	-0.0043	0.0264	1.0217	-0.5396	0.5796
MSCI Return (%)	0.0375	0.0731	0.8720	-0.3418	0.4793
US TB Rate (%)	0.2163	0.1500	0.2786	0.1200	0.2300
Global VIX Return (%)	-0.0564	-0.1964	6.8376	-3.9314	2.9905

Table 5: Mimicking Hypothesis

This table shows the result of regressions between Net Equity Trading by FIIs after the disclosure of insiders' trades for different window periods (15, 20 and 30 days after the disclosure of insiders' trading) and the opportunistic and routine trades over the sample period 2007-2014. Net Equity Trading is defined as the number of shares traded by all FIIs scaled by previous day's number of shares outstanding of firm *i* in day *t* (reported in pbs units). The main independent variables Opportunistic Buy, Routine Buy, Opportunistic Sell and Routine Sell defined in notes to Table 3. The control variables are defined in the notes to Table 4. We sort the entire sample trades for each category of insider's trades into terciles and designate the top 33rd percentile as the large insiders' trades. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

				Large Insiders' Trades		
	Model 1 (1-15)	**Model 2 (1-20)**	**Model 3 (1-30)**	**Model 4 (1-15)**	**Model 5 (1-20)**	**Model 6 (1-30)**
Opportunistic Buy	0.0021***	0.0027***	0.0034***	0.0046**	0.0072***	0.0069***
	(2.93)	(4.31)	(6.77)	(2.31)	(4.12)	(4.97)
Routine Buy	-0.0023	-0.0010	-0.0011	-0.0047	-0.0036	-0.0032
	(-0.88)	(-0.42)	(-0.65)	(-0.64)	(-0.56)	(-0.65)
Opportunistic Sell	-0.0018	-0.0005	0.0002	0.0014	0.0020	0.0023
	(-0.44)	(-0.14)	(0.07)	(0.33)	(0.51)	(0.75)
Routine Sell	-0.0002	-0.0000	0.0000	-0.0006	-0.0019	-0.0010
	(-0.27)	(-0.04)	(0.03)	(-0.35)	(-1.25)	(-0.82)
Stock Return	26.0274***	25.1449***	24.8122***	35.5727***	27.3531***	24.9794***
	(18.87)	(20.79)	(25.41)	(5.97)	(5.03)	(5.75)
Market Return	13.7376***	12.5349***	13.2406***	14.0075	15.8658	20.3786**
	(4.71)	(4.90)	(6.38)	(1.00)	(1.24)	(2.00)
Market Volatility	-57.1042***	-42.1264***	-34.3702***	-169.3047***	-123.4128**	-120.6798***
	(-4.60)	(-3.87)	(-3.88)	(-2.76)	(-2.20)	(-2.71)
USD Volatility	30.0563	4.0940	-13.8613	306.9879**	280.5950**	83.8806
	(1.25)	(0.20)	(-0.82)	(2.33)	(2.35)	(0.89)
MSCI EM Return	30.5385***	27.6909***	17.0671***	55.4047**	34.9724*	55.3821***
	(4.37)	(4.53)	(3.43)	(2.40)	(1.66)	(3.32)
MSCI Return	-6.2755	-9.0749**	-4.3326	-42.6204	-25.2124	-55.4626**
	(-1.32)	(-2.19)	(-1.30)	(-1.24)	(-0.80)	(-2.23)
US TB Rate	-24.3213	-32.4140**	-36.8065***	6.9802	-21.9193	-19.2652
	(-1.42)	(-2.15)	(-3.02)	(0.10)	(-0.34)	(-0.38)
Global VIX Return	0.6506	0.0269	-0.4495	-4.5058	-3.4696	-3.4617
	(0.93)	(0.04)	(-0.92)	(-1.29)	(-1.09)	(-1.40)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.1290	0.1186	0.1083	0.1495	0.1329	0.1060
Number of Firms	440	455	469	352	362	377
Number of Observations	60,522	78,277	119,377	15,994	20,635	31,583

Table 6: Propensity Score Matching

This table reports the results of propensity score matching. Treatment group is defined as the firms where both insiders and FIIs trade whereas Control group is defined as the firms where FIIs trade but insiders do not. We use propensity score matching with nearest neighbourhood of 0.01 caliper using various firm level characteristics to identify matched control groups. Panel A presents the parameter estimates from the probit model used to estimate the propensity scores for the treatment and control groups. The dependent variable is 1 if in treatment group and 0 if in control group. The firm level characteristics are defined in the notes to Table 1. We control for time and firm fixed effects. Standard errors are corrected for clustering at the industry level. Panel B reports the distribution of estimated propensity scores post matching. Panel C reports the univariate comparison between the treatment and control firm's characteristics and their corresponding *t*-statistics. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Pre-Match Propensity Score Regression and Post-Match Diagnostic Regression

	Dummy=1 if in treatment group; 0 if in control group	
	Model 1	Model 2
	Pre-match	Post-match
Size	0.1278***	-0.0344
	(7.64)	(-1.24)
Leverage	0.0005	-0.0025
	(0.56)	(-1.21)
Return on Equity	0.2904***	0.0038
	(4.34)	(1.15)
Cash Holdings	-0.2882	0.0881
	(-1.17)	(0.24)
Current Ratio	-0.0000	0.0006
	(-0.08)	(0.52)
Firm Age	-0.1033*	-0.0531
	(-1.66)	(-0.61)
Board Size	0.2235**	-0.0024
	(2.26)	(-0.01)
Board Independence	0.4110**	-0.0573
	(2.08)	(-0.22)
Industry Fixed Effects	Yes	Yes
Pseudo R^2	0.05952	0.03128
Number of observations	55,704	29,517

Panel B: Estimated Propensity Score Distributions

	Obs.	Min	P5	P50	Mean	SD	P95	Max
Treatment	462	0.125	0.268	0.503	0.469	0.117	0.632	0.748
Control	462	0.131	0.268	0.505	0.473	0.12	0.642	0.757
Difference	-	-0.006	0.000	-0.002	-0.004	-0.003	-0.01	-0.009

Panel C: Difference in Firm Characteristics

	Treatment	Control	Difference	*t*-statistics
Size	8.136	8.255	-0.118	-1.14
Leverage	1.471	1.692	-0.221	-0.71
Return on Equity	0.116	0.115	0.002	0.34
Cash Holdings	0.063	0.062	0.001	0.37
Current Ratio	3.110	3.589	-0.479	-0.64
Firm Age	3.247	3.252	-0.006	-0.44
Board Size	2.263	2.273	-0.010	-1.62
Board Independence	0.470	0.468	0.001	0.55

Table 7: Difference-in-Differences for FIIs Equity Trading

This table reports the Difference-in-Differences (DiD) test examining how opportunistic insiders' trades affect the equity trading of FIIs. Treatment group is defined as the firms where both insiders and FIIs trade whereas Control group is defined as the firms where FIIs trade but insiders do not. We use propensity score matching with nearest neighbourhood of 0.01 caliper using various firm level characteristics to identify matched control groups. Panel A provides the DiD test results for Net Equity Trading) before and after the disclosure of opportunistic buy and opportunistic sell trades. Panel E reports the regression estimates of Net Equity Trading of treatment and control firms surrounding the disclosure of opportunistic and routine insiders' trades. The dependent variable is Net Equity Trading by FIIs. $Opp\ Buy\ Event_t$ is a dummy variable that takes value of 1 after the disclosure of opportunistic insider buy trades and 0 before the disclosure. $Opp\ Sell\ Event_t$ is a dummy variable that takes value of 1 after the disclosure of opportunistic insider sell trades and 0 before the disclosure. $TRMT_i$ is dummy variable that takes value of 1 for treatment firms and 0 for control firms. All the control variables are defined in notes to Table 3. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Net Equity Trading Difference-in-Differences Test

Window Period (days)	Mean Treatment Difference (after-before)	Mean Control Difference (after-before)	Mean DiD Estimator (treat-control)
	Opportunistic Buy		
-15 to 15	0.9630***	-0.3013	1.2643**
	(4.51)	(-0.60)	(2.00)
-20 to 20	1.0707***	0.1073	0.9634***
	(-5.87)	(0.21)	(2.65)
-30 to 30	0.9881***	-0.2127	1.2008***
	(7.23)	(0.53)	(2.67)
	Opportunistic Sell		
-15 to 15	-0.5232***	-0.0568	-0.4664
	(-3.36)	(-0.12)	(-1.01)
-20 to 20	-0.4588***	0.0030	-0.4618
	(-3.50)	(0.00)	(-1.14)
-30 to 30	-0.4445***	0.2859	-0.7304**
	(-4.45)	(0.86)	(-2.27)

Panel B: Net Equity Trading Difference-in-Differences Regression Analysis

	Opportunistic Buy			Opportunistic Sell		
	Model 1 (-15,15)	Model 2 (-20,20)	Model 3 (-30,30)	Model 4 (-15,15)	Model 5 (-20,20)	Model 6 (-30,30)
$Opp\ Buy\ Event_t \times TRMT_i$	0.6720**	0.6534**	0.4612*			
	(2.85)	(3.07)	(2.08)			
$Opp\ Sell\ Event_t \times TRMT_i$				-0.1595	-0.1132	-0.1715
				(-0.62)	(-0.52)	(-0.81)
Stock Return	55.1704***	52.6514***	46.8575***	95.6957***	96.5681***	92.1087***
	(4.23)	(3.95)	(3.74)	(4.33)	(4.57)	(4.71)
Market Return	42.4885	46.1515*	50.0704*	17.8799	12.3955	17.4561
	(1.59)	(1.85)	(1.99)	(0.71)	(0.58)	(1.01)
Market Volatility	-4.3167	-8.5919	-73.2216	-132.9591	-78.9501	-84.0624
	(-0.02)	(-0.05)	(-0.55)	(-0.92)	(-0.57)	(-0.65)
USD Volatility	-352.1352	-304.9451	-149.7756	-259.8383	-317.2349	-342.1876
	(-1.18)	(-1.16)	(-0.66)	(-0.45)	(-0.59)	(-0.74)
MSCI EM Return	22.3947	23.0191	11.3072	7.1918	-0.2302	1.5968
	(0.47)	(0.49)	(0.26)	(0.21)	(-0.01)	(0.06)
MSCI Return	-105.6755	-106.9461	-94.8304	52.9767	49.4648	42.6801
	(-1.05)	(-1.12)	(-1.14)	(0.77)	(0.85)	(0.87)
US TB Rate	-697.9520*	-654.8408*	-576.4132**	-96.4386	-141.2499	-136.3641
	(-1.97)	(-2.09)	(-2.58)	(-0.50)	(-0.74)	(-0.76)
Global VIX Return	-23.6427	-24.9565*	-24.7496**	-0.4808	-1.1621	0.8380
	(-1.69)	(-1.91)	(-2.27)	(-0.12)	(-0.36)	(0.30)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.095	0.093	0.082	0.104	0.089	0.070
Number of Firms	369	384	396	319	330	345
Number of Observations	53,007	68,657	104,516	63,043	81,622	124,344

Table 8: FIIs' Equity Trading and Stock Return: Using Propensity Score Matching

This table reports the Difference-in-Differences (DiD) test examining the difference in abnormal return between the treated and control group. Treatment group is defined as the firms where both insiders and FIIs trade whereas Control group is defined as the firms where FIIs trade but insiders do not. We use propensity score matching with nearest neighbourhood of 0.01 caliper using various firm level characteristics to identify matched control groups. Panel A reports the cumulative abnormal return (CARs) for opportunistic buy and sell trades on treated and control firms calculated using market model. The estimation period is from -200 to -21 days prior to the disclosure of insiders' trading. We analyse CARs for different event period ranging from 20 days before the disclosure of insiders' trades and five, 10 and 20 days after the disclosure of insiders' trades. *t-test B* and *t-test K* denotes the standardized cross-sectional test statistics proposed by Boehmer et al. (1991) and Kolari (2010) respectively. *t-test* is the test statistics for the difference in CARs of opportunistic and routine trades. Panel B shows the result of regressions between returns and the DiD estimator for opportunistic buy trades (Panel B.1) and opportunistic sell trades (Panel B.2). We use the abnormal return and the stock return as the main dependent variable. The main independent variable is $Opp\ Buy\ Event_t \times TRMT_i$ in Panel B.1. and $Opp\ Buy\ Event_t \times TRMT_i$ in Panel B.2., where $Opp\ Buy\ Event_t$ is the dummy variable equal to 1 after the reported date of opportunistic insiders' buy trades and 0 before, $Opp\ Sell\ Event_t$ is the dummy variable equal to 1 after the reported date of opportunistic insiders' sell trades and 0 before, and $TRMT_i$ is the dummy variable that takes value of 1 for treatment firms and 0 for control. All the control variables are defined in the notes to Table 3. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A. Difference in CARs between Treatment and Control firms for Opportunistic Buy and Opportunistic Sell

	Opportunistic Buy				Opportunistic Sell			
	(-20,-1)	(1,5)	(1,10)	(1,20)	(-20,-1)	(1,5)	(1,10)	(1,20)
Treatment (1)	-0.951	0.629	0.926	2.010	2.429	-0.297	-0.207	-0.153
t-test B	-2.50**	5.08***	5.97***	7.44***	*3.71****	*2.44***	*2.44***	*2.32***
t-stat K	-2.37**	4.82***	5.65***	7.05***	*3.42****	*2.25***	*2.25***	*2.13***
Control (2)	-0.781	0.136	0.613	0.924	0.894	0.278	0.356	0.487
t-test B	-3.59***	1.30	4.01***	3.55***	*5.09****	*-1.93**	*-1.18*	*-1.48*
t-stat K	-2.90***	1.05	3.24***	2.86***	*4.23****	*-1.61**	*-0.98*	*-1.23*
Diff (1-2)	-0.170	**0.493**	**0.314**	**1.086**	1.535	**-0.575**	**-0.563**	-0.640
t-test	-4.99***	**3.01*****	**2.39*****	**3.01*****	*2.88***	***-2.40*****	***-2.15*****	*-1.21*

Panel B. Difference in CARs: Using Regression

Panel B.1: Opportunistic Buy

	Window Period (-5, 5)		Window Period (-10, 10)		Window Period (-20, 20)	
	Model 1 Abnormal Return	**Model 2 Stock Return**	**Model 3 Abnormal Return**	**Model 4 Stock Return**	**Model 5 Abnormal Return**	**Model 6 Stock Return**
$Opp\ Buy\ Event_t \times TRMT_i$	0.3407***	0.3876***	0.2394***	0.3023***	0.1449***	0.2054***
	(4.68)	(4.76)	(4.11)	(4.26)	(2.83)	(3.51)
Stock Return	4.3992*	5.1115*	6.2229**	6.4165**	7.2214***	7.4459***
	(1.74)	(1.96)	(2.60)	(2.63)	(3.13)	(3.18)
Market Return	0.1198	5.1436	-2.4378	3.5808	-0.0824	6.7805
	(0.03)	(1.07)	(-0.63)	(0.80)	(-0.02)	(1.63)
Size	-0.5912***	-0.4916***	-0.6306***	-0.5544***	-0.6215***	-0.5888***
	(-5.16)	(-5.13)	(-6.10)	(-5.74)	(-7.14)	(-6.69)
Price-to-Book Ratio	-0.0015**	-0.0022***	-0.0004	-0.0013**	-0.0017**	-0.0024***
	(-2.13)	(-2.79)	(-0.72)	(-2.59)	(-2.74)	(-4.30)
Turnover	-1.8547	-2.8377	-0.0316	-0.8013	-1.7397	-1.5774
	(-0.79)	(-0.88)	(-0.01)	(-0.29)	(-0.60)	(-0.47)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.034	0.048	0.033	0.046	0.031	0.044
Number of Firms	387	387	391	391	391	391
Number of Observations	18,411	18,411	39,690	39,690	79,360	79,360

Panel B.2: Opportunistic Sell

	Window Period (-5, 5)		**Window Period (-10, 10)**		**Window Period (-20, 20)**	
	Model 1 Abnormal Return	**Model 2 Stock Return**	**Model 3 Abnormal Return**	**Model 4 Stock Return**	**Model 5 Abnormal Return**	**Model 6 Stock Return**
$Opp\ Sell\ Event_t \times TRMT_i$	0.0027	-0.0375	-0.0135	-0.0616	-0.0557	-0.1080***
	(0.05)	(-0.63)	(-0.36)	(-1.43)	(-1.65)	(-2.78)
Stock Return	3.6275**	3.5813**	3.5651**	3.5044**	3.6307**	3.5439**
	(2.21)	(2.25)	(2.40)	(2.39)	(2.45)	(2.40)
Market Return	12.9129***	18.0382***	12.8046***	18.6077***	12.5064***	19.4677***
	(4.81)	(4.84)	(5.67)	(5.31)	(5.28)	(5.90)
Size	-0.6799***	-0.5831***	-0.7071***	-0.6165***	-0.6529***	-0.5819***
	(-7.04)	(-6.35)	(-8.45)	(-7.02)	(-8.53)	(-7.33)
Price-to-Book Ratio	-0.0044	-0.0032	-0.0021	-0.0002	-0.0030	-0.0015
	(-1.00)	(-1.04)	(-0.61)	(-0.09)	(-1.02)	(-0.78)
Turnover	-8.1300***	-8.0127***	-6.1151**	-5.5200**	-7.2982***	-6.6807***
	(-3.25)	(-2.90)	(-2.57)	(-2.19)	(-3.27)	(-2.82)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.033	0.047	0.029	0.043	0.025	0.040
Number of Firms	522	522	523	523	525	525
Number of Observations	52,360	52,360	111,866	111,866	223,712	223,712

Table 9: Liquidity Hypothesis

This table shows the result of regressions between Net Equity Trading by FIIs at the traded date of insiders' trading and the contemporaneous opportunistic trades and routine trades over the sample period 2007-2014. Net Equity Trading is defined as the number of shares traded by all FIIs scaled by previous day's number of shares outstanding of firm *i* in day *t* (reported in pbs units). Contemporaneous Opportunistic Buy (Sell) is the number of shares bought (sold) by opportunistic insiders scaled by previous day's number of shares outstanding of the firm on the actual traded date. Contemporaneous Routine Buy (Sell) is the number of shares bought (sold) by routine insiders scaled by previous day's number of shares outstanding of the firm on the actual traded date. All the control variables are defined in notes to Table 4. We sort the entire sample trades for each category of insiders' trades into terciles and designate the top 33rd percentile as the large insiders' trades. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

				Large Trades
	Model 1	Model 2	Model 3	Model 4
	(Day 0)	(Day 0)	(Day 0)	(Day 0)
Contemporaneous Opportunistic Buy	-0.0034		-0.0034	-0.0034
	(-0.96)		(-0.95)	(-0.92)
Contemporaneous Routine Buy	-0.0355***		-0.0354***	-0.0363***
	(-9.41)		(-9.39)	(-9.11)
Contemporaneous Opportunistic Sell		0.0247	0.0205	0.0215
		(1.14)	(0.95)	(0.97)
Contemporaneous Routine Sell		-0.0451***	-0.0439***	-0.0441***
		(-3.28)	(-3.22)	(-3.18)
Stock Return	57.5178***	57.8041***	58.0688***	60.0799***
	(6.64)	(6.62)	(6.71)	(6.67)
Market Return	14.7250	14.9662	14.9104	16.3528
	(0.75)	(0.75)	(0.76)	(0.79)
Market Volatility	-169.9488**	-160.5081**	-171.3938**	-184.1279**
	(-2.30)	(-2.15)	(-2.32)	(-2.33)
USD Volatility	237.5749	227.7063	236.2161	219.3167
	(1.55)	(1.48)	(1.54)	(1.35)
MSCI EM Return	-20.1962	-13.0084	-17.2082	-19.7719
	(-0.63)	(-0.40)	(-0.54)	(-0.58)
MSCI Return	40.5633	43.6982	37.2936	49.0993
	(0.85)	(0.91)	(0.79)	(0.97)
US TB Rate	9.5586	-12.0786	9.8694	16.6229
	(0.10)	(-0.12)	(0.10)	(0.16)
Global VIX Return	-1.7421	-1.5736	-1.9904	-1.5474
	(-0.36)	(-0.32)	(-0.41)	(-0.30)
Time Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.2312	0.2194	0.2325	0.2298
Number of Firms	284	284	284	184
Number of Observations	5,472	5,472	5,472	2,117

Table 10: Robustness Tests: Trade-Level Definition of Opportunistic and Routine Traders

This table shows the result of regressions between Net Equity Trading by FIIs at the traded date of insiders' trading and the alternative (contemporaneous) opportunistic trades and routine trades over the sample period 2007-2014 to test mimicking hypothesis is Panel A and liquidity hypothesis in Panel B. Net Equity Trading is defined as the number of shares traded by all FIIs scaled by previous day's number of shares outstanding of firm *i* in day *t* (reported in pbs units). To define the routine trades, we examine the insiders' trading patterns for at least three preceding years. If an insider traded a stock in the same calendar month in three consecutive years, all subsequent trades that he or she made in the same month are labelled as routine and trades made in a different month are labelled opportunistic. Opportunistic Buy (Sell) is the number of shares bought (sold) by opportunistic insiders scaled by previous day's number of shares outstanding of the firm on the reported date. Routine Buy (Sell) is the number of shares bought (sold) by routine insiders scaled by previous day's number of shares outstanding of the firm on the reported date. Contemporaneous Opportunistic Buy (Sell) is the number of shares bought (sold) by opportunistic insiders scaled by previous day's number of shares outstanding of the firm on the actual traded date. Contemporaneous Routine Buy (Sell) is the number of shares bought (sold) by routine insiders scaled by previous day's number of shares outstanding of the firm on the actual traded date. Control variables are same as in Table 5 and Table 6. We sort the entire sample trades for each category of insider's trades into terciles and designate the top 33rd percentile as the large insiders' trades. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Mimicking Hypothesis

				Large Insiders' Trades		
	Model 1 (1-15)	Model 2 (1-20)	Model 3 (1-30)	Model 1 (1-15)	Model 2 (1-20)	Model 3 (1-30)
Opportunistic Buy	0.0019***	0.0025***	0.0033***	0.0025**	0.0033***	0.0039***
	(2.62)	(4.03)	(6.47)	(2.50)	(3.90)	(5.47)
Opportunistic Sell	-0.0002	-0.0000	-0.0000	0.0001	-0.0000	0.0002
	(-0.33)	(-0.09)	(-0.04)	(0.13)	(-0.02)	(0.33)
Routine Buy	0.0012	0.0020	0.0015	-0.0018	0.0002	-0.0005
	(0.40)	(0.82)	(0.79)	(-0.41)	(0.06)	(-0.17)
Routine Sell	-0.0086	-0.0062	-0.0043	0.0010	0.0002	0.0010
	(-1.61)	(-1.37)	(-1.14)	(0.28)	(0.09)	(0.41)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.129	0.119	0.108	0.163	0.147	0.140
Number of Firms	440	455	469	359	372	381
Number of Observations	60,522	78,277	119,377	15,983	20,429	29,501

Panel B: Liquidity Hypothesis

	Model 1	Large Insiders' Trades
Contemporaneous Opportunistic Buy	-0.0040	-0.0037
	(-1.12)	(-1.02)
Contemporaneous Routine Buy	-0.0350***	-0.0348***
	(-9.33)	(-9.15)
Contemporaneous Opportunistic Sell	0.0315	0.0331
	(1.12)	(1.17)
Contemporaneous Routine Sell	-0.0404***	-0.0418***
	(-2.80)	(-2.88)
Controls	Yes	Yes
Time Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Adjusted R2	0.2320	0.2321
Number of Firms	284	284
Number of Observations	5,472	3,283

Table 11: Robustness Tests: Using Alternative Definition of FIIs Trading

This table shows the result of regressions between changes in holdings by FIIs and the lagged and contemporaneous routine and opportunistic insiders' trades over the sample period 2007-2014. The dependent variable is quarterly changes in holdings by FIIs in firm *i* in quarter *t*. In Models 1-3, Number of Opp Buys (Sells) is the log of 1+number of opportunistic insiders' trades in the previous two quarters and Number of Routine Buys (Sells) is the log of 1+number of routine insiders' trades in the previous two quarters of the firm. In Models 4-6, Number of Opp Buys (Sells) is the log of 1+number of opportunistic insiders' trades in the same quarter and Number of Routine Buys (Sells) is the log of 1+number of routine insiders' trades in the same quarter of the firm. Control variables are defined in notes to Table 1. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Past Response			Contemporaneous Response		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Number of Opp Buys	0.1280***		0.1281***	-0.0968		-0.0847
	(3.55)		(3.53)	(-1.12)		(-0.97)
Number of Routine Buys	-0.0157		-0.0157	-0.2551**		-0.2521**
	(-0.38)		(-0.38)	(-2.90)		(-2.87)
Number of Opp Sells		-0.2112**	-0.2114**		-0.0836	-0.0697
		(-2.86)	(-2.87)		(-1.77)	(-1.52)
Number of Routine Sells		0.0006	0.0089		0.2089***	0.2046***
		(0.01)	(0.23)		(4.10)	(3.94)
Size	0.1002***	0.1020***	0.0992***	0.0939***	0.0902***	0.0861***
	(5.03)	(5.44)	(4.64)	(4.88)	(4.86)	(4.38)
Leverage	0.0230**	0.0231***	0.0230***	0.0224**	0.0226**	0.0221**
	(3.06)	(3.24)	(3.22)	(2.46)	(2.35)	(2.31)
Return on Equity	0.2713***	0.2818**	0.2706**	0.2844***	0.2771***	0.2751***
	(3.19)	(2.89)	(3.13)	(3.78)	(4.04)	(4.02)
Cash Holdings	0.9148*	0.8276	0.9126*	0.8081	0.8976*	0.8817*
	(1.94)	(1.72)	(1.92)	(1.75)	(1.95)	(1.91)
Current Ratio	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	(0.14)	(0.10)	(0.14)	(0.20)	(0.14)	(0.15)
Firm Age	-0.0171	-0.0287	-0.0162	-0.0580	-0.0531	-0.0484
	(-0.37)	(-0.67)	(-0.35)	(-1.10)	(-0.99)	(-0.92)
Board Size	-0.1998	-0.2205	-0.1968	-0.1787	-0.1599	-0.1567
	(-0.95)	(-1.00)	(-0.91)	(-0.76)	(-0.68)	(-0.66)
Board Independence	0.4045	0.3637	0.4057	0.3183	0.3526	0.3651
	(1.16)	(0.95)	(1.16)	(0.83)	(0.97)	(0.98)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.02731	0.02336	0.02654	0.02780	0.03065	0.03028
Number of Firms	423	423	423	420	420	420
Number of Observations	2,482	2,482	2,482	2,472	2,472	2,472

Table 12: Additional Robustness Tests

This table shows the result of regressions between Net Equity Trading by FIIs before the disclosure of insiders' trades and the opportunistic and routine insiders' trades in Model 1-3 and Net Equity Trading by FIIs after the disclosure of insiders' trades and the opportunistic and routine trades in Model 4-6 over the sample period 2007-2014. Net Equity Trading is defined as the number of shares traded by all FIIs scaled by previous day's number of shares outstanding of firm *i* in day *t* (reported in pbs units). The main independent variables Opportunistic Buy, Routine Buy, Opportunistic Sell and Routine Sell are the defined the number of shares traded (buy or sold) by opportunistic (routine) inside traders scaled by previous day's number of shares outstanding of firm. All the control variables are defined in notes to Table 3. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Lead Trades			Past Trades without month end observations		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	(-15,-1)	(-20,-1)	(-30,-1)	(1,15)	(1,20)	(1,30)
Opportunistic Buy	0.0003	-0.0008	-0.0012	0.0021**	0.0029***	0.0047***
	(0.07)	(-0.26)	(-0.61)	(2.49)	(3.79)	(7.47)
Routine Buy	-0.0139	-0.0148	-0.0090	-0.0018	0.0004	0.0010
	(-1.57)	(-1.47)	(-1.36)	(-0.52)	(0.12)	(0.48)
Opportunistic Sell	-0.0016	-0.0013	-0.0013	-0.0019	-0.0006	-0.0004
	(-1.06)	(-1.46)	(-1.46)	(-0.40)	(-0.16)	(-0.11)
Routine Sell	0.0041	0.0032	0.0016	-0.0006	-0.0002	0.0001
	(1.07)	(0.66)	(0.52)	(-0.89)	(-0.41)	(0.17)
Stock Return	33.0935***	32.3710***	29.9920***	23.6280***	22.1103***	21.0899***
	(9.39)	(9.12)	(8.37)	(14.20)	(15.20)	(18.00)
Market Return	9.8025	9.7460	9.9596	3.3077	1.7892	3.6325
	(1.35)	(1.26)	(1.32)	(0.94)	(0.58)	(1.46)
Market Volatility	-68.8918	-76.5391	-68.6791	-66.0978***	-46.9510***	-36.2554***
	(-1.35)	(-1.50)	(-1.63)	(-4.48)	(-3.62)	(-3.42)
USD Volatility	92.7813	98.8753	78.2061	66.0285**	26.6919	8.8977
	(0.85)	(0.87)	(0.78)	(2.28)	(1.06)	(0.44)
MSCI EM Return	-3.2018	-5.7802	-8.0211	30.0341***	28.4624***	19.7963***
	(-0.42)	(-0.78)	(-1.03)	(3.59)	(3.88)	(3.34)
MSCI Return	-12.5474	-18.6635*	-24.8872**	-13.9613**	-15.6784***	-10.4356***
	(-1.11)	(-1.91)	(-2.53)	(-2.45)	(-3.15)	(-2.61)
US TB Rate	32.4711	30.4724	14.6556	-69.0556***	-76.6501***	-69.3382***
	(0.41)	(0.35)	(0.22)	(-3.30)	(-4.17)	(-4.78)
Global VIX Return	-0.5750	-0.2746	0.6206	-0.5249	-1.1191	-1.1126*
	(-0.80)	(-0.28)	(0.61)	(-0.63)	(-1.54)	(-1.93)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.166	0.155	0.138	0.132	0.124	0.117
Number of Firms	453	466	481	417	432	452
Number of Observations	59,754	77,522	117,923	40,347	52,540	80,444

Appendix 1: Robustness Test: Using Past Five Years' Trading History

This table shows the result of regressions between Net Equity Trading by FIIs at the traded date of insiders' trading and the alternative (contemporaneous) opportunistic trades and routine trades over the sample period 2007-2014 to test mimicking hypothesis in Panel A and liquidity hypothesis in Panel B. Net Equity Trading is defined as the number of shares traded by all FIIs scaled by previous day's number of shares outstanding of firm *i* in day *t* (reported in pbs units). For the classification of insiders' trades, in this alternate setting, an insider must make at least one trade in each of five preceding years. A routine trader is an insider who placed a trade in the same calendar month for at least five consecutive years. Otherwise, the trader is considered as an opportunistic. An insider will be classified as either routine or opportunistic at the beginning of each year and all subsequent trades after the classification are then classified as either routine buy (sell) or opportunistic buy (sell) trades. Opportunistic Buy (Sell) is the number of shares bought (sold) by opportunistic insiders scaled by previous day's number of shares outstanding of the firm on the reported date. Routine Buy (Sell) is the number of shares bought (sold) by routine insiders scaled by previous day's number of shares outstanding of the firm on the reported date. Contemporaneous Opportunistic Buy (Sell) is the number of shares bought (sold) by opportunistic insiders scaled by previous day's number of shares outstanding of the firm on the actual traded date. Contemporaneous Routine Buy (Sell) is the number of shares bought (sold) by routine insiders scaled by previous day's number of shares outstanding of the firm on the actual traded date. Control variables are same as in Table 5 and Table 6. We sort the entire sample trades for each category of insider's trades into terciles and designate the top 33rd percentile as the large insiders' trades. We control for time and firm fixed effects. Standard errors are corrected for clustering at the firm and time level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Mimicking Hypothesis

				Large Insiders' Trades		
	Model 1 (1-15)	Model 2 (1-20)	Model 3 (1-30)	Model 1 (1-15)	Model 2 (1-20)	Model 3 (1-30)
Opportunistic Buy	0.0127**	0.0167***	0.0158***	0.0157***	0.0161***	0.0158***
	(1.99)	(3.04)	(3.40)	(3.76)	(4.02)	(4.15)
Opportunistic Sell	0.0007	-0.0006	-0.0016	-0.0019	-0.0025	-0.0040
	(0.50)	(-0.51)	(-1.59)	(-0.20)	(-0.32)	(-0.61)
Routine Buy	-0.0063	-0.0098	-0.0116	-0.0007	-0.0004	-0.0006
	(-0.31)	(-0.56)	(-0.81)	(-0.81)	(-0.59)	(-0.95)
Routine Sell	0.0009	0.0008	0.0009	-0.0003	-0.0002	-0.0005
	(1.17)	(1.22)	(1.60)	(-0.33)	(-0.30)	(-0.69)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.1606	0.1491	0.1320	0.1584	0.1489	0.1244
Number of Firms	233	237	244	182	201	216
Number of Observations	35,107	45,377	69,189	10,486	13,378	19,376

Panel B: Liquidity Hypothesis

	Model 1	Large Insiders' Trades
Contemporaneous Opportunistic Buy	-0.0047*	-0.0044
	(-1.55)	(-1.33)
Contemporaneous Routine Buy	-0.0553***	-0.0554***
	(-9.39)	(-9.20)
Contemporaneous Opportunistic Sell	-0.0646	-0.0636
	(-0.70)	(-0.67)
Contemporaneous Routine Sell	-0.1747***	-0.1298***
	(-3.95)	(-3.32)
Controls	Yes	Yes
Time Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Adjusted R2	0.2336	0.2300
Number of Firms	143	133
Number of Observations	3,012	2,262