The Influence of Foreign Portfolio Investors on Tax Policy

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Abstract

We use an unexpected policy announcement in the Indian market that threatened to retrospectively curb the tax avoidance practices of foreign portfolio investors (FPIs) to conduct a quasi-natural experiment to investigate the direction and extent of reactions of these investors. Using transactional level equity trading data, our results show that following the announcement there is an immediate and economically significant reduction in average equity trading by FPIs of approximately INR 8.10 million per day. Consequently, this withdrawal of funds has undesirable effect on stock liquidity, volatility and prices that forces the government to relax the proposed policy. These findings suggest that FPIs can influence policy making in their favour by exercising their market disruptive influence.

JEL Classification: G11, G18

Key Words: policy influence; tax avoidance; equity trading; emerging market; quasi-natural experiment

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1 Introduction

Foreign Portfolio Investors (hereafter, FPIs) are one of the major investor groups in emerging markets. The importance of FPIs, particularly for the capital constrained emerging markets, is widely documented in the literature as they can have a significant influence on the value of stocks and the cost of raising capital (see Bekaert and Harvey (2003), Kerner (2015)). This is important as the higher cost of capital, as a result of lower foreign portfolio investments, could reduce the investment activities of publicly listed firms as the value of projects may not justify their prospective economic worth (Henry (2000)). Recognizing such benefits, policy makers often shape policies that attract and support FPIs. However, a few recent papers suggest that FPIs themselves hold significant market power to influence policymaking to suit their own investment preferences (see Kerner (2015)). Although FPIs could influence a host country's policy making, Kerner (2015) suggests that the influence depends on whether FPIs can impact shareholders' and managers' interest and whether those shareholders and managers are in a position to change the government policies. We extend this literature on FPIs political influence by arguing that they also possess direct market-based means of instituting changes in the host governments' policies through their market withdrawal response, even if the change in policy relates to FPIs tax avoidance.

The influence of taxes on foreign portfolio choice has received some attention in the literature (Poterba (2001), Graetz and Grinberg (2002), Poterba and Samwick (2003), Sialm (2009)), but the reaction of FPIs to proposed changes in tax policies and the subsequent government response is so far unexplored, to the best of our knowledge. We argue that there are two main challenges in establishing a causal effect of tax avoidance on the trading activities of FPIs. First, one needs to isolate the effect of tax avoidance from other possible factors that might affect the FPIs' trading behaviour, such as return chasing, and the various push and pull

factors of capital flows. Second, instead of using an endogenous variable reflecting tax changes, an exogenous shock that alters the current tax rules affecting the FPIs is a preferred set-up in establishing credible causality. We overcome these challenges by exploiting an unexpected announcement of changes in tax policy aimed at curbing the tax avoidance motives of FPIs in the Indian market.[1] We examine how FPIs react to policy changes and their potential implications on subsequent policy amendments in the Indian market, by exploiting a tax related, unexpected policy announcement made on 1st April 2015 called Minimum Alternate Tax (henceforth, MAT).[2]

Before the announcement, there was ambiguity surrounding the applicability of MAT on FPIs, as it was widely believed that only Indian firms are subject to the MAT provisions under which companies were compelled to pay a certain minimum tax. However, after the announcement, the provisions threatened to increase the retrospective tax liability on incomes earned by FPIs. The impending tax change created substantial uncertainty as it directly challenged the ability of FPIs to avoid taxes using offshore tax havens. However, succumbing to the reaction of FPIs, the government backed down from its plan and on 1st September 2015 announced that retrospective MAT liability would not be imposed on FPIs. Thus, the period between the effective date (1st April 2015) and the second announcement (1st September 2015) provides us with an ideal window to examine the effect of the change in rules on tax avoidance on the investment activities of FPIs (see Section 2 for further details on MAT). Specifically, we address three key questions. First, we examine the direction and size of trade by FPI following the MAT announcement. Second, we also investigate the possible implications of post-MAT trading on different stock level features of the traded firms. Finally, we also study

[1] FPIs are one of the major and influential investor groups in India, hold more than 40% of freely floated shares in the equity market. "More foreign funds to face India tax demands", *Financial Times*, 13th April 2015.
[2] Unlike other tax policy changes, the potential tax change we use was significant (as it threatened to increase tax liability by almost 20%) and, to the best of our knowledge, was not contaminated by other information or policy changes. We address the effect of other systematic events during the shock period in Section 5.4.1.

the reaction (directional and economic size) of FPIs once the government backtrack on the controversial MAT provision.

Using transactional level data and a quasi-natural Difference-in-Differences (DiD) empirical approach, our results show that there is a significant negative reaction to the impact of the proposed changes in tax policy that threatened to increase retrospective tax liability of FPIs on their trading activities. The results show significant withdrawal by FPIs in response to the proposed tax change, which threatened to increase FPIs' tax liability. The effect is not only statistically significant but also economically material, on average lead to a decline in net equity trading by 0.344 basis point of market capitalization per day for an average company (i.e. an outflow of approximately INR 8.10 million per equity). We also find that within the first seven trading days after the effective date announcement FPIs started withdrawing from the market. These results are robust to various checks, and in particular continue to hold when controlling for other systematic shocks, using an alternative treatment group, ruling out the possibility of false experiment and addressing the issue of attrition bias.

Further, our tests on the implications of the outflow show that the MAT announcement had a negative impact on stock turnover, liquidity, and volatility, thus potentially elevating the cost of capital. In economic terms, we find that one standard deviation decline in net equity trading (2.926 basis points) leads to 0.0246% decrease in turnover ratio, 0.062 point increase in illiquidity index, 0.129 point increase in liquidity (higher liquidity index suggest lower stock liquidity) and 0.0123% increase in stock volatility. Further, the results on pricing effects demonstrate that FPIs' withdrawal had a depressing pricing effects on the market. We find an effect on 0.54% decline in one trading day cumulative stock return for long strategy on treated firms and 0.67% increase in one trading day cumulative stock return for short strategy on control firms for one standard deviation decline in net equity trading (2.926 basis points).

Finally, given the unfavourable implications of the withdrawal and the potential pressure

from FPIs-represented lobby groups, the government retracted the tax change. However, the reversal of the policy did not lead to immediate and equally substantial inflows compared to the abrupt and economically sizeable outflows on the announcement of the policy. Economically, though the announcement of the policy lead to portfolio outflow of 0.344 basis points of market capitalization, the reversal of policy lead portfolio inflow of only 0.063 basis points of market capitalization.

Our study holds important implications for policy makers in emerging markets. The findings suggest that a tax avoidance advantage is one of the important attractions of foreign investors in emerging markets. However, given their market dominance, any proposed change that risks curtailing such an advantage, despite being controversial, would act as a sufficient trigger for FPIs to exit the market. Further, the reversal of the proposed policies shows that FPIs can themselves pressurise the government by their actions. Finally, even after the uncertainty on tax treatment was removed the given the delayed reaction of FPIs to re-enter the market once they decide to exit the market shows the importance of any uncertainty in government policies in relation to the tax treatment of FPIs.

This paper makes the following contributions. First, we contribute to the literature on FPIs' influence on the policy making of emerging markets. Kerner (2015) argues that FPIs have a real but limited influence on policy making and they can sway policy making by influencing the interests of shareholders and managers of firms. We provide evidence of a new channel, the market depressing effect, through which FPIs can influence policy making by their actions in withdrawing from the market. .

Second, we contribute to the literature on tax avoidance and FPIs in emerging markets. Despite studies suggesting that FPIs are sensitive to tax policies (Daude and Fratzscher (2008), Desai and Dharmapala (2009b), Desai and Dharmapala (2011)), there is no evidence of the magnitude of FPIs' reaction to change in tax policy, specifically related to tax avoidance related

reforms. Given the limited empirical evidence, this study contributes to the literature by quantifying the reaction of FPIs to changes in tax policy that affect their ability to avoid taxes, which subsequently forced the government to bend their knees and reconsider their policy change. To our knowledge, there is no study investigating the nexus of tax avoidance and trading activities of FPIs.

Third, we also make a methodological contribution. Graetz and Grinberg (2002) note that robust and credible empirical evidence on the effects of taxation on international portfolio allocation is required to better inform policy makers. Empirically, measuring the effect of tax avoidance has been one of the major challenges in this literature. Studies use measures such as long run effective tax rates, book-tax differences, abnormal measures of tax avoidance, unrecognized tax benefits and tax shelter firms (Desai and Dharmapala (2006), Dyreng, Hanlon and Maydew (2008), Desai and Dharmapala (2009a), Graham and Kim (2009), Wilson (2009)). However, these measures either do not fully capture tax avoidance (construct validity bias) and/or are endogenous in nature (Hanlon and Heitzman (2010)). Instead of using endogenous proxies, we exploit an unexpected exogenous shock that affects the prospect of tax avoidance by FPIs and present an examination of credible causal links between tax avoidance and FPIs' trading activities.

Fourth, we also contribute to the literature related to the agency problems resulting from government discretion and financial globalization. Bekaert and Harvey (2003) argue that the beneficial impact of financial globalization, through increased investments by FPIs, has been limited due to several implicit barriers to international investments. Stulz (2005) notes that one of the implicit barriers to international investments, among other factors, is agency problems stemming from the possibility of expropriation by the host government, particularly in emerging markets. Governments can use their power to expropriate FPIs to suit their own private or political welfare through actions such as a change in government policies (Stulz

(2005)). However, evidence on how unexpected changes in taxation related policies affect FPIs is missing. Using a quasi-natural experiment, we contribute to this strand of literature by documenting how the unexpected change in tax policies that threaten to increase expropriation of FPIs by the host government affects the trading activities of FPIs.

Finally, we also add to the conflicting literature on the destabilizing effect of FPIs' trading in emerging market by investigating the withdrawal impact of FPIs' post-MAT announcement. Primarily Bekaert and Harvey (2000), Choe, Kho and Stulz (1999), Karolyi (2002), and Schuppli and Bohl (2010) do not find evidence of the destabilizing effect of foreign trades. However, de Long, Shleifer, Summers and Waldmann (1990) suggest that noise traders such as FPIs may have a destabilizing effect on asset prices. Given the fact that we use an exogenous effect that potentially triggered the withdrawal, we provide credible shock based evidence using trade level granular data on the implications of sudden and unexpected withdrawal of FPIs in emerging market.

The rest of the paper is organized as follows. Section 2 provides a brief review of the background and key dates related to the proposed taxation announcement. Section 3 presents the underlying theoretical framework. Section 4 describes the trading data followed by a discussion of the empirical results and robustness tests in Section 5. Finally, Section 6 concludes the paper.

2 Tax avoidance: The Case of the Minimum Alternate Tax

In a bid to attract foreign investments in India, FPIs are exempt from the long term capital gain taxes and they pay short term capital gain tax of 15%. However, most FPIs take advantage of the double-taxation treaty agreement (DTTA) with countries such as Mauritius, Singapore, and Hong Kong to avoid the tax liability in India. For instance, capital gain taxes are exempt in Mauritius, which encourages FPIs to "treaty shop" and establish a holding company in

Mauritius for investment in India.[3] Such DTTAs also fostered "round tripping" activities, whereby Indian individuals hide funds in tax havens such as Mauritius and then reinvest those funds back into Indian stocks, bonds, and promissory notes. These loopholes in the tax regime result in the avoidance of capital gain taxation in India by FPIs.[4]

With the objective of curbing the tax avoidance practices of FPIs, the Indian government started demanding a new set of corporate tax liability called the Minimum Alternate Tax (MAT) on the income of FPIs. MAT is an alternate tax mechanism to ensure "zero-tax companies" pay at least 18.5% tax on net profit. These companies, in spite of having substantial net profit and having paid dividends, did not pay any taxes due to various deductions and concessions provided under the Income Tax law. It was widely believed that only Indian companies are subject to MAT provisions and as a result, FPIs would be exempted from such taxes. Appendix A shows the key dates of the MAT issue in India. In 2010, Authority for Advance Rulings (AAR) ruled that MAT was not applicable to companies having no permanent establishment in India.[5] Contrary to precedent, in 2012 AAR ruled that MAT provisions override the DTTA and hence would also be applicable to FPIs.[6] However, the ruling was challenged in the Supreme Court.

[3] Annual Report for 2015/16 published by the Securities Exchange Board of India (SEBI), shows foreign portfolio investments from Mauritius, Singapore and Luxembourg had the highest amount of assets under custody during 2015/16 after the US.

[4] The issue of tax avoidance by foreign investors began concerning the Indian government when a Dutch subsidiary of Vodafone, a UK-based multinational telecom company, purchased an indirect but controlling stake of 67% in Hutchinson Essar Ltd (HEL), who held and operated a telecom licence in India. The deal was processed through acquisition of stocks of a Cayman Islands company from a subsidiary of Hutchinson Telecommunication International Limited (HTIL), the latter also being located in the Cayman Islands. HTIL, purchased by Vodafone, owned an indirect interest in HEL through several tiers of Mauritius and Indian companies. The Indian government claimed that the transaction was liable to be taxed, around $2.5 billion, since the transaction involved purchase of assets based in India. Vodafone argued that since the deal was between two foreign entities in a foreign jurisdiction, the Indian government had no right to impose capital gain tax. Though the Supreme Court ruled in favour of Vodafone, in 2012 the Indian government changed its Income Tax Act retrospectively to ensure that such offshore share transfers are liable to pay a domestic capital gain tax if at least 50% of the assets held by target foreign companies are based in India. The retrospective change in tax law also affected other transactions involving the indirect transfer of assets between international companies and Indian subsidiaries, such as the Idea Cellular-AT&T and GE-Genpact deal.

[5] The Timken Company vs. Income Tax Department (ITD) (23rd July 2010) and Praxair Pacific Ltd. vs. ITD (23rd July 2010).

[6] Castleton Investment Ltd. vs. ITD (14th August 2012).

After the AAR ruling, the Indian Tax Department (ITD) started sending tax notices asking for the payment of the new tax liability; however, uncertainty related to the application of the new tax rose substantially in 2015. On 28th February 2015, the Indian government made an unexpected announcement that the new tax liability, MAT, would not be imposed on the transactions of foreign companies (including Foreign Institutional Investors and FPIs) having no permanent establishment or place of business in India effective from 1st April 2015. The announcement did clarify that MAT would not be applicable to FPIs on the transaction from 1st April 2015 but it created uncertainty as to whether MAT would be imposed retrospectively. The announcement only provided temporary relief to the FPIs as, starting in April 2015, the Indian government intensified its tax demand by sending notices to several FPIs demanding MAT for previous years, arguing that the announcement was prospective and MAT would be applicable for all income (including capital gains) of FPIs earned before 1st April 2015. The tax demand was valued at 6.4 billion dollars.[7] The government argued that India should not be considered as a tax haven and that it is seeking legitimate taxes avoided by foreign investors. Demand for previous years' MAT threatened to impose additional tax liability on FPIs. Further, it also increased the hardship of current investors, as MAT related to previous years' income earned by other investors would have to be borne by current investors. Some of the FPIs approached the courts to settle the matter.[8]

To address the concerns and apprehensions of FPIs, a high-level committee was formed by the Indian government on 7th May 2015 to specifically provide recommendations on the issue of MAT on FPIs for the period prior to 1st April 2015. The committee consisted of three core members who conducted various rounds of consultation with major groups that also

[7] "100 FIIs get tax notices for $6bn, say its retrospective", *Times of India*, 6th April 2015; "India on collision course with investor over $6.4 billion tax target", *Financial Times*, 15th April, 2015; "How to end India's Tax Terrorism", *Bloomberg*, 17th April, 2015.

[8] For instance, Aberdeen Asset Management filed a petition in Mumbai's High Court to challenge the Tax claim by ITD.

represented the interests of FPIs, such as KPMG, Deloitte, Ernst & Young, PricewaterhouseCoopers, Federation of Indian Chambers of Commerce and Industry (FICCI), Confederation of Indian Industry (CII), and Progress Harmony Development Chamber of Commerce and Industry (PHDCCI). The committee submitted a detailed report and subsequently, on 1st September 2015, the government made another announcement that MAT would not be imposed on FPIs retrospectively.

We consider 1st April 2015 as the key event date in our study as the uncertainty of retrospective tax demands increased dramatically after the effective date of the MAT announcement. Thus, the trading period between the effective date of 1st April 2015 and the announcement on 1st September 2015 provides us with the unique setting to investigate how FPIs responded to a change in the tax regime that closed the tax avoidance loopholes for them, at least for all retrospective transactions.

3 Theoretical Framework

The theoretical framework that we draw upon is based on a model of barriers to international investment in emerging economies developed by Bacchetta and Van Wincoop (2000). Their framework demonstrates the dynamics of capital flows in emerging markets when gradual liberalizations (such as reduction in taxes) are introduced. We simplify this model and assume that FPIs choose to allocate their wealth, *W*, between the Indian market *(IND)* and other *N* identical countries. Thus, the total number of markets invested is *N +1*. Period *t* returns on investment in other countries n_i *(*$N=\sum_{i=1}^{N} n_i$*)* are given by $r_{n_i\,t} \sim N(\bar{\mu}_N, \sigma_N^2)$. Let period *t* returns on equities in the Indian market *(IND)* be $\mu_{IND,t} \sim N(\mu_{IND}, \sigma_{IND}^2)$. For foreign investors, the return on investment in the Indian market is subject to a foreign investor tax, $\tau_{IND,t}$ translating into net return of:

$$r_{IND,t} = \mu_{IND,t} - \tau_{IND,t} \tag{1}$$

and the expected return is $\bar{r}_{IND,t} = \bar{\mu}_{IND,t} - \tau_{IND,t}$. In Equation (1), $\tau_{IND,t}$ denotes the general

applicable taxes, such as short term capital gain taxes. Further, we assume that the returns are uncorrelated across countries and $\sigma_{IND}^2 = \sigma_N^2$. We also assume that investors have an exponential utility function $U(C) = e^{-\theta C}$, where consumption C is equal to the portfolio return, i.e. $R_t \times W$, and θ is the degree of risk preference ($\theta > 0$). Thus, foreign investors choose portfolio allocations to maximize period t utility, which is a function of the mean-variance trade-off:

$$max_{\alpha_{nt}} E(R_t) - \frac{\gamma}{2} var(R_t) \tag{2}$$

where $n \in [1, N+1]$, India is the $(N+1)^{st}$ equity market, α_{nt} is the weight of country n_i in the portfolios (with $\sum_{n=1}^{N+1} \alpha_{n_i\, t} = 1$), $\gamma = \theta W$, and R_t is portfolio returns given by:

$$R_t = \sum_{n=1}^{N} \alpha_{n_i\, t}.r_{n_i\, t} + \alpha_{N+1,t}.r_{IND,t} \tag{3}$$

Next we define the average expected return in other countries as $\bar{r}_t = \sum_{n=1}^{N} \bar{r}_{n_i t}/N$ and we have the expected return on the Indian market as $\bar{r}_{IND,t}$; the portfolio weight in the Indian market (i.e. *(N+1)st market)* by foreign investors is given by:

$$\alpha_{N+1,t} = \frac{1}{N+1} + \frac{\bar{r}_{IND,t} - \left[\frac{\bar{r}_{IND,t} + N\bar{r}_t}{N+1}\right]}{\gamma\sigma^2} \tag{4}$$

Following the arguments by Bacchetta and Van Wincoop (2000) and Edison and Warnock (2008), Equation (4) suggests that an increase in $\tau_{IND,t}$ will lead foreign investors to reduce portfolio weight in the Indian equity market. In the context of the Indian equity market $\tau_{IND,t}$ represents the short term capital gain taxes applicable to FPIs which have been constant over a period of time. After the announcement related to MAT, the FPIs were held liable for paying new taxes, which we assume to be $\varphi_{IND,t}$. Thus, in the context of MAT, $\varphi_{IND,t}$ increased from $\varphi_{IND,t} = 0$ to $\varphi_{IND,t} = \bar{\varphi}_{IND,t}$. After the announcement related to MAT, the portfolio weight in the Indian equity market (i.e. *(N+1)st* market*)* by foreign investors is given by $\hat{\alpha}_{N+1,t}$ as:

$$\hat{\alpha}_{N+1,t} = \frac{1}{N+1} + \frac{(\bar{r}_{IND,t} - \bar{\varphi}_{IND,t}) - \left[\frac{(\bar{r}_{IND,t} - \bar{\varphi}_{IND,t}) + N\bar{r}_t}{N+1}\right]}{\gamma\sigma^2} \quad (5)$$

Equation (5) suggests that an increase in $\varphi_{IND,t}$ from 0 to $\bar{\varphi}_{IND,t}$ after the MAT announcement would result in a reduction of portfolio weight in the Indian equity market. Subtracting Equation (5) from Equation (4) will give us the difference in portfolio allocation in the Indian market after the introduction of additional MAT liability:

$$\alpha_{N+1,t} - \hat{\alpha}_{N+1,t} = \bar{\varphi}_{IND,t}\left(\frac{N}{\gamma\sigma^2}\right) \quad (6)$$

Thus, the difference in portfolio allocation before and after the announcement is attributable to the change in MAT liability $\bar{\varphi}_{IND,t}$. Based on the model, we would expect portfolio inflows to remain steady before the introduction of MAT (keeping $\tau_{IND,t}$ constant) but the portfolio inflow to reduce or portfolio outflow to occur, as a response to the prospective tax liability, after the announcement related to MAT that introduced new tax liability $\bar{\varphi}_{IND,t}$ for FPIs.

Further, we introduce the concept of incomplete information used by Bacchetta and Van Wincoop (2000) in our analysis. They argue that investors may not have immediate full information about the liberalizations or reforms in emerging markets. They suggest that when the uncertainty about the extent of the reforms and their application are high, particularly in the beginning, it would have a higher effect of the foreign portfolio inflows. Following a similar argument, we argue that when investors do not have complete information and when the uncertainty related to the application of MAT is high, the effect on the inflows would be higher.

4 Data and Summary Figures

This study analyses trading level data of FPIs (and their sub-accounts) that are obtained from the database maintained by the SEBI-endorsed National Securities Depository Limited (NSDL). The database is available publicly and contains all the trading details for individual

firms by individual FPIs from different stock exchanges since 1st January 2003. The database contains information such as transaction identification, scrip name, ISIN code, transaction date, transaction type, stock exchange, rate, quantity, value, and instrument types. However, the database masks the FPIs, their sub-accounts, and broker identification. 99.45% of all transactions are conducted on the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) whereas 99.36% of all transactions are for equities. We limit our analysis to the purchase and sale of equities on NSE and BSE covering 99.34% of all transactions. Since the MAT event period lasts from 1st April 2015 to 31st August 2015, we limit our sample period from 1st January 2015 to 31st August 2015.

Figure 1 depicts the month-wise total net equity trading (i.e. purchase – sale, in million INR[9] rupees) of all listed Indian equities traded by all FPIs during the year 2015. These figures are winsorized at the 1st and 99th percentile to limit any extreme outliers in the transaction. Total net equity trading by FPIs for the first three months witnessed a positive inflow of around INR 199 billion (the highest total net equity trading being INR 102 billion on January 2015). However, immediately after the effective MAT date on 1st April 2015, there was a series of outflows from April to September. Although transactions increased briefly during July, the transaction value of around INR 25.5 billion rupees is less than half of the transaction value during March 2015. The total net equity trading during the event period (1st April 2015 to 30th August 2015) was approximately INR 447 billion.

[Insert Figure 1 about here]

Figure 2 shows the monthly average net equity trading for an average equity traded during the year 2015 by all FPIs. The figure shows a similar trend to that observed in Figure 1, i.e. the first three months before the announcement related to MAT witnessed a positive

[9] The average US$/INR rate during 1st January 2015 to 31st August 2015 was INR 63.24/US$ (Source: Reserve Bank of India)

average transaction per equity of INR 139, INR 36 and INR 90 million respectively. However, after the announcement related to MAT, the average figures became negative (the lowest figure being INR -254 million in August 2015). We argue that the decrease in net equity trading from 1st April 2015 to 30th August 2015, as identified in Figures 1 and 2, is attributed to the reaction of FPIs to the MAT announcement that curtailed their ability to avoid taxes.

[Insert Figure 2 about here]

5 Empirical Results

5.1 Effect of Tax Avoidance: Mean Differences

Following Bekaert and Harvey (2002), Froot, O'Connell and Seasholes (2001), and Richards (2005), we define net equity trading (in basis point or hundredths of a percent) as:

$$NET_{it} = \frac{\sum(quantity_{i,t} \times price_{i,t})}{MCap_{i,t-1}} \quad (7)$$

In Equation (7), $\sum(quantity_{i,t} \times price_{i,t})$ is the net equity trading on the trading day *t* for equity *i*. The term $quantity_{i,t}$ is the number of equities *i* purchased/sold on date *t* at $price_{i,t}$ (positive figure for purchase and negative for sale). $MCap_{i,t-1}$ is the previous day's market capitalization for equity *i*.

In order to examine the effect of tax avoidance on net equity trading, first we conduct a simple paired t-test for the mean differences in NET_{it} before and after the MAT effective date of 1st April 2015 using five different window periods. First, for a *Seven Trading Days* window period we use trading data from 23rd March to 31st March 2015 for the *Pre-MAT Period* and 1st April 2015 to 15th April 2015 for the *Post-MAT Period*. Likewise, for a *One Month's* period we use data from 1st March to 31st March 2015 for the *Pre-MAT Period* and 1st April 2015 to 30th April 2015 for the *Post-MAT Period*; similar is the case for *Two* and *Three Months'* window periods. For the *MAT Event Period* window, we use 1st January to 31st March 2015 for the *Pre-MAT Period* and 1st April 2015 to 31st August 2015 for the *Post-MAT Period*.

[Insert Table 1 about here]

The results in Panel A of Table 1 show the difference in average net equity trading in the post-MAT *Seven Trading Days* period relative to the pre-MAT *Seven Trading Days* period. In relation to the *Pre-MAT Period*, after the announcement related to MAT, there was a decline of 0.239 basis point, which is statistically significant at the 1% level. Economically, the MAT announcement leads to the withdrawal of almost INR 5.73[10] million market capitalization per day per equity. The difference is higher for the *One Month* window as well as for the *Two Months* and the *MAT Event Period* window. During the event period, the withdrawal constitutes almost INR 6.21 million market capitalization per day per equity, which is higher than the *Seven Trading Days'* period. The result is fairly consistent with our theoretical prediction that as the uncertainty related tax avoidance increases, the negative response by FPIs also escalates. The statistically and economically significant differences in average equity trading for various windows suggest that the increase in potential tax, which reduced the tax avoidance benefits of FPIs, seems to have damaging consequences on the trading activities of these investors.

5.2 Effect of Tax Avoidance: Baseline Regression Results

We begin our firm-level analysis by running a panel data regression based on different time periods as discussed in the previous section. For each *Post-MAT Period*, as shown in Panel A of Table 1, we create a dummy variable *MAT effect* that takes the value of one. For example, for the *Seven Trading Days* window, the *MAT effect* dummy takes the value of one for the period from 1st April 2015 to 15th April 2015 and zero for the period from 23rd March 2015 to 31st March 2015. Similar dummies are generated for the remaining window periods. We use the following regression equation to run daily fixed effect panel data:

$$NET_{it} = \beta(MAT\ effect_t) + \boldsymbol{\gamma_i} + \varepsilon_{it} \quad (8)$$

[10] The average market capitalization per equity during the *Seven Trading Days*, *One Month*, *Two Months*, *Three Months* and *MAT Event Eeriod* was around INR 239.68, INR 236, INR 237.87, INR 236.86 and INR 235.41 billion respectively.

In Equation (8), NET_{it} is the day *t* net equity trading scaled by the previous day's market capitalization of listed stocks (*i)* on the Indian stock market, as defined in Equation (7). Firms traded are indexed as *i* and daily time periods are indexed as *t.* $MAT\ effect_t$ is the dummy variable which takes the value of one in the *Post-MAT Period* and zero in the *Pre-MAT Period*. $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects and ε_{it} is the error term. We also cluster all the standard errors at firm level. The term β captures any change in net equity trading caused by the announcement related to MAT.

As the simplified version of Bacchetta and Van Wincoop (2000) model suggests that an increase in tax liability affecting the tax avoidance prospect of FPIs would affect the portfolio inflows negatively, we expect the sign of β to be negative and statistically significant. The outcomes presented in Panel B of Table 1 confirm our theoretical expectation and suggest that the closure of the tax avoidance prospect has a significant negative impact on the trading activities of FPIs. The effect during the *Seven Trading Days* window period is 0.238 basis point (market capitalization of approximately INR 5.73 million per equity per day) which increases to around 0.396 basis point (market capitalization of approximately INR 9.35 million per equity per day) for the *One Month* window period. The coefficient is also higher for *Two Months*, *Three Months* and the *MAT Event Period* compared to the first *Seven Trading Days* period. The result is again fairly consistent with the theoretical model that the potential uncertainty of the imposition of additional tax liability results in a higher negative effect on the portfolio flows of foreign investors.

Next, we estimate different specifications of the following general regression equation to evaluate the effect of tax change after controlling for a number of factors that could provide alternative explanations:

$$NET_{it} = \beta(MAT\ effect_t) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \varepsilon_{it} \quad (9)$$

In Equation (9), $\boldsymbol{X}$ is a set of control variables discussed in the following paragraph. To

control for firm-level heterogeneity, 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 firm and time (day) level. Our main variable of interest $MAT\ effect_t$ is a dummy variable that takes the value of one for *Post-MAT Period* from 1st April 2015 and 31st August 2015 and zero *Pre-MAT Period* from 1st January 2015 and 31st March 2015. Our sample period ranges from 1st January 2015 to 31st August 2015.

With respect to control variables, the first factor we include controls for recent stock returns. Brennan and Cao (1997) argue that investors tend to purchase foreign assets in periods when the return on foreign assets is high and to sell when the return is low. Theories on trading behaviour in emerging markets characterise foreign investors as "uninformed positive feedback traders", suggesting the presence of return-chasing behaviour, i.e. buying past winning stocks and selling past losers (Choe, Kho and Stulz (1999), Froot, O'Connell and Seasholes (2001), Grinblatt and Keloharju (2001)). Empirical evidence suggests a positive relation between net foreign flows and contemporaneous and lagged stock returns. We control for this effect at the firm level by including the previous day's stock return of individual firms the FPIs traded on a particular day on the NSE and/or BSE. We source this data from the Prowess database maintained by the Centre for Monitoring Indian Economy (CMIE). The returns data provided in Prowess not only include returns based on the prices of the equity on the exchange but also include dividends earned from the scrip and any gain or loss due to any other capital actions. We denote this as *Stock Return* in our study.

Second, we control for a set of variables that the literature refers to as pull factors, which are internal to host economies, responsible for foreign inflows. Griffin, Nardari and Stulz (2004), for instance, suggest that equity flow in the host country increases with the return of the host country's stock market. This evidence thus suggests positive foreign investors' investment following high returns in a market. We control this factor by including the previous

day's return on the NSE or BSE index *(Market Return).* Both these indices are sourced from the Reserve Bank of India. Further, Ülkü (2015) suggests that the volatility of local returns also affects the persistence in net foreign flows. To capture this volatility, we include the previous day's return on the Indian Volatility Index *(Indian VIX Return)*. The data are sourced from the NSE. Hau and Rey (2006) suggest that net equity flows into foreign market are positively related to exchange rate appreciation. We control the exchange rate fluctuation by including USD/INR exchange rate volatility (standard deviation) which is the daily standard deviation of the exchange rate using the previous 90 days' figures (*USD/INR Volatility)*. The exchange rate is obtained from the Reserve Bank of India. Further, we also include time varying microeconomic factors, namely the previous month's inflation rate *(Inflation Rate)* and last quarter's real gross domestic product growth rate *(Real GDP Growth Rate)*. Both these variables are sourced from Thompson Reuters.

Finally, we control for another set of variables that the literature views as push factors, which are external to host economies, responsible for foreign inflows. Following the arguments of Stulz (1999) and Griffin, Nardari and Stulz (2004) that investment in emerging markets by foreigners increases when their wealth increases, Richards (2005) suggests that both global and emerging market returns would influence the foreign portfolio flows. We use the previous day's return using the MSCI World Market Index *(World Return)* as a proxy of global return, and previous day's return using the MSCI Emerging Market Index *(EM Return)* as a proxy of emerging market return. Both indices are sourced from Thomson Reuters. Similarly, a number of studies note changes in US interest rates as one of the major push factors that influence the flow of portfolio capital into emerging markets (such as Ülkü (2015), Fuertes, Phylaktis and Yan (2016), Sarno, Tsiakas and Ulloa (2016)). We use previous day return on one year US Treasury Bills *(US TB Rate)* acquired from Thompson Reuters. Finally, investors' risk aversion also explains the push of equity flows from home countries to host countries (Forbes and

Warnock (2012), Fratzscher (2012), Sarno, Tsiakas and Ulloa (2016)). Following this literature, we use return on Global VIX index *(Global VIX Return)*, sourced from Thompson Reuters, which is based on the one-month model-free implied volatility of the S&P 500 equity index. Richards (2005) argues that most of the investment in emerging markets occurs through specialized investment managers investing only in emerging markets, hence, the riskiness related to emerging markets might be more relevant. Accordingly, the return on Emerging Market Volatility Index *(EM VIX Return)* is also included as a control variable.

[Insert Table 2 about here]

Table 2 provides the descriptive statistics of all the control variables used in this study. The *Stock return* is significantly different before and after the MAT announcement; it declined by around 0.07% after the MAT. Likewise, the market also experienced a significant decline, almost 0.985%, in its return *(Market Return)* after the MAT event. The return on Indian volatility index *(Indian VIX Return)* also increased significantly following the announcement of the change in tax policy. These figures provide some clues that the announcement may have had a detrimental effect on the market return and its volatility. The change in *USD Volatility* (-0.020%), *Real GDP Growth Rate* (-1.688%) and *US TB Rate* (0.059%) after the MAT event is statistically significant.

The results estimating different specifications of Equation (9) with various control variables are presented in Table 3. In Specification I, we use the dummy variable $MAT\ effect_t$ only. In Specification II, in addition to the dummy variable, we include stock returns and in Specification III, we include the dummy variable, stock return and pull factors. Finally, in Specification IV, we include all the control variables. In all Specifications, our main variable of interest $MAT\ effect_t$ is statistically significant (at the 1% level of significance) and its coefficient ranges from -0.355 to -0.386 basis point. The effect is not only statistically significant but also economically relevant as the effect leads to the withdrawal of INR 8.36 -

INR 9.09 million market capitalization per day per equity. The significant reduction in net portfolio equity flow after the increase in additional tax liability is consistent with the theoretical predictions of the simplified version of the Bacchetta and Van Wincoop (2000) model. These results support our previous connotation that the increase in tax liability aimed at curbing the tax avoidance of FPIs is attributed to the sudden withdrawal of investment in equity by FPIs.

[Insert Table 3 about here]

With regard to the control variables, consistent with Bohn and Tesar (1996) and Bekaert and Harvey (2002), we find support for the return-chasing behaviour/momentum trading at the firm level, but not at the market level. Although, we find evidence of market level return-chasing when we do not include push factors. Further, we find strong evidence of the significance of pull factors. Consistent with the findings of Hau and Rey (2006), our findings suggest that higher exchange rate volatility results in lower net foreign portfolio inflow. The positive impact of *Indian VIX Return* on net equity trading is not consistent with Ülkü (2015); however, it suggests that there is an increase in market uncertainty during the MAT event period. Further, among various push factors, consistent with Ülkü (2015), we find significant influence of *US TB Rate* during the sample period, providing some evidence of significance of global push factors.

5.3 Effect of Tax Avoidance: Difference-in-Differences Results

In our previous analysis, we included various time period dummies, controlled for various push and pull factors along with unobserved firm-level and time-level effects, but our estimates may still suffer from any systematic shocks that could have occurred during the event period. To avoid these concerns and further establish a credible causal effect of tax avoidance on the trading activities of FPIs, we perform a quasi-natural experiment using MAT as an exogenous event. We examine the effect of tax avoidance by employing a DiD method appropriate for

establishing causal claims in a quasi-natural setting. This method compares the effect of an event on groups affected or more affected by the event (called the treatment group) with those that are unaffected or least unaffected (called the control group) (Vig (2013)). The DiD approach controls for economic trends and trading-specific patterns that might affect both groups.

Since the issue related to tax avoidance applies to all FPIs, we do not have any natural treatment and control groups for our analysis. In order to generate a treatment and a control group, we divide the firms based on total net equity trading by all FPIs in different sectors. We first identify the sector based on the first two digits of the National Industry Classification, 2008 of India. For each sector, we calculate the net equity trading from 1st January 2003[11] to 31st March 2015 and sort the entire table based on the calculated total net equity trading figures. Next, we divide the net equity trading for each sector into terciles and define the top 33rd percentile of the sectors that have the highest value of exposure as the treated group and the bottom 33rd percentile of the sectors as the control group. We find that the total net equity trading in sectors such as financial services, textiles, IT, pharmaceuticals, and telecom are substantially higher compared to sectors such as advertising and market research, retail trade, mining, construction companies, and sports and recreation. It is economically logical to argue that any exogenous shocks that affect the trading activities would have a greater impact on sectors/firms that had higher net equity trading (treatment group) as compared to sectors/firms that had lower net equity trading (control group).

Figure 3 provides a picture of the difference in net equity trading and its trends before (i.e. 1st January 2015 to 31st March 2015) and after (i.e. 1st April 2015 to 31st August 2015) the MAT event for the treated and the control groups. The net equity trading for the treatment group before the event was INR 161 billion compared to net equity trading for the control group

[11] The FPIs' trading data are only available from the year 2003.

of INR -0.36 billion. However, after the event, the net equity trading for the treatment group dropped by INR 576 billion compared to that of the control group by just INR 82 billion.

[Insert Figure 3 about here]

We perform DiD examination in two different ways. First, we examine the mean difference in the NET_{it} values for the treated and control group before and after the MAT event. Panel A of Table 4 presents the results of DiD for NET_{it} values before the MAT event i.e. *Pre-MAT Period* (1st January 2015 to 31st March 2015) and after the MAT event i.e. *Post-MAT Period* (1st April 2015 to 31st August 2015). Firms in the treatment group are compared with the control groups. We find that the net equity trading by FPIs falls significantly more in treatment firms compared to control firms. For firms in the treatment group, the figure drops from 0.2322 to -0.0484, a fall of 0.2807 basis point which is statistically significant. In contrast, for control firms, the figure falls slightly from 0.1815 to 0.1030, a fall of 0.0785 basis point, which is not statistically significant. There is no statistical difference between the net equity trading between the treatment and control groups prior to the MAT event. The estimate shows the net equity trading of treatment firms drops by 0.2022 basis point more than control firms, which is statistically significant. The fall is also economically significant as it suggests a reduction of INR 4.76 million market capitalization per day per equity.[12]

The second approach we take to conduct a DiD is by examining the regression coefficient for two different equations. First, we run the DiD using Equation (10) for different window periods.

$$NET_{it} = \beta(MAT\ effect_t \times TRMT_i) + \boldsymbol{\gamma_i} + \varepsilon_{it} \quad (10)$$

Similar to Table 1, for each *Post-MAT Period*, we create a dummy variable $MAT\ effect_t$ that takes the value of one for the trading period during the MAT event. For

[12] Calculated as 0.2022 basis point of daily average market capitalization of each equity during the MAT event period which is around INR 235.41 billion.

example, for the *Seven Trading Days* window, $MAT\ effect_t$ dummy takes the value of one for the period from 1st April 2015 to 15th April 2015 and zero for the period from 23rd March 2015 to 31st March 2015. For the *One Month* window, $MAT\ effect_t$ takes the value of one for the period from 1st April to 30th April 2015 and zero for the period from 1st March to 31st March 2015. Similar dummies are generated for the *Two* and the *Three Months'* window periods. For the *MAT Even Period*, $MAT\ effect_t$ takes the value of one for the period from 1st April to 31st August 2015 and zero for the period from 1st January to 31st March 2015. As before, NET_{it} is the day *t* net equity trading value by all FPIs as a percentage of the previous day's market capitalization of listed stocks (*i)* on the Indian stock market.

[Insert Table 4 about here]

Firms traded are indexed as *i* and daily time periods are indexed as *t.* $TRMT_i$ takes the value of one for firms in the treatment group and zero for firms in the control group. As previously discussed, the treatment group include firms in sectors whose total net equity trading value is higher (top 33rd percentile) and the control group include firms in sectors whose total net equity trading is lower (bottom 33rd percentile). $\boldsymbol{\gamma_i}$ is a vector of firm dummies controlling for firm fixed effects and ε_{it} is the error term. We also cluster all the standard errors at firm level. The term β, which captures the DiD effect, is any change in net equity trading on the treatment firms caused by the tax avoidance policy relative to a corresponding change on the control firms. As our theoretical framework, based on simplified version of Bacchetta and Van Wincoop (2000) model, suggests that that an increase in tax liability would affect the portfolio allocation by FPIs negatively, we hypothesize the sign of β to be negative and statistically significant.

The estimates in Panel B of Table 4 appear to provide evidence consistent with our simplified version of Bacchetta and Van Wincoop (2000) model that the increase in tax liability has a significant, negative effect on the trading activities of FPIs. The coefficient during the

Seven Trading Days window period suggests an effect of 0.202 basis point of the market capitalization per day per equity on the treatment firms in relation to the control firms. Again the effect is higher for the other window period compared to the *Seven Trading Days'* working period, supporting our theoretical expectation that rise in uncertainty about tax change leads FPIs to react negatively by avoiding the Indian market. This provides evidence that the policy announcement that threatens to increase tax liability and curtail the tax avoidance motives of FPIs has an unfavourable effect on their trading activities.

Finally, we show that the effects in Tables 3 and 4 are statistically robust to the application of standard regression analysis controlling for variables that are understood to affect the trading activities of FPIs. We estimate different specifications of the following regression equation to evaluate the effect of tax avoidance including a number of competing control factors:

$$NET_{it} = \beta(MAT\ effect_t \times TRMT_i) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \alpha_k + \varepsilon_{it} \qquad (11)$$

In Equation (11), $MAT\ effect_t$ is a dummy variable that takes the value of 1 for the *MAT Event Period* between 1st April 2015 and 31st August 2015. $TRMT_i$ is a dummy variable that takes the value of one for firms in the treatment group and zero for firms in the control group. $\boldsymbol{X}$ is a set of control variables defined and discussed in Section 5.2. To control for firm-level heterogeneity, we use firm fixed effects $\boldsymbol{\gamma_i}$, to control for the influence of aggregate time-series trends; we also include time (days) fixed effects δ_t. Since the classification of treatment and control group is based on the total net equity trading in different sectors, we also control for sector fixed effects α_k where k denotes the sector. We also cluster our standard error at firm, time (day) and sector level. The variable of interest β, which captures the DiD effect, is theorised to be negative and statistically significant.

Table 5 shows the results of regression-based DiD controlling for various factors. As expected, the sign of the main variable of interest $MAT\ effect_t \times TRMT_i$ is negative and

statistically significant at 1% in all specifications. In Specification I, we report the basic regression results. It can be seen that the average NET_{it} ratio is down by almost 0.360 basis point after the tax change related to MAT was announced. In Specification II, we add stock return as a control variable and the result is unchanged. In Specification III, we add all the pull factors that may affect the net equity trading; the result still remains unchanged. In Specification IV, we further add all the push and pull factors that may affect the net equity trading and the point estimate for the effect of the MAT announcement on the NET_{it} ratio remains similar at 0.344 basis point. Again, the effect of the policy announcement related to tax avoidance is not only statistically significant but economically meaningful as well, as it resulted in a reduction of INR 8.10 million market capitalization per day per equity. The results suggest that the potential threat of an increase in tax liability, though in retrospective transactions, seems to create substantial outflows by FPIs in emerging market. Such a negative response is used as a market-based tool to showcase their disagreement. With regard to the control variables, the coefficients are similar to the results reported in Table 3.

[Insert Table 5 about here]

5.4 Robustness Tests

In this section we undertake a number of additional checks to ensure the robustness of the results reported in the previous section.

5.4.1 Addressing Systematic Shocks

One of the major challenges of the isolating effect of MAT is the existence of other confounding events that may have occurred during the same period between 1st January 2015 and 31st August 2015; such events may result in a biased estimation of the treatment effect. We thus conduct an extensive search of national and international newspapers to identify any major exogenous shocks that could substantially affect the trading behaviour of FPIs and may not have been captured by our control variables, year effects, time (day) effect, firm-specific effect,

and sector effects. With one potential exception discussed in detail below, to the best of our knowledge we were not able to identify any other major systematic shocks that could be sufficiently important to have a large effect on net equity trading.

The one potential exception concerns the effect of Greece exiting from Eurozone, referred to as "*Grexit*" hereafter. On 22nd June 2015, the Greek government submitted an "economic reform" proposal in a bid to negotiate a 7.2 billion euro rescue package to meet its debt obligations and reduce the possibility of *Grexit*. The Euro-group meeting was held on 24th June 2015 to discuss the proposal and negotiate bailout agreements. Bank of America Merrill Lynch in their research report stressed that FPIs were closely monitoring the bailout negotiations and in the event of *Grexit*, FPIs' investment in the equity market of India could stall, potentially driven by increased global risk aversion.[13] On 13th July 2015, after days of negotiations, Eurozone leaders and the Greek government agreed on a bailout package conditional on various economic and policy reforms.

Thus, it could be possible that the threat of Greece exiting the Eurozone would have a confounding effect on the trading activities by FPIs in India. To test this possibility, we include an additional dummy variable $Grexit_t$ that takes the value of zero for the period between 22nd June 2015 and 13th July 2015. The result is presented in Table 6. In Specification I of Table 6, we include the dummy variable in Equation (11) along with all the previously used control variables and control for time (day), firm, and sector fixed effects. The $Grexit_t$ dummy variable remains statistically insignificant and our main result is still robust. The economic significance is similar to the results reported in Table 5.

Further, to control for any other industry-specific shocks that affect the trading activities we include the interaction between sector and time (day) fixed effects ($\delta_t \times \alpha_k$) in our regression (Vig (2013)). We present the results in Specification II of Table 6. Similar to

[13] "Grexit may stall FPI inflows into India: Bank of America Merrill Lynch", *The Economic Times*, 4th July 2015

Specification I, the $Grexit_t$ dummy is statistically insignificant and the main variable of interest $MAT\ effect_t \times TRMT_i$ is statistically significant and economically similar to our earlier results.

5.4.2 Alternative Treatment and Control Group

Another major challenge inferring the causal impact of the exogenous event is the ability to identify a valid comparison group relative to those firms that are highly affected by the shock. So far, in our analysis, the control group consists of firms where FPIs have lower net equity trading exposure during 1st January 2003 to 31st March 2015 based on the lowest tercile. As an alternative treatment and control group, we use median net equity trading for each sector as a cut-off point to separate the treatment and control groups. Specifically, the treatment group includes firms in sectors whose net equity trading is higher than the median net equity trading. We rerun Equation (11) and present the results in Specification III of Table 6. Even in this setting, our main result is robust, and the coefficient is larger in magnitude than in Table 5.

Additionally, we also create alternate treatment and control groups based on the FPIs' identification. Though the public dataset provided by NSDL masks the original identification of FPIs, it provides a unique key for each FPI which we use to divide the FPIs into control and treatment groups. First, we calculate the net equity trading, similar to Equation (7) but slightly modified, as shown in Equation (12) and discussed below:

$$NET_{jit} = \frac{\sum(quantity_{j,i,t} \times price_{j,i,t})}{MCap_{i,t-1}} \tag{12}$$

In Equation (12), $\sum(quantity_{j,i,t} \times price_{j,i,t})$ is the net equity trading on the trading day *t* for equity *i* by FPI *j*. All other indicators are as previously defined. In this case, the net equity trading is the sum of all equity trades (purchase as positive trade and sell as negative trade) by each FPI for each stock each day scaled by previous day market capitalization and sorted on the basis of highest net-traded value to lowest. Second, we identify the control and

the treatment groups based on the net equity trading values by each FPI during 1st January 2003 to 31st March 2015. Initially, we create control and treatment groups based on the cut-off point as median net equity trading values (FPIs higher than median net equity trading values as the treatment group and below median as the control group) and then create another alternate control and treatment groups based on terciles of the net equity trading values (FPIs with the top 33rd percentile as the treatment group and the bottom 33rd percentile as the control group). We rerun Equation (11) by replacing NET_{it} by NET_{jit} and also include FPIs fixed effects in our regression in addition to the firm, time (day) and sector fixed effects. The results are presented in Table 6. In Specification IV we use median value as the cut-off point and in Specification V we use terciles as the cut-off point, as discussed above. Even in these alternate settings, the results are still robust, supporting the negative effect of increases in tax liability on the trading activities of FPIs.

[Insert Table 6 about here]

5.4.3 Balanced Panel and False Experiment

Possible attrition bias caused by a drop of firms from the sample due to non-trading could result in biased estimates. To ensure that our estimates using unbalanced panel data are robust to attrition bias, we re-run Equation (11) using fully balanced data during the sample period from 1st January 2015 to 31st August 2015. The result is reported in Table 6 (Specification VI). Even in this balanced setting, our primary results are still robust, suggesting that the threat of increased tax liability had a negative effect on the trading activities of FPIs.

Another way to check if the estimated effects are due to the reaction against the tax policy, rather than some other confounding factor, is by conducting a placebo test – particularly a "false experiment". The basic idea is that if the underlying effect is detectable in the period other than the MAT event period, then it would be difficult to attribute the effect to the tax avoidance that occurred only during the period of 1st January 2015 to 31st August 2015. To

eliminate this concern, we run a similar specification in Equation (11), modified to assume the occurrence of non-existent events (placebo event) in the period other than the year 2015. To run this test, the false experiment for 2014 replaces the interaction term of interest in Equation (11) – $MAT\ effect_t \times TRMT_i$ – with the interaction between $TRMT_i$ and an indicator variable $MAT\ effect_t$ for the period covering 1st January 2014 to 31st August 2014. Specification VII of Table 6 reports the result of the false experiment. The estimated "effect" for an event in 2014 is statistically indistinguishable from zero. The absence of any significant estimated effects for these false experiments provides us with confidence in our primary conclusion that the estimated effects in Tables 3 and 5 are attributable to the MAT effect rather than to some other confounding factors.

5.5 Implications of FPIs' Market Withdrawal

Our results suggest that the MAT announcement led substantial outflows by FPIs. Here, we investigate the possible implications of such a systematic withdrawal, whereby the MAT effect period is used as the exogenous factor that lead to market avoidance by FPIs. To analyse whether the market avoidance triggered by the MAT event had a disrupting effect on the market, we investigate its effect on various stock level features such as stock market liquidity (also as a proxy of cost of capital), volatility and valuation effects. The valuation effect is examined using price-to-book ratio and investigation of the potential pricing effects.

With respect to liquidity, we use three different liquidity measures. The first firm level liquidity measure we employ is turnover ratio for stock *i* at time *t* and computed as:

$$Turnover\ ratio_{it} = \frac{Number\ of\ shares\ traded_{it}}{Number\ of\ shares\ outstanding_{it}} \qquad (13).$$

Second, following Amihud (2002) we calculate the daily index of illiquidity for stock *i* at time *t* as:

$$Illiquidity_{it} = \frac{|R_{it}|}{V_{it}} \qquad (14)$$

where R_{it} is the return of stock *i* at time *t*, and V_{it} is the daily volume of stock *i* at time *t*. Following Amihud (2002) we multiply the index by 10^6. The third proxy we employ is in the spirit of Hui and Heubel (1984), known as liquidity ratio and the daily measure is constructed as:

$$Liquidity\ Ratio_{it} = \frac{(P_{max-}P_{min})/P_{min}}{V/(S.\bar{P})} \quad (15)$$

where P_{max} is the highest daily price in the last 5-day period, P_{min} is the lowest daily price in the last 5-day period, V is the total quantity of all stocks traded over the 5-day period, S is the total number of shares outstanding over the same period and $\bar{P}$ is the average closing price over the same period. A higher value of liquidity ratio indicates a lower liquidity of stock.

Firm level *Stock Volatility* is calculated using the standard square of daily stock returns. Firm level *Price-to-Book Ratio* is the ratio of market price to book value per share. These variables are sourced and derived from Prowess database. The pricing effect proxies are discussed in section 5.5.4.

5.5.1 Summary Statistics

We begin the implication assessments by comparing the pre and post MAT differences of the above mentioned firm level proxies. The results are reported in Panel A of Table 7. The *Difference* column shows the difference in average of the respective variables before and after the MAT event. As evident from the figures, we find significant decline in liquidity measures proxied by *Turnover Ratio*, *Illiquidity Index* and *Liquidity Index*. The figures also reveal material surge in *Stock Volatility* and drop in *Price-to-Book Ratio* following the FPIs' withdrawal after the MAT event. These pre and post univariate figures impart strong indication clues that FPIs' withdrawal in the post MAT period had negative implications for stock level liquidity, volatility and valuation measures. In the following section, we conduct multivariate regression analysis to establish causal impact of FPIs' withdrawal.

[Insert Table 7 about here]

5.5.2 Implication on Stock Liquidity

For policymakers, one of the concerns is how FPIs' trading may have a direct or indirect effect on the overall growth of the economy. It is established in the literature that lower stock market liquidity enhances firms' cost of capital (Amihud and Mendelson (2000), Balakrishnan, Billings, Kelly and Ljungqvist (2014)). Following this strand of literature, we proxy cost of capital using stock market liquidity measures, including stock turnover. Bekaert and Hodrick (2009) imply that although turnover is often considered as an indicator of liquidity, it also suggests the arrival of news that instigates trades. In our case, we investigate the effects on liquidity as a proxy for cost of capital, by running different specifications of the following regression equation.

$$Y_{it} = \beta_1(MAT\ effect_t) + \beta_2(NET_{it}) + \beta_3(MAT\ effect_t \times TRMT_i \times NET_{it}) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \alpha_k + \varepsilon_{it} \quad (16)$$

In Equation (16), Y_{it} is a vector of dependent variables, i.e., measures of stock market liquidity where firms are indexed as *i* and daily time periods are indexed as *t*. We use three different liquidity measures as discussed in the previous section. The other factors of Equation (16) are as follows. $MAT\ effect_t$ is a dummy variable that takes the value of one for the *Post-MAT Period* between 1st April 2015 and 31st August 2015 and zero for the *Pre-MAT Period* between 1st January 2015 and 31st March 2015. NET_{it} is the net equity trading scaled by previous day market capitalization as discussed in Equation (7). $TRMT_i$ is a dummy variable that takes the value of one for firms in the treatment group and zero for firms in the control group as discussed previously. Our main variable of interest is β_3, which captures the effect of FPIs' market withdrawal prompted by the MAT event on the liquidity. $\boldsymbol{X_{it}}$ is a set of control variables discussed in the following paragraph.

Recent empirical evidence suggests that stock trading characteristics are the most common factors that affect stock liquidity (see Chordia, Roll and Subrahmanyam (2000), Stoll

(2000)). Specifically, literature finds stock price, return variance, trading volume, market capitalization, number of trades and absolute stock return to be important determinants of stock liquidity (Stoll (2000), Lesmond (2005), Chai, Faff and Gharghori (2010)). Chai, Faff and Gharghori (2010) argue that stocks with lower price tend to be risker, thus, stock price would be positively related to the liquidity of the stock. We use log of average stock price at the end of trading day to control for the effect of price of stock. We denote it as *Stock Price*.

Likewise, Stoll (2000) argues that large trading volume, higher market capitalization, and number of trades increases the stock liquidity as it reduces the risk of carrying inventory whereas higher return volatility reduces the stock liquidity as it increases the risk of carrying inventory. To control for the effect of trading volume, we use log of total volume of shares traded, in million INR, during a trading day. We denote it as *Volume.* Further, we use daily stock return volatility calculated as square of daily stock return to control for the effects of return variance. We denote it as *Stock Volatility.* We also use log of number of trades during a day and denote it as *Trades.* The natural log of market capitalization, in million INR, at the end of trading day, denoted as *Market Capitalization* is also incorporated. Following Chai, Faff and Gharghori (2010), we also control for absolute stock return as an additional measure of volatility. We use absolute value of daily stock return and denote it as *Absolute Return.* All these variables are sourced and derived from Prowess database. Finally, we also control for time (day) δ_t, sector α_k and firm fixed effects $\boldsymbol{\gamma_i}$. We also cluster our standard error at firm, time (day) and sector level.

The results are presented in Panel B of Table 7. The estimations in Specifications I imply that reduction in net equity trading, NET_{it}, due to the FPIs' withdrawal following the MAT announcement reduces stock turnover ratios. In terms of economic magnitudes, one standard deviation decline in NET_{it} (2.926 basis points) leads to a reduction 0.0246% decline in *Turnover Ratio*. Likewise, in Specifications II we examine the effect of FPIs' market

avoidance using Amihud's (2002) measure of illiquidity. The results also suggests that the stock illiquidity increases significantly following FPIs' exit from the market. In terms of economic magnitudes, one standard deviation decline in NET_{it} (2.926 basis points) leads to a reduction 0.062 point increase in *Illiquidity Index*. Finally, in Specifications III we investigate the effect of FPIs' retirement from the market using Hui and Heubel's (1984) measure of liquidity. The outcomes demonstrates that FPIs' retreat post MAT lead to lower liquidity (higher value suggests lower liquidity). In terms of economic magnitudes, one standard deviation decline in NET_{it} (2.926 basis points) leads to a 0.129 point increase in *Liquidity Index*. Consistent with earlier studies (Bekaert and Harvey (2002)), these outcomes validate that FPIs' withdrawal reaction post MAT announcement had undesirable effects on market liquidity and thus on cost of capital. These effects, driven by sudden and unexpected outflow of FPIs, seem to have played a key role in forcing the government to reverse the proposed change in tax policy.

With regard to control variables, we find mixed evidence in support of the previous literature. Though we find positive relation between volatility of stock and its turnover, we also find that volatility reduces the liquidity of the stock which is consistent with findings of Stoll (2000). We find inconsistent evidence in terms of *Price* of stock and its impact on turnover and liquidity measures. Consistent with Stoll (2000) and Chai, Faff and Gharghori (2010), we find *Volume* and *Trades* positively affect the turnover ratios and liquidity measures. Surprisingly, we find that *Market Capitalization* reduces the liquidity of stock which is not consistent with the previous literature. In line with Chai, Faff and Gharghori (2010), we also find *Absolute Return* negatively associated with *Illiquidity* and *Liquidity Ratio.*

5.5.3 Implication on Stock Volatility

Emerging equity markets are characterised by higher volatility which in turn also increases the cost of capital of firm (Bekaert and Harvey (1997)). Likewise, studies that examine the issue

of liberalizations and volatility in the stock market show that the stock market volatility reduces after liberalizing when foreign investors begin holding the local market (Bekaert and Harvey (1997), Bekaert and Harvey (2000), Kim and Singal (2000)). Following this argument, it would suggest that when FPIs withdraw from the market the stock volatility in the market should increase. To examine the effect of FPIs' withdrawal following the MAT event on stock volatility, we run different specifications of following regression equation:

$$\begin{aligned} Stock\ Volatility_{it} \\ &= \beta_1(MAT\ effect_t) + \beta_2(NET_{it}) \\ &+ \beta_3(MAT\ effect_t \times TRMT_i \times NET_{it}) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \alpha_k + \varepsilon_{it} \end{aligned} \quad (17)$$

where,$Stock\ Volatility_{it}$ is the daily stock volatility of firms calculated as square of stock return for firm *i* at time *t.* $MAT\ effect_t$, $TRMT_i$ and NET_{it} are defined in the previous section. The economic rationales for including the set of controls ($\boldsymbol{X_{it}}$) are discussed as follows. Recent empirical evidence suggests that size and liquidity are two main determinants of stock return volatility (Bekaert and Harvey (1997), Bae, Chan and Ng (2004), Li, Nguyen, Pham and Wei (2011)). Following these studies, we include log of market capitalization *(Market Capitalization)* as a measure of size, the ratio of number of shares traded or trading volume and number of shares outstanding *(Turnover Ratio)* and Amihud (2002) *Illiquidity Index* as a measure of stock liquidity. We also follow Wei and Zhang (2006) and Li, Nguyen, Pham and Wei (2011) and include previous day *Volatility* as it is established that return volatility is auto-correlated. Likewise, we also include *Price to Book Ratio* calculated as the ratio of price of stock and book value per share of stock as a proxy for risk factor.[14] All these variables are calculated daily and sourced from Prowess database.

The results are presented in Panel C of Table 7. The coefficient of our main variable of interest β_3 is negative and significant in Specification I. Economically, our result suggests that

[14] Chan and Chen (1991) and Fama and French (1993) suggest size and price-to-book ratio as a proxy for firm riskiness that capture the variation in stock returns.

one standard deviation decline in NET_{it} (2.926 basis points) leads to a 0.0123% increase in *Stock Volatility* due to FPIs' withdrawal following the repercussion of MAT event. Thus, it shows that FPIs' departure following the MAT event had an undesirable consequence on stock volatility and hence, the cost of capital, which also seems to have forced the government to reconsider the proposed change in tax policy.

With regards to control variables, our estimations are in line with the results reported by Li, Nguyen, Pham and Wei (2011). We find significant positive impact of *Volatility* and *Turnover Ratio* on stock volatility. Though the impact of *Market Capitalization* is not significant, the direction is similar to results reported by Li, Nguyen, Pham and Wei (2011).

5.5.4 Pricing effects

We next examine whether the FPIs' withdrawal after the MAT event had any pricing effects, particularly we evaluate whether potential trading strategies adopted before the MAT event yield significantly different returns post the MAT event. A possible rationale behind this strategy is that if FPIs trade less in stocks after the MAT event then the traded stocks would be under-priced resulting in lower stock return. To analyse the trading strategy, we take a long (short) position on the treated (control) firms and compute the cumulative returns of this position over holding period of one, five, ten, 15 and 22 trading days.[15] The following daily panel fixed effect regression, analogous to Gao and Lin (2015, Equation (10)), for treated and control firms is run to identify the pricing effect.

$$\frac{1}{w}\left[\log\left(1+r_{t+w,w}\right)\right] = \beta_1(MAT\ effect_t) + \beta_2(MAT\ effect_t \times NET_{it}) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \varepsilon_{it}, \quad w = 1, 5, 10, 15, 22 \tag{18}$$

where $\log\left(1+r_{t+w,w}\right) \equiv \log(1+r_{t+1}) + \cdots + \log(1+r_{t+w})$ and r_{t+1} is the return on day

[15] We exclude cumulative returns for each holding period that include returns before the MAT effective date (i.e. 1st April, 2015) and the second announcement date (i.e. 1st September 2015). For example, for five working days, we do not include cumulative returns for five trading days before 1st April 2015 and five trading days before 1st September 2015. Similar is the case for other holding periods.

t+1. We vary *w* from one to 22 trading days. $MAT\ effect_t$ is a dummy variable that takes the value of one for the *Post-MAT Period* between 1st April 2015 and 31st August 2015 and zero for the *Pre-MAT Period* between 1st January 2015 and 31st March 2015. NET_{it} is the net equity trading scaled by previous day market capitalization as discussed in Equation (7). X_{it} is vector of control variables that affects the stock return discussed in following paragraph. $\boldsymbol{\gamma_i}$ and δ_t control for firm fixed effects and time (day) fixed effects respectively.

The first control variable that we include is previous day stock return (*Stock Return)* as Brennan, Chordia and Subrahmanyam (1998) suggest that past stock returns affects their expected return. Likewise, stock expected returns are negatively related to size and price-to-book ratio (Fama and French (1995), Jensen, Johnson and Mercer (1997)) . We include *Market Capitalization* calculated as log of market capitalization at the end of previous day as a proxy for size and *Price-to-Book Ratio* is calculated as ratio of previous day price of stock and previous day book value per share. Similarly, Chordia, Subrahmanyam and Anshuman (2001) and Amihud (2002) find significant relation between stock returns and liquidity measures. We include *Turnover Ratio* calculated as the ratio of previous day number of shares traded and previous day number of shares outstanding as a proxy for liquidity measure. We also include *Volatility* calculated as square of previous day stock returns as a measure of stock total risk.

[Insert Table 8 about here]

Panel A of Table 8 reports summary of the cumulative stock returns over various holding periods for long strategy on treated firms and short strategy on control firms. As shown in *Difference* column of Panel A.1 and Panel A.2, the cumulative stock return for long strategy declined significantly after the MAT event for all the holding periods and the cumulative stock return for short strategy on control firms increased significantly after MAT event for 15 and 22 trading days holding period respectively. The results suggest that long (short) strategy on more (less) affected firm yields significant negative (positive) return due to FPIs' withdrawal

following the MAT event signaling pricing effect.

We report regression results of Equation (18) in Panel B of Table 8. In Panel B.1, we regress cumulative stock returns for long strategy on treated firms traded by FPIs and in Panel B.2, we regress cumulative stock returns for short strategy on control firms traded by FPIs. The key conclusion is that the β_2 coefficient is statistically significant for long strategy on treated firms for one, five, and ten trading days holding period. In terms of economic magnitude, we find that one standard deviation decline in NET_{it} (2.926 basis points) leads to 0.54%, 0.08%, and 0.013% decline in cumulative stock returns for one day, five and ten trading days respectively. Likewise, the β_2 coefficient is also statistically significant for short strategy on control firms for one day and five trading days. Economically, one standard deviation decline in NET_{it} (2.926 basis points) leads to 0.67% and 0.123% increase in cumulative stock returns for one day and five trading days respectively. We also conduct similar trading strategy using alternative treatment and controls groups based on median value (as discussed in Section 5.4.2) and still observe similar results (unreported). In summary, our exercises suggest that MAT event induces significant pricing effects in both long and short strategy.

5.6 Policy Reversal and FPIs' Market Re-Entry

Our theoretical framework suggests that foreign portfolio flows, after the introduction of MAT, should reduce. Following the similar economic sense, it would also suggest that the flows should increase following the reversal of the tax policy, i.e. we should observe inflows. We evaluate the significance, particularly the size of the net trading on account of the U-turn of the policy announcement using the approach similar to outflows reported in the earlier sections. First, we conduct a simple paired t-test for the mean differences in NET_{it} before and after the second announcement related to the reversal of MAT on 1st September 2015 using five different

window periods[16] similar to those reported in Panel A of Table 1.

The results in Panel A of Table 9 from the average figures of the third column, the flows are still negative but the size of the outflows have lessened as evident from the positive mean differences reported in column four. When we associate these economic significances related to the initial withdrawal, as conveyed in Panel A of Table 1, the outcomes suggest that the reversal of the policy does not lead to quick and any material inflow of foreign portfolio, rather only the pace of the outflow reduced.

[Insert Table 9 about here]

In our second approach, we investigate to establish the causal effect by running two different specifications of the following regression equation after controlling for other confounding factors:

$$NET_{it} = \beta_1(MAT\ reversal\ effect_t) + \beta_2(MAT\ reversal\ effect_t \times TRMT_i) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \alpha_k + \varepsilon_{it} \quad (19)$$

In Equation (19), $MAT\ reversal\ effect_t$ is a dummy variable that takes the value of zero for the *Post-MAT Event Period* between 1st April 2015 and 31st August 2015, and the value of one for the *After Announcement* period between 1st September 2015 and 31st December 2015. $TRMT_i$ is a dummy variable that takes the value of one for firms in the treatment group and zero for firms in the control group. All other factors are the same as described in the previous section. The variable of interest β_1 and β_2, which captures the post-MAT effect, is expected to be positive and statistically significant.

The results of the two different estimations of Equation (19) are presented in Panel B of Table 9. In Specification I, we include the dummy variable $MAT\ reversal\ effect_t$ and in

[16] *Seven Trading Days* window period for *MAT-Period* is 21st August-31st August 2015 and *After Announcement* period is 1st September-9th September 2015. *One Month* window period for *MAT-Period* is 1st August-31st August 2015 and *After Announcement* period is 1st September -30th September 2015. *Two Months* window *MAT-Period* is 1st July-31st August 2015 and *After Announcement* period is 1st September-29th October, 2015. *Three Months* window *MAT-Period* is 1st June-31st August 2015 and *After Announcement* period is 1st September-30th November 2015. *Post-MAT Event Period* for *MAT-Period* is 1st April 2015-31st August 2015 and *After Announcement* event period is 1st September -31st December 2015.

Specification II, we include the DiD variable $MAT\ reversal\ effect_t \times TRMT_i$ along with control variables. The coefficients of the main variable of interest β_1 and β_2 are positive but not statistically significant. Even if we focus only on the economic significance, we see that compared to the specifications on withdrawal (a decline of 0.344 basis point, as reported in Table 5), the DiD coefficients of post policy reversal period are much smaller (an increase of 0.0628 basis point). These results suggest that though FPIs are quick to move out of the emerging markets reacting to unfavourable policies, the reversal of the change in policies does not lead to immediate and equally substantial inflows of foreign portfolios relative to outflows.

6 Conclusion

Given the importance of foreign portfolio investments in a capital constrained growing emerging markets; it is imperative for policymakers to attract and retain FPIs by understanding the influence they could have on future policy. The literature suggests that foreign investors can indirectly influence policy making through their ability to pressurize shareholders and managers of the firms in which they invest to make representations on their behalf. However, we suggest that when the market-wide policy of the host government does not match the preference of foreign investors, they could directly react by withdrawing from the market. We exploit an unexpected tax related policy announcement that threatened to impose retrospective taxes and show how FPIs not only react by quickly withdrawing from the market but also influence the policy making to suit their own preferences.

On 1st April 2015, the Indian government introduced the Minimum Alternate Tax (MAT) which threatened to impose retrospective tax liability on FPIs. However, subsequent second announcement was made on 1st September 2015 declaring no imposition of MAT on FPIs. The window between the effective date and second announcement reflects a source of exogenous variation in taxation related policy. Using this window, daily transaction level granular data of

FPIs and using a DiD quasi-experimental method, this paper finds a large and economically significant negative effect (amounting to around 0.344 basis point of market capitalization per day per equity). This constitutes an outflow of almost INR 8.10 million per day per equity. Further, we also find that the effect of the increase of tax liability was immediate as the FPIs withdrew from the market within the first *Seven Trading Days* after the MAT announcement. The dramatic response of FPIs to exit from the market had disruptive effects in market in terms of stock turnover, liquidity, volatility and pricing which forced the Indian government to remove its plan to introduce the proposed changes. However, our results indicate that the reversal of policy does not lead to immediate and materially substantive inflows.

To conclude, our study implies that tax advantage is one the important attractions of foreign investors in emerging market, but, the results of our study also imply that FPIs are highly sensitive to tax policies and any changes that increase their explicit tax liability may attract a severe withdrawal reaction. This is a direct channel through which FPIs influence changes in government policies to suit their preferences. Although FPIs quickly pulled out of the market, they do not show a similar urgency to move back into the market following the reversal of changes in policies. This suggests that policymakers should take due care in formulating, announcing and implementing policies that may have a direct effect on the expected payoff of FPIs if they wish to continue attract new investors and retain existing ones.

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Table 1: Different Window Periods Summary Analysis

Panel A: Mean Difference in Net Equity Trading

This table shows the paired t-test of the differences in average daily net equity trading value as a percentage of previous day market capitalization (reported in pbs units) of listed stocks in BSE/NSE by all FPIs. The column *Window Period* denotes the different period of trading days. The column *Pre-MAT Period* shows the average value for the corresponding trading window before MAT event date (1st April 2015) and *Post-MAT Period* shows the average value of corresponding trading window after the MAT event date. *Seven Trading Days* window period for *Pre-MAT Period* is 23rd March-31st March 2015 and *Post-MAT Period* is 1stApril-15th April 2015. *One Month* window period for *Pre-MAT Period* is 1st March-31st March 2015 and *Post-MAT Period* is 1st April -30th April 2015. *Two Months* window period for *Pre-MAT Period* is 1st February-31st March 2015 and *Post-MAT Period* is 1st April-29th May 2015. *Three Months* window period for *Pre-MAT Period* is 1st January-31st March 2015 and *Post-MAT Period* is 1stApril-30th June 2015. *MAT Event Period* for *Pre-MAT Period* is from 1st January 2015-31st March 2015 and *Post-MAT Period* is from 1st April -31st August 2015. The column *Difference* shows the difference between *Post-MAT* and *Pre-MAT* event average values. *t-stat* is the t-statistics of the difference figure with a probability of the alternative hypothesis that the average difference is less than zero (i.e. Post-MAT average - Pre-MAT average <0) denoted by *p-value*. The column *Observations* shows the sample size included in each window.

Window Period	Pre-MAT Period	Post-MAT Period	Difference	t-stat	p-value	Observations
Seven Trading Days	0.428	0.189	-0.239	-4.659	0.000	13,892
One Month	0.397	0.049	-0.348	-9.865	0.000	28,103
Two Months	0.307	0.047	-0.260	-10.489	0.000	55,266
Three Months	0.244	0.006	-0.237	-11.382	0.000	84,131
MAT Event Period	0.244	-0.021	-0.264	-14.377	0.000	115,424

Panel B: Regressions for Different Window Periods

This table reports the regression results of the following regression specification:

$$NET_{it} = \beta(MAT\ effect_t) + \boldsymbol{\gamma_i} + e_{it}$$

where: NET_{it} is the day *t* net trading value by all FPIs as a percentage of previous day's market capitalization of listed stocks (*i)* on the Indian stock market (reported in pbs units). Firms traded are indexed as *i* and daily time periods are indexed as *t.* $MAT\ effect_t$ is the dummy variable which takes the value of zero in different *Pre-MAT Period* and one for different *Post-MAT Period* as discussed in the notes to Panel A. $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects. e_{it} is the error term. Standard errors are corrected for clustering at the firm level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Seven Trading Days	One Month	Two Months	Three Months	MAT Event Period
$MAT\ effect_t$	-0.238***	-0.396***	-0.314***	-0.325***	-0.354***
	(-3.36)	(-6.81)	(-6.20)	(-6.86)	(-8.05)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.231	0.198	0.159	0.136	0.121
Number of firms	716	804	884	943	1,041
Number of observations	13,986	28,375	55,827	85,023	116,794

Table 2: Descriptive Statistics of Controls

This table shows the overall summary statistics of control variables used in this study. First, we use *Stock Return* which is defined previous day's stock return of individual firms the FPIs traded on a particular day in National Stock Exchange and/or Bombay Stock Exchange. Second, we use controls for various pull factors that include *Market Return* as previous day's return on National Stock Exchange or Bombay Stock Exchange, *Indian VIX Return* as previous day's return on the Indian VIX index, *USD Volatility* as the daily standard deviation of USD/IRS exchange rate constructed using the previous 90 days' figures, *Inflation rate* as previous month's rate of inflation and *Real GDP Growth Rate* as previous quarter's growth rate in real Gross Domestic Product. Last, we use controls for push factors that include *EM Return* as previous day's return on emerging market using the MSCI Emerging Market Index, *World Return* as previous day's return on World market using the MSCI World Market Index, *US TB Rate* as previous day's 1-year US Treasury Bills rate, *EM VIX Return* as previous day's return on the Chicago Board Options Exchange Emerging Markets Volatility Index and *Global VIX Return* as previous day's return on the Chicago Board Options Exchange Volatility Index. *Pre-MAT Period* is 1st January-31st March 2015 and *Post-MAT Period* is 1st April-31st August 2015. *Difference* shows the difference between *Post-MAT* and *Pre-MAT Period* average values. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Variables	Overall Mean	Overall Median	Overall SD	Pre-MAT Period Mean (1)	Post-MAT Period Mean (2)	Difference (1-2)
Stock Return (%)	-0.023	-0.060	2.837	0.021	-0.049	-0.070***
Market Return (%)	-0.020	0.009	1.083	0.042	-0.057	0.099**
Indian VIX Return (%)	0.270	-0.089	6.054	-0.066	0.469	0.535*
USD Volatility (%)	0.311	0.320	0.021	0.324	0.304	-0.020***
Inflation Rate (%)	4.883	5.010	0.567	4.943	4.848	-0.095
Real GDP Growth Rate (%)	2.498	3.560	2.979	3.560	1.871	-1.688***
EM Return (%)	-0.102	-0.098	0.975	0.019	-0.172	-0.191
World Return (%)	-0.017	-0.005	0.796	0.034	-0.047	-0.080
US TB Rate (%)	0.262	0.250	0.056	0.225	0.284	0.059***
EM VIX Return (%)	0.354	-0.547	8.006	-0.101	0.618	0.719
Global VIX Return (%)	0.208	-0.107	8.864	-0.156	0.420	0.576

Table 3: MAT Effect Regressions

This table reports the regression results of the following regression specification:

$$NET_{it} = \beta(MAT\ effect_t) + \boldsymbol{X}.\delta + \boldsymbol{\gamma_i} + \delta_t + e_{it}$$

where NET_{it} is the day *t* net trading value by all FPIs as a percentage of previous day's market capitalization of listed stocks (*i)* on the Indian stock market (reported in pbs units). Firms traded are indexed as *i* and daily time periods are indexed as *t.* $MAT\ effect_t$ is the dummy variable which takes the value of zero in the *Pre-MAT Period* (1st January-31st March 2015) and one in the *Post-MAT Period* (1st April-31st August 2015). $\boldsymbol{X_{it}}$ is the set of control variables as defined in the notes to Table 2. $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects. δ_t controls time (day) fixed effects. e_{it} is the error term. Standard errors are corrected for clustering at the firm level and time (day) level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively. The sample period ranges from 1st January 2015 to 31st August 2015.

	Specification I	**Specification II**	**Specification III**	**Specification IV**
$MAT\ effect_t$	-0.360***	-0.355***	-0.386***	-0.353***
	(-5.38)	(-5.40)	(-5.75)	(-5.69)
Stock Return		0.0676***	0.0679***	0.0680***
		(11.16)	(11.42)	(11.14)
Market Return			0.0598*	0.0227
			(2.00)	(0.89)
Indian VIX Return			0.0142***	0.0101**
			(2.98)	(2.44)
USD Volatility			-3.038	-4.795**
			(-1.67)	(-2.38)
Inflation Rate			0.194***	0.151***
			(4.27)	(3.55)
Real GDP Growth Rate			0.0105	0.00491
			(0.90)	(0.43)
EM Return				0.434
				(1.39)
World Return				-0.271
				(-0.38)
US TB Rate				-1.318*
				(-1.70)
EM VIX Return				0.00766
				(1.68)
Global VIX Return				-0.00749
				(-1.58)
Firms Fixed Effects	Yes	Yes	Yes	Yes
Time (day) Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.121	0.125	0.126	0.127
Number of Firms	1,041	1,039	1,032	1,032
Number of Observations	116,794	116,789	114,286	114,286

Table 4: Mean and Regression based Difference-in-Differences

Panel A: Firm Level Difference-in-Differences Analysis

This table shows the difference between the differences of treatment and control group for the average value of NET_{it} between *Pre-MAT Period* (between 1st January 2015 and 31st March 2015) and *Post-MAT Period* (between 1st April 2015 and 31st August 2015). NET_{it} is the daily net equity trading value as a percentage of previous day's market capitalization on BSE/NSE (reported in pbs units). *Treatment Group* is a dummy variable which takes value of one if the firms are in the treatment group and zero if in the *Control Group*. We calculate total net equity trading for each sector by all FPIs since 1st January 2003 to 31st March 2015 and designate firms in the top 33rd percentile sectors as the treatment group and the bottom 33rd percentile sectors as the control group. *Difference* shows the difference between *Post-MAT Period* and *Pre-MAT Period* case average values. *t-stat* is the t-statistics of the difference figure with probability of the alternative hypothesis that the average difference is less than zero (i.e. *Post-MAT* average - *Pre-MAT average* <0) denoted by *p-value*.

	Pre-MAT Period	**Post-MAT Period**	**Difference**	**t-stat**	**p-value**
Treatment Group	0.2322	-0.0484	-0.2807	-13.1668	0.0000
Control Group	0.1815	0.1030	-0.0785	-1.2330	0.2176
Difference (Pre-MAT)	0.0507			1.0190	0.308
Difference (Post-MAT)		-0.1514		-3.879	0.000
Difference-in-Differences			-0.2022	-3.810	0.001

Panel B: Different Periods based Difference-in-Differences Regression

This table reports the regression results of the following regression specification:

$$NET_{it} = \beta(MAT\ effect_t \times TRMT_i) + \boldsymbol{\gamma_i} + e_{it}$$

where: NET_{it} is the day *t* net trading value by all FPIs as a percentage of previous day's market capitalization of listed stocks (*i)* on the Indian stock market (reported in pbs units). Firms traded are indexed as *i* and daily time periods are indexed as *t.* $MAT\ effect_t$ is the dummy variable which takes the value of zero in the *Pre-MAT Period* and one in the *Post-MAT Period* for seven trading days, one month, two months, three months and event period. *Seven Trading Days* window period for *Pre-MAT Period* is 23rd March-31st March 2015 and *Post-MAT Period* is 1stApril-15th April 2015. *One Month* window period for *Pre-MAT Period* is 1st March-31st March 2015 and *Post-MAT Period* period is 1st April -30th April 2015. *Two Months* window period for *Pre-MAT Period* is 1st February-31st March 2015 and *Post-MAT Period* is 1st April-29th May, 2015. *Three Months* window period for *Pre-MAT Period* is 1st January-31st March 2015 and *Post-MAT Period* is 1stApril-30th June 2015. *MAT Event Period* for *Pre-MAT Period* is 1st January 2015-31st March 2015 and *Post-MAT Period* is from 1st April -31st August 2015. $TRMT_i$ is the dummy variable which takes the value of one for the treatment group and zero for the control group as defined in Panel A. $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects. e_{it} is the error term. Standard errors are corrected for clustering at the firm level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Seven Trading Days	**One Month**	**Two Months**	**Three Months**	**MAT Event Period**
$MAT\ effect_t \times TRMT$	-0.202**	-0.373***	-0.318***	-0.348***	-0.356***
	(-2.38)	(-5.44)	(-5.27)	(-6.25)	(-6.98)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.239	0.204	0.165	0.139	0.121
Number of Firms	590	666	737	783	863
Number of Observations	11,829	23,990	47,128	71,804	98,757

Table 5: Regression based Difference-in-Differences with Controls

This table reports the regression results of the following regression specification:

$$NET_{it} = \beta(MAT\ effect_t \times TRMT_i) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \alpha_k + \varepsilon_{it}$$

where: NET_{it} is the day *t* net trading value by all FPIs as a percentage of previous day's market capitalization of listed stocks (*i)* on the Indian stock market (reported in pbs units). Firms traded are indexed as *i* and daily time periods are indexed as *t.* $MAT\ effect_t$ is the dummy variable which takes the value of zero in *Pre-MAT Period* (1st January-31st March 2015) and one in the *Post-MAT Period* (1st April-31st August 2015). $TRMT_i$ is the dummy variable which takes the value of one for the treatment group and zero for the control group. We calculate total net equity trading for each sector by all FPIs since 1st January 2003 to 31st March 2015 and designate firms in the top 33rd percentile sectors as the treatment group and the bottom 33rd percentile sectors as the control group. $\boldsymbol{X_{it}}$ is the set of control variables as defined in the notes to Table 2. $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects. δ_t and α_k control time (day) and sector fixed effects respectively. e_{it} is the error term. Standard errors are corrected for clustering at the firm level, time (day) level and sector level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively. The sample period ranges from 1st January 2015 to 31st August 2015.

	Specification I	**Specification II**	**Specification III**	**Specification IV**
$MAT\ effect_t \times TRMT$	-0.360***	-0.357***	-0.384***	-0.344***
	(-5.72)	(-5.80)	(-5.77)	(-5.25)
Stock Return		0.0646***	0.0646***	0.0647***
		(8.24)	(8.70)	(8.39)
Market Return			0.0591**	0.0190
			(2.05)	(0.76)
Indian VIX Return			0.0132**	0.00887*
			(2.53)	(2.04)
USD Volatility			-2.633	-4.775*
			(-1.18)	(-1.89)
Inflation Rate			0.185***	0.133***
			(3.55)	(2.85)
Real GDP Growth Rate			0.00827	0.00168
			(0.70)	(0.14)
EM Return				0.376
				(1.31)
World Return				-0.222
				(-0.30)
US TB Rate				-1.603*
				(-1.71)
EM VIX Return				0.00716
				(1.33)
Global VIX Return				-0.00758
				(-1.27)
Firms Fixed Effects	Yes	Yes	Yes	Yes
Time (day) Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R^2	Yes	Yes	Yes	Yes
Number of Firms	0.129	0.133	0.134	0.135
Number of Observations	863	861	855	855
Stock Return	98,757	98,752	96,614	96,614

Table 6: Robustness Tests

This table reports the regression results for different specifications of the following regression specification:

$$NET_{it} = \beta.(MAT\ effect_t \times TRMT_i) + Grexit_t + X_{it} + \gamma_i + \delta_t + \alpha_k + \vartheta_j + \delta_t \times \alpha_k + e_{it}$$

where: NET_{it} is the day *t* net trading value by all FPIs as a percentage of previous day's market capitalization of listed stocks (*i)* on the Indian stock market (reported in pbs units). Firms traded are indexed as *i* and daily time periods are indexed as *t.* $MAT\ effect_t$ is the dummy variable which takes the value of zero in *Pre-MAT Period* (1st January-31st March 2015) and one in the *Post-MAT Period* (1st April-31st August 2015) in Specification I-VI and the value of zero in the placebo *Pre-MAT Period* (1st January-31st March 2014) and one in the placebo *Post-MAT Period* (1st April-31st August 2014) in Specification VII. $TRMT_i$ is the dummy variable which takes the value of one for the treatment group (alternate treatment group) and zero for the control group (alternate control group). $Grexit_t$ is the dummy variable which takes value of 1 for the period between 22nd June 2015 and 13th July 2015. $\boldsymbol{X_{it}}$ is the set of control variables as defined in the notes to Table 2. $\boldsymbol{\gamma_i}$ is vector of firm dummies controlling for firm fixed effects. δ_t, α_k and ϑ_j control time (day), sector fixed effects and FPIs' fixed effects respectively where indicated. $\delta_t \times \alpha_k$ is an interaction of time and sector fixed effects for controlling any other unexpected shocks. e_{it} is the error term. Standard errors are corrected for clustering at the firm level, time (day) level, sector level and FPI level where indicated. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively. The sample period ranges from 1st January 2015 to 31st August 2015 (1st January 2014 to 31st August 2014 for Specification VII).

	Addressing Systematic Shocks		**Alternate Group using Median**	**Alternate Group using FPI Identification**		**Balanced Panel**	**False Experiment**
	Specification I	**Specification II**	**Specification III**	**Specification IV**	**Specification V**	**Specification VI**	**Specification VII**
$MAT\ effect_t \times TRMT$	-0.325***	-0.335***	-0.342***	-0.133***	-0.136***	-0.554**	-0.181
	(-3.87)	(-5.73)	(-5.08)	(-6.57)	(-6.47)	(-2.38)	(-1.49)
$Grexit_t$	-0.159	-0.156					
	(-1.54)	(-0.06)					
Stock Return	0.0647***	0.0650***	0.0680***	0.0098***	0.0103***	0.171***	0.0659***
	(8.42)	(10.79)	(9.80)	(3.82)	(4.22)	(5.96)	(9.83)
Market Return	0.0284	0.0286	0.0176	0.0130**	0.0123**	0.137*	0.00369
	(1.10)	(1.61)	(0.72)	(2.44)	(2.44)	(1.93)	(0.09)
Indian VIX Return	0.00976**	0.00971***	0.00924**	0.00023	0.00012	0.0255**	0.00805
	(2.28)	(3.39)	(2.26)	(0.29)	(0.16)	(2.10)	(1.33)
USD Volatility	-5.681**	-5.656***	-4.467*	-0.455	-0.475	-18.06**	-0.613
	(-2.56)	(-3.47)	(-1.97)	(-0.98)	(-1.10)	(-2.73)	(-0.97)
Inflation Rate	0.153***	0.153***	0.143***	0.0240**	0.0212**	0.179	-0.122
	(3.26)	(4.28)	(3.25)	(2.34)	(2.27)	(1.58)	(-1.34)
Real GDP Growth Rate	-0.00177	-0.00177	0.00250	-0.0097*	-0.0093*	-0.0416	0.0337**
	(-0.15)	(-0.17)	(0.22)	(-1.82)	(-1.84)	(-1.16)	(2.50)
EM Return	0.368	0.367	0.436	-0.0023	-0.0062	0.593	1.059*
	(1.27)	(1.59)	(1.56)	(-0.54)	(-1.10)	(0.77)	(1.96)
World Return	-0.116	-0.130	-0.332	-0.0013	-0.0027	-0.447	-0.652
	(-0.16)	(-0.33)	(-0.48)	(-0.09)	(-0.25)	(-0.25)	(-0.58)
US TB Rate	-1.891**	-1.828***	-1.622*	-0.585***	-0.554***	-9.730***	0.198
	(-2.20)	(-2.79)	(-1.87)	(-3.22)	(-3.15)	(-4.23)	(0.05)
EM VIX Return	0.00720	0.00721***	0.00736	0.00652	0.00950	0.0211	-0.0173
	(1.31)	(2.85)	(1.48)	(0.60)	(1.04)	(1.65)	(-1.54)
Global VIX Return	-0.00641	-0.00666**	-0.00764	-0.0015	-0.0017*	-0.0312*	0.00637
	(-0.94)	(-2.03)	(-1.57)	(-1.36)	(-1.87)	(-1.79)	(0.93)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time (day) Fixed Effects	Yes	No	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	No	Yes	No	No	Yes	Yes
FPI Fixed Effects	No	No	No	Yes	Yes	No	No
Time × Sector Fixed Effects	No	Yes	No	No	No	No	No
Adjusted R^2	0.135	0.145	0.126	0.101	0.101	0.076	0.139
Number of Firms	855	852	1032	1,005	1,013	91	743
Number of Observations	96,614	96,575	114,286	604,504	699,273	14,833	71,817

Table 7: Implications of FPI's Withdrawal

Panel A: Summary Statistics

This table shows the overall summary statistics of various variables. Liquidity measures are proxied using: (i) *Turnover Ratio* as the ratio of the number of shares traded in a day and number of shares outstanding; (ii) daily *Illiquidity Index* developed by Amihud (2002) and (iii) daily *Liquidity Index* developed by Hui and Heubel (1984). *Stock Volatility* is the daily volatility of stock return calculated as square of daily stock return and *Price-to-Book Ratio* as the ratio of stock price of the firm and book value per share. *Pre-MAT* period is 1st January-31st March 2015 and *Post-MAT* period is 1st April-31st August 2015. *Difference* shows the difference between *Post-MAT* and *Pre-MAT Period* average values. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Overall Mean	**Overall Median**	**Overall SD**	**Pre-MAT Period Mean (1)**	**Post-MAT Period Mean (2)**	**Difference (1-2)**
Turnover Ratio (%)	0.193	0.076	0.275	0.200	0.189	-0.011***
Illiquidity Index	0.543	0.115	0.977	0.490	0.574	0.084***
Liquidity Index	2.519	0.802	3.842	2.420	2.576	0.156***
Stock Volatility (%)	0.087	0.018	0.294	0.077	0.093	0.016***
Price-to-Book Ratio (times)	5.557	2.926	16.729	6.195	5.195	-1.000***

Panel B: Regression Analysis for Implications on Stock Liquidity

This table reports the regression results of the following regression specification:

$$Y_{it} = \beta_1(MAT\ effect_t) + \beta_2(NET_{it}) + \beta_3(MAT\ effect_t \times TRMT_i \times NET_{it}) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \alpha_k + \varepsilon_{it}$$

where: Y_{it} is a vector of different proxies of liquidity measures as discussed in the notes to Panel A. Firms traded are indexed as *i* and daily time periods are indexed as *t.* $MAT\ effect_t$ is the dummy variable which takes the value of zero in the *Pre-MAT Period* (1st January-31st March 2015) and one in the *Post-MAT Period* (1st April-31st August 2015). NET_{it} is the net equity trading scaled by previous day market capitalization as discussed in Equation (7). $TRMT_i$ is the dummy variable which takes the value of one for the treatment group and zero for the control group. We calculate total net equity trading for each sector by all FPIs since 1st January 2003 to 31st March 2015 and designate firms in the top 33rd percentile sectors as the treatment group and the bottom 33rd percentile sectors as the control group. $\boldsymbol{X}$ is the set of control variables that include *Stock Volatility* as the daily stock return volatility, *Price* as the log of average price of the stock at the end of the day, *Volume* as the log of total volume of shares traded during the day in million INR, *Trades* as the log of number of trades during the day, *Market capitalization* as the log of market capitalization at the end of the day, and *Absolute return* as the absolute daily stock return. $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects. δ_t and α_k control time (day) and sector fixed effects respectively. e_{it} is the error term. Standard errors are corrected for clustering at the firm level, time (day) level and sector level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively. The sample period ranges from 1st January 2015 to 31st August 2015.

	Turnover Ratio	**Illiquidity Index**	**Liquidity Index**
	Specification I	**Specification II**	**Specification III**
$MAT\ effect_t \times TRMT_i \times NET_{it}$	0.000840***	-0.0211***	-0.0443**
	(3.70)	(-2.58)	(-2.32)
Stock Volatility	0.0573***	5.258***	203.5***
	(30.68)	(7.97)	(19.42)
Price	0.000157*	0.261***	0.274***
	(1.73)	(11.02)	(3.67)
Volume	0.00103***	-0.332***	-0.353***
	(130.19)	(-119.18)	(-47.71)
Trades	0.000111***	0.103***	-0.201***
	(10.54)	(27.66)	(-21.78)
Market capitalization	-0.000661***	0.00356	1.598***
	(-7.04)	(0.14)	(20.73)

Panel B. Continued…

Absolute return	0.00792***	15.24***	7.986***
	(21.40)	(116.61)	(19.53)
Firm Fixed Effects	Yes	Yes	Yes
Time (day) Fixed Effects	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes
Adjusted R^2	0.747	0.669	0.835
Number of Firms	778	778	778
Number of Observations	82,684	82,684	82,684

Panel C: Regression Analysis for Implications on Stock Volatility

This table reports the regression results of the following regression specification:

$$Stock\ Volatility_{it} = \beta_1(MAT\ effect_t) + \beta_2(NET_{it}) + \beta_3(MAT\ effect_t \times TRMT_i \times NET_{it}) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \alpha_k + \varepsilon_{it}$$

where: $Stock\ Volatility_{it}$ is the daily stock volatility of firms calculated as square of stock return. Firms traded are indexed as *i* and daily time periods are indexed as *t.* $MAT\ effect_t$ is the dummy variable which takes the value of zero in the *Pre-MAT Period* (1st January-31st March 2015) and one in the *Post-MAT Period* (1st April-31st August 2015). NET_{it} is the net equity trading scaled by previous day market capitalization as discussed in Equation (7). $TRMT_i$ is the dummy variable which takes the value of one for the treatment group and zero for the control group. We calculate total net equity trading for each sector by all FPIs since 1st January 2003 to 31st March 2015 and designate firms in the top 33rd percentile sectors as the treatment group and the bottom 33rd percentile sectors as the control group. $\boldsymbol{X}$ is the set of control variables that include *Volatility* as the previous day stock return volatility, *Turnover Ratio* as the ratio of the number of shares traded and number of shares outstanding, *Market capitalization* as the log of market capitalization at the end of the day, *Price to Book Ratio* as the ratio of stock price of the firm and book value per share and *Illiquidity Index* is index for illiquidity developed by Amihud (2002). $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects. δ_t and α_k control time (day) and sector fixed effects respectively. e_{it} is the error term. Standard errors are corrected for clustering at the firm level, time (day/week) level and sector level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively. The sample period ranges from 1st January 2015 to 31st August 2015.

	Specification I
$MAT\ effect_t \times TRMT_i \times NET_{it}$	-0.00042*
	(-1.73)
Volatility	0.0965**
	(2.49)
Turnover Ratio	0.130***
	(3.79)
Market Capitalization	-0.000784
	(-1.42)
Price to Book Ratio	0.00025
	(1.27)
Illiquidity Index	1.163
	(1.61)
Firm Fixed Effects	Yes
Time (day) Fixed Effects	Yes
Sector Fixed Effects	Yes
Adjusted R^2	0.175
Number of Firms	753
Number of Observations	81,580

Table 8: Pricing effects of FPIs' Withdrawal

Panel A: Summary statistics

This table shows the overall summary statistics of cumulative stock return calculated as $1/w\left[\log(1+r_{t+w,w})\right]$, where $\log(1+r_{t+w,w}) \equiv \log(1+r_{t+1})+\cdots+\log(1+r_{t+w})$ and r_{t+1} is the return on day *t+1*. We vary *w* from one to 22 trading days. Panel A.1 shows the cumulative stock return for long strategy on treated firms that are traded by FPIs during the sample period. Panel A.2 shows the cumulative stock return for short strategy on control firms that are traded by FPIs during the sample period. *Pre-MAT* period is 1st January-31st March 2015 and *Post-MAT* period is 1st April-31st August 2015. *Difference* shows the difference between *Post-MAT* and *Pre-MAT Period* average values. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

A.1. Long Strategy on Treated Firms

	Stock Return (%) for Long Strategy on Treated Firms					
	Overall Mean	**Overall Median**	**Overall SD**	**Pre-MAT Period Mean (1)**	**Post-MAT Period Mean (2)**	**Difference (1-2)**
One Trading Day	-0.006	-0.020	2.932	-0.0372	-0.0312	-0.0684***
Five Trading Days	-0.072	-0.059	1.297	-0.0331	-0.0939	-0.0608***
Ten Trading Days	-0.011	-0.017	0.846	-0.0209	-0.0044	0.0165***
15 Trading Days	-0.045	-0.039	0.724	-0.0144	-0.0614	-0.0469***
22 Trading Days	-0.076	-0.067	0.607	-0.0018	-0.1031	-0.1012***

A.2 Short Strategy on Control Firms

	Stock Return (%) for Short Strategy on Control Firms					
	Overall Mean	**Overall Median**	**Overall SD**	**Pre-MAT Period Mean (1)**	**Post-MAT Period Mean (2)**	**Difference (1-2)**
One Trading Day	-0.105	0.000	3.230	-0.1352	-0.0866	0.0486
Five Trading Days	0.033	0.058	1.374	0.0084	0.0471	0.0386
Ten Trading Days	0.020	0.015	0.755	0.0038	-0.0198	-0.0237
15 Trading Days	-0.011	-0.000	0.895	-0.0092	0.0359	0.0451***
22 Trading Days	0.034	0.036	0.603	-0.0248	0.0556	0.0805***

Panel B: Regression based Pricing Effects

This table reports the regression results of the following regression specifications:

$$\frac{1}{w}\left[\log(1+r_{t+w,w})\right] = \beta_1(MAT\ effect_t) + \beta_2(MAT\ effect_t \times NET_{it}) + X_{it} + \boldsymbol{\gamma_i} + \delta_t + \varepsilon_{it}$$

where where $\log(1+r_{t+w,w}) \equiv \log(1+r_{t+1})+\cdots+\log(1+r_{t+w})$ and r_{t+1} is the return on day *t+1*. We vary *w* from one to 22 trading days. $MAT\ effect_t$ is the dummy variable which takes the value of zero in the *Pre-MAT Period* (1st January-31st March 2015) and one in the *Post-MAT Period* (1st April-31st August 2015). NET_{it} is the net equity trading scaled by previous day market capitalization as discussed in Equation (7). $\boldsymbol{X}$ is the set of control variables that include *Stock Return* as the previous day return on stock, *Market capitalization* as the log of market capitalization at the end of the previous day, *Price-to-Book Ratio* as the ratio of previous day stock price of the firm and previous day book value per share, *Turnover Ratio* as the ratio of the previous day number of shares traded and previous day shares outstanding, and *Volatility* as the previous day stock return volatility calculated as square of stock return. $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects. δ_t controls time (day) effects. e_{it} is the error term. Standard errors are corrected for clustering at the firm level and time (day) level. Panel B.1 shows the regression result for cumulative stock return for long strategy on treated firms traded by FPIs during the sample period. Panel B.2 shows the regression result for cumulative stock return for short strategy on control firms traded by FPIs during the sample period. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively. The sample period ranges from 1st January 2015 to 31st August 2015.

B.1. Long Strategy on Treated Firms

	One Trading Day	Five Trading Days	Ten Trading Days	15 Trading Days	22 Trading Days
$MAT\ effect_t \times NET_{it}$	0.00184***	0.00026***	0.000058***	0.000002	-0.000016
	(12.76)	(5.14)	(2.96)	(0.11)	(-0.94)
Stock Return	0.0369	-0.00807	-0.0109	-0.0120**	-0.00463
	(1.49)	(-0.80)	(-1.55)	(-2.09)	(-1.09)
Market Capitalization	-0.00236***	-0.00233***	-0.00194***	-0.00207***	-0.00203***
	(-3.09)	(-4.15)	(-3.85)	(-4.12)	(-4.89)
Price-to-Book ratio	-0.00264***	-0.00227***	-0.00207***	-0.00209***	-0.00196***
	(-4.61)	(-5.64)	(-7.28)	(-7.24)	(-7.27)
Turnover Ratio	-0.177	-0.147**	-0.0673	-0.0932**	-0.0603*
	(-1.62)	(-2.31)	(-1.41)	(-2.34)	(-1.88)
Volatility	0.317	0.210	-0.0248	0.0224	-0.0229
	(0.59)	(1.04)	(-0.30)	(0.26)	(-0.35)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Time (Day) Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.100	0.132	0.176	0.222	0.253
Number of Firms	532	528	500	511	519
Number of Observations	61,876	58,832	50,332	51,612	53,847

B.2. Short Strategy on Control Firms

	One Trading Day	Five Trading Days	Ten Trading Days	15 Trading Days	22 Trading Days
$MAT\ effect_t \times NET_{it}$	-0.0023***	-0.00042***	-0.00002	-0.000024	-0.000032
	(-5.83)	(-2.81)	(-0.20)	(-0.32)	(-0.58)
Stock Return	-0.0483	-0.00773	0.0122	0.00761	0.00479
	(-1.61)	(-0.64)	(1.44)	(1.11)	(1.07)
Market Capitalization	0.00878**	0.00684***	0.00707***	0.00633***	0.00520***
	(2.71)	(3.24)	(3.12)	(3.22)	(3.07)
Price-to-Book ratio	0.00247**	0.00236**	0.00301***	0.00226***	0.00148*
	(2.47)	(2.59)	(5.56)	(3.27)	(1.99)
Turnover Ratio	0.000013	0.000011*	0.0000079	0.0000081**	0.0000075***
	(1.42)	(1.85)	(1.38)	(2.22)	(2.78)
Volatility	0.156	0.0982	-0.0422	-0.0112	0.0178
	(0.62)	(0.95)	(-0.57)	(-0.19)	(0.26)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Time (Day) Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.105	0.118	0.154	0.184	0.191
Number of Firms	100	100	98	100	99
Number of Observations	9,904	9,422	8,075	8,210	8,533

Table 9: Policy Reversal and FPIs' Market Re-entry

Panel A: Mean Differences in Net Equity Trading following Policy Reversal

This table shows the paired t-test of the differences in average daily net equity trading value as a percentage of previous day market capitalization (reported in pbs units) of listed stocks in BSE/NSE by all FPIs. The column *Window Period* denotes different periods of trading days. The *MAT-Period* column shows the average value for corresponding trading window period before the second announcement on MAT issue (i.e. 1st September 2015) and the *After Announcement* column shows the average value of corresponding trading window after the MAT reversal announcement of 1st September 2015. *Seven Trading Days* window period for *MAT-Period* is 21st August-31st August 2015 and *After Announcement* period is 1st September-9th September 2015. *One Month* window period for *MAT-Period* is 1st August-31st August 2015 and *After Announcement* period is 1st September - 30th September 2015. *Two Months* window *MAT-Period* is 1st July-31st August 2015 and *After Announcement* period is 1st September-29th October 2015. *Three Months* window *MAT-Period* is 1st June-31st August 2015 and *After Announcement* period is 1st September-30th November 2015. *Post-MAT Event Period* for *MAT-Period* is 1st April 2015-31st August 2015 and *After Announcement* event period is 1st September -31st December 2015. The *Difference* column shows the difference between *After Announcement* and *MAT-Period* event average values. *t-stat* is the t-statistics of the difference figure with a probability of the alternative hypothesis that the average difference is less than zero (i.e. *After Announcement* average – *MAT-Period* average <0) denoted by *p-value*. The column *Observations* shows the sample size included in each window.

Window Period	MAT-Period	After Announcement	Difference	t-stat	p-value	Observations
Seven Trading Days	-0.531	-0.406	0.125	4.044	0.000	10,063
One Month	-0.202	-0.171	0.030	0.921	0.356	29,340
Two Months	-0.119	-0.060	0.058	2.528	0.011	58,528
Three Months	-0.177	-0.065	0.111	5.635	0.000	87,181
Post-MAT Event Period	-0.140	-0.022	0.118	7.364	0.000	129,659

Panel B: Policy Reversal Difference-in-Differences results

This table reports the regression results of the following regression specifications:

$$NET_{it} = \beta_1(MAT\ reversal\ effect_t) + \beta_2(MAT\ reversal\ effect_t \times TRMT_i) + X_{it}+\gamma_i + \delta_t + \alpha_k + e_{it}$$

where NET_{it} is the day *t* net trading value by all FPIs as a percentage of previous day's market capitalization of listed stocks (*i)* on the Indian stock market (reported in pbs units). Firms traded are indexed as *i* and daily time periods are indexed as *t*. $MAT\ reversal\ effect_t$ is the dummy variable which takes the value of zero in the *Post-MAT Event Period* (1st April-31st August 2015) and the value of one in the *After Announcement* period (1st September-31st December 2015). $TRMT_i$ is the dummy variable which takes the value of one for the treatment group and zero for the control group. We calculate total net equity trading for each sector by all FPIs since 1st January 2003 to 31st March 2015 and designate firms in the top 33rd percentile sectors as the treatment group and the bottom 33rd percentile sectors as the control group. $\boldsymbol{X}$ is the set of control variables as defined in the notes to Table 2. $\boldsymbol{\gamma_i}$ is the vector of firm dummies controlling for firm fixed effects. δ_t and α_k control time (day) and sector fixed effects respectively. e_{it} is the error term. Standard errors are corrected for clustering at the firm level, time (day) level and sector level. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively. The sample period ranges from 1st April 2015 to 31st December 2015.

	Specification I	Specification II
$MAT\ reversal\ effect_t$	0.0586	
	(0.51)	
$MAT\ reversal\ effect_t \times TRMT_i$		0.0628
		(0.51)
Stock Return	0.0632***	0.0601***
	(12.01)	(10.52)
Market Return	0.0106	0.0157
	(0.55)	(0.84)
Indian VIX Return	0.0117***	0.0117***
	(3.36)	(3.47)
USD Volatility	-2.950	-2.810

Panel B: Continued…

	Specification I	**Specification II**
	(-1.48)	(-1.18)
Inflation Rate	0.117**	0.121*
	(2.11)	(2.04)
Real GDP Growth Rate	0.00880	0.00643
	(0.79)	(0.52)
EM Return	0.113	0.0900
	(0.37)	(0.29)
World Return	-0.0634	0.0394
	(-0.14)	(0.09)
US TB Rate	-0.390	-0.327
	(-1.65)	(-1.41)
EM VIX Return	0.00153	0.000808
	(0.29)	(0.14)
Global VIX Return	-0.00600	-0.00499
	(-1.37)	(-1.01)
Firm Fixed Effects	Yes	Yes
Time (day) Fixed Effects	Yes	Yes
Sector Fixed Effects	Yes	Yes
Adjusted R^2	0.115	0.112
Number of Firms	1070	883
Number of Observations	127,440	107,908

Figure 1: Month wise Net Equity Trading in 2015 (in million rupees)

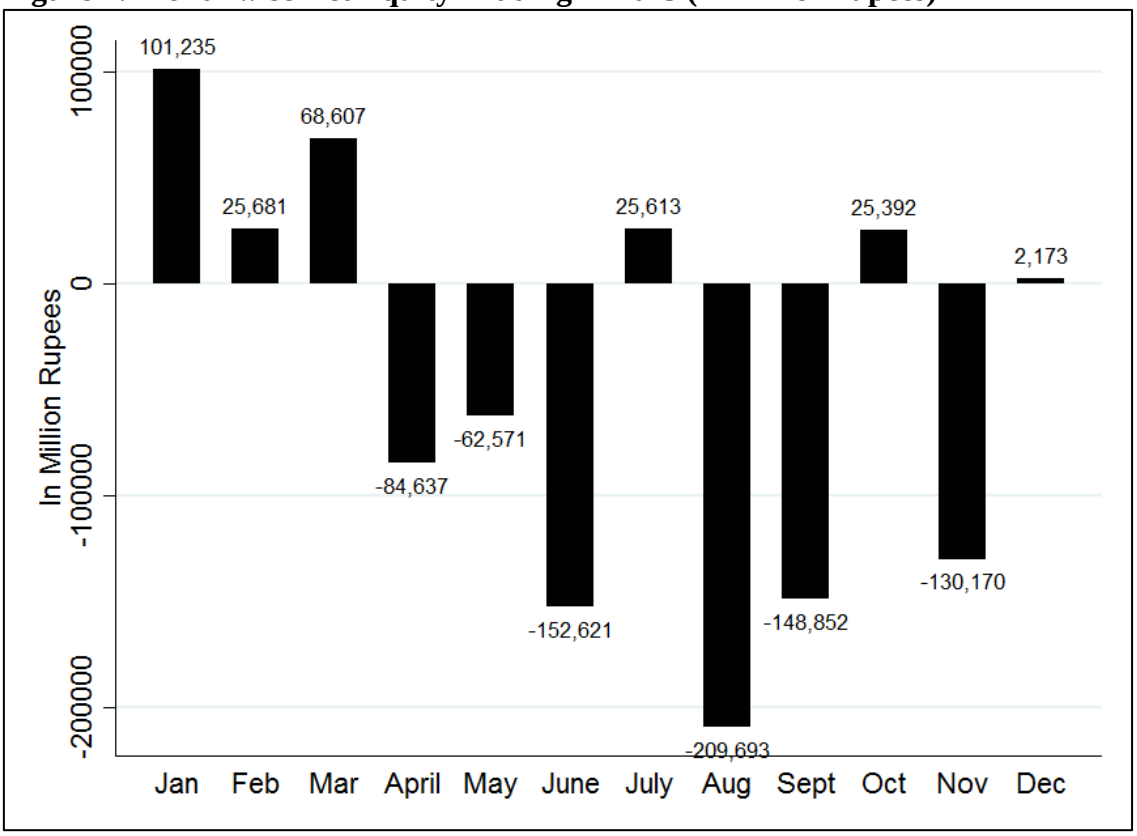


Figure 2: Monthly Average Net Equity Trading per Equity

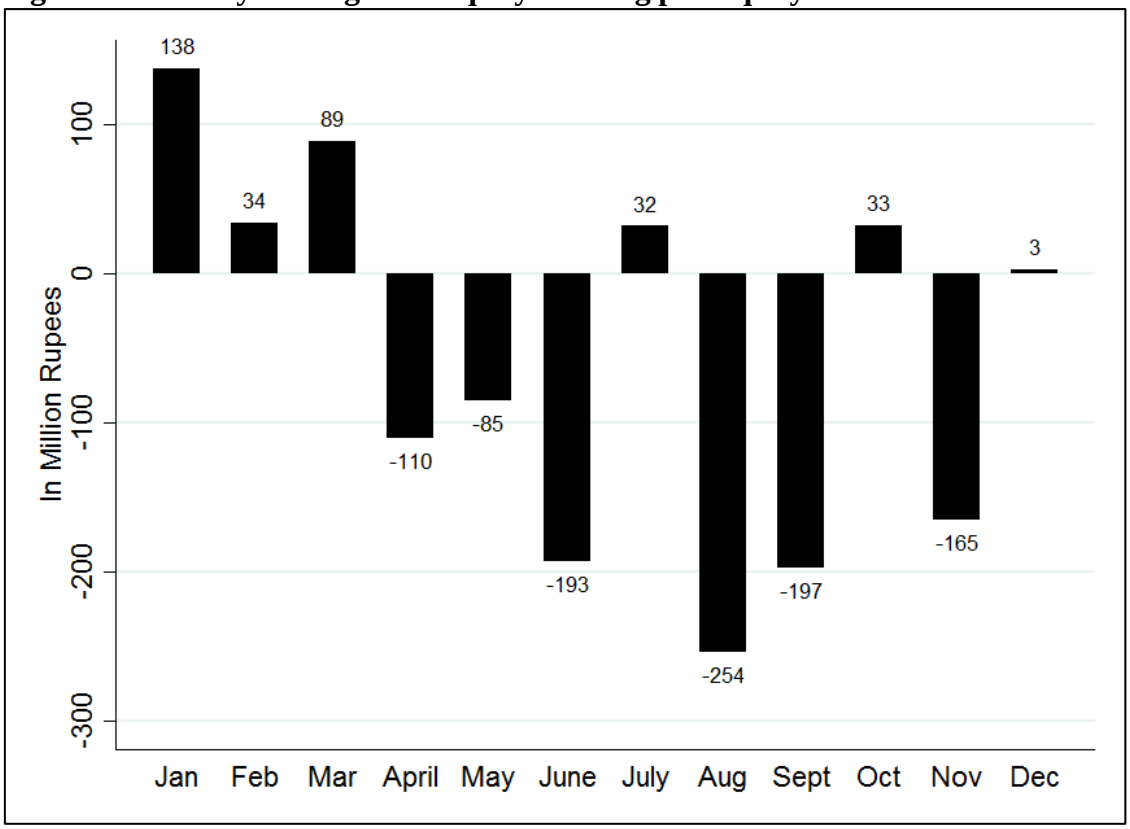
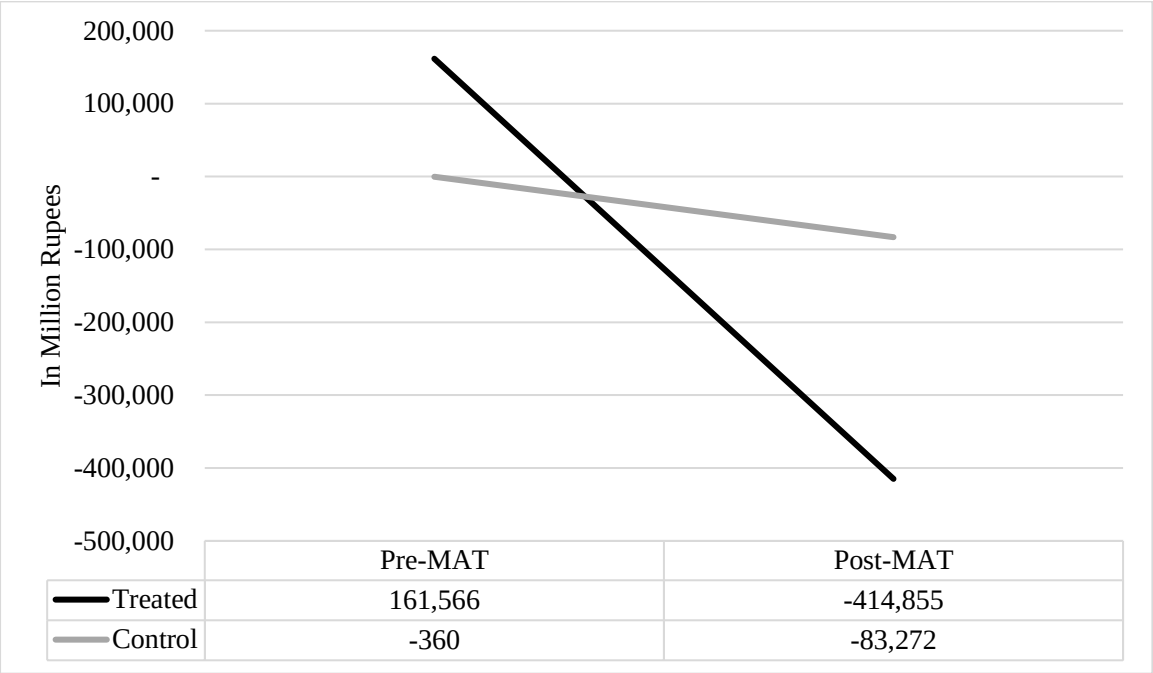


Figure 3: Total Net Equity Trading (in Million Rupees) during Pre-MAT and Post-MAT Period for Control and Treatment groups



	Pre-MAT	Post-MAT
Treated	161,566	-414,855
Control	-360	-83,272

Appendix A: Key Dates for Application of MAT to FPIs in India

Dates	Events	Comments
23rd July 2010	AAR ruled that MAT was not applicable to companies having no permanent establishment in India.	FPIs were not liable to pay MAT in India.
14th August 2012	AAR overruled its previous decision	MAT provisions override DTTA and hence FPIs are liable to pay MAT. Decision challenged in Supreme Court.
28th February 2015	The announcement in budget session that MAT would not be imposed w.e.f. 1st April 2015	Provided relief to FPIs; however, raised a question whether MAT would be imposed retrospectively.
1st April 2015	Approval of announcement and effective date for the announcement.	Closed the tax avoidance loophole but increased uncertainty whether MAT would be imposed retrospectively
5th April 2015	Tax demands by Indian government valued at around 6.4 billion dollars.	Further increased uncertainty about the new tax liability
7th May 2015	High-level committee formed to give recommendation on the specific issues of MAT for FPIs	
25th August 2015	High-level committee submitted detailed report	
1st September 2015	MAT not to be applicable retrospectively	Resolved the uncertainty. End of the issue of application of MAT to FPIs.