

## Stock Market Trading in the Aftermath of an Accounting Scandal

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### 1. Introduction

Research on investor participation in financial markets shows that investors' personal experiences play a disproportionate role in shaping their risk appetite and consequently their trading decisions (Kaustia and Knupfer, 2008; Malmendier and Nagel, 2011; Malmendier and Nagel, 2016; Anagol, Balasubramaniam, and Ramadorai, 2015; Andersen, Hanspal, and Nielsen, 2016). Investors react to major shocks (such as the 2008 financial crisis) through a change in risk perceptions that affects trading decisions (Dorn and Weber, 2013; Hoffmann, Post, and Pennings, 2013).

However, we do not have adequate evidence on how a “firm-specific governance” shock affects investment behaviour, especially of small investors in emerging economies--generally characterised by low participation, low financial literacy, and a larger trust deficit.<sup>2</sup> Behavioural biases such as too much trading, overconfidence, trading on attention-grabbing stocks or a disposition effect which is the tendency of investors to sell shares whose price has increased, while keeping assets that have dropped in value (Odean, 1998; Barber and Odean, 2000; Barber and Odean, 2001; Barber and Odean, 2008) may get exacerbated for such investors in the event of a firm specific governance shock.

Studying firm-specific shock is important for three reasons. First, a firm-specific shock is unanticipated even for the household which is most skilled in trading in the stock market. Second, when the shock is on account of “poor governance”, it forces investors to pay attention to governance issues. And third, it creates an environment where investors may extrapolate their experience--if one firm had poor governance standards, might other similarly placed firms be the same?

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<sup>2</sup> The World Values Survey evidence shows that low income countries have lower levels of trust capital.

## **2. Research Question**

In this paper, I use a remarkable natural experiment to obtain evidence about fraud revelation and stock market participation. I ask, if investors with direct exposure to firm-specific fraud are more likely to cash out of the stock market than investors with no direct exposure to fraud? Whether this behaviour is restricted to the stock in question, or is there an effect on other stocks? How does this behaviour vary with degree of exposure, experience in markets, and proximity to the epicenter of the fraud? I also ask if the reaction to fraud is an immediate response or continues to persist over long horizons?

I narrow my attention to a single event, the biggest, and most unexpected accounting fraud in the Indian stock market, also known as the “Enron of India”. On 7 January 2009, the chairman of one of the most successful IT companies, Satyam, confessed that he had manipulated the accounts of the firm by US\$1.47 billion. The inability of auditors to discover this fraud signifies a governance failure. Investors in Satyam are said to have lost almost Rs.136 billion (US\$2 billion) over the next month. While Satyam had been in the news in the previous month over its acquisition of two real-estate companies (Maytas Properties and Maytas Infrastructure), the scale of the accounting fraud was entirely unexpected, and a complete surprise (Wharton, 2009).

### **Data**

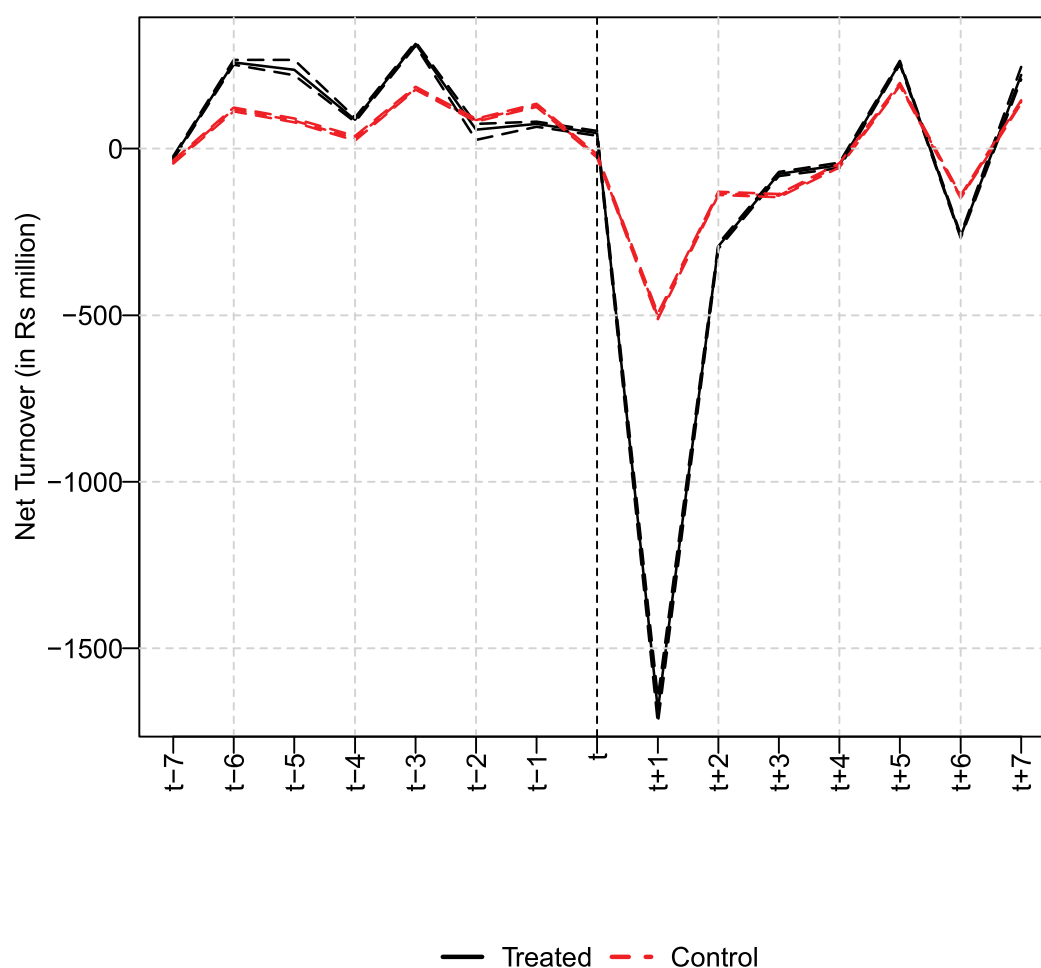
The data on daily investor account holdings comes from the National Securities Depository Limited (NSDL), the largest depository in India in terms of total assets tracked (roughly 80%). I am thus able to observe trading behaviour immediately after the event, and on a daily basis for an extended period of time unlike other papers that base their analysis on household survey data, or observe investors at monthly or yearly frequency. I focus on investors who held Satyam shares in their accounts one day prior to the event (Treated), and compare their trading behaviour to those who did not hold Satyam (Control). The selection on observables problem, that is ensuring that treated and control investors are alike at least on metrics that are observable, is overcome by using a matching framework. Matching procedures are preferable to randomly selecting investors with no exposure to Satyam as they are less likely to lead to estimation bias by picking investors with completely different characteristics.

## **3. Results**

I find that investors with direct exposure to Satyam trade more intensely immediately i.e. over seven days after the Satyam event relative to control investors, and that this trading was largely driven by cashing out of the portfolio. Treated investors cash out almost 10.6 percentage points of their overall

portfolio relative to control investors post the crisis. The cashing out is largely restricted to the “bad stock”. Over the period of a month, there is no difference in the trading behaviour i.e. the net traded value, of the treated and control investors. The result is presented in Figure 1.

**Figure 1 : Net traded value of the treated and control investors**



The results are robust to comparison with days of similar portfolio losses, and dealing with rumblings on the Satyam stock a few weeks prior to the scandal. This is done as follows.

A possible criticism of the analysis could be that there are unobservable differences between the treated and control group that are driving the behaviour. While the matching strategy controls for differences on observables, it does not account for differences such as risk aversion that are not captured by the variables available for analysis. Another criticism could be that when there is a

portfolio loss, people always sell, and this has nothing to do with the impact of fraud revelation on trust. One way to test for unobservables is to look at people who once held Satyam, but for some reason did not on the day of the crisis. These investors are likely to be more similar to the treated investors, than those who have never purchased Satyam. I divide the control group into three kinds: those that never held Satyam (strict control), those that exited Satyam before Maytas and those that exited Satyam after Maytas. The second group allows me to test for importance of unobservables as these are the investors “similar” to the Satyam investors. Results remain the same when the control group is restricted to those who had exited Satyam before Maytas.

To evaluate if it is loss in portfolio value that is driving this behaviour, for each treated investor, I calculate the portfolio loss to the Satyam investor in the event of the crash. I find a date on which the same investor faced a similar loss, and plot the average net traded value for a seven day window on both these dates. I find that on similar portfolio loss dates, there is a sharp fall in the net traded value i.e. investors cash out. However, the magnitude of the fall is lower than the Satyam case. This suggests that the effect is specific to the “Satyam” event.

These results are contrary to international evidence in two respects. First, the results show that the effect is restricted only to those investors who held stocks that were the subject of the governance fraud, unlike results from the US which show that households withdraw from unrelated stocks as well as from the asset class itself. Second, the results show that the effect is attenuated over time. Results from the US indicate that effects of fraud are long-lasting (Gurun, Stoffman, and Yonker, 2017; Giannetti and Wang, 2016). The type of fraud, and the cultural and institutional settings in which the fraud takes place may vary across locations, and possibly explain the differences in the results with the international literature.

#### **4. Conclusion**

Instances of fraud may deter participation overall and cause fewer people to enter the market, but data restrictions prohibit us from throwing light on this important question. In order to understand the impact of firm specific fraud revelation, and the channels through which it manifests, it is important to build up a literature that analyses such events across multiple settings. This paper is the first, to the best of my knowledge, to focus on the impact of fraud in an emerging market. The literature on limited participation in emerging economies, especially India, has so far focused largely on supply side challenges i.e. the problems in the distribution of retail financial products (Anagol and Kim, 2012; Halan, Sane, and Thomas, 2014; Halan and Sane, 2016). This paper presents evidence on the demand side by studying investor reaction to fraud.