



The turn of the month effect in India: A case of large institutional trading pattern as a source of higher liquidity



Daniela Maher^{a,*}, Anokhi Parikh^b

^a Manchester Business School, The University of Manchester, Booth Street West, Manchester, M15 6PB, United Kingdom

^b University of Mumbai, Kalina, Santacruz (E), Mumbai 400 098, Maharashtra, India

ARTICLE INFO

Article history:

Received 10 November 2011

Received in revised form 21 November 2012

Accepted 12 February 2013

Available online 26 February 2013

JEL classification:

G1

Keywords:

Turn of the month
Institutional traders
Liquidity
Market efficiency
Returns

ABSTRACT

We examine (via parametric and non-parametric tests) the turn of the month effect in the returns of various, size-conditioned Indian stock indices, across time, in up and down markets and independent of other seasonal anomalies. We find little support for the payday and the US macroeconomic news announcements hypotheses. Instead, we show that institutional traders (foreign and domestic) significantly increase their trading volumes (on the buying side) at month end, potentially pushing prices up. There is no evidence of a similar behavior on the retail side. We suggest this to be a major cause of the observable TOM effect in India.

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1. Introduction

A quarter of a century after its first reporting (Ariel, 1987), the turn of the month (hereafter TOM) effect is still at the forefront of the seasonal anomalies literature. TOM effect is defined as the tendency of stock returns to surge during a period encompassing the end of each month and the beginning of the new month. There remains no consensus as to the precise length of this period which, ranges from 4 to 5 days (Hensel & Ziemba, 1996; Lakonishok & Smidt, 1988) to 20 days (Xu & McConnell, 2008) and therefore no consensus as to the exact cause of this phenomenon. TOM is one of those seasonal anomalies whose reporting is supposed to help eliminate it from the market place and yet researchers (Kunkel, Compton, & Beyer, 2003 among others) document its presence across a variety of markets and time periods long after its first sightings.

If present, TOM effect adds to the anomalies literature in that it raises questions about market efficiency and investors' rationality. A statistically significant and persistent surge in market wide returns around the turn of the month becomes inexplicable within a rational frame and lends further support to a growing behavioral finance research. To date, there is a relatively substantial literature covering the presence

(or absence) of TOM effect in developed markets (Jaffe & Westerfield, 1989; Lee, Pettit, & Swankowski, 1990; Ogden, 1990; Xu & McConnell, 2008), but fewer studies are concerned with its presence in emerging markets (Balaban & Bulu, 1996; Depenchuk, Compton, & Kunkel, 2010; Khaled & Keef, 2012; Kunkel et al., 2003; McGuinness & Harris, 2011; Oguzsoy & Guven, 2006; Wong, 1995; Xu & McConnell, 2008). Kunkel et al. (2003) examine 19 different stock markets, confirming the presence of a TOM effect in 15 of those, and suggesting it accounts for 87% of the monthly returns, on average. McGuinness and Harris (2011) is probably the latest study confirming the presence of a TOM effect, particularly in the Hong Kong and the mainland B-markets over the period 1995 to 2010. Freund, Jain, and Puri (2007) is, to our knowledge, the only study investigating and confirming the TOM effect in India over the period 1992 to 2004. This last result subscribes to a broader view that, while this phenomenon might have diminished in US and Canada, it might in fact have increased in the Pacific Rim countries in the nineties (Compton, 2002).

The methodologies employed in detecting seasonal effects, such as day of the week and turn of the month, range from visual inspection of value and equally-weighted market returns (Xu & McConnell, 2008) to OLS regressions (Freund et al., 2007; Nikkinen, Sahlström, Takko, & Åijö, 2009), to GARCH models (Kiymaza & Berument, 2003), to general linear procedures such as ANOVA (Kunkel et al., 2003) and non-parametric tests (Kunkel et al., 2003). The variety of models employed attempt to overcome the usual assumptions about normally distributed returns and constant error variances that so often bring into question

* Corresponding author. Tel.: +44 161 276 3452; fax: +44 161 275 4023.

E-mail addresses: D.Maher@manchester.ac.uk (D. Maher), anokhi.parikh@gmail.com (A. Parikh).

the significance of the coefficient estimates in standard regression. Given the variety of testing methods and the range of countries on focus, it is rather unlikely that the general TOM effect is a byproduct of a data mining process. However, there is no better way to disapprove skepticism in relation to a seasonal effect other than employ new data sources that testify to its existence (Agrawal & Tandon, 1994).

The current literature has made progress not only in relationship to documenting the TOM effect but also in highlighting potential explanations for its presence. These explanations span a variety of causes. Ogden (1990) suggests the payday hypothesis as the likely cause of a TOM effect. Individual investors get generally paid at the end of the month and therefore their (direct or indirect) demand rises during this period. Booth, Kallunki, and Martikainen (2001) also point out towards increased liquidity at month-end as being the cause of the TOM effect in Finnish market. They base their findings on a sample of 148 individual stocks whose returns are analyzed over the period 1991 to 1997 via a simple cross-sectional regression and different (exogenous) standardized volume measures. In support of the liquidity hypothesis is also the study by Ng and Wang (2004) that specifically relates the turn of the year effect in small stocks with an increased institutional trading activity as a result of window dressing. Similarly, Barone (1990) suggests a portfolio rebalancing hypothesis according to which institutional investors structure their purchases at the end of the month to boost performance indicators that are published in the specialized press and which are generally calculated on the basis of end-of-the-month price. Nikkinen et al. (2009) on the other hand lend support to a scenario whereby TOM returns surge because of the release of US macroeconomic news announcements. In this vein, Ogden (1990) previously suggested that monetary policy, in particular, is key in explaining the TOM returns. On the other hand, anecdotal evidence from market professionals seems to suggest that cash deployment could also contribute to this seasonal pattern. Investors manifest a (natural) dislike towards fund managers that end a month with substantial cash in their portfolios. Of course, this may be just another version of Barone's (1990) hypothesis and a way of justifying why institutional investors tend to deploy their cash more at month end than at any other time. Equally, a combination of several of these hypotheses could very well be the cause of higher TOM returns.

The aim of this study is to investigate both the presence of a TOM effect in India and its most likely causes. We perform a thorough analysis in order to document this seasonal pattern beyond any reasonable doubt and under different market conditions. We also argue that it is explained by an end-of-month accelerated buying generated by large institutional players such as foreign investors and domestic mutual funds. We thus contribute to the literature in several ways. First, we demonstrate that the TOM effect is present in one of the most important emerging markets of the world. Second, we link its presence to the buying/selling patterns of some of the largest trading players in the market. Third, we rule out competing hypotheses such as the payday effect and the macroeconomic news announcements by investigating their credibility in this specific market. Last but not least, we contribute to the underdeveloped return-volume literature and therefore suggest that, whenever possible, researchers should exploit available data on player-related trading volumes in order to question their price-pressure potential.

We focus on India because of the lack of studies aimed at the turn of the month effect in large and increasingly important emerging markets.¹ Based on GDP growth rates, India ranks 2nd in the world (5.5%) behind China (7.4%). Moreover, historically, from 2000 until 2011, India's average quarterly GDP Growth was 7.45% reaching a historical high of 11.80% in December of 2003 and a record low of 1.60% in December of 2002.² The BSE (Bombay Stock Exchange) is the world's largest stock

exchange in terms of number of listed companies.³ The National Stock exchange of India (NSE) is the fourth largest exchange in the world, in terms of the number of trades in the equity segment and the 9th largest in the world by market capitalization (around US\$1.59 trillion).⁴ As mentioned, the only study we find on India is Freund et al. (2007) whose purpose is simply to confirm the presence of a TOM effect in the S&P CNX Nifty index over the period 1992 to 2004 using the OLS method.

In our pursuit, we employ parametric and non-parametric tests such as GARCH models and Wilcoxon Signed Rank tests. We also investigate the TOM returns' pattern in a variety of market indices (Sensex, Midcap and Smallcap). We make use of a database on total volumes of trading (buy/sell) for large institutional players such as FII (foreign institutional investors) and domestic MF (mutual funds) as well as a slightly more limited database on the volumes of trading of some retail investors (client and proprietary trading). Our study contains the most pertinent period of time in the recent history of Indian stock market trading (2003 to 2011). In 2003 the Indian market begins to recover from the Dot-com crisis of 2000.⁵ During 2003 to 2007, the BSE Sensex index grows more than five times prompting analysts and economists to refer to it as a bull market. There is also the equivalent of a massive structural break in the influx of foreign flows into India from around Rs.2600crs in 2002–03 to about Rs.46000cr in 2003–04, which considerably improves market depth.⁶ This influx remains steady until the recent global financial crisis of 2008 when it turns into a significant outflow but then regains a massive momentum as early as March 2009.⁷ This allows us to define a 'downturn' period and check the stability of our TOM effect across non-random sub-periods.

The results support the existence of a TOM effect in returns over a quite specific interval $[-1, +2]$ and across a variety of indices, from BSE Sensex (considered to be the barometer of Indian economy) to BSE Smallcap. However, our evidence seems to suggest that this effect is more visible in up rather than down markets, being present in all periods except the period marked by the global financial crisis of 2008–2009. It is possible that the causes of TOM effect may still be at play during this period and yet their impact on returns is not visible anymore, on a background of market pessimism and volatility contagion. As to the nature of these causes, little support is found for both the payday and the macroeconomic news announcement hypotheses. We establish persistent and statistically significant higher buying volumes on the last 2 days of the month for both FII and MF investors based on a variety of tests. We then prove the link between end of month increased index returns and institutional trading volumes, thereby providing evidence of the important role institutions play in fueling the TOM effect. We broadly subscribe to the portfolio-rebalancing hypothesis of Barone (1990). This suggests that institutional investors structure their purchases at the end of the month to boost performance indicators that are normally calculated on the basis of end-of-the-month price. Given the major role played by institutional investors such as foreign institutional investors and domestic mutual funds on the active trading market in India (between 30% in March 2003 and 40% in December 2010 of the total free float market), we suggest that their end of month cash deployment is contributing substantially to the turn of the month effect.⁸ In the following we elaborate on our methodology, empirical results and conclusion.

³ <http://www.bseindia.com/about/introbse.asp>

⁴ http://nseindia.com/content/press/prs_GL_launch.pdf

⁵ <http://www.imf.org/external/pubs/ft/weo/2003/01/>

⁶ Securities and Exchange Board of India, <http://www.sebi.gov.in/sebiweb/>

⁷ <http://www.imf.org/external/pubs/ft/weo/2009/01/>

⁸ We estimate the percentages based on ownership figures from CMIE and taking into consideration the fact that over 50% of the market is owned by promoters who do not actively trade their shares. The market is proxied by BSE 500. <http://www.cmie.com/>

¹ Exception: McGuinness and Harris (2011) for China.

² <http://www.tradingeconomics.com/india/gdp-growth>

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