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ORIGINAL ARTICLE

Global mutual fund market: the turn of the month effect and investment strategy

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Abstract
Turn of the month (TOM) is a widely recognized anomaly and studied majorly in the context with equity markets. However, the global mutual fund market has not been much exposed to empirical testing of the TOM anomaly and the implication thereof. This study has dual objectives of not only investigating if the TOM effect persists in the world of equity mutual funds but also proposing an investment strategy to exploit the TOM anomaly to mutual fund investors. The study examines 40 equity mutual funds across 6 different geographies and 2 multi-geographic segments. For the sample period of 15 years (2005–2020), crucially covering financial crisis as well as an outbreak of the Covid-19 pandemic this study confirms a statistically significant effect of TOM for 23 out of 40 funds. Based on findings, the paper proposes a staggered investment strategy to investors in mutual funds for entry and exit to exploit the TOM effect for return enhancement.

Keywords Turn of the month · Mutual funds · Investment strategy · Calendar anomaly

JEL Classification G14 · G15

Introduction

The turn of Month (TOM) anomaly is widely discussed in the finance literature to contradict the weak form of the Efficient Market Hypothesis (EMH) and proved that stock market return has a seasonal pattern and can be used for the creation of profitable trading strategies. Equity Mutual Funds returns are also influenced by equity market volatility and the NAV of the funds are varying depending on the expectations of the market participants. The persistence of the TOM effect in the world of equity mutual funds can be converted into a prudent investment strategy for mutual fund investors across the globe. An increase in the price of the asset during the last few days of the month & the first few days of the next month is observed, in general, because of the significant movement of funds in the market during this period. This argument is in the light of liquidity aspects of domestic and institutional investors during the last few days of the current month and the first few days of the next month. Many researchers have proved the TOM effect hypothesis with the parametric and nonparametric method but yet only a few have explained the economic rationale behind this anomaly. The flow of liquidity via trading of stocks to rebalance the portfolio by pension fund managers and other institutional investors was the main reason cited by Lakonishok and Smidt (1988) for explaining the economic phenomenon behind the liquidity argument. Another very common argument is about salary date in the month-end period and auto-debit of investment into mutual funds by many retail investors leading toward heavy liquidity flow in the market. This paper examines 40 equity mutual funds across 6 different geographies and 2 multi-geographic segments for the sample period of 15 years (2005–2020), crucially covering financial crisis as well as an outbreak of the Covid-19 pandemic to check the TOM effect and discuss the possibility of designing the investment strategy in equity mutual funds using such anomaly.

This paper is segregated into sub-sections where Sect. 2 elaborates the review of literature, Sect. 3 discusses the data

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and research methodology, Sect. 4 deliberates on the empirical findings based on testing and proposes an investment strategy and the last Sect. 5 presents the closing remarks and future scope of the research work.

Literature review

A very pioneering study was done by Ariel (1987) where he calculated mean returns for the before and during the first half of the month (− 9, + 9) and mean return for the rest of the days to prove the TOM return pattern in US stock index. Jacobs and Levy (1988) also supported the TOM effect for the US market. Lakonishok and Smidt (1988) used 90 years of returns on the DJIA index and reported strong evidence for the TOM effect with its rationale. The study found a higher cumulative return at the turn of the month (− 4, + 4), which is higher than the average cumulative return of the whole month. The impact of TOM with empirical data and explanation of the TOM phenomenon both together is discussed by Ogden (1990) with the help of the very famous hypothesis of "Standardisation of Payment System" that influence the rise in liquidity in the market at the turn of each month in US market. The same idea was carried forward by Ziemba (1991) in the Japanese market to deliver the theory of the "preferred habitat" of investment as investors reinvest their profits again in the market. The study made an interesting observation of the early effect of TOM (− 5, + 2) in Japan as their salaries are paid five days in advance compared to other international markets. Cadsby and Ratner (1992) had conducted a study on 10 countries including the US and UK and reported a significant TOM effect in a few countries while the study could not establish the TOM effect in France, Japan, Italy and Hong Kong. The cash and derivatives market also has a TOM effect (− 5, − 1) and was reported by Martikainen et al. (1995) using Finnish market data. Booth et al. (2001) also studied market data of the Helsinki Stock Exchange in Finland to find out the reason for the TOM and it supported the arguments of rising in liquidity at month-end given by Ogden (1990). It was observed that institutional investors do selling of loss-making stocks and buying profit-making stocks at the month-end period to show good performance to their clients and that induces more liquidity in the market. Thaler (1987) Barone (1990) has examined this argument and termed it as "Window dressing hypothesis" and "Portfolio rebalancing hypothesis." Many researchers proved seasonal effects and calendar anomalies in various global equity markets and also suggested a profitable investment strategy based on these findings as long as transaction cost (Marquering et al. 2006) is smaller than the gross profit of the strategy. Jones (2002) and Lesmond et al. (1999) had studied the reduction in transaction cost over a period of time and how it varies by the size of the firm and other variables. Hensel and Ziemba (1996) and Kunkel and Compton (1998) also stated about "Switching Strategy" to maximize the return from TOM effect with reduced volatility rather naïve buy and hold strategy. Intensive research with the data of most of the international equity market, the TOM phenomena has received a global presence. Kunkel et al. (2003) proved a significant (87%) TOM effect (− 4, + 4 days) in sixteen major markets of the world with the data of 1988–2000. Indian stock market has also shown the TOM effect in the study conducted by Freund, Jain and Puri (2007) with the data of leading stock exchange of India—NSE for the period of 1992–2004. Nikkinen et al. (2007) had reported that the TOM effect in the SP100 is induced because most of the macroeconomics news is announced at the end of the month which is similar to the reason stated by Penman (1987) observation of corporate earnings announcement of US companies in the first half of the calendar month. McConnell and Xu (2008) have studied CRSP index data for 1987 to 2005 to reconfirm the TOM effect (− 1, + 3) in most of the global economies but they contradicted the argument of Odgen (1990) by showing no significant trading volume and funds liquidity flow. Zwergel (2010) also discovered the TOM effect and showed that a TOM-based trading strategy outperforms even after adjusting for transaction cost. McGuinness and Harris (2011) studied three Chinese markets and compared significant TOM effects along with lunar the new-year return effects. TOM was not only examined in equity markets but also in the ETF market along with suggestive trading strategies to optimize returns for the investors. Chen and Chua (2011) and Chen et al. (2015) suggested the "switching strategy" of T-bill during the non-TOM period otherwise investing into SPDR ETF for higher Sharpe ratio for varying levels of risk aversion of investors. Sharma and Narayan (2014) examined 560 firms of NYSE for the period 2000–2008 and found the size-wise and sector-wise different TOM effects in all 14 sectors under the study. Aziz and Ansari (2017) examined 12 major Asia-Pacific markets during the period of 2000–2015 covering the period of the financial crisis and reported the TOM effect in 11 markets of the Asia-Pacific region. Arendas and Kotlebova (2019) investigated the TOM effect in the stock markets of 11 Central and Eastern European (CEE) countries for a 20-year period (1999–2018) and proved significant TOM in seven countries. A study by Singh et al. (2021) has focused on emerging markets namely Brazil, China and India for the testing turn of the month effect for equity markets with three different sub-time periods which has pointed that significant higher average returns for the turn of the month were generated as compared to non-turn of the month time period.

Though a variety of literature is available to verify the TOM effects in equity and other markets but very few handful of studies are available in the equity mutual funds market. The funds flow in the Mutual fund market also has

a seasonality impact. Choi (2015) established the turn of the year effect in cash flows to US domestic mutual funds with the highest net cash flows in January while lowest in December. This paper aims to fill this gap in the literature and examine the presence of the TOM effect in the global mutual funds market and suggest an investment strategy to maximize the return.

Data and research methodology

Data

To add rigor to testing as well as to have diverse geographical representation, equity mutual fund schemes were selected from six different geographic segments and two multi-geographic segments. Out of these six segments, three developed market segments were selected namely USA, Europe and Japan while the other three segments were emerging market segments namely India, China, Latin America. Emerging market-theme and International market-theme were identified as multi-geographic segments. For every segment top five open-ended equity mutual fund schemes were selected based on their asset under management from MutualFunds.com. For all forty equity mutual fund schemes, the net asset value (NAV) data of daily frequency was extracted from Yahoo finance for the time period starting from 1st-Aug.-2005 till 31st-July-2020. The NAV data for respective funds is before the adjustment of any income distributed and after the adjustment of any "swing pricing" or "entry/exit load" for moving capital in or out of the fund. This fifteen years' time period crucially covered the entire economic cycle, the financial crisis of 2008 and the outbreak of the Covid-19 Pandemic. Based on daily NAV data, log returns were calculated for every scheme.

Research methodology

An extensive literature review has suggested that various studies have defined the turn of the month window differently. Studies, such as Lakonishok and Smidt (1988), Ogden (1990), Cadsby and Ratner (1992), have opted for the turn of the month window as the last trading day of a month and the first three trading days of next month denoted as (− 1, + 3). Other studies have explored different turn of the month window to empirical testing such as Ziemba (1991) has applied (− 5, + 2) days window, Kayacetin and Lekpek (2016) have used (− 2, + 4) days window and so forth. To represent diverse interest for various windows this study has applied two windows one being (− 1, + 3) days where days from the last trading day of the month till 3rd trading day of the next month is considered as TOM window and all other trading days are considered to be Rest of the Month (ROM) window and another window being (− 7, + 7) which encompasses all other window intervals.

Daily log returns based on NAV data was calculated as per the formula given below;

$$R_{i,t} = \ln\left[\frac{P_{i,t}}{P_{i,t-1}}\right]\times 100 \tag{1}$$

where $R_{i,t}$ is the return of a particular mutual fund scheme on day t, $P_{i,t}$ is the closing NAV price of the mutual fund scheme on day t and $P_{i,t-1}$ is the closing NAV price of the mutual fund scheme on day $t-1$.

In order to test if returns generated during the turn of the month window days (ToM) is statistically significant or not against the returns generated during the rest of the month days (ROM), OLS regression analysis is applied which is in line with studies such as Kunkel et al. (2003), Kumar (2015), Aziz and Ansari (2017). Following OLS regression equation is applied for empirical testing purpose;

$$R_{it} = \alpha_i + \beta_i D_{it} + e_{it} \tag{2}$$

where α_i represents the returns during the rest of the month days when the dummy value supplied would be zero. β_i represents additional returns for the turn of the month days generated over the returns for the rest of the month days. D_{it} represents a dummy variable that takes a value of zero for the rest of the month days and a value of one for the turn of the month days and e_{it} is the error term.

Many empirical studies have confirmed that equity asset's return distribution may not show normal distribution. With consideration that equity mutual fund returns may also indicate non-normal distribution, the study has performed Wilcoxson signed rank test (WSR) as a nonparametric test to validate if returns generated during the turn of the month days window has any statistical significance against returns generated during the rest of the month days.

Empirical findings

This study was focused on forty equity mutual funds schemes from six different geographic segments and two multi- geographic segments to test if the turn of the month effect persists in unexplored global equity mutual market segment and if it persists to devise return enhancing strategy to exploit such anomaly from the investor perspective. A descriptive statistics table for all the mutual funds based on fifteen years' time period is given in Table 1. The study has found based on OLS regression analysis for the turn of the month window of (− 1, + 3) that majority of equity mutual funds from emerging market segments namely India, China, Latin America and emerging segment -theme have shown

Table 1 Descriptive statistics for 40 mutual funds

Mutual funds	N	Mean	SD	Skewness	Kurtosis
BlackRock-US	1639	0.036858	1.255595	− 0.312	6.433
Fidelity-US	1639	0.057781	1.369703	− 0.618	9.414
JPM-US	1639	0.051599	1.30965	− 0.218	5.077
Schwab-US	1639	0.040794	1.211745	− 0.266	7.697
Vanguard-US	1639	0.046166	1.224255	− 0.329	9.415
BlackRock-LA	1639	0.098347	2.033061	− 0.345	6.716
DWS-LA	1639	0.092666	2.002203	− 0.332	6.423
Fidelity-LA	1639	0.08797	1.933932	− 0.36	7.172
JPM-LA	1617	0.130239	1.877472	− 0.518	10.432
T.rowe-LA	1639	0.09616	1.967003	− 0.286	6.653
Commonwealth-Japan	1639	0.022403	1.095985	− 0.198	2.146
Fidelity-Japan	1639	0.03904	1.277333	− 0.446	7.571
Hennessy-Japan	1637	0.039912	1.141003	− 0.042	5.005
Matthews-Japan	1639	0.056981	1.147501	− 0.201	2.656
T.rowe-Japan	1639	0.039137	1.128598	− 0.278	3.375
Aditya Birla-IN	1615	0.130458	1.187571	− 0.068	3.719
Eaton-IN	1639	0.120483	1.528695	− 0.331	5.783
HDFC-IN	1614	0.121261	1.276951	− 0.109	2.432
ICICPru-IN	1616	0.145497	1.109246	0.042	5
SBI-IN	1608	0.141146	1.154032	− 0.346	2.708
Blackrock-Europe	1639	0.036106	1.508991	− 0.381	9.405
Fidelity-Europe	1639	0.047175	1.330277	− 0.494	7.113
JPM-Europe	1639	0.058706	1.411714	− 0.102	8.157
MS-Europe	1639	0.040324	1.350003	− 0.312	6.356
T.rowe-Europe	1639	0.051908	1.317933	− 0.439	7.008
Aberdeen-China	1639	0.096697	1.448722	0.175	15.136
Columbia-China	1639	0.090001	1.756004	0.053	9.416
Fidelity-China	1639	0.088088	1.473726	− 0.061	6.454
Goldman-China	1639	0.096275	1.384056	0.111	9.67
Templeton-China	1639	0.099029	1.329858	0.131	8.314
Blackrock-emerging	1639	0.103543	1.45198	− 0.205	9.141
BNYMellon-emerging	1639	0.090227	1.314917	0.004	8.577
Fidelity-emerging	1639	0.096022	1.420846	− 0.467	9.573
JPM-emerging	1639	0.08881	1.443361	− 0.103	7.711
T.rowe-emerging	1639	0.093568	1.419864	− 0.324	8.077
AmericaNP-International	1639	0.058294	1.157068	− 0.324	7.567
America-International	1639	0.05286	1.171952	− 0.346	7.049
Fidelity-International	1639	0.067553	1.353292	− 0.719	10.883
First eagle-International	1639	0.052222	0.771567	− 0.075	9.761
MFS-International	1639	0.04717	1.213333	− 0.143	9.429

Table 2 Result of regression analysis for window (− 1, + 3)

Mutual fund	α	β	*P*-value of Beta
BlackRock-US	0.025	0.029	0.659
Fidelity-US	0.025	0.060	0.412
JPM-US	0.040	0.068	0.321
Schwab-US	0.026	0.033	0.611
Vanguard-US	0.029	0.024	0.709
BNY Mellon- US[b]	0.029	0.04	0.542
Green Century Equity- US[b]	0.021	0.032	0.422
BlackRock-LA	− 0.010	0.230	0.032[a]
DWS-LA	− 0.008	0.252	0.016[a]
Fidelity-LA	− 0.013	0.220	0.031[a]
JPM-LA	− 0.012	0.266	0.009[a]
T.rowe-LA	− 0.009	0.247	0.017[a]
Pinebridge-LA[b]	− 0.01	0.243	0.003[a]
Investco-LA[b]	− 0.015	0.23	0.007[a]
Commonwealth-Japan	0.012	− 0.055	0.336
Fidelity-Japan	0.016	− 0.005	0.942
Hennessy-Japan	0.034	− 0.063	0.307
Matthews-Japan	0.018	0.014	0.816
T.rowe-Japan	0.025	− 0.028	0.645
DFA—Japan[b]	0.021	− 0.027	0.601
Aberdeen-Japan[b]	0.029	− 0.025	0.746
Aditya Birla-India	0.036	0.168	0.013[a]
Eaton-India	0.003	0.199	0.019[a]
HDFC-India	0.032	0.179	0.012[a]
ICICIPru-India	0.033	0.220	0.000[a]
SBI-India	0.031	0.212	0.001[a]
MS-India[b]	0.027	0.195	0.009[a]
The India Fund-India[b]	0.022	0.181	0.011[a]
Blackrock-Europe	− 0.001	0.117	0.139
Fidelity-Europe	0.003	0.139	0.052[a]
JPM-Europe	− 0.002	0.184	0.015[a]
MS-Europe	0.009	0.119	0.097
T.rowe-Europe	0.006	0.145	0.042[a]
First Trust-Europe[b]	0.003	0.14	0.118
Columbia Acorn-Europe[b]	0.004	0.11	0.12
Aberdeen-China	0.005	0.242	0.001[a]
Columbia-China	0.021	0.214	0.017[a]
Fidelity-China	0.019	0.205	0.007[a]
Goldman-China	0.003	0.202	0.005[a]
Templeton-China	0.020	0.153	0.033[a]
AMG Veritas-China[b]	0.013	0.203	0.012[a]
Investco-China[b]	0.15	0.156	0.005[a]
Blackrock-emerging	0.001	0.226	0.003[a]
BNYMellon-emerging	− 0.008	0.209	0.003[a]
Fidelity-emerging	0.008	0.193	0.009[a]
JPM-emerging	0.006	0.201	0.007[a]
T.rowe-emerging	0.001	0.219	0.003[a]
Sunbridge capital-emerging[b]	0.001	0.209	0.005[a]
Matthews-emerging[b]	0.006	0.212	0.007[a]
AmericaNP-International	0.028	0.075	0.224
America-International	0.013	0.103	0.099
Fidelity-International	0.014	0.111	0.125
First eagle- International	0.025	0.023	0.577
MFS-International	0.014	0.095	0.142
Putnam-International[b]	0.018	0.081	0.233
Marsico-International[b]	0.021	0.14	0.32

[a]Shows statistical significance at 5% for turn of the month returns

[b]Represents median sized fund based on net asset under management

statistical significant returns generation at a significance level of 5% as indicated in Table 2. Also, the two median-sized funds based on the net asset under management were selected in each category to observe if the size of the fund affects the existence of the TOM effect and how strong the TOM effect was for the larger-sized fund and median-sized fund in the same category. On both these fronts, the study found that median-sized funds demonstrated similar results when compared to larger-sized funds. However, to draw any substantial inferences much larger study is required.

On a similar line regression analysis was run for the turn of the month window of (− 7, + 7), where findings are echoing the same outcome that emerging markets mutual funds are having statistical significance at 5% level as shown in Table 3.

WSR test was performed to test if the median of the difference between returns generated during the turn of the month days window and returns generated during the rest of the month days has any statistical significance. WDR test for the turn of the month winds of (− 1, b 3) has confirmed for statistical significance for the turn of the month window only in the case of a few emerging mutual funds as indicated in Table 4.

Similarly, the WSR test was run for the turn of the month window of (− 7, + 7), where findings stated that for the majority of mutual funds from emerging market segments have shown statistical significance in favor of the turn of the month window which is indicated in the Table 5.

Table 3 Result of regression analysis for window (− 7, + 7)

Mutual fund	α	β	*P*-value of Beta
BlackRock-US	0.0225	0.0144	0.7364
Fidelity-US	0.0117	0.0461	0.3256
JPM-US	0.0448	0.0068	0.8774
Schwab-US	0.0219	0.0189	0.6457
Vanguard-US	0.0204	0.0258	0.5382
BNY Mellon- US[b]	0.024	0.006	0.624
Green Century Equity- US[b]	0.0119	0.0248	0.554
BlackRock-LA	− 0.0739	0.1349	0.0819
DWS-LA	− 0.0340	0.1267	0.0602
Fidelity-LA	− 0.0462	0.1341	0.0408[a]
JPM-LA	− 0.0691	0.1989	0.0022[a]
T.rowe-LA	− 0.0391	0.1352	0.0411[a]
Pinebridge-LA[b]	− 0.05	0.145	0.0032[a]
Investco-LA[b]	− 0.063	0.125	0.0620
Commonwealth-Japan	− 0.0078	0.0302	0.4099
Fidelity-Japan	− 0.0021	0.0412	0.3424
Hennessy-Japan	0.0163	0.0236	0.5521
Matthews-Japan	− 0.0097	0.0667	0.0900
T.rowe-Japan	0.0081	0.0311	0.4182
DFA—Japan[b]	− 0.006	0.03	0.3622
Aberdeen-Japan[b]	− 0.0022	0.022	0.4501
Aditya Birla-IN	− 0.0040	0.1340	0.0019[a]
Eaton-IN	− 0.0470	0.1675	0.0022[a]
HDFC-IN	− 0.0005	0.1216	0.0074[a]
ICICIPru-IN	− 0.0096	0.1547	0.0001[a]
SBI-IN	− 0.0125	0.1538	0.0002[a]
MS-India[b]	− 0.01	0.146	0.001[a]
The India Fund-India[b]	− 0.0042	0.14	0.003[a]
Blackrock-Europe	− 0.0060	0.0422	0.4083
Fidelity-Europe	− 0.0032	0.0504	0.2732
JPM-Europe	− 0.0112	0.0699	0.1517
MS-Europe	0.0084	0.0320	0.4891
T.rowe-Europe	− 0.0001	0.0520	0.2566
First Trust-Europe[b]	− 0.002	0.04	0.3152
Columbia Acorn-Europe[b]	− 0.006	0.0051	0.2841
Aberdeen-China	− 0.0167	0.1134	0.0163[a]
Columbia-China	0.0117	0.0783	0.1728
Fidelity-China	0.0078	0.0803	0.1015
Goldman-China	− 0.0273	0.1236	0.0076[a]
Templeton-China	− 0.0098	0.1088	0.0183[a]
AMG Veritas-China[b]	− 0.006	0.01	0.1311
Investco-China[b]	− 0.014	0.131	0.0138a
Blackrock-emerging	− 0.0326	0.1361	0.0052[a]
BNYMellon-emerging	− 0.0411	0.1313	0.0035[a]
Fidelity-emerging	− 0.0206	0.1166	0.0148[a]
JPM-emerging	− 0.0161	0.1049	0.0299[a]
T.rowe-emerging	− 0.0252	0.1188	0.0127[a]
Sunbridge capital-emerging[b]	− 0.02	0.121	0.003[a]
Matthews-emerging[b]	− 0.054	0.1	0.005[a]
AmericaNP-International	0.0192	0.0391	0.3239
America-International	0.0037	0.0492	0.2219
Fidelity-International	− 0.0040	0.0715	0.1229
First eagle- International	0.0095	0.0427	0.1117
MFS-International	0.0087	0.0385	0.3549
Putnam-International[b]	0.007	0.048	0.22
Marsico-International[b]	0.0091	0.007	0.13

[a]Shows statistical significance at 5% for turn of the month returns

[b]Represents median sized fund based on net asset under management

Return enhancing strategy aligned with monthly systematic investment plan and systematic withdrawal plan

Empirical testing has suggested that the emerging markets are more prone to demonstrate the turn of the month effects for both the windows with the context of equity mutual fund schemes. Twenty-three funds that have demonstrated a statistically significant difference for (− 1, + 3) window in favor of the Turn of the Month (TOM) effect, have been identified to measure NAV price difference between ROM window and TOM window.

The average NAV price of 23 funds for the TOM window and ROM window along with the percentage difference of these two NAV is exhibited in the Table 6 as below, where the average of all the NAV price falls between the 4th of the month and the 29th of the month as ROM window is taken and for TOM window average of all the NAV price falls between 30th of the month and 3rd of next month is considered for the entire sample time period.

This study based on generated inference proposes a return enhancing strategy to exploit evident turn of the month effect especially for retail investors and institutional investors. A systematic investment plan (SIP) is a staggered investment strategy where the investor invests a fixed monetary amount at the NAV on a pre-determined date and frequency in the specified mutual fund where this exercise will be recurring in nature on monthly basis. Hence, the investor may buy through SIP on monthly basis by deliberately selecting

Table 4 WSR results for window (− 1, + 3)

Mutual fund	*P*-value
BlackRock-US	0.363
Fidelity-US	0.19
JPM-US	0.56
Schwab-US	0.28
Vanguard-US	0.303
BNY Mellon- US[b]	0.339
Green Century Equity- US[b]	0.426
BlackRock-LA	0.233
DWS-LA	0.134
Fidelity-LA	0.217
JPM-LA	0.339
T.rowe-LA	0.168
Pinebridge-LA[b]	0.218
Investco-LA[b]	0.314
Commonwealth-Japan	0.6
Fidelity-Japan	0.9
Hennessy-Japan	0.654
Matthews-Japan	0.418
T.rowe-Japan	0.839
DFA—Japan[b]	0.682
Aberdeen-Japan[b]	0.871
Aditya Birla-India	0.185
Eaton-India	0.244
HDFC-India	0.353
ICICIPru-India	0.104
SBI-India	0.181
MS-India[b]	0.213
The India Fund-India[b]	0.181
Blackrock-Europe	0.547
Fidelity-Europe	0.169
JPM-Europe	0.16
MS-Europe	0.34
T.rowe-Europe	0.258
First Trust-Europe[b]	0.294
Columbia Acorn-Europe[b]	0.150
Aberdeen-China	0.143
Columbia-China	0.18
Fidelity-China	0.006[a]
Goldman-China	0.015[a]
Templeton-China	0.153
AMG Veritas-China[b]	0.158
Investco-China[b]	0.003[a]
Blackrock-emerging	0.032[a]
BNYMellon-emerging	0.025[a]
Fidelity-emerging	0.126
JPM-emerging	0.055
T.rowe-emerging	0.039[a]
Sunbridge capital-emerging[b]	0.095
Matthews-emerging[b]	0.022[a]
AmericaNP-International	0.224
America-International	0.291
Fidelity-International	0.208
First eagle- International	0.564
MFS-International	0.302
Putnam-International[b]	0.317
Marsico-International[b]	0.288

[a]Shows statistical significance at 5% for turn of the month returns

[b]Represents median sized fund based on net asset under management

dates that are falling in the ROM window (from 4th to 29th) which may lead to a lower average NAV purchase price. Same way, while withdrawing the fund in staggered manner, the investor can opt for a systematic withdrawal plan (SWP) mode where the investor withdraws on monthly basis on dates that are falling in the TOM window (30th to 3rd of next month) which may lead to higher average NAV sell price. Hence, looking at the percentage difference between average NAV price on ROM and TOM window the strategy can be proposed that buying units on monthly basis during the ROM window may lead to the lower average cost of buying due to lower NAV on these dates, while selling the units on monthly basis during TOM window may lead to the higher average price of selling eventually resulting into return enhancing strategy just by better date selection without any additional cost implication.

For the above 23 mutual funds with (− 1, + 3) window, the study also observed (see the figure under the appendix) that 17 mutual funds have shown higher average returns generated during the TOM window for the calendar year-end month of December as compared to average returns generated during other months. This may hint toward the impact of the turn of the calendar year effect which can be further explored as an extension to the current study.

Table 5 WSR results for window (− 7, + 7)

Mutual fund	*P*-value
BlackRock-US	0.865
Fidelity-US	0.445
JPM-US	0.861
Schwab-US	0.927
Vanguard-US	0.756
BNY Mellon- US[b]	0.770
Green Century Equity- US[b]	0.547
BlackRock-LA	0.032[a]
DWS-LA	0.04[a]
Fidelity-LA	0.034[a]
JPM-LA	0.016[a]
T.rowe-LA	0.048[a]
Pinebridge-LA[b]	0.012[a]
Investco-LA[b]	0.002[a]
Commonwealth-Japan	0.364
Fidelity-Japan	0.217
Hennessy-Japan	0.259
Matthews-Japan	0.063
T.rowe-Japan	0.472
DFA—Japan[b]	0.275
Aberdeen-Japan[b]	0.322
Aditya Birla-India	0.011[a]
Eaton-India	0.003[a]
HDFC-India	0.034[a]
ICICIPru-India	0.002[a]
SBI-India	0.001[a]
MS-India[b]	0.013[a]
The India Fund-India[b]	0.002[a]
Blackrock-Europe	0.429
Fidelity-Europe	0.302
JPM-Europe	0.234
MS-Europe	0.418
T.rowe-Europe	0.242
First Trust-Europe[b]	0.325
Columbia Acorn-Europe[b]	0.275
Aberdeen-China	0.006[a]
Columbia-China	0.062
Fidelity-China	0.013[a]
Goldman-China	0.003[a]
Templeton-China	0.015[a]
AMG Veritas-China[b]	0.015[a]
Investco-China[b]	0.003[a]
Blackrock-emerging	0.002[a]
BNYMellon-emerging	0.004[a]
Fidelity-emerging	0.003[a]
JPM-emerging	0.011[a]
T.rowe-emerging	0.005[a]
Sunbridge capital-emerging[b]	0.002[a]
Matthews-emerging[b]	0.003[a]
AmericaNP-International	0.28
America-International	0.196
Fidelity-International	0.08
First eagle- International	0.176
MFS-International	0.453
Putnam-International[b]	0.237
Marsico-International[b]	0.215

[a]Shows statistical significance at 5% for turn of the month returns

[b]Represents median sized fund based on net asset under management

Closing remarks and future scope

The turn of the month effect is tested for many markets over the past few decades. However, the global equity mutual fund market has not attracted much attention to testing turn of the month anomaly. This study based on the identified forty equity mutual fund schemes representing six different geographical segments and two multi-geographical segments for the time period of fifteen years, has inferred that the turn of the month is persistence in two different windows for the majority of emerging markets based on statistical significance generated through regression analysis as well as Wilcoxson signed rank test. The study has proposed the staggered investment strategy to exploit turn of the month anomaly in emerging markets where the investor can buy units on the date which is falling during the ROM window to lower the average purchase cost and sell units on the date which is falling during TOM window to get higher average selling price resulting into return enhancing strategy without any cost addition.

The future scope of such study may be explored where along with the turn of the month anomaly, calendar year end anomaly or day of the week anomaly can be tested. Also, other asset markets within the mutual fund can be subject to testing such as a bond or hybrid mutual funds. The extension of this work can also be explored in the direction of studying the impact of size of the fund on the TOM effect. Testing such anomalies in the mutual fund market can be the first step in a direction to devise better strategies to exploit if such anomalies persist.

Table 6 Average NAV price and percentage difference for TOM and ROM window

Funds	Average NAV price for TOM window	Average NAV price for ROM window	% difference between average NAV price on ROM and TOM window
Black Rock-Emerging	17.12	17.02	0.59
BNY Mellon-Emerging	9.06	8.96	1.12
Fidelity-Emerging	23.34	23.16	0.78
J P Morgan-Emerging	21.25	21.16	0.43
T. Rowe-Emerging	31.68	31.34	1.08
Black Rock-Latin America	46.35	45.70	1.42
DWS-Latin America	24.12	23.82	1.26
Fidelity-Latin America	25.03	24.62	1.67
J P Morgan-Latin America	25.45	25.44	0.04
T.Rowe-Latin America	21.01	20.71	1.45
Aberdeen-China	17.48	17.41	0.40
Columbia- China	32.13	32.01	0.37
Fidelity- China	22.25	22.22	0.14
Goldman- China	17.10	17.01	0.53
Templeton- China	10.90	10.84	0.55
Aditya Birla-IN	121.55	119.91	1.37
Eaton- IN	23.21	22.95	1.13
HDFC- IN	262.98	259.30	1.42
ICICIPru- IN	75.96	74.61	1.81
SBI- IN	118.63	115.55	2.67
Fidelity-Europe	26.05	25.88	0.66
J P Morgan-Europe	18.53	18.40	0.71
T.rowe-Europe	14.98	14.93	0.33

Appendix

See Table 7.

Table 7 December month's average returns versus other months' average returns for TOM (− 1, + 3) window

Funds	December month average returns%	Other months average returns %
Black Rock-Emerging	0.29	0.23
BNY Mellon-Emerging	0.34	0.21
Fidelity-Emerging	0.30	0.22
J P Morgan-Emerging	0.23	0.22
T. Rowe-Emerging	0.22	0.25
Black Rock-Latin America	0.13	0.34
DWS-Latin America	0.16	0.33
Fidelity-Latin America	0.10	0.34
J P Morgan-Latin America	0.15	0.32
T.Rowe-Latin America	0.10	0.38
Aberdeen-China	0.37	0.24
Columbia-China	0.40	0.16
Fidelity-China	0.41	0.18
Goldman-China	0.35	0.17
Templeton-China	0.61	0.16
Aditya Birla-IN	0.30	0.19
Eaton-IN	0.56	0.16
HDFC-IN	0.38	0.21
ICICIPru-IN	0.61	0.23
SBI-IN	0.50	0.22
Fidelity-Europe	0.25	0.16
J P Morgan-Europe	0.42	0.22
T.rowe-Europe	0.20	0.17

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