Do UAE Stock Markets Experience
Turn-of-the-month Anomaly?
An Empirical Analysis

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Abstract—This study makes an attempt to examine whether the fast emerging UAE stock markets, DFM and ADX experience Turn-of-the month anomaly as documented in the economic literature reportedly found in many advanced markets such as NYSE, DAX and FTSE. The share price behavior of eight stocks has been used in the study. An ‘event window’ of six days over the TOM (Turn of the month) period and NTOM (Non-Turn of the month) has been identified for 16 months for each of the eight stocks resulting in a total of 128 observations. The authors examined whether abnormal returns have been registered by the above stocks during the TOM window period. The results revealed that although minor differences in the mean returns have been noticed between the TOM and NTOM periods, the difference is not statistically significant except for one stock. So, the UAE stock markets do not experience TOM anomaly. This guides us to conclude that no abnormal returns can be made by the investors using the TOM anomaly in these markets. However, further investigation is necessary to identify the presence or absence of other seasonal anomalies in these markets.

Index Terms—Market anomalies, Turn-of-the-month effect, Seasonality, January effect, Monday effect

JEL Classification: G02, G14, G15

INTRODUCTION

People have always been one of the fascinating areas of research for stock market analysts ever since share trading had started. This phenomenon has gained further momentum after a few market anomalies have been reported in the literature. Day-of-the-week effect, Holiday effect, January effect and Turn-of-the month effect (TOM) are some of the seasonal anomalies abundantly found in the literature. Although the presence of seasonality challenges the concept of Efficient Market Hypothesis (EMH), a considerable amount of research works have supported the same in many of the advanced markets. Among these, a very interesting market anomaly reported by Ariel (1987), was the turn-of-the-month effect in which he had stated that higher positive mean rates of return occurred only in the first half of the month compared to the second half. Another interesting but a significant finding from his research was the statistically significant higher returns between the last trading day of the month and the first three days of the month. In the same way, Lakonishok and Smidt (1988) found similar results for the US stocks for a 90-year period. Pettengill and Jordan (1988) Martikainen, Perttunen and Ziemba (1994) show evidence of abnormal TOM returns in their research work on 24 important global stock markets.

A. Motivation and Background
Against this backdrop, the primary purpose of this empirical research is to examine whether seasonality effect, more particularly, TOM is present in one of the fast developing Asian markets, i.e., the UAE stock markets comprising Dubai Financial Market (DFM) and Abu Dhabi Securities Exchange (ADX). We are motivated to pursue this research in these two markets owing to the following reasons. Firstly, the UAE (United Arab Emirates) stock markets, comprising DFM and ADX have gained a great recognition as one of the fast emerging markets in the region on account of the growing volume of transactions during the last decade. So, it is worthwhile and might be rewarding to examine whether this ‘seasonality’ is present in these two markets. Secondly, the present research might throw fresh insights into the market structure and pattern of returns as well as the trend in volatility which would help developing profitable trading strategies in the future. Thirdly, to our knowledge, no such research works on the TOM effect have been carried out in these two markets, so far. In a nutshell, this paper makes an attempt to investigate the presence or absence of seasonality in security returns, primarily focusing on the TOM effect, in DFM and ADX during the sample study period.

B. Research question
The current study was started with the following research question:
Do the UAE stock markets experience the Turn-of-the-month anomaly?

C. Objectives of the study
Based on the above research question, the present study aims at achieving the following objectives:
- To examine the presence or absence of the turn-of-the-month (TOM) effect in selected stocks listed on Dubai Financial Market (DFM) and Abu Dhabi Stock Exchange (ADX);
- To suggest, based on the results, appropriate investment and profitable trading opportunities for the investing population.

D. Hypothesis
To examine the impact of the TOM on the selected sample stocks, the following null and alternate hypotheses have been tested:

**Null Hypothesis:**

$H_0$: The TOM returns and the non-turn-of-the-month (NTOM) returns are not equal in the UAE stock markets

**Alternate Hypothesis:**

$H_1$: The TOM returns and the NTOM returns are equal

### E. Challenges faced

The researchers have faced many challenges in the process of the current research on account of the following reasons. The major hurdles faced by the researchers, among others, include the overall condition of the financial markets in the region, particularly, in the post-crisis period, thin trading bias, lack of confidence among the investing population as evidenced by the declining volume of trades in both the markets, low liquidity, high volatility etc.

The remainder of the paper is organized as follows. The following section, Section II, reviews the existing literature on a few important anomalies and seasonality patterns documented in the literature. Section III provides a detailed description of the methodology used in the study which includes data collection, sampling and the analytical tools applied in this research. Section IV discusses the analytical results and findings. The last section V, gives the recommendations in the light of the objectives of the study along with the concluding remarks.

### II. REVIEW OF LITERATURE

This section introduces a review of the existing literature on the most important market anomalies, followed by the comments and summary by the researchers. A concise review of the finance literature provides a plenty of evidence in support of the turn-of-the-month anomaly in both advanced and less developed markets. As an "anomaly" is evidence against the Efficient Market Hypothesis (EMH), which theorizes that the markets discount and reflect all available information, every investor would be interested to capitalize on it taking a call or put decision. An interesting dimension of market anomaly is that if investors strongly believe that the market is inefficient, obviously, every investor would attempt to make excessive returns. Although many anomalies have been documented in the literature, a list of selected anomalies has been reviewed along with the required explanation advocated by the researchers.

#### A. Pioneering studies on 'market anomalies':

**Monday Effect:** More than 38 years ago, Cross (1973) reported variations in returns across week days. Later, Gibbons and Hess (1981) found, with the data spanning over a period of seventeen years, that the returns on Mondays were negative. Explanations in support of Monday Effect: Researchers provide many contributing factors for the Monday anomaly. One explanation states that firms and governments generally release good news during the weeks while reserving the bad news for the week-ends which pushes the share prices down on the next first trading day, i.e., Monday. Kamara (1995) reported that the active involvement of institutional traders cause low Monday returns. Surprisingly, in the same year, Alexakis and Xanthakis (1995) found abnormal positive returns on Mondays in Athens Stock Exchange. Keim and Stambaugh (1984) argue that trading frequency, particularly, the bid/ask price movements during the week, cause week-end effects in the US markets. They further state that settlement procedures might also contribute to this phenomenon. Flow of information and economy or company-related news, could also cause Week-end effect, it has been stated. Damodaran (1989); Penman (1987) and Steely (2001) also argue in favor of this proposition.

**B. January Effect**

January effect is yet another important anomaly widely documented in the literature where it has been reported that the month of January has yielded abnormal returns compared to other months in a year. Rozeff and Kinney (1976); Gulenekin and Gulenekin (1983); Nassir and Mohammed (1987) and Balaban (1995) have reported that January returns are positive and higher when compared to other months. Ho (1999) noticed that six out of eight Asia Pacific stock markets exhibited higher returns in January. Recent studies too proved this anomaly, quite well. For instance, Fountas (2002) and Koutianoudis and Wang (2003) reported higher significant returns in January in a study on the Athens Stock Exchange. Elango and Dayanand Pandey (2008) too reported in favor of abnormal higher returns in the month of January in the National Stock Exchange of India. Praveen Das and Uma Rao (2011) used stock market data from Japan, the UK and France for the period from 1975 to 2007. Their research revealed that January effect is valid and economically meaningful for all the three major non-US markets. CanInci (2010) using data from 1986 to 2007 provided evidence for the presence of January anomaly and noticed that its presence is persistent over a period of time. However, one interesting finding was that the returns were not pervasive over the period. Quite contrary to the above findings, a few studies argue that January anomaly of low price stocks outperforming high-price stocks cannot be used to earn abnormal returns. Foundas and Segerdakis (1999) found very little evidence in favor of January anomaly. In their study on 18 stock markets for the period 1987-95, Bhardwaj and Brooks (1992), Mills and Coutts (1995), Draper and Paudyal (1997), Booth and Keim (2000) state that given the prohibitive transaction costs, lower bid/ask spread and commission, the suggested excess profit disappears. They argued that January anomaly cannot economically be exploited. The year-end tax-loss selling hypothesis, accounting information hypothesis and positive risk-return trade-off are some of the explanations advocated to explain the presence of January anomaly.

**C. Turn-of-the month effect**

Cadsby and Radner (1992) used the daily stock market indices of ten countries between 1962 and 1989 and found evidence of TOM anomaly in six countries. However, Lee et al. (1990) with a sample period of 648 country months did not find any evidence of TOM effect. Agrawal and Tandon (1994) in their examination of the returns of 19 countries found that over 70% of the mean returns for any given month were generated in the 5 days around the TOM in the
A. Sampling Data and Period

This is primarily an ‘Event Study’ and relies upon the secondary data of daily share prices of the selected sample companies. In order to examine either the presence or absence of the TOM effect, eight widely and highly traded stocks, listed on ADX and DFM drawn from different sectors, are used in the current study. To test the impact of the TOM phenomena on local stock prices around that period, the standard method of computing abnormal returns has been used as this approach is widely followed by many researchers to examine the impact of the TOM on the stock returns. As indicated earlier, the study uses daily closing prices of eight local stocks listed in the UAE stock markets in Abu Dhabi and Dubai. Four stocks listed on Abu Dhabi Stock Exchange (ADX) have been included in the study: They are Dana Gas (DANA), Methaq Takaful Insurance (METHAQ), Ras Al Khaimah Cement Company (RAKCC) and Agthia Group (AGTHIA). The other four stocks included in the sampling frame are listed on Dubai Financial Market (DFM). The companies are Emaar Properties (EMAAAR), Arabtec Holding (ARTC), Air Arabia (AIRARABIA) and Dubai Investments Company (DIC). These stocks have been included in the sampling frame owing to the following reasons. Firstly, they are continuously traded in the market and do not suffer from ‘thin trading bias’ which is one of the important prerequisites for the present research. The sample period is from January 07th, 2010 to May 04th, 2011. The data have been downloaded from the official websites of both ADX and DFM. Such of those stocks that were traded continuously during the study period have been included in the sampling frame. So, the study has used ‘judgment sampling’ method as the researchers decided on the sample companies considering the fact that the UAE stock markets are small and the options available before the researchers were not many in terms of expanding the sample companies.

B. Event Period

The researchers have used the standard method followed in the event study methodology. The TOM is defined as the last two and first four days of the month with a total of 128 observations. The six-day period is chosen to capture the maximum effect on the returns if the phenomenon holds true especially with the overall economic conditions mentioned previously.

C. Analytical Tools

Data of closing prices for the eight local stocks are collected. Then, the six days over the TOM period as well as the rest of the month (NTOM) are identified for 16 months for each of the eight stocks. Afterwards, the stocks’ returns are calculated using the natural logarithm (LN) in MS Excel applying the following formula:

\[ R_i, t = \ln \left( \frac{P_t}{P_{t-1}} \right) * 100 \]  

(1)

Where ‘R’ refers to the returns of stock i for day t, LN is the natural logarithm, t refers to today’s price and t-1 refers to the previous day’s share price.

The TOM returns (2) and the rest of the month returns (NTOM) (3) are averaged for each stock for the sample period of 16 months as given below:

\[ AR_i, t = \frac{\sum_{t=-2}^{+4} AR_i, t \; (TOM)}{n} \]  

(2)

Where \( t = -2, \ldots, 0, \ldots, +4 \)

\[ AR_i, t = \frac{\sum_{t=-2}^{+4} AR_i, t \; (NTOM)}{n} \]  

(3)

Where \( t = \) the rest of the month excluding the TOM period

Finally, the t-test is applied using SPSS software to test a) whether the TOM returns are equal to the NTOM returns.

IV. ANALYTICAL RESULTS AND FINDINGS

The results are summarized in Table 1 below. A summary of descriptive statistics, t-test and p-values of eight stocks from January 07th, 2010 to May 04th, 2011:
The findings support the hypothesis that the TOM returns and the non-turn-of-the-month (NTOM) returns are equal in the UAE stock markets is rejected at 5% level of significance in the case of this company. But, this result cannot be generalized for the all the remaining sample companies and market as a whole. In general, based on the average returns, there is no TOM effect over the TOM period in the UAE markets.

V. RECOMMENDATIONS AND CONCLUSION

After conducting the analysis of the TOM effect on eight selected local stocks with 128 observations, the following findings are summarized as below:

A. Recommendations

The findings of this assignment are not in line with the findings documented in the literature. There could be several reasons for the unusual phenomenon prevailing in the UAE stock markets. Based on the analytical results presented above, it is noted here, that investors should not trade or take decisions based on the general concept of making abnormal returns over the TOM period in the local financial markets. The lack of the TOM anomaly in the local markets is possibly due to many reasons; for instance, the local financial markets are new compared to the other financial markets. Other reasons may include the low level of investor confidence prevailing in the post-global crisis scenario, low liquidity and the overall global economic conditions prevailing in the economy and the region. In a nutshell, investors need to exercise care and caution before making investment decisions based on the concept of TOM anomaly. We strongly advocate in favor of undertaking further studies to include share price indices of the local markets in addition to including a few more stocks in the sampling frame in order to get reliable evidence on the presence or absence of market anomalies. Furthermore, special attention should be given to positive news around the TOM period, if there is any, while conducting studies using samples from the local markets as this could possibly result in abnormal returns in line with the findings reported in the literature. A detailed investigation on the above aspects would certainly benefit individual and institutional investors investing in the UAE stock markets.

B. Conclusion

This study has made an attempt to examine the presence or absence of the turn-of-the-month (TOM) effect on eight selected local stocks prices. A sample of four stocks listed on DFM and four stocks listed on ADX is used in the study. The period tested is from January 07th, 2010 to May 4th, 2011 with a total of 128 observations. Student’s t test has been applied on the average abnormal returns to examine whether there is a statistically significant difference between the TOM returns and the NTOM returns during the study period. The results reveal that investors cannot make abnormal returns over the TOM period and that both TOM and NTOM returns are not statistically significant although mean returns show minor differences. The findings support the hypothesis only in the case of one company and is rejected at 5% level of significance. Therefore, there is no evidence to sufficiently prove that there are abnormal returns over the TOM period in the local markets. These findings lead us to conclude that the TOM anomaly do not exist in the UAE financial markets. This also supports the

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*Significant at 5% level

A. Findings

Based on the results presented in Table-1 above, it could be stated that there is no evidence to prove that investors can earn abnormal returns around the TOM period in the selected local stocks. The mean returns of all the stocks show lower values than the NTOM’s values except for Arabtec Holding. This supports the null hypothesis, stated earlier. In other words, there is clear evidence that the TOM returns are different from the NTOM returns. This is supported by the respective Student’s ‘t’ values as well. However, the 2-tailed significance values (P-value), are not significantly lower at 5% level of significance in the case of all the remaining seven companies. Only in the case of one company, i.e., Agthia Group, the P-value is statistically significant (P-value 0.014 < 0.05). With the result, the null hypothesis that the TOM returns and the non-turn-of-the-month (NTOM) returns are equal in the UAE stock markets is rejected at 5% level of significance in the case of this company. But, this result cannot be generalized for the all the remaining sample companies and market as a whole. In general, based on the average returns, there is no TOM effect over the TOM period in the UAE markets.
Efficient Market Hypothesis which advocates that the investors cannot make abnormal returns consistently. Thus, the findings of this present study are not in synchronization with the findings documented in the literature. With the result, investors would not be able to find profitable trading opportunities using the concept of TOM anomalies. Some of the factors which might contribute to the absence of market anomalies are as follows: 1) the local financial markets are still considered new and growing; 2) lack of confidence in the minds of investing population; 3) low liquidity and 4) the overall uncertain global economic conditions. Finally, the researchers recommend that a comprehensive study should be undertaken to explore good trading opportunities and examine the presence or otherwise of other market anomalies as well.

References


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