Chapter 2

Review of Literature of Calendar Anomalies

Some of the major calendar anomalies have been introduced in the last Chapter. In this Chapter an extensive survey of the literature has been conducted. The objective of this survey is to observe different variants of these anomalies across the globe in the markets with different market micro-structure. This analysis will be helpful in understanding to what extent an anomaly can be a result of market micro-structure. A survey of the different explanations extended by the researchers has also been conducted. Finally, a survey has been conducted of the empirical studies on calendar anomalies in Indian stock market. This survey has been used to identify the gaps in research and to develop the objectives for the present study.

2.1. Day-of-the-Week Effect:

Day-of-the-week effect was first documented by Osborne (1962) in the United States (US) stock market, and subsequently analyzed by Cross (1973), French (1980), Gibbons & Hess (1981), Lakonishok & Levi (1980), Keim & Stambaugh (1983), Rogalski (1984) and Jaffe & Westerfield (1985) and Jacobs and Levy (1988). In US typically low mean returns are observed on Monday in comparison to the rest of the days of week. Means returns on Friday are observed positive and abnormally higher than the mean returns on other days of the week. Wang et al (1997) observed that in US market, the well-known Monday effect occurs primarily in the last two weeks of a month. Wang used a long time series from 1962–1993 for his empirical research. French (1980) and, Jaffe, Westerfield and Ma (1989) reported that the average returns are significantly negative on Monday and these are significantly lower than the average returns for other week-days in US and many other countries of the world. On the other hand, the average returns on Friday are found to be positive and higher than the average returns for the rest of the week.

Chan, Leung and Wang (2004) observed that the well known Monday seasonal is stronger in stock with low institutional holdings. Lakonishok and Maberly (1990) documented that the individual investors tend to increase trading activity (especially
sell transactions) on Monday. It indicates that Monday effect could be related to the trading pattern of individual investors.

There are some variations in day-of-the-week effect in some countries. Balban (1995), for Istanbul stock exchange and Jaffe and Westerfield (1985) for Australia and Japan found negative and lowest returns on Tuesday rather than on Monday. Negative Tuesday effect was mostly observed in European and Asian countries.

Chang, Pinegar and Ravichandran (1998) found that the day-of-the-week effect became insignificant when responses to macroeconomics news were taken into account. Jain and Joh (1988) reported that liquidity in the market place is lower on Monday than other days of the week; they reported that total volume of New York stock exchange (NYSE) is approximately 90% of the average trading volume for Tuesday through Friday. Arsad and Coutts (1996) and Steely (2001) found that general trend of market is an important variable in determining the existence of day-of-the-week effect. Bildik(2004) asserted that low and negative Monday effect disappears when returns of the last trading day of the previous week are positive.

Many hypotheses are suggested by researchers to explain the day of- the-week effect. More prominent among them are as follows:

2.1.1. Information Processing Hypothesis:

Miller (1988), and Lakonishok and Maberly (1990) argued that although it is costly for all the investors to gather and process information, it is particularly costly for the individuals to do so during weekday trading hours when these people are employed in other activities. For individual investors weekends provides a convenient, low cost opportunity to reach at investment decisions. Therefore, when market reopens the individual investors might be expected to be more active. Although, they may put some buying orders during other days of the week based on the recommendations of stock brokers, but for selling orders they rely on their own analysis. Therefore, the selling pressure exceeds the demand on Monday. On the other hand, the trading volume of institutional investors remains depressed on Monday morning. Osborne in (1962) explained that decrease in institutional trading activity is a consequence of an industry-
wide practice of using the early trading hours of Monday as an opportunity to plan strategy for the upcoming week

2.1.2. Information Release Hypothesis:

French (1980), Rogalski (1984), De Fusco (1993) and Damodaran (1989) show that firms trend to report bad news on weekends (Friday) and this delayed announcement of bad news might cause the negative Monday effect. Firms and governments generally release good news between Monday and Friday, but wait until the weekend to release bad news. As a result bad news is reflected in lower stock prices on Mondays and good news is reflected in higher stock prices on Friday. However, in an efficient market, rational investors should recognize this and should short sell on Friday at a higher price and buy on Monday at a lower price, assuming that the expected profit covers the transactions costs and a payment for risk. This type of trading should lead to the elimination of the anomaly, since it should result in prices falling on Friday and rising on Monday.

2.1.3. Settlement Regime Hypothesis:

Gibbons and Hess (1981), Lakonishok and Levi (1982) reported that the delay in the cash payment for the security can lead to enhancements in the rates of return on specific day due to the extra credit occasioned by the two days of the weekend.

2.1.4. Trading Activities of Investors:

Osborn (1962) suggested that individual investors have more time to take financial decisions during the weekend; they are relatively more active in the market on Monday. He also reported that institutional investors are less active in the market on the Monday because Monday tends to be a day of strategic planning.
2.2. Turn-of-the-Month Effect:

Turn-of-the-month (TOM) effect was first identified by Ariel in 1987 for US equity market. He observed that the mean returns are higher at the end of one month and beginning other month. In his study covering a period of nineteen years (1963-1981), considering last day of one month and the first three days of upcoming month (-1, +3) he observed that changes in stock prices in these days were found positive. Further, Lakonishok & Smidt (1988), extended this investigation; they used ninety years sample period (1897-1986), and used a narrow study window of front trading days comprising the last trading day of a month and first-four trading days of the next month (-1, +4). They found that the mean returns were significantly higher during the turn-of-the-month. Their finding was also supported in many subsequent studies; for example, Hansel and Ziemba (1996) used five days event window of adding two last day of the first month and first three days of next month (-2, +3) for U.S stock market to show the existence of TOM effect. They analyzed data for 1928 to 1993 and found that returns on -1, +2 and +3 days were significantly higher. Penttengill and Jordan (1988) and Agrawal and Tandon (1994) showed that the cumulative returns during the short window of turn-of-the-month could constitute as much as 55-70 percent of monthly returns. Schwert (2003) noted that return patterns that appear during a particular time period often disappear once they have been discovered. However, the turn-of-the-month effect seems to be successful to maintain its existence even after two decades of its discovery. Some relatively recent studies confirmed that this effect is still present in US equity market (e.g. Pham, 2005; McConnel and Xu, 2006). McConnel and Xu (2006) examined turn-of-the-month effect in US equities for the 80 years period from 1926-2005. They found that the effect is powerful over the full period and over the recent two decades such that, on average, investors receive no reward for bearing market risk except at the turn-of-the-month.

This anomaly seems to have global presence as Casby and Ratner (1992), Jaffe and Westerfield (1989) observed in their worldwide market study that turn-of-the-month was significant at 1% level in Canada, Switzerland, and West Germany and at 5% level in UK and Australia. They did not find significant result in Japan, Hong Kong, Italy and France. Bildik (2004) observed statically and economically large and positive returns in first and last week of the month for Istanbul stock exchange. Kolahi (2006) found significant positive difference between turn-of-the-month and non-turn-of-the-month in his
empirical study for European stock market. Arsed and Coutts (1997) found similar results in London stock market in their study covering sixty years period. Some researchers (e.g. Ziemb and Hensel, 1994; Phame, 2005; Gopal, 2001) suggested that turn-of-the-month effect could be exploited to construct certain profitable investment strategies. It is surprising why this anomaly still remained unexploited. Certainly its persistence poses a big challenge to the theory of efficient markets.

Some of the explanations extended in the literature for the turn-of-the-month effect are as follows:

2.2.1. Pay Day Hypothesis:

Ogden (1990) proposed that a general conception about the existence of turn-of-month-effect is that it takes place because at end of the month usually corporate investors need cash to pay the compensation of employees or for other business purposes like dividend and interest. Individual investors on the other hands are generally at the receiving end of this cash flow. They receive the money and reinvest a portion of this sum back in the market. Clusterization of such payments is responsible for turn-of-the-month effect because investors take their money out of the market at end of month for payment purpose and reinvest the amount in new month. This gives birth to high stock prices at turn of month, he presumes that investors invest their funds immediately in the market and as they do so the stock prices are pushes up.

Ogden (1990), Pettengill and Jordan (1988) and Booth et al. (2001) and Bahadur and Joshi (2005) also advance similar explanation for this effect. According to them the increased level of liquidity at the turn-of-the-month is responsible for the increased level of stock prices during this period.

2.2.2. Time of Releasing Information:

Penman (1987), Bollersleve et al. (2000) and Graham et al. (2003) argued that the concentration of earning and other corporate announcements as well as the macroeconomic announcement during the first-half of the month is responsible for the turn-of-the-month effect, as positive returns along with new announcement are observed especially in beginning of month.
2.2.3. Window Dressing Hypothesis:

This hypothesis is also supposed to a possible reason for turn-of-the-month effect. Thaler (1987) and Lakonishok et al (1991) argued that at the end of month, investors especially institutional investors tend to wipe their weak portfolios in order to crop up with only winners in hand. As the month changes, investors start buying back the stocks which push the stock prices up in market.

2.3. Month-of-the-Year-Effect:

Although, significant variations are found in the behavior of stock returns in different countries for different months of the year, generally the returns are found high in the month of January in many countries of the world including the US. Therefore, this effect is also known as January effect. Although Wachte (1942) provided the earliest evidence of the abnormal stock returns in January for US stock markets, Rozeff and Kinney (1976) were the first who formally reported this effect in the US equity market, they found that returns on an equally weighted index of NYSE stocks were much higher in January than in other months of the year.

Similar results were reported from other parts of the globe. Gultekin and Gultekin (1983) show abnormal positive January returns in sixteen countries. Similarly, Agrawal and Tondon (1994) reported monthly anomalies in eighteen countries other than US.

Studies by Banz (1981), Reinganum (1981), Blume and Stambaugh (1983) and Roll (1983), Keim (1983) investigated the interaction of the month-of-the-year and size effect and found that there is significant negative relationship between stock returns and the size of the issuing firm as measured by the total market value of outstanding equity in their empirical results of the study. They concluded that returns of small firms were significantly higher than large firms in January. Along with small firm effect Keim (1983) attributed this finding to tax-loss-selling and information release hypothesis (explained separately below).

Reinganum (1983) also observed that the tax consideration is an important factor for stock market seasonality. However, he was of the view that the entire seasonality in stock returns cannot be explained by tax-loss-selling hypothesis. Fama (1991)
analyzed the behavior of S&P 500 for the period of forty years (1941-1981). During this period small stocks averaged a return of 8.06% in January which was substantively higher the returns during other months of the year. Brown et al., (1983) examined the month-of-the year effect in Australia and they found that in Australia returns were abnormally high in month of July along with January. He linked the July-effect with the implication of tax payments because at the end of July tax is payable in Australia. On the other hand Raj and Thurston (1994) found that the January and April (taxation period) effects were not statistically significant in the New Zealand stock market. Alagidede (2008) in his study covered seven African countries and found that January returns were positive and significant for Egypt, Nigeria and Zimbabwe. February returns were higher for Kenya, Morocco and South Africa but Tunisia had no monthly seasonality.

Various hypotheses for month-of-the-year-effect has been suggested by researchers among them following are more prominent:

2.3.1. Tax-Loss Selling Hypothesis:

One of the explanations put forward for the existence of seasonality in stock returns is the ‘tax-loss-selling hypothesis. This hypothesis was first suggested by Branch (1977). According to the hypothesis, investors want to realize capital losses in current tax year, which create a downward price pressure at the yearend on securities that have previously experienced negative returns. Subsequently, at the beginning of the new tax year, this selling pressure is relieved and the affected securities earn excess returns as their prices rebound. For example, in the USA, December is the tax month; therefore, the financial houses sell shares whose values have fallen, to book losses in order to reduce their taxes. As a result of this selling, stock prices decline. However, as soon as the December ends, people start acquiring shares and as a result stock prices bounce back. This lead to higher returns in the beginning of the year, that is, in the month of January. This is called the ‘January effect’ in the US. In India, March is the tax month; it would be interesting to find ‘April Effect’ in this case.

Evidence in support of this hypothesis is provided by Jones, Lee and Apenbrink (1991), Poterba and Weisbenner (2001); Dai (2003). Contradicting evidences are
also abundant. Brown et al. (1983) in Australia and Kato and Schallheim (1985) in Japan report significant January effects, even though January is not the beginning of the tax year in those countries.

2.3.2. **Window Dressing Hypothesis:**

According to the window-dressing hypothesis, developed by Haugen and Lakonishok (1988), the institutional investors sell their loss making shares and buy profit making shares at the end of the calendar year so that they could avoid showing the loss making shares in their reports and maintain respectable position in the market.

Institutional managers are evaluated based on their performance and their investment philosophy. To improve their performance, the institutions buy both risky stocks and small stocks (as profit can be increased by taking extra risk) but sell them before the end of the year so that they do not show up in their year-end holdings. At the beginning of the calendar year, investment managers reverse the process by selling winners, large stocks, and low risk stocks while replacing them with small and risky stocks that typically include many past losers. The window dressing hypothesis represents an alternative but not necessarily an exclusive explanation for the month-of-the-year effect.

2.3.3. **Information Release Hypothesis:**

Rozef and Kinney (1976) reported that good news is released in the first few days of January; therefore, the returns are high at the beginning of the year. Berry and Brown (1985) found that relative information of poor securities have more systematic risk than that of rich securities. At the end of the year flood of news make small capitalized stocks much active than large capitalized stocks which are already rich in information. Consequently, small stocks would react more strongly to the increased flow of news in the month of January by generating larger returns than the large stocks. Penman (1987) finds that firm release good news in the beginning of each quarter and bad news release in second half of the quarter.
2.3.4. Parking the Proceeds Hypothesis:

This hypothesis is suggested by Ritter (1988). He argued that the month-of-the-year effect is caused by the buying and selling behavior of individual investors. Parking the proceeds hypothesis can be viewed as a generalization of the tax loss selling hypothesis. As at the end of the year, individual sell securities in order to realize the losses for tax purpose. Some of the proceeds from the sale are not immediately reinvested but “parked” until January and then invested which pushes up the demand and consequently the prices of securities.

2.3.5. Small Firm Effect Hypothesis:

There has also been an explanation linking the January effect with the small firm effect. Keim (1989) attribute this to microstructure biases. According to this explanation, the last trade in December for most stocks is at the bid price, which causes returns to appear high in the first few days of January. Keim (1989) found that the tendency for stocks to be at the bid price for the last trade in December was much pronounced for small stocks. In addition, small stocks have higher bid-ask-spread and a lower price. Therefore, the return would be bigger for small stocks and this partly explains the differences in the January effect between large and small stocks.

2.4. Holiday Effect:

Holiday effect was first identified by Fields (1934). The holiday effect is arguably one of the oldest and most consistent of all seasonal regularities. Ariel (1987, 1990) and Lakonishok and Smidt (1988) reported in their seminal studies that the returns of pre-holiday period were higher than those of post-holiday period they found that Abnormal returns were found not only in weekend closing but for any gap in trading. Lakonishok and Smidt even show that the holiday effect accounts for some 30 to 50 percent of the total return on the US market in the pre-1987 period. Ariel shows that pre-holiday returns were eight times of the post-holiday returns. He further demonstrates that the eight holidays per year account for 38% of the total annual rate of returns. Kim and Park (1994) and Brockman and Michayluk (1998) also found a
US holiday effect using market indicators from the New York Stock Exchange, AMEX and NASDAQ from 1963-1987 and 1987-1993, respectively.

Many analysts have taken a closer look at the performance of the stock market both before and after each holiday. Their research has documented the holiday effect in different countries of the world other than US (Canada, Japan, Hong Kong and Australia (Cadsby and Ratner 1992), Turkey (Bildik 2004), Italy (Barone, 1989) etc.

Cadsby and Ratner (1992) explored the holiday effect in the international markets. They considered Canada, Japan, Hong Kong and Australia from 1962 to 1989 and tested for local holidays using market indices from each country. The results indicated significant pre-holiday effects in all of the sample markets, with the highest returns appearing on days just prior to joint holidays, Kim and Park (1994) provided further evidence of international holiday effects in their study of the Nikkei (Japan) and the Financial Times (UK) indexes, confirming Cadsby and Ratner’s (1992) findings for Japan and presenting new evidence of a holiday effect in the UK. Interestingly, Kim and Park (1994) also noted a firm-size effect in these markets. In another extensive study, Agrawal and Tandon (1994) tested the potency of holiday in seventeen national markets. Their results indicated significant pre-holiday strength in 65 percent of the sample markets.

Research in South-East Asia (Wong et al. 1990; Cadsby and Ratner 1992; Tong and Wildon 1992; Yen and Shyy 1993; Chan et al. 1996) has identified the presence of a Chinese new year holiday effect. Yen and Shyy (1993), found Evidence of significant excess returns prior to Chinese New Year in Hong Kong, Japan, Malaysia, Singapore, South Korea and Taiwan; Wong et al. (1990) identified both a Chinese new year and an Aidilfitri (the festival ending the fast of Ramadan) effect on the Kuala Lumpur stock exchange; and Chan et al (1996) confirmed the Chinese New Year effect in Thailand, Singapore and Malaysia along with a mild Hindu holiday effect in Singapore and Malaysia.

Worthington (2007) tested holiday effect in Australian market and concluded that holiday effect is limited to small cap firms. He used twelve different stock indices of the Australian stock market for the period of 10 year (1996 – 2006) providing 2,635 end-of-day observations on the Australian Stock Exchange (ASX). His empirical
evidence suggests holiday effect at the market level with pre-holiday returns typically five times higher than other days. His study found small firm effect with pre-holiday returns, in small cap stocks more than ten times higher than other trading days.

The major explanations extended in the literature for the presence of holiday-effect are as follows:

2.4.1. **Investor Psychology:**

Arguably, the most promising explanation for the holiday effect lies in investor psychology (Brockman and Michayluk 1998; Vergin and McGinnis 1999). This hypothesis suggests that investors tend to buy shares before holidays because of ‘high spirits’ and ‘holiday excitement’. Unfortunately, this hypothesis has proven difficult to test directly.

2.4.2. **Closing Effect:**

One possible explanation is that the high pre-holiday returns are a manifestation of the well documented closing effect in which high returns for securities are observed at market closings. Another group of studies links the pre-holiday effect to systematic patterns in the dataset used to compute pre-holiday returns. On the behavioral side, explanations range from short-sellers closing their risky positions prior to holidays, to psychological reasons such as investors’ good mood around holidays indicating greater optimism about future prospects.

2.5. **Calendar Anomalies – Some Common Observations:**

Existence of calendar anomalies is inconsistent to the notion of market efficiency. Financial markets are considered most competitive markets in the world. These markets are dominated by institutional investors who, equipped with algorithm trading tools, are ready to exploit any possible mispricing. Then how can these anomalies survive in the market. Some economists believe that the anomalies may be the result of data mining (see for example Merton, 1987; Lakonishok and Smidt, 1988; Lo & MacKinlay, 1990). Some abnormal behavior in the market may be observed by chance (sampling error), and since same set of data is explored again and again by the researchers they obtain the same results. Therefore, a true test of market
anomalies is to observe them in the markets other than the stock markets of developed countries.

2.6. Past Studies on Calendar Anomalies in Indian Stock Market

Most of the studies on calendar anomalies have focused on the US and European markets; it is of interest to search whether such anomalies exist for a developing countries which are characterized by different market microstructure, stage of development and different cultures. Very few empirical studies on calendar anomalies have been done using Indian data.

Chaudhary (1991) studied Sensex returns from 1988 to 1990 and found day-of-the-week effect in Indian stock market. He observed that average return on Monday was negative and highest return was realized on Friday. Poshakwale (1996) also studies Sensex and found that Wednesday returns are highest across the week and returns for Monday were negative. Arumugam (1998) investigated the day of-the-week effect on stock returns for a long span of time from 1979 to 1997 he observed that Friday returns are significantly positive while Monday returns are significantly negative in all period. Kumari and Mahendra (2006) studied the day-of-the-week effect in BSE and NSE, he observed negative returns on Tuesday and relatively higher returns on Monday where as Sah (2008) suggested positive Friday effect for Nifty. These studies clearly suggested the weekend effect in Indian stock market. further Elango and Almacki (2008) studied day-of-the-week affect in the NSE and he found that returns were lowest during Monday and highest during Wednesday, This may be the impact of rolling settlement (t +2) in Indian stock market. Selvakumar (2011) used BSE Sensex and CNX Nifty returns from 1992 to 2005 in his empirical study, and observed that returns were negative for Monday and Tuesday and highest for Friday.

Turn-of-the-month effect could not gain as much popularity in the literature as much day-of-the-week-effect however Bodla and Jindal (2006), Chandra (2008) suggested robust presence of turn-of-the-month effect in Indian market. Further, Abhijeet (2011) studied BSE Sensex daily return for the period from 1998 to 2008; he found that early days of the month witnessed higher mean returns than later days of the same month.

Some of the empirical studies have focused on the month-of-the-year effect in context to Indian stock market. Pandey (2002) reported the existence of seasonal effect in
monthly stock returns of BSE Sensex in India and confirmed the January effect. Patel (2008) found that monthly returns during November and December were significantly higher than rest of the month while returns during March to May were significantly lower than rest of the months. He argued that these effect were independent to each other, Dash (2011) also found positive November and December effect along with positive August Effect and negative March effect, Dash suggested that high returns during November and December could be a Diwali effect, with a huge flow in the purchase of household goods, electronic equipments and gold in India usually in November. He gave another possible explanation behind this effect that it could be the Rabi harvest (winter crop), which effects commodity prices and in turn, stock prices goes up during November and December, similarly the Kharib harvest (monsoon crop) could be a possible reason for positive August effect; whereas, March effect seems to be the result of “tax-loss-selling”. Dash also suggested that Effect of seasonal anomalies reduced after the market crashes. It is surprising that no study has explored the holiday effect in Indian stock market.

2.7. The Research Gap and Need for the Present Study:

It is clear from the above survey that most of the empirical studies on calendar anomalies have focused the developed markets. As explained above the results based on the same set of data may be biased and may simply be the manifestation of data mining. Therefore, there is a need to test the existence of these anomalies across the world, particularly in emerging markets. Emerging markets also provide an opportunity to study the dynamics of market efficiency with changing microstructure, width and depth of the market. Indian stock market has witnessed a repaid transformation during last two decades; therefore it provides an interesting opportunity to explore the dynamics of market efficiency. It will be interesting (and also enriching to our understanding of price discovery process) to explore what changes have taken place in the nature calendar anomalies in Indian stock market during the process of this transformation. A few studies have attempted to test the existence of different anomalies in Indian stock market; but these studies do not address the question in a systematic way how market reforms have affected the nature
of these anomalies and hence the efficiency of the market. The present study intends to fill this gap.