The efficient market hypothesis and calendar anomalies: a literature review

Matteo Rossi

DEMM Department,
University of Sannio,
Via delle Puglie, 82, 82100 Benevento, Italy
Email: mrossi@unisannio.it

Abstract: One of the most important principles used in measuring the market's efficiency is the ability of prices to reflect all currently available information. The Efficient Market Hypothesis (EMH) is the proposition that current stock prices fully reflect all available information about the value of the firm and that there is no way to earn excess profits by using this information. The EMH has received an abundance of attention since its inception. However, evidence against the EMH is growing, and numerous studies have documented return predictability. In fact, despite its relative simplicity, this hypothesis has also generated considerable controversy. After all, the EMH questions the ability of investors to consistently detect mispriced securities. For these reasons, scholars have recently been studying the calendar anomalies that are one of the characteristics of financial markets, and these anomalies are found to contradict the EMH. The purpose of this paper is to present a systematic review of the existing literature on calendar anomalies. This critical examination of the relationship between the EMH and calendar anomalies provides new insights for scholars and executives.

Keywords: efficient market hypothesis; calendar anomalies; January effect; turn-of-the-month effect; day-of-the-week effect.

Reference to this paper should be made as follows: Rossi, M. (2015) 'The efficient market hypothesis and calendar anomalies: a literature review', *Int. J. Managerial and Financial Accounting*, Vol. 7, Nos. 3/4, pp.285–296.

Biographical notes: Matteo Rossi is an Assistant Professor of Corporate Finance at the University of Sannio, Italy. He earned a PhD in Corporate Governance and his prime research interests are corporate finance, financing innovation, wine marketing and innovation systems. In all of these areas, he has published, contributed chapters to books, edited books and presented papers to national and international conferences. He is the Vice President for International Relations of the EuroMed Research Business Institute (EMRBI). In 2014, he won the Highly Commended Paper Award of the *International Journal of Organizational Analysis* (Emerald) for the paper 'Mergers and acquisitions in the hightech industry: a literature review' and in 2012, he won the Outstanding Paper Award of the *International Journal of Organizational Analysis* (Emerald) for the paper 'Italian wine firms: strategic branding and wine performance'.

Copyright © 2015 Inderscience Enterprises Ltd.

1 Introduction

One of the most important criteria used in measuring the market's efficiency is whether or not prices reflect all available information (information efficiency). The Efficient Market Hypothesis (EMH), also known as the Random Walk Theory (Kendall, 1953), is the proposition that current stock prices fully reflect all available information about the value of the firm and that when using this information, there is no way to earn higher profits. The term "efficient market" was introduced in 1965 by Eugene Fama, who argued that in an efficient market, "on the average, competition will cause the full effects of new information on intrinsic values to be reflected instantaneously in actual prices" (Fama, 1965, p.57). Thus, the EMH predicts that at any point in time, market prices should incorporate and reflect all available information. However, different kinds of information can influence security values. Consequently, economists define three levels of market efficiency, which are distinguished by the amount and type of information reflected in security prices (Brealey et al., 2011): weak form efficiency, semi-strong form efficiency and strong form efficiency.

The weak form of the Efficient Market Hypothesis asserts that the current stock price fully incorporates only that information contained in the past history of prices. In this situation, one should not be able to profit from using information that is available to everyone. However, many financial analysts attempt to generate profits by studying exactly what this hypothesis asserts is without value: that is, past stock price series and trading volume data. This technique is called technical analysis. The empirical evidence for this form of market efficiency, and therefore against the value of technical analysis, is quite strong and consistent (Clarke et al., 2001).

The semi-strong form of the efficient market hypothesis suggests that the current stock price fully incorporates all publicly available information, e.g., past prices, data reported in a company's financial statements, earnings, announced merger plans, and expectations regarding macroeconomic factors. In fact, this public information does not even have to be of a strictly financial nature. If markets are semi-strong efficient, then prices will adjust immediately to reflect publicly available information. Like the weak form of the efficient market hypothesis, the semi-strong form still asserts that one should not be able to profit using something that everyone knows, as the information is public. This public information, however, may be relatively difficult to gather and costly to process. Major newspapers and company-produced publications may not be sufficient sources. Many scholars have found empirical evidence that is overwhelmingly consistent with the semi-strong form of the EMH.

The strong form of the efficient market hypothesis states that the current stock price fully incorporates all existing information, both public and private (including so-called insider information). The main difference between the semi-strong and strong efficiency hypotheses is that in the latter case, no one should be able to systematically generate profits. In the case of strong-form market efficiency, the market anticipates future developments in an unbiased manner. Therefore, the stock price may have already incorporated both public and private information and evaluated it in a much more objective and informative way than even insiders. Not surprisingly, however, empirical research in finance has found evidence that is inconsistent with the strong form of the EMH.

The EMH has received an abundance of attention since its inception. However, evidence against the EMH is mounting, and numerous studies have documented return

predictability (Rossi, 2016). In fact, despite its relative simplicity, this hypothesis has also generated considerable controversy. After all, the EMH questions the ability of investors to consistently detect mispriced securities. For these reasons, scholars have recently been studying calendar anomalies that are characteristic of the financial markets and finding that they contradict the EMH (Nasir et al., 2016).

On the basis of the above, this paper is organised as follows. The first section presents a literature review on calendar anomalies. I include a separate subsection for each calendar anomaly. In the final section, I conclude the paper with some important considerations for scholars and executives.

2 Calendar anomalies: a literature review

During the 1970s, many empirical tests were conducted to demonstrate the informational efficiency of stock markets. In contrast, during the 1980s, 1990s, and over the last 15 years, much has been written with the goal of demonstrating the markets' *inefficiency* by identifying orderly variations in stock prices related to the calendar of the civil year.

The aim of this section is to describe calendar anomalies across the globe among markets with different micro-structures. A calendar effect is an economic consequence or market anomaly related to the calendar (Nasir et al., 2016). The calendar time hypothesis states that the market behaves differently at different hours of the day, on different days of the week, and at various times of the month and year. Various studies have been conducted on this topic. Below is a chronological literature review of principal studies on calendar effects (Table 1).

Table 1 Principal studies on calendar effects

Calendar anomalies	*Main studies*
January effect	Wachtel, 1942; Rozeff and Kinney, 1976; Banz, 1981; Reinganum, 1981; Blume and Stambaugh, 1983; Brown et al., 1983; Gultekin and Gultekin, 1983; Keim, 1983; Roll, 1983; Barone, 1990; Fama, 1991; Agrawal and Tondon, 1994; Athanassakos and Schnabel, 1994; Raj and Thurston, 1994; Alagidede, 2008; Mylonakis and Tserkezos, 2008
Day-of-the-week effect	Osborne, 1962; Cross, 1973; French, 1980; Lakonishok and Levi, 1982; Gibbons and Hess, 1981; Keim and Stambaugh, 1984; Rogalski, 1984; Jaffe and Westerfield, 1985; Jacobs and Levy, 1988; Jaffe et al., 1989; Barone, 1990; Lakonishok and Maberly, 1990; Balaban, 1995; Hawawini and Keim, 1995; Arsad and Coutts, 1996; Wang et al., 1997; Berument and Kyimaz, 2003; Steeley, 2001; Bildik, 2004; Chan et al., 2004; Chinko and Avci, 2009
Turn-of-the-month effect	Ariel, 1987; Lakonishok and Smidt, 1988; Pettengill and Jordan, 1988; Barone, 1990; Cadsby and Ratner, 1992; Agrawal and Tandon, 1994; Hensel and Ziemba, 1996; Arsad and Coutts, 1996; van der Sar, 2003; Bildik, 2004; McConnell and Xu, 2008;
Other (minor) effects	Lakonishok and Smidt, 1988; Barone, 1990; Cadsby and Ratner, 1992; Kim and Park, 1994; Meneu and Pardo, 2004; Cao et al., 2009; Marrett and Worthington, 2009; Dodd and Gakhovic, 2011; Almudhaf, 2012; Barmak, 2012; Ehrmann and Jansen, 2012; Nasir et al., 2016

Source: Author's calculation

2.1 January effect

The January effect is known to be the most important calendar anomaly: "as goes January, so goes the year" is a popular rule in the stock market. This effect is also known as the "turn of the year" effect.

Though Wachtel (1942) provided the earliest evidence of abnormal stock returns in January for US stock markets, Rozeff and Kinney (1976) were the first to formally report this effect in the US equity market. They found "the existence of seasonality in monthly rates of return on the New York Stock Exchange from 1904–1974. With the exception of the 1929–1940 period, there are statistically significant differences in mean returns among months due primarily to large January returns" (Rozeff and Kinney 1976, p.379).

Similar results were reported by Gultekin and Gultekin (1983), Barone (1990), and Agrawal and Tondon (1994). They showed abnormal positive returns in major industrialised countries: "Evidence is provided that there are strong seasonalities in the stock market return distributions… The seasonality, when it exists, appears to be caused by the disproportionately large January returns in most countries and April returns in the U.K. With the exception of Australia, these months also coincide with the turn of the tax year" (Gultekin and Gultekin, 1983, p.469). Similarly, Agrawal and Tondon (1994) reported monthly anomalies in 18 countries other than the USA: "the January returns are large in most countries and a significant monthly seasonal effect exists in ten countries" (Agrawal and Tondon, 1994, p.83).

Barone (1990) conducted a study based on the Milan Stock Exchange's index with reference to the period 2 January 1975 to 22 August 1989. "The results obtained on the basis of the MIB index for the whole period considered show that the Italian stock market also has a pronounced seasonal pattern with the daily changes in stock prices during January account equal on average to 0.33 per cent and significantly different from zero at a level of confidence of less than 0.001" (Barone, 1990, p.495).

Other studies (Banz, 1981; Reinganum, 1981; Blume and Stambaugh, 1983; Roll, 1983; Keim, 1983) investigated the interaction of the month-of-the-year and size effects and found a significant negative relationship between stock returns and the firm size (measured by the total market value of outstanding equity). Additionally, Fama (1991) has analysed the behaviour of the S&P 500 over a period of 40 years (1941–1981). During this period, small stocks averaged a return of 8.06% in January, which was substantially higher than returns during other months of the year.

Brown et al. (1983) examined the month-of-the year effect in Australia, where the tax year ends on 30 June. For Australian stocks, they found seasonal effects in December–January and July–August with the largest effects in January and July. 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. Athanassakos and Schnabel (1994) also observe that superior January performance comes from tax loss trading at the end of December. The risk to small stocks is not constant throughout the year and tends to be particularly high at the beginning of the year.

Mylonakis and Tserkezos (2008) examined the January effect in the Athens Stock Exchange (ASE). Their research analyses the period of January 1985 to December 2001 and confirms that the "January effect" exists in the ASE general index. The primary analysis of this study shows that mean returns during January are considerably higher than other months throughout the 17 years of the study period. Alagidede (2008) studied seven African countries and found that the month-of-the-year effect is prevalent in

African stock returns. Particularly, 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. Norvaisiene et al. (2015) study seasonality in the Baltic Stock Market: "the daily log return indexes of Nasdaq OMX Tallinn, Nasdaq OMX Riga, and Nasdaq OMX Vilnius in the Baltic stock exchange were analysed for the period of 2003–2014" (Norvaisiene et al., 2015, p.468). One of the main results of this study is the existence of the Month effect. In particular, results show "that return in the Estonian stock market is statistically significantly higher in January if compared to the return of other months" (Norvaisiene et al., 2015, p.471).

2.2 Day-of-the-week effect

The day-of-the-week effect was first documented by Osborne (1962) in the US stock market and was subsequently analysed by many scholars (Cross, 1973; French, 1980; Gibbons and Hess, 1981; Lakonishok and Levi, 1982; Keim and Stambaugh, 1984; Rogalski, 1984; Jaffe and Westerfield, 1985; Jacobs and Levy, 1988; Jaffe et al., 1989; Barone, 1990; Wang et al., 1997). Typically in the USA, low mean returns are observed on Monday in comparison to the other days of week. Mean returns on Friday are observed to be positive and abnormally higher than the mean returns on other days of the week.

Two important studies were conducted by French (1980) and Jaffe et al. (1989). They reported that average returns are significantly negative on Mondays and that these are significantly lower than the average returns for other weekdays in the USA. On the other hand, average returns on Friday are found to be positive and higher than average returns for the rest of the week.

Jain and Joh (1988) reported that liquidity in the stock market is lower on Monday than on other days of the week; they found that the total volume of the New York Stock Exchange (NYSE) on Monday is approximately 90% of its average trading volume for Tuesday through Friday.

Lakonishok and Maberly (1990) show that individual investors tend to increase their trading activity on Monday. Thus, the main reason for the Monday effect could be related to the trading pattern of individual investors. Hawawini and Keim (1995) explain the Calendar Time Hypothesis as suggesting that Monday's mean is different than the mean returns on all other days, indicating that the return generating process is a continuous activity. Additionally, Wang et al. (1997) observed that in the US market, the well-known Monday effect occurs primarily in the last two weeks of each month. Wang used a long time series (1962–1993) for his empirical research.

The week effect was studied by Kiymaz and Berument (2003). They look at the presence of the day-of-the-week effect on the stock market using the S&P 500 index from January 1972 to October 1997. Their study shows that the day-of-the-week effect exists in both volatility and in returns. Their findings suggest that the highest and lowest returns are observed on Wednesdays and Mondays, but the highest and lowest volatility are present on Wednesdays and Fridays, respectively.

Chinko and Avci (2009) analyse the existence of 'day-of-the-week effect' for the Istanbul Stock Exchange (ISE) based on the ISE-100 index during the time period 1995–2008. Their analysis shows negative Monday returns and positive Thursday and Friday returns at a 5% significance level. However, Tuesday and Wednesday have no significant

return patterns. Their final analysis shows that regardless of market capitalisation, all portfolios showed significant negative Monday returns, no results for Tuesday and Wednesday, but positive Thursday and Friday returns.

Various explanations have been suggested by researchers (Arsad and Coutts, 1996; Steeley, 2001; Chan et al., 2004). Chan et al. (2004) observed that the Monday effect is stronger in stocks with low institutional holdings. Arsad and Coutts (1996) and Steeley (2001) found that the general trend of the market is an important variable in determining the existence of the day-of-the-week effect. Bildik (2004) asserted that low and negative Monday effects disappear when returns of the final trading day of the previous week are positive.

Some countries show variations in the day-of-the-week effect. In fact, Jaffe and Westerfield (1985) and Balaban (1995) report different results. In particular, Jaffe and Westerfield (1985) examine the daily stock market returns for four foreign countries. They find that "lowest mean returns for the Japanese and Australian stock markets occur on Tuesday" (Jaffe and Westerfield, 1985, p.433). A negative Tuesday effect was mostly observed in European countries. In contrast to Chinko and Avci (2009), Balaban (1995) also reports these results in his analysis of the ISE.

2.3 Turn-of-the-month effect

The turn-of-the-month (TOM) effect was first identified by Ariel in 1987 for the US equity market. He observed that mean returns are higher at the end of one month and at the beginning of the next month. His study covered a period of nineteen years (1963–1981), focusing on the last day of one month and the first three days of the following month (–1, +3). He divided each month into two parts, with the first part commencing on the final day of the previous month. Next, he compared the cumulative returns for both parts using value-weighted and equally weighted indexes. All returns occurred during the first part of the month for the period.

van der Sar (2003) explains the Turn-of-the-Month effect as producing exceptionally high returns that are realised repeatedly only on 5 or fewer back-to-back trading days around the turn of the month. In other words, this effect is a temporary rise in stock prices that normally occurs during the last few days of each month.

Lakonishok and Smidt (1988) extended Ariel's investigation. They used a 90-year sample period (1897–1986) and a narrow study window of front-trading days comprising the final trading day of one month and first four trading days of the next month (–1, +4). They "find evidence of persistently anomalous returns around the turn of the week, around the turn of the month, around the turn of the year, and around holidays" (Lakonishok and Smidt, 1988, p.403).

Their finding has been supported by many subsequent studies (Hensel and Ziemba, 1996; Agrawal and Tandon, 1994). Hensel and Ziemba (1996) created a five-day event window by adding the final two days of one month and the first three days of the next month (–2, +3) in the US stock market to show the existence of the TOM effect. They analysed data from 1928 to 1993 and found that returns on –1, +2 and +3 days were significantly higher. Pettengill and Jordan (1988) and Agrawal and Tandon (1994) showed that cumulative returns during the short window of the turn-of-the-month could constitute as much as 55–70% of monthly returns.

"In the Italian market there is a clear difference between the first and second halves of the calendar month. On the basis of the sample obtained by excluding the observations

corresponding to the first day of each monthly account and to the trading days after a public holiday, stock prices are found to fall in the first part of the calendar month (in correspondence with the end of the monthly account) and then rise in the second (in correspondence with the early part of the next account)" (Barone, 1990, p.491).

Some relatively recent studies have confirmed that this effect is still present in the US equity market (McConnell and Xu, 2008). McConnell and Xu (2008) examined the turn-of-the-month effect in US equities. Using CRSP daily returns, they found that the turn-of the-month effect persists throughout the period 1987–2005: in essence, over this 19-year period (and over the 109-year period of 1897–2005) all excess market returns occurred during the four-day turn-of-the-month intervals. They "further find that the turn-of-the-month effect is not confined to small or low-priced stocks; it is not confined to the December-January turn-of-the-month; it is not confined to calendar-quarter-ends; it is not confined to the U.S.; and it is not due to market risk as traditionally measured: the standard deviation of returns at the turn-of-the-month is no higher than during other days" (McConnell and Xu, 2008, p.49). Thus, this anomaly seems to have a global presence. Both Cadsby and Ratner (1992) and Jaffe and Westerfield (1989) observed in their worldwide market studies that turn-of-the-month was significant at the 1% level in Canada, Switzerland, and West Germany and at the 5% level in the UK and Australia. They did not find significant results in Japan, Hong Kong, Italy and France.

Other studies focus their attention on particular stock exchanges. Bildik (2004) observed statistically and economically large and positive returns in the first and last weeks of the month for the Istanbul Stock Exchange. Arsad and Coutts (1997) found significant positive differences between turn-of-the-month and non-turn-of-the-month periods in their empirical study of the London stock market over a 60-year period.

This analysis of the turn-of-the-month effect suggest that this anomaly could be exploited to construct certain profitable investment strategies, making it surprising that this anomaly still remains relatively unexplored. Certainly its persistence poses a major challenge to the theory of efficient markets.

2.4 Other calendar effects

Apart from the calendar anomalies discussed above, other scholars have analysed additional calendar effects. Another seasonal variation that has been studied is the holiday effect. This can be defined as a fully predictable stock exchange closure because of a public holiday. This affects the performance of daily stock returns. Unlike monthly or weekly effects, the holiday effect may vary from market to market in timing, duration and frequency. This effect depends on the public holiday: for example, the USA has 8 holidays, compared to four in China. The holiday effect is known to produce unusual results; specifically, it produces either high or low returns. Recent observations of the holiday effect suggest that on pre-holiday trading days, mean returns are positive and high in comparison with non-holiday trading days. Post-holiday returns are normally significantly positive, however, they are not significantly different from normal trading days. Recent studies focusing on developed financial markets confirm these results (Barone, 1990). Lakonishok and Smidt (1988) document significant returns on days before US public holidays. These pre-holiday returns are 23 times higher than returns on normal days. These results are confirmed by several other studies (Pettengill, 1989; Ariel, 1990).

Cadsby and Ratner (1992) analyse the holiday effect in ten different stock market indices. Their study shows a pre-holiday effect in Australia, Canada, and Hong Kong but not in European markets. Kim and Park (1994) note a pre-holiday effect in all three major stock markets in the USA (NYSE, AMEX and NASDAQ), as well as in Japan and the UK. They indicate that the persistence of a pre-holiday effect across countries suggests that it is not determined by institutional arrangements unique to the stock market of a particular country. Significant pre-holiday returns also exist in other markets. For example, Meneu and Pardo (2004) find significant pre-holiday effects in Spain; Cao et al. (2009) find significant pre-holiday effects in the New Zealand market; and Marrett and Worthington (2009) document pre-holiday effects in Australia. Dodd and Gakhovich (2011) confirm these results and "In addition to previous literature, we also document abnormal post-holiday returns" (p.29).

This review of existing literature suggests that the attention paid to religious calendar effects has been low compared to other effects mentioned earlier. However, some studies do focus on these effects (Almudhaf, 2012; Barmak, 2012; Nasir et al., 2016). Almudhaf (2012) investigates the Islamic calendar seasonal effect in the stock returns of 12 countries where Muslims make up the majority of the population. The results showed evidence of Islamic calendar seasonal effects in all 12 countries in the sample. During the month of Ramadan, Jordan, Kuwait, Pakistan and Turkey show a positive effect, which contradicts the predictions of some investors. Surprisingly, for all 12 countries, there is a positive coefficient during the month of Ramadan. Based on these results, there is an average Ramadan return that exceeds the average returns for other months of the Islamic calendar in the four countries mentioned above. Their final results showed evidence of seasonality in stock returns based on the Islamic calendar. Similar results were highlighted by Barmak (2012). He contends that this holy month in the Islamic calendar affects the stock market, especially if the population in that country is dominated by Muslims.

In particular, Nasir et al. (2016) analyse the Ramadan Effect in Pakistan. Their analysis draws two conclusions: the first shows that Ramadan has a minor positive impact on the stock market and the second conclusion states that the stock market is less volatile during the holy month of Ramadan.

The behaviour of the stock market may also be affected by certain pre-determined events. A rather strange and new phenomenon took place during the 2010 FIFA World Cup in South Africa. Ehrmann and Jansen (2012) have analysed this situation, noting that many matches took place during stock market trading hours. The pair examined 15 international stock exchanges using minute-by-minute trading data. Their three key findings were that first, when a country's national team was playing, trading in that country's market dropped by 45% alongside a fall of 55% in volume. Second, match events influenced market activity; for example, there was an additional drop of 5% in trading activity when a team scored a goal. The third and final finding was that the co-movement of stock prices between global and national stock market returns dropped by over 20% during matches. This clearly indicates that the stock market's attention was on the football pitches rather than the trading pit, leading to an alteration in the price formation process.

3 Conclusions

Although the efficient market hypothesis was widely accepted by academic financial economists, over the last few years the evidence against the EMH has grown. The preceding discussion began with the January effect, followed by day-of-the-week, monthly, and weekend effects and finally the Islamic calendar effect.

These effects have attracted the attention of a large number of scholars, but results have often been mixed. The EMH, particularly in its semi-strong and strong forms, is often strongly criticised.

The fragmentation of the literature on calendar anomalies has prevented the formulation of a general theory on this topic. In fact, this literature review shows that there is no single, unified point of view on the relationship of the EMH to calendar effects. This brief literature review has shown that, although progress has been made in our understanding of this topic, there are still many opportunities to improve our understanding of the principal motivations behind calendar effects.

The fragmentation of the literature on this topic and resulting lack of consensus underscores the complexity of calendar effects. The main question is: is it possible that all financial markets are characterised by calendar effects? A priori, this is impossible to answer. If anything, the strong form of the EMH is an academic consideration. The heterogeneity of scholarship in this field is also related to the difficulty of defining the subject of investigation: calendar effects can be studied as a specific topic or as evidence of a non-efficient market hypothesis. However, these considerations can only partially explain the excessive fragmentation of the literature. Naturally, many fields are characterised by fragmented literature, but in this field such fragmentation provides a clear opportunity for progress. To take advantage of this opportunity, however, it is necessary to compare the various themes, methods of investigation, and data used in studying this topic. Only in this way will it be possible to explore this unresolved topic in sufficient depth.

References

Agrawal, A. and Tandon, K. (1994) 'Anomalies or illusions? Evidence from stock markets in eighteen countries', *Journal of International Money and Finance*, Vol. 13, No. 1, pp.83–106.

Alagidede, P. (2008) 'Day of the week seasonality in African stock markets', *Applied Financial Economics Letters*, Vol. 4, No. 2, pp.115–120.

Almudhaf, F. (2012) 'The Islamic calendar effects: evidence from twelve stock markets', *International Research Journal of Finance and Economics*, Vol. 87.

Ariel, R. (1987) 'The monthly effect in stock returns', *Journal of Financial Economics*, Vol. 18, No. 2, pp.161–174.

Ariel, R. (1990) 'High stock returns before holidays: existence and evidence on possible causes', *The Journal of Finance*, Vol. 45, No. 5, pp.1611–1626.

Arsad, Z. and Coutts, J.A. (1996) 'The weekend effect, good news, bad news and the financial times ordinary shares index: 1935–1994', *Applied Economics Letters*, Vol. 3, pp.797–801.

Athanassakos, G. and Schnabel, J.A. (1994) 'Professional portfolio managers and the January effect: theory and evidence', *Review of Financial Economics*, Vol. 4, No. 1, pp.79–91.

Balaban, E. (1995) 'Day of the week effects: new evidence from an emerging market', *Applied Economics Letters*, Vol. 2, pp.139–143.

Banz, R.W. (1981) 'The relationship between return and market value of common stocks', *Journal of Financial Economics*, Vol. 9, pp.3–18.

Barmak, S (2012) 'The Ramadan effect', *Canadian Business*, Vol. 85, No. 14, pp.62–63.

Barone, E. (1990) 'The Italian Stock Market: efficiency and calendar anomalies', *Journal of Baking & Finance*, Vol. 14, Nos. 2/3, pp.483–510.

Berument, H. and Kiymaz, H. (2003) 'The day of the week effect on stock market volatility and volume: international evidence', *Review of Financial Economics*, Vol. 12, No. 4, pp.363–380.

Bildik, R. (2004) *Are Calendar Anomalies Still Alive? Evidence from Istanbul Stock Exchange, Istanbul Stock Exchange*, Working Paper Series. Available online at: http://ssrn.com/abstract =598904

Blume, M.E. and Stambaugh, R.F. (1983) *Biases in computed returns: An application to the size effect*, Manuscript, University of Pennsylvania, Philadelphia, PA.

Brealey, R.A., Myers, S.C. and Allen, F. (2011) *Principles of Corporate Finance*, 10th ed., McGraw-Hill Irwin, New York.

Brown, P., Keim, D.B., Keleidon, A.W. and Marsh, T.A. (1983) 'Stock return seasonalities and the tax-loss-selling-hypothesis: analysis of the arguments and Australian evidence', *Journal of Financial Economics*, Vol. 12, No. 6, pp.105–127.

Cadsby, C.B. and Ratner, M. (1992) 'Turn-of-the-month and pre-holiday effects on stock returns: some international evidence', *Journal of Banking and Finance*, Vol. 16, No. 3, pp.497–509.

Cao, X., Premachandra, I.M., Bharba, G.S. and Tang, Y.P. (2009) 'Firm size and the pre-holiday effect in New Zealand', *International Research Journal of Finance and Economics*, Vol. 32, pp.171–187.

Chan, K.C., Chen, C.R. and Steiner, T.L. (2004) 'Research productivity of the finance profession in the European region', *Journal of Business Finance and Accounting*, Vol. 31, Nos. 3/4, pp.177–213.

Chinko, M. and Avci, E. (2009) 'Examining the day of the week effect in Istanbul Stock Exchange', *The International Business and Economics Research Journal*, Vol. 8, No. 11, p.45.

Clarke, J., Jandik, T. and Mandelker, G. (2001) 'The efficient market hypothesis', in Arffa, R.C. (Ed.): *Expert Financial Planning: Investment Strategies from Industry Leaders*, Wiley & Sons, New York.

Cross, F. (1973) 'The behavior of stock prices on Fridays and Mondays', *Financial Analysts Journal*, Vol. 29, pp.67–69.

Dodd, O. and Gakhovich, A. (2011) 'The holiday effect in Central and Eastern European financial markets', *Investment Management and Financial Innovations*, Vol. 8, No. 4, pp.29–35.

Ehrmann, M. and Jansen, D.J. (2012) *The pitch rather than the pit: investors inattention during FIFA world matches*. Available online at: www.ecb.europa.eu/pub/pdf/scpwps/ecbwp 1424.pdf (accessed on 10 March 2015).

Fama, E.F. (1965) 'Random walks in stock market prices', *Financial Analysts Journal*, Vol. 21, No. 5, pp.55–59.

Fama, E.F. (1991) 'Efficient capital markets: II', *The Journal of Finance*, Vol. XLVI, No. 5, pp.1575–1617.

French, K.R. (1980) 'Stock returns and the weekend effect', *Journal of Financial Economics*, Vol. 8, pp.55–70.

Gibbons, M. and Hess, P. (1981) 'Day of the week effects and asset returns', *Journal of Business*, Vol. 54, pp.579–596.

Gultekin, M.N and Gultekin, N.B. (1983) 'Stock market seasonality: international evidence', *Journal of Financial Economics*, Vol. 12, No. 4, pp.469–481.

Hawawini, G. and Keim, D.B. (1995) 'On the predictability of common stock returns: worldwide evidence', in Jarrow, R.A., Maksimovic, V. and Ziemba, W.T. (Eds): *Handbooks in Operations Research and Management Science*, Vol. 9 on Finance, North Holland, Amsterdam, pp.497–544.

Hensel, C.R. and Ziemba, W.T. (1996) 'Investment results from exploiting turn-of-the-month effects (Digest Summary)', *Journal of Portfolio Management*, Vol. 22, No. 3, pp.17–23.

Jacobs, B.I. and Levy, K.N. (1988) 'Calendar anomalies: abnormal returns and at calendar turning points', *Financial Analysis Journal*, No. 6, pp.28–39.

Jaffe, J. and Westerfield, R. (1985) 'The weekend effect in common stock returns: the international evidence', *Journal of Finance*, Vol. 40, pp.237–244.

Jaffe, J.F., Westerfield, R. and Ma, C. (1989) 'A twist on the Monday effect in stock prices: evidence from the US and foreign stock markets', *Journal of Banking and Finance*, Vol. 13, Nos. 4/5, pp.641–650.

Jain, P.C. and Joh, C.H. (1988) 'The dependence between hourly prices and trading volume', *Journal of Financial and Quantitative Analysis*, Vol. 23, No. 3, pp.269–284.

Keim, D.B. (1983) 'Size related anomalies and stock return seasonality: further empirical evidence', *Journal of Financial Economics*, March, pp.13–32.

Keim, D.B. and Stambaugh, R.F. (1984) 'A further investigation of the weekend effect in stock returns', *Journal of Finance*, Vol. 39, No. 3, pp.819–835.

Kendall, M.G. (1953) 'The analysis of economic time series, Part I. Prices', *Journal of the Royal Statistical Society*, Vol. 96, pp.11–25.

Kim, C.W. and Park, J. (1994) 'Holiday effect and stock returns: further evidence', *Journal of Financial and Quantitative Analysis*, Vol. 29, No. 1, pp.145–157.

Kiymaz, H. and Berument, H. (2003) 'The day of the week effect on stock market volatility and volume: international evidence', *Review of Financial Economics*, Vol. 12, pp.363–380.

Lakonishok, J. and Levi, M. (1982) 'Weekend effect in stock return: a note', *Journal of Finance*, Vol. 37, pp.883–889.

Lakonishok, J. and Maberly, E. (1990) 'The weekend effect: trading patterns of individual and institutional investors', *The Journal of Finance*, Vol. 45, pp.231–243.

Lakonishok, J. and Smidt, S. (1988) 'Are seasonal anomalies real? A ninety-year perspective', *The Review of Financial Studies*, Vol. 1, No. 4, pp.403–425.

Marrett, G.K. and Worthington, A.C. (2009) 'An empirical note on the holiday effect in the Australian stock market', *Applied Financial Letters*, Vol. 16, pp.1769–1772.

McConnell, J.J. and Xu, W. (2008) 'Equity returns at the turn of the month', *Financial Analysts Journal*, Vol. 64, No. 2, pp.49–64.

Meneu, V. and Pardo, A. (2004) 'Pre-holiday effect, large trades and small investor behavior', *Journal of Empirical Finance*, Vol. 11, pp.231–246.

Mylonakis, J. and Tserkezos, D. (2008) 'The January effect results in the Athens Stock Exchange (ASE)', *Global Journal of Finance and Banking Issues*, Vol. 2, No. 2, pp.44–55.

Nasir, M.A., Khan, K. and Rossi, M. (2016) 'The calendar anomalies on performance and volatility of stock market: the effects of Ramadan on Karachi Stock Exchange', *Global Business and Economics Review* (forthcoming).

Norvaisiene, R., Stankeviciene, J. and Lakstutiene, A. (2015) 'Seasonality in the Baltic Stock Markets', *Procedia – Social and Behavioral Sciences*, Vol. 213, pp.468–473.

Osborne, M.F.M. (1962) 'Periodic structure in the Brownian motion of stock returns', *Operations Research*, Vol. 10, pp.345–379.

Pettengill, G.N. (1989) 'Holiday closings and security returns', *The Journal of Financial Research*, Vol. 12, No. 1, pp.57–67.

Pettengill, G.N. and Jordan, B.D. (1988) 'A comprehensive examination of volume effects and seasonality in daily security returns', *Journal of Financial Research*, Vol. 11, No. 1, pp.57–70.

Raj, M. and Thurston, D. (1994) 'January or April? Tests of the turn-of-the-year effect in the New Zealand stock market', *Applied Economics Letters*, Vol. 1, No. 5, pp.81–83.

Reinganum, M.R. (1981) 'Misspecification of capital asset pricing: empirical anomalies based on earnings yields and market values', *Journal of Financial Economics*, Vol. 9, pp.19–46.

Rogalski, R.J. (1984) 'New findings regarding day-of-the-week returns over trading and non-trading periods: a note', *Journal of Finance*, Vol. 39, pp.1603–1614.

Roll, R. (1983) 'Vas ist das? The turn of the year effect and the return premium of small firms', *Journal of Portfolio Management*, Vol. 9, No. 1, pp.18–28.

Rossi, M. (2016) 'The capital asset pricing model: a critical literature review', *Global Business and Economics Review* (forthcoming).

Rozeff, M.S and Kinney, W.R. Jr. (1976) 'Capital market seasonality: the case of stock returns', *Journal of Financial Economics*, Vol. 3, No. 4, pp.379–402.

Steeley, J.M. (2001) 'A note on information seasonality and the disappearance of the weekend effect in the UK stock market', *Journal of Banking and Finance*, Vol. 25, pp.1941–1956.

van der Sar, N. (2003) 'Calendar effects on the Amsterdam Stock Exchange', *De economist*, Vol. 151, No. 3, pp.271–292.

Wachtel, S.B. (1942) 'Certain observations on seasonal movement in stock prices', *Journal of Business*, Vol. 15, No. 2, pp.184–193.

Wang, K., Li, Y. and Erickson, J. (1997) 'A new look at the Monday effect', *Journal of Finance*, Vol. 52, pp.2171–2186.