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Revisiting fast profit investor sentiment and stock returns during Ramadan

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ABSTRACT

Using stochastic dominance (SD) approach, this paper revisits the *Ramadan effect* in the stock returns of 15 Muslim countries and altogether as a portfolio. Our study is motivated by the preferred statistical attributes of SD analysis. Specifically, SD requires no normal distribution of returns assumption and it imposes few restrictions on investors' risk-return tradeoff preference. Our results indicate that the *Ramadan effect* exists in most of Muslim countries used in the study during the sub-periods 1996–2000 and 2001–2006 and in the portfolio during the sub-period 1995–2007. However, its magnitude diminishes during the global financial crisis period (2007–2012). The findings of this paper indicate that previous results are not an artifact deriving from violations of distributional assumptions. We conclude that risk-averse investors would benefit from increased utility by switching from non-Ramadan to Ramadan.

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1. Introduction

Many calendar anomalies have been widely documented in both mature and emerging capital markets around the world. Such studies include day-of-the-week, weekend, time-of-the-month, turn-of-the-month, month-of-the-year, turn-of-the-year, and holiday effects. Recently, researchers have examined a moving calendar anomaly based on the Islamic lunar calendar. The Islamic calendar predominantly marks the religious activities and holidays in the Muslim countries. Results have been mixed, but some have reported higher stock returns and/or lower volatility during the month of Ramadan compared to the other months.

This *Ramadan effect* refers to significantly higher stock returns during the ninth month of the Islamic calendar.¹ The finance literature contains mixed evidence that support the existence of the *Ramadan effect* in Muslim markets. For instance, Husain (1998) examines *Ramadan effect* in the Pakistani equity market and finds that a significant decline in stock returns volatility in this month although the mean return indicates no significant change. Similar to Husain's findings, Seyyed, Abraham, and Al-Hajji (2005), find no significant change in *Ramadan* mean return in

Saudi market, but they do report a noticeable decline in volatility.² Contrary to other studies, Bialkowski, Etebari, and Wisniewski (2012) find that stock returns during the month of Ramadan are significantly higher and less volatile in 11 out of 14 Muslim countries, however, Almudhaf (2012) finds evidence supporting a *Ramadan effect* in four of the 12 countries analyzed. Furthermore, using runs tests, Al-Hajieh, Redhead, and Rodgers (2011) results support a *Ramadan effect* in 6 of the 8 markets studied. Al-Ississ (2010) investigates the effect of the Muslim holy days of *Ramadan* and *Ashura* on the daily returns and trading volume of 17 Muslim financial markets over a period of 1988–2009.³ Mustafa (2011) finds that there is *Ramadan effect* in Karachi stock market.

Recently, Bialkowski, Bohl, Kaufmann, and Wisniewski (2013) investigate *Ramadan effect* in stock returns (1988–2011) and Mutual Fund (2000–2011) in Turkey. They confirm the results of previous studies and document higher returns during *Ramadan* for the Istanbul Stock Exchange. However, the effect has gradually decreased over recent years. Ramezani, Pouraghajan, and Mardani (2013) test seasonality in lunar months for Tehran stock exchange total index. Their results are inconclusive about *Ramadan effect*.

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¹ Ramadan is the most venerated month of the lunar (Hijri) calendar during which Muslims fast from dawn until sunset and gifts are shared with the poor. The 12 months derived from the lunar cycle are separated by the appearance of the new moon and the number of days in a month average between 29 and 30 days, making the Islamic year approximately 11 days shorter than the Gregorian year.

² Husain (1998) and Seyyed et al. (2005) apply GARCH model.

³ Ashura day is the 10th day of Muharram (the first month of the Islamic calendar). Since the beginning of this world, Ashura day has been a very important day. On this day great signs of Allah's power and glory have appeared in the world. On this day many Prophets were born and they were instituted to the office of prophecy. On this day, Prophets, Saints and Sincere servants of Allah were blessed with miracles and spiritual powers.

Prior research provides evidence that investor sentiment and social mood can play a vital role in the movement of stock prices. Some examples include, research by [Edmans, Garcia, and Norli \(2007\)](#) shows significant market declines after losses by national soccer teams and [Hirschleifer and Shumway \(2003\)](#) show that stock returns are positively correlated with sunshine. This line of research provides evidence that the social mood reflects the combined level of optimism or pessimism in society at a given time. This can lead to herding within these markets when investors are faced with relatively uniform set of stimuli that impact their decision making. The holy month of *Ramadan* can be identified as potentially creating such an investment environment in Muslim countries.

Ramadan is one of the most celebrated religious traditions in the world and is observed by 1.6 billion Muslims around the world.⁴ During the holy month of *Ramadan* Muslims focus on becoming more socially and spiritually oriented. As indicated by research in positive psychology, religion provides a valuable form of social support, encourages optimistic beliefs, and contributes to the believers' happiness.⁵ The main goal of this study is to test the extent and magnitude of any anomalies that may exist due to changes in sentiment and mood during the month of *Ramadan*.

No fully satisfactory explanation has been provided for this apparent violation of the trading hypothesis during Islamic calendar. In the absence of a theoretically acceptable explanation for an observed phenomenon, the question of appropriateness of research methods arises. Virtually all prior studies have employed the mean-variance (MV) criterion. This method uses parametric statistics that rely on the normality assumption, which, in reality, does not hold. In addition, MV approach depends only on the first two moments (i.e., mean and variance) of asset returns. However, it is well-known that both positive and negative skewness are present in asset returns. Thus, using MV approach will result in missing the important information contained in higher moments. The MV criterion also requires quadratic utility functions and is not appropriate if investors' utility functions are not quadratic.⁶ In the literature of *Ramadan effect*, some researchers adopt regression models or GARCH models.⁷ These models still require assumptions about the nature of the distribution, and they may suffer misspecification problems, which may well lead to spurious findings.

To address the shortcomings of the parametric approach, some studies have applied non-parametric stochastic dominance (SD) approach to examine calendar anomalies. Specifically, SD is used by [Seyhun \(1993\)](#) to evaluate the January effect, as well as [Wingender and Groff \(1989\)](#) to examine the day-of-the-week effect. [Cho, Linton, and Whang \(2007\)](#) investigate Monday effect in the US, UK and Japanese markets. [Lean, Smyth, and Wong \(2007\)](#) support the existence of weekly and monthly effects in the Asian markets. [Al-Khazali, Koumanakos, and Pyun \(2008\)](#) apply SD to examine calendar anomaly in the Greek stock market. Calendar anomalies related to the tax-loss selling hypothesis and seasonality in the Swedish equity market are tested with SD by [Dahlquist and Sellin \(1996\)](#). Also using SD, [Basdas \(2011\)](#) reports the day-of-the-week effect is limited in the Istanbul stock market. For the U.S. bond market, [Al-Khazali \(2001\)](#) shows the January effect in high-yield bonds using SD.⁸

Therefore, the purpose of this paper is to investigate empirically the existence of the *Ramadan effect* in the stock returns of 15 Muslim countries using the stochastic dominance (SD). As discussed in the above literature, there are several other methods which are used to study the

Ramadan effect. These methods and approaches focus on special cases of mean variance analysis, which are comparing expected returns or variance. Though both of these methods can shed some light on the issue, there are certain shortcomings concerning both of them.

Regarding the comparing expected returns, even though it is a very convenient and common method, one cannot reach an accurate and conclusive result due to the fact that the approach neglects certain risk factors regarding the differences in mean returns. Also, the results of any other method based on mean variance analysis are questionable because of its economical dependence on either normal returns or quadratic utility.

Furthermore, both of these hypotheses are questionable in terms of logical and empirical grounds, as it is explained in [Levy \(2006\)](#). According to Levy, the criterion of stochastic dominance is the natural economic criterion to apply to investors who follow the expected utility paradigm. In this approach, there is a hierarchy of criteria: First order dominance refers to non-satiable individuals, second order dominance refers to non-satiable and risk averse individuals, and third and higher order dominance can be defined for individuals with additional restrictions on their utility functions. In terms of financial applications most of the focus should be on the second order dominance as risk aversion seems natural.

With regards to the *Ramadan effect*, if Ramadan returns dominate returns of other months by the second order, then risk averse individual (who also aims to maximize expected utility) would prefer Ramadan returns to the other monthly returns. Consequently, it can be concluded that the second order SD is applicable to the case of Ramadan effect.

In the previous studies of the *Ramadan effect* the main area of focus is on comparing mean returns by dummy regression analysis. However, given the considerable evidence of non-normality of stock returns, relying purely on these analyses to assess investment strategies may not be accurate and reliable. This is because the differences in expected returns can be due to differences in the investment's risk which the comparing mean returns does not take into consideration. This view was taken by [Seyhun \(1993\)](#) in his studies of the January effect. He argues that the SD approach provides a clearer test of the market efficiency hypothesis by taking account of omitted risk factors. Therefore, we believe that, based on the SD criterion, our general notion of the *Ramadan effect* is more powerful than the ones studied and presented previously.

The purpose of our study is to contribute to the growing body of literature on *Ramadan effect* in the following ways: This study is the first to use SD analysis to investigate *Ramadan effect* in the stock returns of 15 Muslim countries and in a portfolio. As discussed in [Section 4](#), SD offers analytical advantages over parametric mean-risk models prominent in the literature. Second, it extends previous studies by including most recent time frame. Finally, to capture structural changes and the impact of financial crises, we divided the study period to multiple sub-periods.⁹ Our results indicate that the *Ramadan effect* exists in most Muslim countries used in the study and in the portfolio, but it varies over different sub-periods. Results indicate that the *Ramadan effect* is noticeable and that previous findings are not an artifact deriving from violations of distributional assumptions. However, its magnitude diminishes over the last sub-period (2007–2012). We conclude that, although, Ramadan does not significantly outperform non-Ramadan from a wealth perspective, but risk-averse investors would benefit from increased utility by switching from non-Ramadan to Ramadan.

The existence of *Ramadan effect* has numerous implications. Since the efficiency of stock market is very important to the capital allocation decision making process, and enhancing the role of stock market in economic development process, the findings of this study have useful implications for individual and institutional investors, as well as policy makers in the Muslim countries. Furthermore, anomalies are a boon to both practitioners and academics. To practitioners the anomalies offer exploitable profits, and to academics the anomalies undermine one of their basic tenets, the efficient market hypothesis. If *Ramadan effect* exist, the

⁴ Thomson Reuters (2013) report that the Islamic economies of the world represent more than \$8 trillion in GDP and a 1.6 billion population growing at twice the rate of the global population.

⁵ For more discussion please review [Beit-Hallahmi and Argyle \(1997\)](#).

⁶ See [Feldstein \(1969\)](#) and [Meyer, Li, and Rose \(2005\)](#).

⁷ Please review [Almudhaf \(2012\)](#), [Bialkowski et al. \(2012\)](#), [Mustafa \(2011\)](#), [Seyyed et al. \(2005\)](#) and [Ramezani et al. \(2013\)](#).

⁸ SD has also been applied to examine the effects of seasonality in derivative markets as well as the efficiency of portfolio diversification. [Brooks, Levy, and Yoder \(1987\)](#) use SD for the evaluation of portfolios investment with options and [Fischmar and Peters \(1991\)](#) employ SD to construct an efficient frontier.

⁹ Such as, Asian crisis in 1997/1998 and world financial crisis 2007/2008.

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