



## Fast profits: Investor sentiment and stock returns during Ramadan

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### ABSTRACT

Observed by more than 1.5 billion Muslims, Ramadan is one of the most celebrated religious traditions in the world. We investigate stock returns during Ramadan for 14 predominantly Muslim countries over the years 1989–2007. The results show that stock returns during Ramadan are significantly higher and less volatile than during the rest of the year. No discernible declines in market liquidity are recorded. We find these results consistent with a notion that Ramadan positively affects investor psychology, as it promotes feelings of solidarity and social identity among Muslims world-wide, leading to optimistic beliefs that extend to investment decisions.

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### 1. Introduction

A growing body of recent research shows that security returns respond to variables related to factors such as the weather, biorhythms, beliefs, and social identity.<sup>1</sup> For instance, Hirschleifer and Shumway (2003) find that daily stock returns are significantly correlated with sunshine. Dowling and Lucey (2005) and Kamstra et al. (2000) present international evidence that seasonal variations in biorhythms and disruptions in sleep caused by changing to and from daylight saving time affect stock returns. Finally, Edmans et al. (2007) investigate the impact of international soccer results and find a significant market declines after losses by national soccer teams in international competitions.

These studies are motivated by a set of recent theories that focus on the effects of emotions and feelings on people's judgments and decision making.<sup>2</sup> For example, Loewenstein et al. (2001) "risk-as-feelings" theory posits that people's feelings and emotions often influence their decisions, especially when such decisions involve risk

and uncertainty. According to this theory both emotional reactions and cognitive evaluations guide reasoning, but when they diverge, emotional reactions often dominate behavior and influence the eventual decision (Simon, 1967; Loewenstein et al., 2001). In line with the findings that people in good moods tend to be more optimistic in their judgments than those in bad moods (Wright and Bower, 1992), these studies demonstrate that market prices can be influenced by changes in investors' emotional state even when the underlying events are economically neutral from a direct cost-benefit perspective.

In this paper we examine whether a religious practice can, through its influence on investors' psychology, affect the behavior of the market. The important role played by religion has been highlighted in several earlier studies. Weber (1905) argue that Protestantism fueled the development of early capitalism. Stulz and Williamson (2003) document empirically that religion has the power to explain the cross-country variation in creditor rights and the level of enforcement. The existing literature also acknowledges that religiosity, social interactions and social norms can influence investment decisions of individuals and financial institutions, as well as corporate decision-making in general (Duflo and Saez, 2002; Hong et al., 2004; Brown and Taylor, 2010; Hong and Kacperczyk, 2009; Hilary and Hui, 2009). We endeavor to add to the existing body of knowledge by focusing on the stock markets in countries where religion is an integral part of everyday life and determines much of the

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<sup>1</sup> For a comprehensive review of the theory and evidence on this line of research, see Hirschleifer (2001), and Lucey and Dowling (2005).

<sup>2</sup> The impact of investors' mood on their actions is of great interest to researchers in Behavioral Finance. The survey by Subrahmanyam (2007) reviews the developments in this field over the past two decades.

interaction within the society. Specifically, we examine the stock market effects of Ramadan for nations where the majority of the population are adherents of Islam.

Observed by more than 1.5 billion Muslims, Ramadan is one of the most celebrated religious traditions in the world. It involves abstinence from eating, drinking and other sensual pleasures, as well as strict control of desires. In principle, Ramadan is a time of reflection, self-reformation, giving and worship (Qur'an 51:21; 2:183). As a fundamental, shared experience, it brings about a greater solidarity and cooperation among Muslims throughout the world. A major contributor to this effect is the greater social support provided within the community and also the closer relationship an individual Muslim establishes with Allah, which in itself is a critical form of social relation. During the holy month Muslims become 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 (Beit-Hallahmi and Argyle, 1997). The collective enthusiasm derived from Ramadan leads to a heightened sense of social identity and greater satisfaction with life for Muslims around the world. This satisfaction, in turn, may conceivably lead to optimistic beliefs that extend to the investment decisions of the followers.

The process of Ramadan-type fasting itself can substantially benefit the health of the devotee. As mentioned in the Qur'an and also supported by clinical research, it can promote both the physical and mental well-being of individuals (Böck et al., 1978; Perk et al., 2001; Saleh et al., 2005). Clinical research shows that the Ramadan fasting generally makes people less tense and anxious (Daradkeh, 1992) and that it may also induce mild states of euphoria (Knerr and Pearl, 2008). The euphoria derived from Ramadan could influence investor behavior and consequently have a positive valuation effect on equity markets in Islamic countries. Mood aside, the demand for equities may also increase as a result of the favorable health status enjoyed by the local Muslim investors. Rosen and Wu (2004) report that households in good health are inclined to hold a greater share of risky assets in their portfolios. Similarly, Edwards (2008) finds that retired people perceive significant risks associated with future health shocks and that these perceptions lead to a continued reduction in financial risk taking. In light of the foregoing discussion, we would expect the Ramadan period to coincide with notable increases in the prices of risky securities.

This study is a comprehensive examination of stock returns for a broad sample of 129 Ramadan months for 14 predominantly Muslim countries over the period running from 1989 to 2007. The results show that during Ramadan stock returns are on average much higher but less volatile compared to the rest of the year. The results also attest to the fact that there are no discernible declines in market liquidity during Ramadan. We find these results consistent with our prior expectation that Ramadan has a positive impact on the mood and hence on investors' sentiment. Interestingly, stock markets located in countries populated by non-Muslim majority do not experience similar price effects during the holy month. We also show that the results are unrelated to well-documented calendar anomalies such as the "January effect" or the "Turn-of-the-Week effect". This is perhaps not surprising, as Ramadan does not coincide systematically with a fixed day or season in the Gregorian calendar.

The remainder of this paper is organized as follows: Section 2 presents a discussion of the literature on the health benefits resulting from fasting and the evidence of the market effects of religious festivities. Section 3 outlines the data set and the data collection procedures. Section 4 discusses the results, while Section 5 examines the robustness of these results. The last section concludes the paper.

## 2. Related studies of fasting and religious festivities

This section consists of two parts. The first part is a review of the clinical research into the health effects of fasting. In the second part, we review the evidence on the effects of Ramadan on the Islamic stock markets, as well as the effects of other holidays on markets elsewhere around the world.

### 2.1. The Ramadan fast and its health benefits

Abstaining from ingesting food and liquids between sunrise and sunset is an integral part of Ramadan. With a "suhoor" pre-dawn meal and an "iftar" supper the consumption becomes entirely nocturnal. The Ramadan-type fasting<sup>3</sup> can have a wide range of beneficial effects for health. Although in the initial stage of fasting individuals may experience a feeling of discomfort, this symptom typically abates after the second day of the fast. Proponents of natural medicine argue that it arises as a by-product of the detoxification process, in which the toxins previously stored in fatty tissues are expelled from the body (Fuhrman, 1998). Fasting also provides a respite to the digestive tract and allows for the elimination of superfluous tissue. A number of clinical studies have reported a reduction of body weight and waist circumference in subjects under controlled fasting conditions (Böck et al., 1978; Perk et al., 2001; Saleh et al., 2005; Bouhleb et al., 2008). The ramifications of this observation for the cardiovascular system and oxygenation are immense. Moreover, Saleh et al. (2005) report a significant reduction in total cholesterol and LDL-cholesterol in male subjects, as well as a decrease in the atherogenic index for the whole sample during the fast of Ramadan.

Periodic food deprivation can also alleviate the symptoms of psychosomatic and mental diseases, as well as reduce the tension and anxiety of patients (see Yamamoto et al., 1979; Yamamoto, 1980). In view of these findings, it is perhaps unsurprising that the number of reported suicide attempts drops during the month of Ramadan (Daradkeh, 1992). Furthermore, many of those who fast tend to experience mild states of euphoria. As the human body enters into a fasting mode, its stores of glucose are progressively used up. Ketone bodies produced in the liver start to supplant glucose as an energy source for the brain (Knerr and Pearl, 2008). Interestingly, one of the ketone bodies,  $\beta$ -hydroxybutyrate, is an isomer of GHB ( $\gamma$ -hydroxybutyrate), which is known to the medical profession as an antidepressant and is also used illegally by some people as a mood-enhancing drug. Noting the structural similarities between the abovementioned ketone body and GHB, Brown (2007) hypothesizes that they may have comparable effects on the brain, which would explain the diet-induced euphoria.

### 2.2. Previous studies of religious festivities

Numerous studies have examined security returns for the presence of recurring seasonal patterns in the Gregorian calendar. Among other findings, these studies report persistent anomalous returns around the turn of the week, the turn of the month, and the turn of the year (for example, see Lakonishok and Smidt, 1988). However, there are only a few studies that investigate the market effects of non-secular festivities such as Ramadan. In this section we present a brief overview of the more relevant research.

Seyyed et al. (2005) examine the behavior of the Saudi Arabian stock market in Ramadan during the period of 1985–2000. They find no significant change in mean return but a noticeable decline

<sup>3</sup> The term "fasting", as used in this paper, describes a fasting-refeeding cycle with two meals being consumed daily. Under no circumstances do we try to claim that total abstinence from food leads to health improvements in the long-run, nor that it should be recommended as a treatment for serious medical conditions.

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