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### The short trading day anomaly

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#### 1. Introduction

#### ABSTRACT

The psychological literature indicates that people's mood affects their choices and judgments. We find that short trading days around holidays on the Tel Aviv Stock Exchange are accompanied by positive abnormal returns and reduced volatility in returns. This anomaly is evident in the main stock indices, as well as most of the economic sector indices. The anomaly seems to be size related, with small and mid-cap indices producing abnormal returns. In addition, the volatility index (VIX) during short trading days tends to be lower than on normal trading days. Our findings suggest that investors can benefit from using two simple trading strategies. © 2016 Elsevier B.V. All rights reserved.

Calendar anomalies have been examined in various financial markets and detected in the prices of equities, bonds and currencies. Prior studies have documented seasonal anomalies in developed, as well as in emerging, markets (see e.g., Coutts et al., 2000; Bialkowski et al., 2012). While classical economic analysis, based on the common assumption of rationality, has neglected the consideration of psychological factors in asset pricing, a growing body of financial research challenges the conventional perspective. Indeed, accumulating evidence links the mood of investors and the returns on securities. Several proxies such as weather (e.g. Saunders, 1993; Hirshleifer and Shumway, 2003; Kliger and Levy, 2003a, 2003b, 2008; Cao and Wei, 2005), seasonal biorhythms (e.g. Kamstra et al., 2000; Kamstra et al., 2003; Kliger et al., 2012; Kliger and Kudryavtsev, 2013a), and even folklore beliefs (e.g., Kolb and Rodriguez, 1987; Lucey, 2001) have been employed to capture investors' mood. These studies establish that investors' mood affects their judgment and consequently, their preferences, risk assessments, rational considerations and, ultimately, investment decisions.

We investigate a unique phenomenon in the Tel Aviv Stock Exchange (TASE). During the intermediate days of two major Jewish holidays, Passover (six days) and Sukkot (seven days), the TASE ends its daily trading at 2:25 PM, a significantly shorter trading period than that on other business days throughout the year.<sup>1</sup>

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<sup>&</sup>lt;sup>1</sup> The regular trading day hours on the TASE have varied slightly over the years. For example, from January 2000 to October 2, 2005 the trading day ran until 5:00 PM. Subsequently, until December 31, 2008, trading was extended to 5:30 PM. Beginning on January 1, 2009, it was cut back to 4:30 PM, but in June 2013 trading was extended again till 5:30 PM.



Fig. 1. Accumulated average returns of the leading stock indices around STDs during Passover.

During short trading days (STDs) only official institutions such as public schools, universities, courts, and municipal authorities are on holiday. The private sector generally functions normally, although several institutions such as banks and post offices work until 12:00 or 1:00 PM. The trading volume during STDs is lower by 26% on average. Such a decline in trading volume is also evident on days adjacent to major holidays in the U.S. (see e.g., Chordia et al., 2001).

We find that the mean return on STDs is larger than on normal trading days (NTDs). For equities, the detected daily difference averages 0.36%, and is positive and significant at all market capitalization levels. The difference is also evident in bond returns, mainly corporate bonds, to the extent of 0.08%. In addition, the anomaly is also manifested in various economic sectors. The largest difference occurs in the finance and technology sectors, with daily mean return differences of 0.483% and 0.480%, respectively, and the smallest, yet still positive (0.295%), in the trade and service sector. As with many other calendar anomalies, the STD anomaly is, to some extent, negatively correlated with market capitalization. Figs. 1 and 2 illustrate the overall picture.

We also analyzed the implied volatility index (VIX)<sup>2</sup> in the TASE and found that it is significantly lower during STDs compared to NTDs just before the holiday periods (see Fig. 3). Our findings challenge the weak form of the efficient market hypothesis and call for a convincing explanation.

Given that the literature has established that mood affects investors' attitudes toward risks, we argue that the high returns observed on STDs may be related to investor mood. Specifically, the short trading day and the jovial atmosphere of the holidays may affect investors' level of risk aversion, resulting in higher returns and a decline in the VIX.

STDs are also used on the stock exchanges in the U.S. (NYSE, NYSE AMEX and NASDAQ), but in a way that does not allow us to distinguish their impact from the effect of the holidays because of the proximity of the closing to the holiday. For example, trading stops at 1:00 PM on the last trading day before Independence Day and Christmas, and on the day after Thanksgiving Day.<sup>3</sup> Inevitably, previous literature has considered them part of the holiday period.

Fields (1934) provides the seminal documentation that stock returns are higher on days preceding the closing of the market for secular and religious holidays. A few studies have investigated non-official and single-day holidays that occur when capital markets are open. Frieder and Subrahmanyam (2004) explore NYSE stock prices around three holidays: St. Patrick's Day (a Catholic holiday), the Jewish New Year (Rosh Hashanah) and Yom Kippur, which occurs nine days after Rosh Hashanah. They observe that investors exit the market for the two Jewish holidays, resulting in a substantial decline in the trading volume on the NYSE. Furthermore, Loughran and Schultz (2004) find that trading volume in stocks whose companies are headquartered in cities with large Jewish population drops on Yom Kippur. Nevertheless, neither of these studies considers the holidays tested in this study, because they are observed over a period of several days.

This paper considers a different, if somewhat related, question and focuses on the link between market performance and the duration of the trading day. As far as we know, the issue of short trading days and its impact on the security markets has not been investigated yet. Our goal is to fill the gap in the literature on this issue.

The rest of the paper is organized as follows. Section 2 reviews the literature, Section 3 details the scientific background, Section 4 presents the hypotheses, Section 5 outlines the method and describes the data, Section 6 discusses the results and suggests profitable trading strategies, and Section 7 concludes.

#### 2. Literature review

The literature in psychology and economics has established that mood affects investors' judgment and behavior. As Camerer et al. (2005) point out, we are only beginning to understand the role of affective processes in decision-making. Emotional states have a crucial, collaborative role, in concert with cognitive deliberations, in determining behavior. Damasio (1994) provides evidence that individuals with affective impairments (e.g., autistic tendencies) tend to have difficulties in decision-making and,

<sup>&</sup>lt;sup>2</sup> The VIX of the Tel Aviv Stock Exchange (TASE) is calculated similarly to that published by the CBOE. We further elaborate on the Tel Aviv VIX in Section 5.1.

<sup>&</sup>lt;sup>3</sup> https://www.nyse.com/markets/hours-calendars

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