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Eid Mawlid al-Nabi, Eid al-Fitr and Eid al-Adha; optimism and impact on analysts' recommendations: Evidence From MENA region

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Review article

Eid Mawlid al-Nabi, Eid al-Fitr and Eid al-Adha; optimism and impact on analysts' recommendations: Evidence From MENA region

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ABSTRACT

This study investigates holidays' effect in analyst recommendations in the MENA countries stock markets between 2004 and 2015. The findings show that on Pre-Holidays, analysts tend to issue pessimistic recommendations, and issue optimistic recommendations on Post-Holidays. Prior literature on day-of-the-week effect is endorse our results, which document an increase in stock prices during the week, and a decrease in stock prices over the weekend. We argue that analysts can benefit from the upward trend in stock prices during Post-Holidays by issuing optimistic recommendation. Analysts may as well benefit from the downward trend in stock prices by issuing pessimistic recommendations on Pre-Holidays.
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1. Introduction

Religious values and practices have a significant effect on economic growth (Barro & McCleary, 2003). Muslim holidays are particularly useful to appreciate the holiday effect. For example, the study reveals a positive change in stock returns during Ramadan. In Muslim countries, religion is a vital concern in people's lives, so this paper capitalizes on holy Muslim events. It focuses on how the underlying mechanisms behind the holiday effect can influence the stock market as well as analysts' recommendations. Its interest and originality resides in providing noteworthy results on the potential link between religious holidays and analyst recommendations in the stock markets of the MENA region.

According to a study conducted in the U.S on Health and Retirement, people who visit families and neighbors or go to church are more likely to invest in stocks (Hong, Kubik, & Stein, 2004). Same findings have been determined using a British panel survey. Also, studies have been done with respect to the Jewish events, and a study shows that after St. Patrick's and Rosh Hashanah there are positive returns, but returns turn negative after Yom Kippur (Yaktrakis & Williams, 2010). Another research conducted on lunar months, such as Ramadan and Shawal, and their effect on the Tehran stock market reveal a positive relationship (Ramezani, 2013). Following the same logic, we could claim that during these events, social interactions lead to a positive impact on the activities of the stock market. What about during Muslim festivities? There are several universal Muslim holidays in the Arabic world, but in this paper, we will mainly focus on Eid Mawlid al-Nabi, Eid al-Fitr and Eid al-Adha.

Several papers have investigated types of behavioral biases in analyst recommendations (Grossman & Stiglitz, 1980; Hong, Kubik, & Solomon, 2000; Hong & Kubik, 2003; Trueman, 1994; Welch, 2000). Some showed that analysts tend to issue more optimistic recommendations, mainly in emerging markets (Lin & McNichols, 1998). The same had been investigated by Satt (2015) addressing that average analyst recommendation is close to a "Buy" recommendation. Related studies show that analysts are hesitant about issuing negative recommendations since "Sell" or "Underperform" recommendation sum a total of less than 5 percent of all recommendations issued.

Another research shows that more than half of the recommendations issued are favorable, and that unfavorable ones only make up less than 15 percent of all recommendations issued in G7 countries (Jegadeesh & Kim, 2006; Satt, 2016a, 2016b, 2016c). Many regulators and financial economists claim that an analyst's career improvement has little to do with predicting accurately. As a matter of fact, they report that analysts' recommendations are optimistically biased (Abarbanell, 1991; Brown, Foster, & Noreen, 1985; Chopra, 1998; Dreman & Berry, 1995; Stickel, 1990).

There obviously are reasons for these inflated number of optimistic recommendations. These reasons are associated with the work environment. As shown in a study, analysts who are optimistic relative to the norms are less likely to experience unfavorable job separations. It also revealed that brokerage houses reward analysts who are optimistic and who generate investment banking business and trading commissions (Hong, Kubik, & Stein, 2005). The same study shows that analysts who issue a large fraction of optimistic forecasts on the stocks that they follow are 90 percent more likely to move up the hierarchy. In order to understand whether the optimism bias is based on conflicts of interest or other justifications like cognitive bias, a survey was carried by Michaely and Womack (1999). The answers favored the conflicts of interest explanation. Therefore, this paper argues that interaction between the need to generate brokerage commissions and accuracy concerns may result in a situation where analysts are tempted to issue relatively more favorable (optimistic) recommendations on post-holidays and relatively less favorable (pessimistic) recommendations on pre-holidays. This situation is known as the Holidays Effect in analyst recommendations. We relied on prior literature on the day-of-the-week effect in return to state that the Holidays Effect can also exist in analyst recommendations (Barone, 1990; French, 1980; Lakonishok & Smidt, 1988; Solnik & Bousquet, 1990). According to it, stock returns tend to be relatively low on Post-Holidays, and relatively high on Pre-Holidays. The day-of-the-week effect in returns also suggests that stock returns are relatively high during the week and tend to decrease during weekends. We affirm that returns are the lowest on Post-Holidays and the highest during the Pre-Holidays. If the statement holds, analysts may be encouraged to issue more favorable recommendations on Post-Holidays because it will relief the pressures from employers concerning the issuance of optimistic recommendations. On the second hand, analysts may also benefit from the movement in stock prices based on their recommendations since it is proven in a study that analysts' recommendations influence stock prices (Loh & Stulz, 2011). Since the Holidays Effect indicates an increase in stock prices during the week of holidays, analysts can issue pessimistic recommendations

during Pre-Holidays to better optimize between pressure to generate brokerage commissions and their reputational concerns. Since there is a downward trend in stock prices over the week of holidays, according to the Holidays Effect, if pessimistic recommendation are issued on Post-Holidays their performance may improve.

This paper asserts that there is an impact of holiday's effect on analyst recommendations. Adopting analyst recommendation data from ten MENA stock markets (Morocco, United Arab Emirates, Saudi Arabia, Jordan, Kuwait, Lebanon, Qatar, Algeria, Bahrain and Jordan) during the period between 2004 and 2015, we could reveal that on Post-Holidays (two days after), analysts issue excessively optimistic recommendations, while on Pre-Holidays (two days before), analysts issue excessively pessimistic recommendation.

After controlling for several firm specific characteristics, these findings are quite vigorous to alternate measure of optimism. We showed that the tendency of analysts issuing a "Strong Buy" or a "Buy" recommendation is higher on Pre-Holidays period, and again the tendency of analysts issuing an "Underperform" or "Sell" recommendation tend to be higher on Post-Holidays. Our results further show that firms with higher information uncertainty enhances the holiday's effect. We argue that whenever information uncertainty is high, reputational concerns for analysts gets lower. By the same token, it is somewhat easier for the analysts to issue optimistically biased recommendations for firms with increased level of information uncertainty. Throughout the paper, we also argue that the Holidays Effect is more prevalent among less experienced analysts. There is more pressure for these analysts from their employers. In consequence, there is a higher likelihood that they will issue optimistic recommendations. On the other hand, advanced analysts are less likely to issue optimistic recommendations as they are more skilled, they have wider networks and have more expertise. The effect of Muslim holidays on analysts recommendations is a theme that has not been much explored, so we would like to mention that to the best of our knowledge, this is the first evidence regarding the theme.

2. The Muslim holidays

The Islamic calendar is used in Muslim countries and by Muslims worldwide to date events and holidays. It is a lunar calendar composed of twelve lunar months a year (Lee & Hamzah, 2010). The Gregorian calendar does not include Muslim events because they depend on the sighting of the moon, and therefore changes day and month in Gregorian calendar over years (Chowdhury & Mostari, 2015).

The lunar Hijrah calendar begins with Muharram which is a holy month for Muslims, but only the 10th day (Ashura) is the most sanctified among its days (Satt, 2016a, 2016b, 2016c).

One of the most influential events in the Islamic calendar is Eid al-Adha, it is a sacrifice feast which falls on the 10th day of Dhu al-Hijjah. It is the second Eid celebrated worldwide, and is considered to be the holiest. It celebrates the readiness of Ibrahim (Abraham) to sacrifice his son as a compliance to God's command, before God intervened by sending his angel Jibrail (Gabriel) and communicate that the sacrifice was already accepted. During this period people tend to spend great amount of money relative to other months, so it is curious to study the behavior of trading activities in such situations (Chowdhury & Mostari, 2015).

Ramadan is the 9th month in the Hijri calendar. The date is also revealed by monitoring the moon movements. It is one of the most celebrated worldwide among Muslims (Bialkowski, Etebari, & Wisniewski, 2010). The month of Ramadan is perceived by Muslims throughout the world as a month of fasting to honor the first revelation of the Quran to Muhamad based on Islamic belief.

During this holy month of Ramadan people experience a series of emotion; although fasting promotes patience, devotion and worship, it also intensify emotions and senses. Theoretically, Ramadan can impact financial markets due to its effect on investors' reasoning.

Eid al-Fitr is an event that points the end of Ramadan. It falls on Shawwal which is the month that follows the month of Ramadan on the Islamic calendar. The event represents the breaking of fasting month. It is well known for giving charity to needy people, family and friends gathering, and celebrating the accomplishment of the previous month (Al-Hajieh, Redhead, & Rodgers, 2011). Eid Mawlid al-Nabi is the date that marks the birth of the Prophet Muhammad which is celebrated on Rabi al-awwal, the third month in the Islamic calendar, specifically the 12th day of that month.

3. Data analysis

This study attempts to investigate the Holydays Effect on analyst recommendations. For our analysis, we will be using firms in the MENA region (Morocco, United Arab Emirates, Saudi Arabia, Jordan, Kuwait, Lebanon, Qatar, Algeria, Bahrain and Jordan) throughout the period between 2004 and 2015. Even if we can find cultural variations between these countries, we still have a homogeneous sample since they still are predominantly Muslim countries that celebrate the same holidays. We chose Eid Mawlid al-Nabi as well as Eid al-Fitr and Eid al-Adha, the two major holidays celebrated by all Muslims (Gulevich, 2004). Eid Mawlid al-Nabi is celebrated in almost all Muslim countries, except Saudi Arabia and Qatar, but still testifies the presence of the Holidays Effect. The data will be discussed more in the following sub sections.

3.1. *Analyst recommendations*

I/B/E/S International history recommendation is a database from where investors can obtain different recommendations and estimations from different analysts. We also used this system to gather data about analyst recommendations. I/B/E/S has its own 5-point rating system coded as follow: 1=Strong Buy, 2=Buy, 3=Hold, 4=Underperform, 5=Sell. The system converts the original

Table 1 – Descriptive statistics for analyst recommendations.

Country	Strong buy	Buy	Hold	Underperform	Sell	Total
Morocco	686	1217	1639	681	169	4393
	(15.63%)	(27.71%)	(37.30%)	(15.51%)	(3.86%)	(100.00%)
Saudi Arabia	443	455	656	32	233	1820
	(24.37%)	(25.02%)	(36.02%)	(1.77%)	(12.83%)	(100.00%)
Jordan	675	1221	467	87	1126	3576
Kuwait	222	443	223	134	112	1134
	(19.58%)	(39.07%)	(19.66%)	(11.82%)	(9.88%)	100.00%
United Arab Emirates	1233	1124	543	984	847	4731
	(26.06%)	(23.76%)	(11.48%)	(20.80%)	(17.90%)	100.00%
Qatar	983	776	843	633	189	3424
	(28.71%)	(22.66%)	(24.62%)	(18.49%)	(5.52%)	100.00%
Lebanon	198	244	212	190	113	957
	(20.69%)	(25.50%)	(22.15%)	(19.85%)	(11.81%)	100.00%
Algeria	234	211	109	78	88	720
	(32.50%)	(29.31%)	(15.14%)	(10.83%)	(12.22%)	100.00%
Jordan	89	142	98	78	26	433
	(20.55%)	(32.79%)	(22.63%)	(18.01%)	(6.00%)	100.00%
Bahrain	234	115	178	89	19	635
	(36.85%)	(18.11%)	(28.03%)	(14.02%)	(2.99%)	100.00%

Following table documents the number and percentage of each type of recommendation. The sample period is between 2004 and 2015. The sample consists of firms listed in (Morocco, United Arab Emirates, Saudi Arabia, Jordan, Kuwait, Lebanon, Qatar, Algeria, Bahrain and Jordan).

text recommendations to one of the scores listed above. The sample used in our study includes three events: Eid al-Fitr, Eid al-Adha and Eid-al Mawlid. We gathered data for five trading days chosen as follows: two trading days before the event, the day of the event, and two days after the event. Table 1 shows the descriptive statistics for analyst recommendations. Our findings are consistent with prior literature showing that analysts issue fewer pessimistic recommendations (Jegadeesh & Kim, 2006). In our sample, we observed that 20% of recommendations are "Underperform" or "Sell" and by far 45% of recommendations are "Strong Buy" or "Buy". According to a study, downgrades lower analyst recommendations and their commissions; therefore, analysts tend to avoid issuing downgrade recommendations (Satt, 2015). Conflict of interests being the pressure that analysts face into generating brokerage commissions resulted in a significant disparity existing between the percentage of optimistic recommendations being the Strong Buy and Buy and the pessimistic recommendations being Underperform and Sell (Barber, Lehavy, & Trueman, 2007; Lin & McNichols, 1998).

3.2. *Recommendation optimism*

Optimism is the tendency to expect the most favorable results and to focus on the most favorable side of an event. In our research, optimism is defined as the difference between the current analyst's recommendation and the previous' month consensus recommendation (Farooq & Taouss, 2012; Lai & Teo, 2008). We consider the consensus recommendation as the average of all outstanding recommendations. It is calculated for firms with a minimum of five outstanding recommendations. When measuring the optimism variable, the lower is the value the higher is the optimism. Table 2 represents the descriptive statistics that shows the recommendation optimism. As predicted, the findings reveal that, on Post-Holidays, the recommendations issued have the highest optimism, while on Pre-Holidays, the recommendations issued has the least optimism. We note that on Post-Holidays, the mean and median values of optimism are the lowest; while we report the highest values on Pre-Holidays. A first illustration of day-of-the-week may be suggested on the Table 2.

3.3. *Control variables*

The control variables used in this paper are presented as following:

- **SIZE:** We use the log of market capitalization on the day of recommendation to illustrate SIZE. A study done by Lai and Teo (2008) shows that size has a moderate effect on recommendation optimism. Data for SIZE is gathered from the Datastream.
- **LEVERAGE:** is the total debt to total asset ratio. Firms are exposed to distress risk due to the high degree of leverage; therefore, it may have an effect on recommendation optimism. The data for LEVERAGE is gathered from the Worldscope.
- **EPS:** are the earnings per share. Higher earnings attract stock market participants. We argue that higher earnings may lead to higher optimism in recommendations. Data for EPS is obtained from the Worldscope.
- **GROWTH:** We define GROWTH as growth in firm's assets. We argue that firms with high growth attract investors. Greater visibility among investors may induce analysts to issue optimistic recommendations. Data for GROWTH is obtained from the Worldscope.

Table 2 – Descriptive statistics for optimism.

Statistics	J−2	J−1	Holiday	J+1	J+2
Mean	0.1445	0.1357	0.1130	0.1315	0.1031
Median	0.1300	0.0999	0.100	0.1333	0.0833
Standard deviation	1.3336	1.7693	1.5777	1.1900	1.1133
Total recommendations	10331	7333	6333	5333	6333

Following table documents the descriptive statistics for optimism during our sample period on each day. Optimism is the difference between analyst recommendation and last month's consensus recommendation. The sample period is between 2004 and 2015. The sample consists of firms listed in Morocco, Saudi Arabia, Jordan, Kuwait, United Arab Emirates, Qatar, Lebanon, Algeria, Jordan, and Bahrain.

- **ANALYST:** We define ANALYST as the total number of analysts issuing recommendations for a firm during the year. Lai and Teo (2008) show that the extent of analyst coverage has a moderating effect on recommendation optimism. Data for ANALYST is obtained from the I/B/E/S.
- **EXPERIENCE:** This paper defines EXPERIENCE as the number of years since analyst first appeared in the I/B/E/S database. We argue that higher experience may make analysts more independent, thereby reducing recommendation optimism. Data for EXPERIENCE is obtained from the I/B/E/S.
- **STD:** We define STD as the dispersion in analyst recommendations. Higher dispersion is associated with higher information uncertainty. Ackert and Athanassakos (1997) argue that analysts tend to be more biased whenever information uncertainty is high. Data for STD is obtained from the I/B/E/S.

3.4. *Methodology*

3.4.1. *Univariate analysis*

This section will investigate the effect of the day-of-the-week on analyst recommendations. The treatment consists in selecting different days of the week and check the state of optimism in every day. Therefore, we want to appreciate the relationship between the selected day of the week and the optimism of the analyst. There is only one response variable (optimism) per observation (days). This is why it would be suitable to use a univariate analysis. Optimism was defined in the previous section as the difference between the analyst's recommendation and the previous' month consensus recommendation. To be more specific, we intend to exhibit whether analysts issue more or less optimistic recommendations on some specific days. Table 3 shows whether there is a difference in average recommendation optimism (Panel A) and median recommendation optimism (Panel B) using different days of the week. Our findings reveal that on Pre-holiday, average and median recommendation optimism are significantly less than recommendation optimism on other days. As an instance, we show that the difference between average (median) recommendation optimism on Post-holiday and average (median) recommendation optimism on Pre-holidays is 0.0440 (0.0550). We also report from Table 3, panel A, that on Post-Holidays, average recommendation optimism is significantly more than average recommendation optimism on other days. As an instance, we show that the difference between average recommendation

Table 3 – Difference between optimism.

Panel A: Difference between average optimism

Days	J−2	J−1	Holiday	J+1	J+2
J−2	–				
J−1	−0.024***	–			
Holiday	−0.0122	0.0804	–		
J+1	−0.044***	−0.0022	−0.0008	–	
J+2	−0.088***	−0.0208**	−0.0022***	−0.0442**	–

Panel B: Difference between median optimism

Days	J−2	J−1	Holiday	J+1	J+2
J−2	–				
J−1	−0.044***	–			
Holiday	−0.040*	−0.0288**	–		
J+1	−0.0888	−0.240	−0.244	–	
J+2	−0.088***	−0.020***	−0.048***	−0.088**	–

Following table documents the difference between optimism on different days. Optimism is the difference between analyst recommendation and last month's consensus recommendation. Panel A document differences in average optimism and Panel B documents differences in median optimism. The sample period is between 2004 and 2015. The sample consists of firms listed in Morocco, Saudi Arabia, Jordan, Kuwait, United Arab Emirates, Qatar, Lebanon, Algeria, Jordan, and Bahrain. 1% significance is represented by ***, 5% significance by **, and 10% significance by *.

optimism on Post-holidays and average recommendation optimism on Thursdays is 0.0236. Our findings reveal that on other days – Tuesdays, Wednesdays, and Thursdays, there is no significant difference on average recommendation optimism.

3.4.2. *Multivariate analysis*

Our hypothesis indicates that day-of-the-effect exists in analyst recommendations. For us to test the theory, we assess a regression with (OPT) as the dependent variable being the optimism of analysts, and four other dummy variables which will represent the different days of the week.

- If the recommendation is issued on Post-Holidays, POST-HOLIDAYS receives the value of 1, otherwise it is attributed the value of 0.
- If the recommendation is issued on Tuesday, TUESDAY receives the value of 1, otherwise it is attributed the value of 0.
- If the recommendation is issued on Thursday, THURSDAY receives the value of 1, otherwise it is attributed the value of 0.

If the recommendation is issued on Pre-Holidays, PRE-HOLIDAYS receives the value of 1, otherwise it is attributed the value of 0. As mentioned above, SIZE, LEVERAGE, GROWTH, EPS, ANALYST, and EXPERIENCE are also included in the regression as control variables. In order to complete out regression equations, we also insert year dummies (YDUM), industry dummies (IDUM), and country dummies (CDUM). Our regression equations are presented as follow:

$$\begin{aligned} OPT &= \alpha + \beta_1(MONDAY) + \beta_2(TUESDAY) \\ &+\beta_3(THURSDAY) + \beta_4(FRIDAY) \\ &+ \sum_{Year} \beta^{Year}(YDUM) + \sum_{Ind} \beta^{Ind}(IDUM) + \sum_{Ctry} \beta^{Ctry}(CDUM) + \epsilon \end{aligned} \tag{1}$$

$$\begin{aligned} OPT &= \alpha + \beta_1(MONDAY) + \beta_2(TUESDAY) \\ &+\beta_3(THURSDAY) + \beta_4(FRIDAY) + \beta_5(SIZE) \\ &+ \sum_{Year} \beta^{Year}(YDUM) + \sum_{Ind} \beta^{Ind}(IDUM) + \sum_{Ctry} \beta^{Ctry}(CDUM) + \epsilon \end{aligned} \tag{2}$$

$$\begin{aligned} OPT &= \alpha + \beta_1(MONDAY) + \beta_2(TUESDAY) \\ &+\beta_3(THURSDAY) + \beta_4(FRIDAY) + \beta_5(SIZE) \\ &+\beta_6(LEVERAGE) + \beta_7(EPS) + \beta_8(GROWTH) \\ &+\beta_9(ANALYST) + \beta_{10}(EXPERIENCE) \\ &+ \sum_{Year} \beta^{Year}(YDUM) + \sum_{Ind} \beta^{Ind}(IDUM) + \sum_{Ctry} \beta^{Ctry}(CDUM) + \epsilon \end{aligned} \tag{3}$$

Table 4 shows the results of our analysis. Our findings show the presence of day-of-the-week effect in analyst recommendations, we assert that the most optimistic recommendations are issued on Post-Holidays period. For all equations, the coefficient of POST-HOLIDAYS is significantly negative. We suggest that the day-of-the-week effect in returns is the source of the day-of-the-week effect in analyst recommendations.

In order for the analysts to amend between optimistic biases in their recommendations and their reputation as an unbiased investment advisor, Post-Holidays period is for analysts the most favorable period to issue the most optimistic recommendations. Analysts will be relieving pressure from employers to issue optimistic recommendations, at the same time assure that return would trend upwards in the short-term. Our findings also indicate that recommendations issued on Pre-holidays are the most pessimistic. For all equations, the coefficient of PRE-HOLIDAYS is significantly negative. We suggest that by issuing bulk of unfavorable recommendations on Pre-Holidays, analysts expect the short-term returns would trend downwards.

3.4.3. *Robustness checks*

3.4.3.1. *Day-of-the-week effect and optimism in analyst recommendations (alternate measure)*. In order to check the robustness, we re-estimate Eq. (1)–(3) using alternate measure of optimism being the difference between analyst's current recommendation and the median of last month's outstanding recommendations. The results are shown in Table 5 which are qualitatively similar to those shown in Table 4. We report higher optimism in recommendations issued on Post-holidays and lower optimism in recommendations issued on Pre-holidays. All equations reveal a negative coefficient of POST-HOLIDAYS and a positive coefficient of PRE-HOLIDAYS.

3.4.3.2. *Day-of-the-week effect and optimism in analyst recommendations (quantile regression approach)*. Our analysis entails that any analyzed point on the conditional distribution results in the same estimates of the relationship between optimism in an analyst recommendation and day-of-the-week effect. While testing particularly for linearity and the LINE assumptions, we conclude that the linearity assumption holds. We applied a quantile regression in order to test the empirical effectiveness of the

Table 4 – Day-of-the-week effect and optimism in analyst recommendations.

	Eq. (1)	Eq. (2)	Eq. (3)
J−2	−0.0222**	−0.0444**	−0.0844**
J−1	−0.0024	−0.0044	−0.0088
J+1	0.0222	0.0024	−0.0002
J+2	0.0444***	0.0222***	0.0288**
SIZE		0.0044***	0.00244*
LEVERAGE			−0.0044**
EPS			−0.0004
GROWTH			−0.0088***
ANALYST			0.0008
EXPERIENCE			−0.0088***
STD			−0.4888***
Industry Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes
No. of Observations	2440	8888	4443
F-value	18.44	24.22	34.00
Adjusted R-square	0.04	0.04	0.022

Following table uses Eqs. (1)–(3) to document the relationship between recommendation optimism and 2 days before and after the holiday. The sample period is between 2004 and 2015. The sample consists of firms listed in Morocco, Saudi Arabia, Jordan, Kuwait, United Arab Emirates, Qatar, Lebanon, Algeria, Jordan, and Bahrain. 1% significance is represented by ***, 5% significance by **, and 10% significance by *.

assumption and to examine day-of-the-week at different points of conditional distribution of optimism in analyst recommendations, the quantile regression is implemented at five quantiles (0.10, 0.30, 0.50, 0.70, and 0.90).

Table 6 reports the results of our analysis, proving that the relationship between recommendations issued on Post-Holidays and optimism is accurate only in lower quantiles. POST-HOLIDAYS for the 10th, 30th, and 50th quantile report a negative coefficient. As for the two quantiles left, namely the 70th and 90th, we reveal insignificant coefficient of POST-HOLIDAYS. By comparing Table 4 and with our results, we report that at the 10th and 30th quantile, the relationship is underestimated. We also proved that the relationship between recommendations issued on Pre-Holidays and optimism is only valid in higher quantiles. PRE-HOLIDAYS for the 50th, 70th, and 90th quantile report a positive coefficient. As for the two quantiles left, namely the 10th and 30th. We reveal insignificant coefficient of PRE-HOLIDAYS. By comparing Table 4 and with our results, we report that at the 50th, 70th and 90th quantile, OLS regression underestimates the relationship.

Table 5 – Day-of-the-week effect and optimism in analyst recommendations (alternate measure).

	Eq. (1)	Eq. (2)	Eq. (3)
J−2	−0.0022**	−0.0044**	−0.0022***
J−1	−0.0088	−0.0044	−0.0086
J+1	0.0044	0.0024	−0.0008
J+2	0.0220***	0.0028***	0.0066*
SIZE		0.0022	0.0022***
LEVERAGE			−0.0000**
EPS			0.0004
GROWTH			−0.0000***
ANALYST			−0.0048***
EXPERIENCE			−0.0044***
STD			−0.0668***
Industry Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes
No. of Observations	2144	6022	4200
F-value	20.22	06.64	22.22
Adjusted R-square	0.04	0.01	0.04

Following table uses Eqs. (1)–(3) to document the relationship between recommendation optimism (using an alternate measure) and 2 days before and after the holiday. The sample period is between 2004 and 2015. The sample consists of firms listed in Morocco, Saudi Arabia, Jordan, Kuwait, United Arab Emirates, Qatar, Lebanon, Algeria, Jordan, and Bahrain. 1% significance is represented by ***, 5% significance by **, and 10% significance by *.

Table 6 – Day-of-the-week effect and optimism in analyst recommendations (quantile regression approach).

	0.10	0.30	0.50	0.70	0.90
J−2	−0.0684***	−0.0242***	−0.0222*	−0.0022	−0.0044
J−1	−0.0222	−0.0022	0.0022	0.0022	−0.0028
J+1	−0.0024***	−0.0022	−0.0066	0.0222	0.0066
J+2	−0.0266	0.0066	0.0224**	0.0222**	0.0468***
SIZE	0.0448***	0.0486***	−0.0004*	−0.0086**	−0.0868***
LEVERAGE	−0.0088	−0.0044***	−0.0008	−0.0002**	0.0022
EPS	0.0008	−0.0008	−0.0088*	−0.0028***	−0.0048
GROWTH	−0.0088***	−0.0020***	−0.0002***	−0.00888***	−0.0048***
ANALYST	−0.0044**	−0.0022	0.0002**	−0.00668	0.0066***
EXPERIENCE	−0.0024**	−0.0088**	−0.0044***	−0.00444***	−0.0088***
STD	−0.4222***	−0.4468**	−0.2220***	−0.6886***	−0.2224***
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes
No. of Observations	2882	4862	4822	1882	2862
F-value					
Adjusted R-square	0.022	0.028	0.008	0.022	0.008

Following table uses quantile regression and Eq. (3) to document the relationship between recommendation optimism and 2 days before and after the holiday. The sample period is between 2004 and 2015. The sample consists of firms listed in Morocco, Saudi Arabia, Jordan, Kuwait, United Arab Emirates, Qatar, Lebanon, Algeria, Jordan, and Bahrain. 1% significance is represented by ***, 5% significance by **, and 10% significance by *.

3.4.3.3. Day-of-the-week effect and optimism in analyst recommendations (level of recommendations). As a last robustness check, we substitute optimism measure with the level of recommendations.

Given that level of recommendation is an ordinal variable, we use ordered probit regressions to estimate Eqs. (1)–(3).[1] Table 7 reports the results of our analysis, showing that on Pre-holidays, analysts are more likely to issue pessimistic recommendations (Underperform and Sell). For all equations, we state a significantly positive coefficient of PRE-HOLIDAYS. Our findings from Eq. (3) being the most comprehensive equation, shows that on Post-holidays, analysts are more likely to issue optimistic recommendations (Strong Buy and Buy).

Table 7 – Day-of-the-week effect and optimism in analyst recommendations (level of recommendations).

	Eq. (1)	Eq. (2)	Eq. (3)
J−2	−0.0044	−0.0088	−0.0224**
J−1	0.0006	0.0086	−0.0026
J+1	−0.0006	−0.0022	−0.0088
J+2	0.0660***	0.0224***	0.0888***
SIZE		−0.0444***	−0.0444***
LEVERAGE			0.0008***
EPS			−0.0044***
GROWTH			−0.0044***
ANALYST			0.0088***
EXPERIENCE			−0.0066***
STD			0.2242***
Industry Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes
No. of Observations	6620	1888	6822
Wald Chi2	244.22	222.46	420.22
Pseudo R-square	0.02	0.02	0.08

Following table uses Eqs. (1)–(3) to document the relationship between level of recommendations and 2 days before and after the holiday. The sample period is between 2004 and 2015. The sample consists of firms listed in Morocco, Saudi Arabia, Jordan, Kuwait, United Arab Emirates, Qatar, Lebanon, Algeria, Jordan, and Bahrain. 1% significance is represented by ***, 5% significance by **, and 10% significance by *.

[1] Level of recommendation is coded as follows: 1 for Strong Buy, 2 for Buy, 3 for Hold, 4 for Underperform, and 5 for Sell.

4. Discussion of results

4.1. *Information uncertainty and day-of-the-week effect*

Prior literature shows that stocks with higher uncertainty are more exposed to behavioral biases (Ackert & Athanassakos, 1997). They argue that the higher is the information uncertainty, the higher is the tendency for analysts to be biased. Once there is information uncertainty, reputation tends to be less of a concern for analysts.

As a result, certain information environment could be less exposed to day-of-the-week effect. In order to react to these concerns, we break our sample into two. The first sub-sample englobes firms with above average dispersion in analyst recommendations, while the second sub-sample is formed of firms with below average dispersion in analyst recommendations. Eq. (3) is re-estimated for both sub-samples. Table 8 reports the results of our analysis, showing that in firms with higher information uncertainty, day-of-the-week effect is absent. For sub-sample with below average dispersion in analyst recommendations, we showed insignificant coefficients of both PRE-HOLIDAYS and POST-HOLIDAYS. Table 8 reveals that firms with higher information uncertainty are the ones exposed to day-of-the-week effect. For this sub-sample, we showed significant coefficients of both PRE-HOLIDAYS and POST-HOLIDAYS. Our argument that once information uncertainty is high, behavioral biases are more present, holds is consistent with Ackert and Athanassakos (1997).

4.2. *Analyst experience and day-of-the-week effect*

Our findings are restricted to analysts with less experience, which waken our concerns about the matter. Analysts with less experience may be more susceptible to pressures from their employers. Analysts with more experience, considering their skills and larger networks; in contrast, may be less susceptible to pressures from their employers. In order to react to these concerns, we break our sample into– first sub-sample formed by analysts with above average experience and the second sub-sample is formed of firms with below average experience.

Eq. (3) is re-estimated for both sub-samples. Table 9 shows the results of our analysis, showing that analysts with low experience tend to be more optimistic.

For the recommendations issued by less experienced analysts, we state a significantly negative coefficient of POST-HOLIDAYS. Our argument is stating that because of the pressures faced by employers, less experienced analysts are more likely to issue optimistic recommendations. We also argue that on PRE-HOLIDAYS, analysts with more experience tend to issue less optimistic recommendations. For the recommendations issue by more experienced analysts on PRE-HOLIDAYS, we report a significantly positive coefficient. We therefore argue that due to the skills and larger networks that analysts with high experience own, they can oppose the pressures from employers to issue optimistic recommendations.

Table 8 – Information uncertainty and day-of-the-week effect.

	Low information uncertainty	High information uncertainty
J−2	−0.0000**	−0.0224**
J−1	−0.0224*	0.0466**
J+1	−0.0088**	0.0022*
J+2	0.0044*	0.0866***
SIZE	0.0082**	0.0088*
LEVERAGE	−0.0004**	−0.0022**
EPS	−0.0026	−0.0004*
GROWTH	−0.0066***	−0.0022***
ANALYST	0.0044	0.0008*
EXPERIENCE	−0.0088***	−0.0066***
STD	−0.4644***	−0.4466***
Industry Dummies	Yes	Yes
Year Dummies	Yes	Yes
Country Dummies	Yes	Yes
No. of Observations	4464	2286
F-value	8.40	8.68
Adjusted R-square	0.066	0.080

Following table uses Eq. (3) to document the effect of information uncertainty on holidays' effect. The sample period is between 2004 and 2015. The sample consists of firms listed in Morocco, Saudi Arabia, Jordan, Kuwait, United Arab Emirates, Qatar, Lebanon, Algeria, Jordan, and Bahrain. 1% significance is represented by ***, 5% significance by **, and 10% significance by *.

Table 9 – Analyst experience and day-of-the-week effect.

	Low analyst experience	High analyst experience
J−2	−0.0447***	0.0024
J−1	−0.0444**	0.0224
J+1	−0.0667**	0.0944
J+2	0.0046	0.0666***
SIZE	0.0066	0.0044*
LEVERAGE	−0.0066	−0.0046***
EPS	−0.0006*	−0.0066
GROWTH	−0.0066***	−0.0044***
ANALYST	0.0022	0.0044
EXPERIENCE	0.0006***	−0.0046***
STD	−0.6666***	−0.4664***
Industry Dummies	Yes	Yes
Year Dummies	Yes	Yes
Country Dummies	Yes	Yes
No. of Observations	1444	4667
F-value	14.44	34.26
Adjusted R-square	0.004	0.024

Following table uses Eq. (3) to document the effect of analyst experience on holidays' effect. The sample period is between 2004 and 2015. The sample consists of firms listed in Morocco, Saudi Arabia, Jordan, Kuwait, United Arab Emirates, Qatar, Lebanon, Algeria, Jordan, and Bahrain. 1% significance is represented by ***, 5% significance by **, and 10% significance by *.

5. Conclusions

Previous studies showed a relationship between different religious holidays and stock market activities, as explained in the introduction. In Muslim countries, religion is a vital concern in people's lives, however, to the best of our knowledge, the holidays effect on the stock market and analysts recommendations has not been explored in Muslim countries. This paper investigates the presence of holidays effect in analyst recommendations in MENA countries' stock markets (Morocco, United Arab Emirates, Saudi Arabia, Jordan, Kuwait, Lebanon, Qatar, Algeria, Bahrain) during the period between 2004 and 2015.

Our findings reveal that on Pre-Holidays, analysts tend to issue pessimistic recommendations, and issue optimistic recommendations on Post-Holidays. Our results are robust to alternate measures of optimism and after controlling for various firm-specific characteristics. Prior literature on day-of-the week effect is consonant with our results that document an increase in stock prices during the week, and a slight decrease in stock prices over the weekend. We argue that analysts can benefit from the upward trend in stock prices during Post-Holidays by issuing optimistic recommendation. Analysts may as well benefit from the downward trend in stock prices by issuing pessimistic recommendations on Pre-Holidays. Last but not least we also showed that our findings are more evident among analyst with less experience and in firms with higher information uncertainty. For eventual research, we suggest to construct buy-and-hold portfolios that are designed by relying on recommendations issued on each day of the week and computing their performance.

One of the limitations is the cultural variation between the selected countries, which may or may not significantly influence the stock market. We mainly relied on the fact that it still fosters social interaction. We claimed that this would affect the stock market accordingly, as explained in the beginning of this paper. We hope that further research will be done regarding our research question applied to the MENA region and gain more insights on potential new available data.

Conflicts of interest

The author declares that he has no conflicts of interest.

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