Lunar Calendar and *Ramaḍān* Effect on Performance of Mutual Funds in Pakistan

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Abstract

This paper is primarily intended to find out the effect of the lunar calendar with the special focus of the holy month of *Ramaḍān* on the performance of mutual funds in Pakistan. Economic activity in Pakistan takes a different turn due to observation of *Ṣiyām* (fasting) and shorter working hours in the country in the month of *Ramaḍān*. People are generally more tilted towards the religious and spiritual activities in this month. The paper uses the logit model to study the impact of lunar calendar generally and the holy month of *Ramaḍān* specifically, on the net asset values of the mutual funds – an important category of Islamic capital market. The study confirms the low expected growth of net asset value in the month of *Ramaḍān* and the other periods of the religious sentiment like *Dhū al-Ḥajjah* in the case of Islamic mutual funds. In case of conventional (interest based) mutual funds, however, net asset value of the Funds depicted phenomenal growth. Economic activity regains its pace after *Ramaḍān* and *Dhū al-Ḥajjah* as this is evident from the likelihood increase of net asset value of the Islamic mutual funds in the month of *Shawwāl* & *Muḥarram*, the months following *Ramaḍān* and *Dhū al-Ḥajjah* respectively. In contrast, growth in conventional mutual funds is not much influenced by the periods of religious sentiment.

Keywords: Mutual funds' performance, Net asset value, Lunar calendar, *Ramaḍān* effect.

KAUJIE Classification: I4, L41
JEL Classification: G10, O16, Z12

1. Introduction and Background of Study

Pakistan is an ideology based Islamic state. As per Article 2 of its Constitution (1973), Islam is the State Religion of Pakistan. There is a general feeling that people of the country want the Islamic economic system to prevail in the country. As such, efforts have been made for the

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establishment of the Islamic economic system in the country. The efforts can be traced back to the adoption of the *'Objectives Resolution'* by the first Constituent Assembly in 1949 and the establishment of the Advisory Council of Islamic Ideology on August 1, 1962. One of the primary objectives of the Council was to guide the people through the State to live their lives according to Islamic teachings individually and collectively as a nation.

It is evident from the literature that mutual funds market is developing all over the globe. The mutual funds market in Pakistan has a meager share in the capital market as compared to the international market. Investment opportunities have not been widely available in the country for smaller investors. The first asset management company, National Investment Trust Limited (NITL), established in 1962, is the largest and oldest fund management company in Pakistan with the fund base of Rs 70.85 Billion, and 49,655 unit holders till June 2015. The operations of NIT were Islamised in 1979, but currently any Sharī'ah compliance framework does not exist as far as NIT is concerned. Specific Islamic mutual funds in Pakistan emerged in 1990's. Al Meezan Investment Management Limited is the largest among the Sharī'ah compliant mutual fund companies in Pakistan. It was managing the assets of Rs 68.8 billion as on 30th September 2015. This paper compares the impact of religious sentiment (religiosity of investors) on the growth of net asset value of Islamic (interest free) and conventional (interest based) mutual funds' performance in Pakistan. The paper has been further divided into the following sections, introduction, literature review, data & methodology, results & discussion, conclusion, implication of the study and limitations.

Islamic finance is different from the interest based finance. It is not about the profit maximization but to follow the teaching of Qur'ān and sayings of the Holy Prophet (PBUH). In this connection, it prohibits the *ribā* and abstract/ excessive risk taking (*gharar*) in the financial transactions (Raphie & Roman, 2011). Similarly, Islamic mutual funds have the different characteristics than the conventional mutual funds. Prior to performance evaluation of the Islamic mutual funds, characteristics of the Islamic mutual funds have to be discussed.

Sharī'ah boards define the different criteria for the investment to be Islamic or Sharī'ah compliant. Dow Jones three point criterion for a company to be *ḥalāl* for investment includes total debt to total assets ratio that should be less than 33%; secondly the ratio of cash plus interest bearing securities to total assets should not exceed 33%; and lastly, accounts receivable to total assets ratio must not exceed 33%, (Screens

for Sharī‘ah compliance, 2016). The Meezan bank's advisory board has a different view for the investment to be *ḥalāl* and defined 6 points criteria in this connection, i.e. business of the investee company must be *ḥalāl* business approved by the Sharī‘ah. Interest based debt to total assets ratio must be less than 33% (this ratio has been changing time to time). Non-Sharī‘ah compliant investment must not increase the 33% of the total investment of the company. Income from such sources which are not Sharī‘ah compliant should be less than 5% of the total income of the company. The company's liquid asset must be less than 25% of the company's total assets. In the end, the net liquid assets per share should be less than or equal to the market price per share. To arrive at the net liquid assets they suggest subtracting of illiquid assets, long term liabilities and current liabilities from total assets divided by the total number of shares outstanding. The rationale for allowing some portion of interest in the company's equity and income can be attributed to eliminate the interest factor gradually.

2. Sharī‘ah Screens vs. Socially Responsible Screens

Basso and Funari (2003) differentiated the socially responsible funds on three grounds, ethical screening, cause based investing and shareholder advocacy. Companies which have good reputation on socially responsible criteria are included in the investment portfolios due to positive screening while companies which are bad at the socially responsible criteria are excluded from the funds' portfolios. Socially responsible funds have different definitions as Statman (2000) has mentioned that some funds are defined as socially responsible on the basis of Christian beliefs, likewise there are Beacon screens criteria on which they screen out the companies which harm the animals. Socially responsible funds for this study, however, are the funds which are aligned to the screening principals of the Islamic Mutual funds or *Amānah* funds.

Interest bearing investments are different from the Islamic socially responsible funds as no criteria limitations are applicable to the former. Mutual funds are growing in the country. There are few studies on the mutual funds in Pakistan like Talat & Ali (2009) and Shah & Hijazi (2005) who have studied the performance of the mutual funds in Pakistan. Calendar effects studies have been conducted on the stock market like Zafar, Urooj, Chughta, & Amjad (2012), but the mutual funds have not been studied in this context. The focus of this study is to see the impact of *Hijrī* calendar with the special focus of *Ramaḍān* on the mutual funds in Pakistan.

3. Literature Review

Funds performance is the major concern for the investors in Funds. To facilitate the investor's decision making, the researchers have studied the impact of the end of week, end of year, January, week of the day effect in the different markets. Some of the leading studies on this subject are by Cross (1973), French (1980), Gibbons and Hess (1983) that have been cited by Seyyed, Abraham and Al-Hajji (2005), Zoubi *et al*. (2010) and Muronidis *et al*. (2007). French (1980) had established in his study that the Monday has the significant impact on the returns. He established that Monday returns are almost three times higher than the normal days of the week. Gibbons and Hess are different in their findings as compared to French. They are of the view that Monday has the negative returns than the other weekdays. Despite this contradiction in the findings, it is evident from the literature that Monday has the effect on the returns of the market, either positive or negative.

This kind of effect has no economic rationale like that of the political scenario or the GDP growth rate of the country. The researchers have extended this work to the lunar effect on the stock markets. Dichev and Janes (2003), and Yuan *et al*. (2003), as cited in Muronidis, Tryfonidis and Lazaridis (2007) have examined the full moon and new moon impact on the stock market returns; the both studies have established that the returns in the new moon days are higher than the full moon days. Likewise, securities returns are affected by many other non-economic indicators. Hirshleifer and Shumway (2003), as cited in Bailkowski *et al*. (2012) are of the view that stock returns are correlated with the sunshine. Some of the researchers are different on the moon effect on the stock markets as Chandy, Haensly and Shetty (2007) have criticized the moon effect and proved that market responds according to the market efficiency theories.

The Impact of the lunar calendar has also been studied by the different researchers. The Islamic calendar is different from the Georgian calendar. Islamic calendar has 355 days (354.37 days exactly) instead of 365 as in the Georgian calendar. People in Islamic countries follow the Hijri calendar for their religious activities while their business activities may also be revolving around these days. In the West, people have their own set of holidays as defined by Marrett and Worthington (2007) cited by Zafar *et al*. (2012). They have defined the holidays in their context as New Year day, Easter Friday and Easter Monday, 26th of January & 2nd June for Australia day and the Queen's birthday respectively. Contrary to this, in Islamic countries people celebrate *'Eid al-Fiṭr* and *'Eid al-Aḍḥa* that are based on lunar calendar.

There is some criticism on the day effect, like French (1980) is of the view that Monday returns are not actually higher than the other week days, if we consider the trading hours as the measure of performance. Monday's returns are actually the representative of three days of investment. Investment for the three days brings the higher return on Monday. This is also confirmed by the other researchers as they are of the view that Monday brings three times higher returns in the market. Whereas Cross (1973) is of the opinion that stock returns are higher on Friday than Monday. The conflict of finding among the researchers seems due to the studies conducted in different time periods and different regions and markets.

4. Data and Methodology

Two mutual funds, one conventional (interest based) i.e. NAFA income opportunity funds and the other Sharīʿah compliant, Meezan Islamic Fund (of Al-Meezan Investment Management Limited), are selected for this study. Data of Meezan Islamic fund is retrieved from the official website of the Mutual funds association of Pakistan for the five years starting from May 2008 till June 2013. Data for the same period for the NAFA income opportunity fund is retrieved from the official website of NAFA funds. Data for this period is converted from Gregorian to Hijri Calendar to find out the impact of Islamic month of *Ramaḍān* on the net asset value of the mutual funds.

The increases and decreases in the net asset value of the mutual funds were converted into dummy variable "D NAV". Net asset values of the mutual funds that depict the performance of the fund over time are used as the performance indicators of the funds. To measure the impact of the calendar with the special focus of the month of *Ramaḍān*, dummy variable for NAV was assigned value "1" for the every increase in net asset value over the period of study and "0" otherwise. Similarly dummy variables were created for all the months.

Total 1328 observations of net asset values were included in the model to see the impact of the calendar and the month of *Ramaḍān*. Available data were analyzed by using the Binary Logit model to check the impact of Islamic month of *Ramaḍān* and other periods of religious sentiment on mutual funds' performance in Pakistan. D NAV was regressed on the twelve dummies of months using binary logit regression for the two sets of data available for Islamic and conventional mutual funds. Comparison of net asset values in both forms of funds also presented.

5. Model of the study:

$\ln (p/1-p) = c + \beta_1 M_1 + \beta_2 M_2 + \beta_3 M_3 + \beta_4 M_4 + \beta_5 M_5 + \beta_6 M_6 + \beta_7 M_7 + \beta_8 M_8 + \beta_{10} M_{10} + \beta_{11} M_{11} + \beta_{12} M_{12}$

$\ln (p/1-p)$ = *Probability of Increase in Net asset Value*

Variables Explanation

Variable Name	Explanation
DNAV	Net Asset Value is dependent Variable in the model. Every increase in the NAV is assigned "1" and "0" otherwise
M_1	This is the dummy variable for the first month of Islamic Calendar "*Muḥarram*". When Net Asset Value date falls in *Muḥarram* "M_1" is assigned "1"; otherwise "0".
M_2	This is the dummy variable for the second month of Islamic Calendar "*Ṣafar*". Whenever Net Asset Value date falls in *Ṣafar*, "M_2" is assigned "1"; otherwise "0".
M_3	This is the dummy variable for the Third month of Islamic Calendar "*Rabīʿ al-Awwal*". Whenever the Net Asset value date falls in *Rabīʿ al-Awwal*, M_3 is assigned "1"; otherwise "0".
M_4	This is the dummy variable for the fourth month of Islamic Calendar "*Rabīʿ al-Thānī*". When the Net Asset Value falls in *Rabīʿ al-Thānī*, M_4 is assigned "1"; otherwise "0".
M_5	This is the dummy variable for the fifth month of Islamic Calendar "*Jamādī al-Awla*". When the Net asset Value falls in *Jamādī al-Awla*, M_5 is assigned "1"; otherwise "0".
M_6	This is the dummy variable for the Sixth month of Islamic Calendar "*Jamādī al-Thānī*". When the Net Asset Value falls in *Jamādī al-Thānī*, M_6 is assigned "1"; otherwise "0".
M_7	This is the dummy variable for the seventh month of Islamic Calendar "*Rajab*". When the Net Asset Value fall in Rajab, M_7 is assigned "1" otherwise "0".
M_8	This is the dummy variable for the eighth month of Islamic Calendar "*Shaʿbān*". When the Net Asset Value fall in Shaban *Shaʿbān* M_8 is assigned "1"; otherwise "0".
M_{10}	This is the dummy variable for the tenth month of Islamic Calendar "*Shawwāl*". When the Net Asset Value fall in *Shawwāl*, M_{10} is assigned "1"; otherwise "0".
M_{11}	This is the dummy variable for the eleventh month of Islamic Calendar "*Dhū al-Qaʿdah*". When the Net Asset Value fall in *Dhū al-Qaʿdah*, M_{11} is assigned "1"; otherwise "0".
M_{12}	This is the dummy variable for the twelfth month of Islamic Calendar "*Dhū al-Ḥajjah*". When the Net Asset Value fall in *Dhū al-Ḥajjah*, M_{12} is assigned "1"; otherwise "0".

6. Results & Discussion

Months	Islamic Funds			Conventional funds		
	β	Z	Increase in NAV (p)	β	Z	Increase in NAV (p)
C	-0.14	-1.15	46.51%	2.309	7.044	90.97%
M_1	0.213	1.231	55.3%	-0.432	-0.975	39.35%
M_2	0.199	1.158	54.92%	-1.11	-2.778	24.78%
M_3	0.362	2.082	58.96%	-0.416	-0.956	39.73%
M_4	0.23	1.357	55.74%	-0.539	-1.268	36.83%
M_5	0.139	0.86	53.48%	-0.481	-1.161	38.18%
M_6	-0	-0.03	49.89%	-0.632	-1.549	34.68%
M_7	0.036	0.221	50.91%	-0.142	-0.313	46.44%
M_8	-0.06	-0.35	48.48%	-0.111	-0.245	47.21%
M_{10}	0.025	0.145	50.63%	-0.611	-1.415	35.17%
M_{11}	-0.16	-0.91	46.12%	-0.643	-1.527	34.44%
M_{12}	-0.29	-1.62	42.77%	-0.313	-0.682	42.22%
LR	**23.42**			**13.23**		
M	**0.468**			**0.861**		
SE	**0.496**			**0.345**		

Effect of *Ramaḍān* and other periods of religious sentiment has been witnessed on the economy generally in the Muslim world. According to the Bokil and Schimmelpfennig (2006) prices of the commodities tend to increase during the month of *Ramaḍān* in Pakistan as economy tends to show less growth with increased inflation. The negative relationship between the religious behavior and economic growth is accepted in the literature (McCleary & Barro 2003). International Business Times reported that on the start of *Ramaḍān*, 2016 Bloomberg 200 GCC index fell by 0.3 percent; this index represents the 200 largest stocks of the GCC countries (Elizabeth Whitman; June 6, 2016, http://www.ibtimes.com/). The causal effect of periods of religious sentiments especially *Ramaḍān* on the economic growth has been established by Campante and Yanagizawa-Drott (2013). The finding of their study supports that the GDP, per worker, per capita and total GDP was negatively affected in the month of Ramadan and ended up in the negative output of the economy.

They further argued that the economies of the non-Muslim countries reflected no evidence of *Ramaḍān* effect. The literature supports the activities of the social wellbeing, like donations, Alms giving in the month of *Ramaḍān* and other periods of religious sentiments in the Muslim community.

Current research intended to study the effect of *Ramaḍān* on the performance of mutual funds. Two mutual funds, one from conventional and other from Islamic mutual funds, were compared. The probability of an increase in net asset values of the mutual funds was calculated for each month by using the formula as given below. Month of *Ramaḍān* is included in the model as intercept; however, for the rest of month value of respective beta replaces the intercept. Hence the probability for the increase in the value of month of *Ramaḍān* is calculated as follows

$$P^{Ramaḍān} = e^{Intercept} / 1 + e^{Intercept}$$

Probability results depict that there is 46.51% likelihood for the increase in the net asset value of the Islamic mutual funds in the month of *Ramaḍān*. Results of the previous and following month of *Ramaḍān* are 48.48% and 50.63% respectively which clearly show that the performance of the Islamic mutual fund is poor in *Ramaḍān* as compared to other months. In contrast the probability of increase in net asset value of for conventional funds is quite high i.e. 90.97%. Despite the short working hours the conventional funds depicted the growth in net asset value as compared to Islamic mutual funds. The low growth of the Islamic mutual funds might be due to the influence of religious sentiment of Islamic mutual funds investors. However, the investors of the conventional mutual funds seemed less impacted by this factor.

Muḥarram is the first month in the *hijrī* calendar. There is substantial increase in the likelihood of increase in the net asset values of Islamic mutual funds as compared to the previous month *Dhū al-Ḥajjah*, which is the last month in the Islamic calendar. The likelihood for increase in net asset value is approximately 13% higher than the previous month. This is the significant difference. The reason for lower likelihood in the last month in comparison might be again due to the festive month due to Eid Holidays and *Ḥajj*. However the conventional funds have shown 3% decrease in the net asset values in this period. Probability of likelihood increase in the net asset values of Islamic mutual funds in the month of *Ṣafar* is 54% whereas conventional mutual funds depict only 24.78 % likelihood in net asset value increase of funds. The probability of growth

in net asset value of Islamic mutual funds is in month of *Rabīʿal-Awwal* is 58.96% against the 39.73% expected growth in case of conventional mutual funds. The probability of increase in net asset value in case of Islamic mutual funds is on much higher side in the same period as compared to conventional funds. In the month of *Rabīʿal-Thānī* growth in net assets values of Islamic mutual funds is 55.74% as compared to 36.83 in case of conventional funds. This value is slightly lower than its previous month; however, this is higher than the month of *Ramaḍān* in case of Islamic mutual funds. Next is the fifth *hijrī* month in which the expected performance of the Islamic mutual fund is better than that in *Ramaḍān*. However in case of conventional funds the net asset values reflected the highest growth in the month of *Ramaḍān*.

Jamādī al-Thānī is the sixth month. The likelihood for the increase in the net asset value of the Islamic mutual funds is 49.89 % as contrast to 34.68 of its counterparts. Net asset values of Islamic mutual fund's likelihood for increase in the month of *Rajab* is 50.91% which is higher than the previous month and better than the month of *Ramaḍān* as well; however, in the same period conventional funds growth probability is 46.44% which is better than previous month. *Shaʿbān* is the eighth month in calendar and one month prior to the *Ramaḍān*; the likelihood of increase in net asset value of the fund is lower as compared to the previous month of *Rajab* and it further decreases in the month of *Ramaḍān* as far as Islamic Mutual funds are concerned; however in the case of conventional funds it started improving and in the month of *Ramaḍān* probability of growth in conventional funds is exceptionally high. *Shawwāl* is the tenth month in calendar and it follows *Ramaḍān*. The likelihood of increase in the net asset values of Islamic mutual funds in this month is approximately 4% higher as compared to the month of *Ramaḍān*, while in contrast, the conventional funds started sharp negative growth. *Dhū al-Qaʿdah* is the eleventh month in the calendar. The likelihood for increase in the net asset value of the both kinds of mutual funds has decreased as compared to the previous month. This trend prevails till the end of the year. *Dhū al-Ḥajjah* is the last month of the Islamic calendar. The likelihood of increase in the net asset values is only 42.77% which is the lowest in the year in case of Islamic mutual funds; however, conventional mutual funds started reflecting positive growth. This decrease in net asset values in the Islamic mutual funds again can be attributed to the religious sentiment of *ʻEid* and *Ḥajj*.

7. Conclusion

Results of the study indicate that the Islamic calendar has significant impact on the performance of the mutual funds. Net asset value of the mutual funds decreases in the months of higher religious sentiment and activities like *Ramaḍān*, *'Eids* and *Ḥajj* in case of Sharī'ah compliant mutual funds. There is phenomenal increase observed in the Net asset value of conventional funds in the month of *Ramaḍān*. Findings of the study are consistent with the (Zafar, Urooj, Chughta, & Amjad, 2012) in which they established that holiday has effect on the returns of the stock exchange market. Similar findings regarding weekend effect on stocks returns have also been established by the other researchers as well, like French (1980). In Muslim countries the religious holidays and months have significant impact on stock markets. The findings of the study are also consistent with the study by Ariss, Rezvanian, & Mehdian (2011) regarding calendar anomalies in which they established that the business activity is lower in the *Ramaḍān* due to the religious obligations of the people in the country. Bailkowski, Etebari, & Wisniewski (2012) have also established that the returns during *Ramaḍān* are lower as compared to the rest of the months. Islamic Mutual funds have shown the overall positive trend as is evident from the results of the study – overall, seven months in a year showed more than 50% likelihood in the increase of net asset values of Meezan's mutual funds.

8. Implication of the Study

The study has the practical implications for the fund managers and investors. The findings of the study may guide the investors to manage their investment according to the performance of the mutual funds market in the holy month of *Ramaḍān*. For the fund managers it may provide the guidance to keep in view the people's attitude towards the investment in the Islamic and conventional mutual funds accordingly.

9. Limitation of the Study

For this study, the only two Mutual Funds were selected from the more than forty different funds operating in the market-NAFA mutual funds in conventional and Al-Meezan Investment limited in the Islamic finance market of Pakistan. For the future studies, the inclusion of all the Islamic and conventional mutual funds is recommended for analysis. Comparison of the conventional an Islamic mutual funds market in response to the lunar calendar can also be made to arrive at the more concrete results.

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