The Day of The Week Effect on Qatari Financial Market Returns

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Abstract:

        This study examines the presence of one of the prominent anomalies which is the day of the week effect anomaly in Arab stock exchange Qatari. Data available for daily returns Qatar stock market index QSI in the extended period from 01/02/2018 until 06/07/2021. This paper attempts to test whether the effect of the day of the week exists in returns. Thus, to investigate these effects on stock returns using GARCH (1.1) And OLS models. Our results indicate That there is a negative, statistically significant effect of Monday on the returns of the Qatari stock market. While the average returns of Wednesday's regression analysis are positive and statistically significant.
Keywords: Efficiency of Financial Markets, Calendar Anomalies, The Day Of The Week Effect.
Jel Classification Codes : G10. G02. G19.

Introduction:

        Due to the increasing importance of capital market efficiency in recent decades, market quality has become one of the most fundamental ideas in finance.

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In fact, many studies have been conducted in the field of research on the problem of financial market efficiency. The seasonal calendar or anomalies (such as the January effect, the weekend effect, the weekday effect) also contains a great deal of academic research on financial markets. It has been shown that returns on financial assets systematically show patterns at specific times, such as yearly, monthly, weekly, or Daily Day of the week. Therefore, the effect is one of the most essential calendar effects, it has received great attention from researchers and practitioners because of its outcomes having a day of the week results in an average effect daily return that vary greatly for each day of the week.

Additionally, significant ongoing empirical studies have indicated that weekday patterns are potentially exploitable in both stock returns and volatility in many countries. These everyday anomalies challenge the efficient market hypothesis and have attracted significant interest from economists and market practitioners. From a financial perspective, there are three important reasons to examine daily anomalies in the markets. First, spotting anomalies in stock returns is important because of their impact on investors' trading strategies. Second, it provides additional information for rationality as decision makers, becoming more aware of changes in the volatility of stock returns due to the influence of the day of the week. Rational decision makers can also determine whether high or low returns are associated with a similar high or low volatility on a given day. The third one, investigation of anomalies may reveal clues about how well the market is.

1. Previous literature.

Several studies have dealt with the topic the seasonal effects on the returns of the financial markets and most of the studies agreed on the existence of the effect of the day of the week on the financial market. We mention some of them:

Plamen patev , Katerina Lyroudi and Nigokhos Kanaryan ; the day of the week effect in the central European transition stock market.

This study attempts to find a day-of-the-week effect in the Central European Transition Stock Markets. We consider the Romanian, Hungarian, and Latin, Czech, Russian, Slovak, Slovenian and Polish stock markets during this period September 22, 1997 to March 29, 2002. Our results indicated that the Czech and Romanian markets had significant negative returns on Monday while the Slovenian market had large positive returns on Wednesday and had negative returns unremarkable returns on Friday. The Polish and Slovak markets do not have an anomaly day of the week influence. They applied the GARCH–M (1,1) model to test whether or not the day of the week is affected by stock market risk. (Patev and Lyroudi 2010

Walid Boazam, Abdel Rahim Zghdudi (December 2018).: The Effect of Seasonality on The Efficiency of The Financial Market. Algerian Journal of Economic and Financial Research (02).

Seasonal Effects on the efficiency of the financial market is a theoretical study aimed at studying the price changes of financial assets traded in the stock exchange resulting from the behavior of individuals in limited periods, which is known as the seasonal effect, as it represents anomalies in the financial market that qualify investors to achieve extraordinary gains so that its impact on prices. Among its most prominent results: The financial markets are affected by several seasonal periods because of some financial behaviors, and the stock markets are subject to a seasonal influence at certain times of the year, month or week.

Sedeaq Nassar (2016); The Day of The Week Effect of Stock Returns: Empirical Evidence from Five Selected Arab Countries. Eurasian Journal of Business and Management, 4(2), 55-64

This study examines the presence of one of the prominent anomalies which is the day of the week effect anomaly in five of Arab stock exchanges known as (Qatar, Amman, Palestine, Egypt, and Bahrain stock exchanges) covering the period from May 2010 to April 2014. By using one-way analysis of variance (ANOVA) analysis and Post Hoc Tests, the study indicates that there is no existence of the day of the week effect in each of (Qatar, Amman, Egypt, and Bahrain stock exchange) while it is presence in Palestine stock exchange where the lowest return is in Sunday (the first trading day of the week) and the highest return is in Tuesday.

Jilin Zhang. Yongzeng Lai and Jianghong Lin (2017): The day-of-the-Week effects of stock markets in different countries. Finance research letters vol 20. February; P 47-62

The paper also investigates the daily anomalies in the stock returns of the major indices in 28 markets from 25 countries around the world in emerging and developed markets. During the period 1990 to 2016 using the GARCH model the valuation effects of six financial market indices measured in US dollars were investigated, notable Monday anomalies were obtained in SZC1, DOW, MERVAL, WIG20, FTSEMIB and STI; Tuesday anomalies notable in SPX, SPXT; Wednesday anomalies stand out in MEXBOL, JCI, DAX, SMI, AS51, NKY and NZSE50FG; Thursday anomalies are prominent in SMEC, PX, and PCOMP; Friday anomalies are prominent in IBOV, IPSA, $RTSI, XU100, SENSEX, FBMKLCI, IBEX and HSI index. with the phenomenon of the valuation effect for these selected indices when they were in US dollars.

Omar Khalif Gharaibeh. (2018): Five Calendar Effects in The Amman Stock Exchange. Vol: 22 Issue 04

Aiming: To investigate the effect of five different calendar effects on the Amman Stock Exchange for the period from January 2012 to December 2017. These effects are "day of the week", "half month", "January" and "end of the month" and "January and non-January Monday return." While the presence of some valuation effects has been verified using the Jordanian market index, the current study is the first to examine the impact of five different valuation effects on stock returns. On Monday, while the Amman Stock Exchange shows a much higher average return on Thursdays, Jordanian stock returns are positive and statistically significant

during the first half of the month. The Amman Stock Exchange provides much larger monthly returns in January and December.

2. Efficient Market Hypothesis.

The efficient market hypothesis is considered one of the most controversial hypotheses investigated in issues of financial ethics. It states that the market is considered efficient if the price reaction of the securities traded in it is directed towards the information, financial, economic and other influential data available to dealers in the fast market, in which the exchange of investment tools takes place easily at prices close to the real values (of these) tools, where the balance is achieved with both sides accept (demand and supply). Eugene Fama provides an accurate description of an efficient market that has a sustainable impact on practitioners and academics in the field of finance (., and A, & Tversky, 1979) Fama attributes: The money market has a major role in distributing the ownership of capital shares Capital. Stock(Osman, 2014, p. 76). M. Kendal argues that efficient financial markets are: markets in which the prices of instruments fluctuate randomly around their normal acceptable values, which in turn rationally reflect all the information available to all parties in an appropriate manner, and these prices adjust quickly according to new information. (Maarouf, 2014, p. 74),

 According to European Journal of Economic and Political Studies the definition of the market hypothesis effective,(Degutis and Novickytė 2014 p 02) An effective market could exist if the following conditions persist (Jones, 1993: 626; Shleifer, 2000: p 2) . There are a large number of rational dividends that maximize profits from investors who actively participate in the market, thus rationally valuing securities. Investors quickly and completely react to new information, causing share prices to adjust accordingly (k, 2012, p. 121) .As defined by the efficiency of financial markets, in order to be efficient, a combination of the following characteristics must be available:

- **Transparency,** i.e., the ability of investors to obtain data and information on the prices of offers and orders, and the amount of insurance at all times and with full accuracy during the course of the transaction.
- **Disclosure and advertising** of all information on companies listed on the money market that would affect the supply and demand forces of the financial paper.
- **Liquidity:** Meaning that an exchange of all available investment instruments can be conducted quickly and easily when both parties agree at reasonable prices close to the latest insurance of the commodity itself.

An efficient market depends primarily on information, and Fama has identified three formulas of market efficiency to illustrate the available information:

1. Weak form Efficiency this hypothesis requires that market prices reflect only historical information about stocks, such as prices and volume of previous transactions, meaning that the prices of traded securities reflect historical information about stock prices in the past in full. (Interview, 2013, p. 189)

2. Semi-Strong efficiency Prices reflect all publicly available information, including past returns, profit forecasts, and everything in the financial

statements in the form of current data and information that is publicly published (historical information + current public), whether this information relates to the national economy or the sector to come. The company belongs to (., and A, & Tversky, 1979, p. 77) , It must be fully reflected in stock prices. Thus, one cannot make higher profit using fundamental market analysis which is efficient in semi-strong form.

3. Strong Level Hypothesis means that the prices traded in the market reflect the effect of all publicly available information about the company. That complete information (not only general but also internal) is contained in share prices. The stock price is the same with its intrinsic value. No investor is able to make profits through transactions that are based on any type of information (public or private).(Drogalas et al. 2014 p 5)

2.1 Calendar Anomalies.

The subject of apparent deviations has attracted the attention of many Advocates and practitioners as parts of these deviations have been considered seasonal effects. Meaning that seasonal effects by the tendency of equities to perform differently over different periods of time, including seasonal patterns such as week-day effects, year-month effects and holiday effects. (HALIM, 2014, p. 02) Financial asset returns have been shown to systematically highlight patterns at specific times, such as annual, monthly, weekly, or daily. In opposition to the efficiency theory, showing that it is possible to predict price during some periods and seasons.(Mattarocci 2014   p 7).

The effect of the day of the week was defined ((Patev, Katerina , & Nigokhos, 2003)) as a phenomenon that takes the form of a deviation from the efficient financial market theory, therefore, the average daily return of the market is not equal across all days of the week as expected based on the efficient market theory; as points out the effect of the day of the week results in high (or low) and statistically significant returns on a specific day of the week. Studies have shown from markets and across different time periods, returns results in a common seasonal pattern, which is the tendency of returns to be negative and significant. (Dilmy, Masoudi *2018 p100*):

The statistic on Monday is lower than the returns of the rest of the week, while the returns on Friday tend to be high, positive and significant. The effect of a month of the year is when the returns in some months are higher than in others. One of the most common and interesting findings in research throughout the year - month effects anomaly is the "January Effect." It is strongly argued that this month's equity returns differ significantly from those of the rest of the years.

3. Method and tools used:

3.1 study data: This study uses data for the QSI General daily price index (closing price) during the period between 02/01/2018 to target 06/07/2021. With 876 viewers, the historical data for the QSI was obtained (from the official website of the Qatar Exchange posted at: https://www.investing.com/equities/dfm-historical-data)

The day-to-day return of the general indicator of the Qatari financial market has been calculated according to the following formula (Dilmy, Masoudi *2018*)::

$$R_t = (\ln(P_t) - Ln\ (P_{t-1})) * 100$$

Where:

R : Represent return daily closing general index for the current period (t)

P_t : Represents the daily closing price of the general index for the current period (t)

P_{t-1} : Represent The daily closing price of the general index for the previous period $(t-1)$

3.2 MODEL USED: Model used: To achieve the objectives of the study, the self-regression model was adopted, conditional on the heterogeneity of generalized error variation (GARCH) (1.1) and OLS. This model is studying the impact of today's week. The GARCH model by adding the self-regression limit to give the following equation:

$$R_{t=}\ \alpha_1\ Sun_t + \alpha_2\ Mon_t +\ \ \alpha_3\ Tus_t + \alpha_4 Wed_t + \alpha_5\ Thu + e_t$$

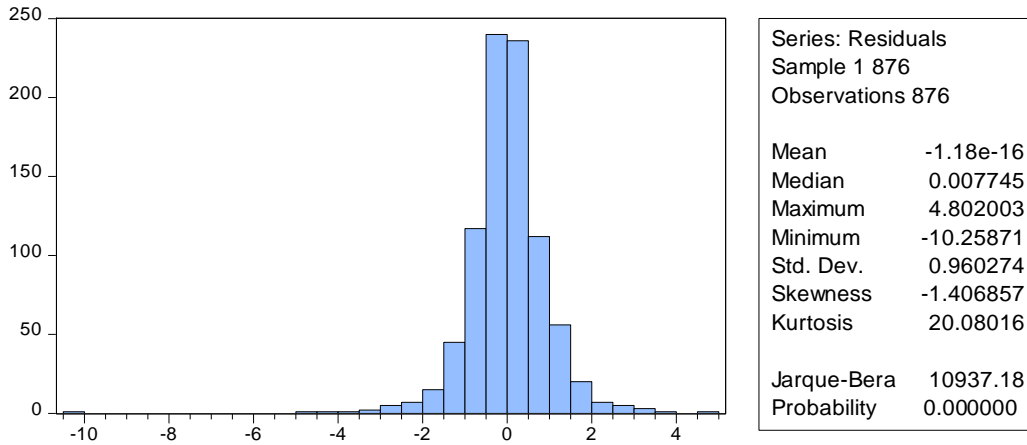- **Rt:** Index return per day t
- Sunt is a dummy variable equal to 1 if it is a Friday and 0 otherwise.
- Mont is a dummy variable equal to 1 if it is Monday and 0 otherwise.
- Tuest is a dummy variable equal to 1 if it is a Tuesday and 0 otherwise .
- Wedt is a dummy variable equal to 1 if it is a Wednesday and 0 otherwise.
- Thut is a dummy variable equal to 1 if it is a Thursday and 0 otherwise.

4. Results and discussed.

4.1 Descriptive statistic.

From Table 01: shows that the market price series under study extends from 02/01/2018 to 06/07/2021 we get on 876 daily views, From Table (1), it can be seen that the smallest value in the time series was (-10.25871-) and the largest value was (4.802003), and the average of the time series is equal to (= 0.0000218) and with a standard deviation equal to (0.011718). It is also shown that the value of the Skewedness coefficient is negative, which is indicated by the resulting value (-1.406857), and therefore the curve is skewed towards the left. As for the Kurtosis coefficient 20.08016>3 This indicates that the distribution is uniform Leptokurtique, from the above it is clear that the chain of returns does not follow the distribution. It is shown by a statistical value (Jarque-bera = 0.00000) if we reject the null hypothesis and accept the alternative hypothesis that the series of returns related to the QSI index does not follow a normal distribution

Table 1: Original QSI series during the period (2018-2021)

Series: Residuals	
Sample 1 876	
Observations 876	
Mean	-1.18e-16
Median	0.007745
Maximum	4.802003
Minimum	-10.25871
Std. Dev.	0.960274
Skewness	-1.406857
Kurtosis	20.08016
Jarque-Bera	10937.18
Probability	0.000000

Source: Prepared by researchers based on EVIWES10

4.2.1 Testing the significance of the series autocorrelation function coefficients for the Qatari market index: The series is stable if the coefficients of its correlation function are no different from zero. Table 02 shows the self-correlation and the partial chain correlation function in a logarithmic form with the propagation form of these estimated parameters.

Table 02: Autocorrelation function of QSI stock returns series

Date: 07/18/21   Time: 11:33
Sample: 1 878
Included observations: 876

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.056	0.056	2.7632	0.096
		2	-0.011	-0.014	2.8697	0.238
		3	0.056	0.058	5.6280	0.131
		4	0.019	0.012	5.9404	0.204
		5	-0.011	-0.011	6.0423	0.302
		6	-0.001	-0.002	6.0427	0.418
		7	-0.078	-0.081	11.448	0.120
		8	-0.072	-0.063	16.008	0.042
		9	-0.029	-0.024	16.729	0.053
		10	0.009	0.019	16.803	0.079
		11	-0.004	0.004	16.818	0.113
		12	-0.040	-0.036	18.238	0.109
		13	-0.023	-0.022	18.718	0.132
		14	0.050	0.045	20.944	0.103
		15	0.073	0.063	25.647	0.042
		16	0.050	0.041	27.878	0.033
		17	0.006	-0.003	27.907	0.046

Source Prepared by researchers based on EVIEWS 10

4.3 Descriptive statistics of the daily returns of the study index according to the days of the week.

Table 3: Statistics Descriptive of the daily returns of the study index according to the days of the week

Day of the week effects				
	Av	S. D	MAX	MIN
SUNDAY	0.01972634	0.3981599	1	**0**
MONDAY	0.02029647	0.4024359	1	**0**

TUESDAY	0.01961231	0.3972894	1	**0**
WEDNESDAY	0.01995439	0.3998856	1	**0**
THURSDAY	0.01995439	0.3998856	1	**0**

	ADF Test		**Philips -Perron T est**		
With constant	With constant and trend	With constant and trend	With constant	With constant and trend	With constant and trend
192.3057-0.0001 ***	192.2195-0.0001 ***	192.4674-0.0001 ***	-27.9627 0.0000***	-27.9490 0.0000***	-27.9604 0.0000***
ALL	0.0264284	0.9661194	4.853013	**10.2077-**	

Source: Prepared by the two researchers, based on program outputs STATA

Table 3 shows that average returns, standard deviation, maximum and minimum returns in percentage terms of the effects of a day of the week points out that the average return for Sunday and Monday under an estimate of 0.01972634 and 0.02029647 respectively. However, the average return for Tuesday is 0.01961231 and the average return for Wednesday and Thursday is the same as estimated at 0.0195439. Monday has the biggest standard deviation of 4024359. The current search looks at this by looking for the unit root of the average yield of diameter. The PP Phillips-Perron (PP) and ADF tests are used in this study as they are the most commonly used tests.

4..3 Unit root tests:

The PP Phillips-Perron (PP) and ADF tests were used in this study as they are the most commonly used tests. Table (4) summarizes that the return chain is stable at its original level when applying ADFs and PP tests where we note that Prob = 0 in both ADF and PP with constant, general direction and unit root, which means accepting the alternative hypothesis that the unit root is not stable, including the RTMG in its original level, which is characteristic.

Table 4: Unit Root Tests for Data

Source: Prepared by the two researchers, based on program outputs EViews10

5. simple regression auto trace day week and estimate consequences GARCH (1.1)

Table No. 4 shows the results of the statistical analysis of weekday returns using the Qatar Stock Exchange Index QSI in the period from 2018/01/02to 21/07/2021.The first column of the table shows the days of the week in the second column to the fifth column shows the regression coefficients for. Dummy Variables for both models OLS and GARCH.

Table 5. Results of the daily regression analysis by. method OLS Compared to GARCH (1.1)

	THE RESULT OF DAILY REGESSION ANALYSIS			
Variable	OLS Coefficient	Prob	GARCH Coefficient	**Prob**
Sun	0.340071	0.4370	-0.366736	**0.1971**

Mon	0.427610	0.3256	-0.308601	**0.2825**
Tus	0.121158	0.7806	0.520276	**0.0741**
West	0.324705	0.4579	0.322110	**0.2600**
Thu	0.368583	0.3996	-0.350923	**0.2200**
F statistic	2.124797	0.060424		
Adjusted R2		**0.012064**		
D Watson		**1.884942**		

Source: Prepared by the two researchers based on program outputs EViews10

Looking at the results of weekday coefficients as shown in Table 5 using OLS, we find that it was (0.4370) (0.3256) (0.7806) (0.4579) (0.3996) for Sunday, Monday, Tuesday, Wednesday and Thursday, respectively, as the results indicate that the average returns on Monday are lower than the rest of the days with significant differences with statistically significant level 5. Moreover, there is a positive, direct and apparent relationship between the variables, as the degree of correlation was estimated for Monday (0.427610), followed by Thursday (0.368583), and the degree of correlation for Tuesday is estimated at 0.121158, which is considered the lowest value. The F test indicates that daily coefficients are not equal in terms of statistics, which leads to the conclusion that the effect of the day of the week is positive and affects the return, which suggests that there is statistical significance in testing differences in the average returns on Monday and the rest of the week, and this is called an anomaly deviation from the efficiency hypothesis The market therefore seeks investors to avoid large negative returns on this day. Consequently, while displaying GARCH (1,1) is negative and statistically significant for a day Monday (-0.308601), looking at the coefficient on Tuesday and Thursday, we find that it is negative with statistical significance, while the coefficient of GARCH The average returns of Wednesday's regression analysis are positive and statistically significant, which indicates the presence of Anomalies on the efficient market hypothesis.

We conclude by using both forms OLS And GARCH That there are differences in the average returns for Monday, which indicates That there is a negative, statistically significant effect of Monday on the returns of the Qatari stock market. Thus, when we using two models OLS And GARCH (1.1) We result that the average returns for the week related to Monday are different in statistical significance.

Conclusion

The effect of the day of the week is one of the most Anomalies in the studied calendar. Its presence in a particular market has important implications for both academics and practitioners. Theoretically, analysis of this effect provides information regarding the level of market efficiency. Practitioners use it to build their investment strategy, especially if it's their intention to predict the daily change in price offers. Our paper examines this anomaly on the Qatar stock market through the evolution of the overall index, QSI, our results show an impact on Monday, when the average return is higher than the rest of the week. This is one of the most common effects in the financial literature.

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