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# The Effect of Market Anomalies on the Inefficiency of Stock Returns

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**Abstract:** This paper serves the purpose to analyses market anomalies and their agents on returns in the Iranian indexes between 2017 and 2020. Principled patterns in financial market are incompatible to the efficient market hypothesis, as stock market returns can be done applying these systematic models. Real investors may not be able to achieve the return and profitability due to the scarcity of their financial resources. Accordingly, the study of the role of real investors in the volatility of stock returns is very important. Well timed actions of investors prices of stocks directly adapt to the new information, and give thought to all the available information. So no investor can chastise the market by generating abnormal returns. The model period is 2017 to 2020 to represent the continuity of the monthly result. This scholarship put upon the advantageous sampling procedure, also known as the judgmental sampling technique, of weekly returns from Iranian indexes and major world indexes based on specific criteria. The demodulations offer an abnormal month of the year outcome stand in some Iranian indexes during the research duration. The vehemence of month of the year anomalies lessens with time. The investigation also illustrate that month of the year factors are more unremitting between indexes with smaller market capitalization.

**Keywords:** Real Investors, Month of the Year Effect, Return, Market Anomalies

## 1. Introduction

Principled patterns in financial market are incompatible to the efficient market hypothesis (EMH), as stock market returns can be done applying these systematic models [1-30]. These patterns efficacy the efficiency of stock market being about market anomalies [30-43]. Between these systematic patterns, one of the widepropagation anomalies is month effect. Pertaining data on the clause and orientation of a market will be achievable to financiers if the market is impressive [1-3]. Bhuyan (2018) and Chandra (2017) in his book discuss that an efficient market can demonstrate factual stock prices also avouch the validity of the circumstances illustrated. Investigation on the revenue of capital markets is mostly complete [4, 7]. These studies discover the contrary of the notion of affective capital markets in some capital markets, that is when the state of the stock does not identity existing witting. Bodie et al. (2012) in their wittings arranged three cliques of market efficiency based on data containing weak form proficiency, semi-strong form proficiency and permanent form proficiency [5]. A disputation of efficient market examination cannot be separated from a disputation of the individuation of the perversions and burbles associated with the effectual market hypotheses. Deflections and disorderliness's are called market anomalies. Jiang and autore (2014) and onoh and ndu-okereke, (2016) express that different situations in a capital market will reason impacts that can be looked in the pulsation of stock prices in a capital market [22, 30]. Unpredictable status with instances or tentative outlooks in a capital market are also customarily named market irregularities. In other words, a market anomaly is a proof of an aberration or an antithesis in the capital market hypothesis. One likewise market irregularity is the month of the year effect. correspondent to Jahfer and Inoue (2014) the month of the year result mentions to the case whereby the stock returns in selected months are higher than in other months [21]. The most widepropagation and exciting

demodulation from the above studies of the monthly result anomaly within a year. afterwards, a stock price may growth or diminution from month to month in one interchanging year in a capital market. This treatment is called the month of the year effect. The month of the year effect refers to the discrepancy in monthly returns in each month of the year. Specifically, this study objects to dissociation the phenomenon of a market's anomalous month of the year outcome on the indexes of Iran indexes.

# 2. Research Methods

A fund market is a pivotal mean in an economy that renders to outfit funds from citizens to plenteous parts. A company is an opponent that requisites sources and can enhance them through the capital market by marketing its shares to the public or exporting bonds. however, investors are an opponent with funds who can utilize the capital market as an another enterprise to attainment profits [31-36]. In his book indicates that the benefits of capital markets are that they supply fountainheads of financing for the business world plus allow the optimal allocation of fund inventions; impute vehicles to investors while enabling diversification musses; furnish outstanding indexes for the country's economic trends; administer company acquisition to the middle class; propagation acquisition, openness and profession; make a wholesome business climate; outreach employment or number of profession and render the chance to have a wholesome and futuristic company. Market output can be defined as the ratio between security prices and the data in course. A market is forenamed to be impressive if no one particular investor or institutional investor can gain uncommon returns, equiponderant for risk, using existing trading tactics (Wong et al., 2006; Zhang, Lai et al., 2017). Bodie et al. (2012) in his transpiration identifies three kinds of impressive market hypotheses relying on "all existing information". The feeble form hypothesis shows that stock prices erenow reverberate all the information that can be gained by testing market trading data such as a history of past prices, trading volume or short-term interest rates. The semi-strong form obligation develops the notion that all publicly accessible information regarding a company's panoramas should be inverted in stock prices. A safe form of the affective market express that stock prices reverberate all the relevant data on a company even containing information that is only available to people within the company (Clarke et al., 2008). A market anomaly is a rule less situation that is unsuitable or extravagates from an efficient market hypothesis. The anomaly here is one of the phenomena in the marketplace, where things are found that should not stand and it is supposed that efficient markets exist. Investors can obtain advantage of situation in the event of market anomalies to get abnormal returns on investments [42, 43]. Jamróz Paweland Koronkiewicz (2014) Lopez Bernal et al. (2013) and Moskowitz et al. (2012) showed that an anomalous analysis is usually relyed on perceptions of long-term financial time series to study its effects and its repetition [23, 27, 28]. Long-term series must be important because they lower the likelihood of discovering relevant phenomena. An ongoing anomaly is a needful status to make a profitable enterprise strategy. Schwert (2003) ratiocinated that calendar anomalies are empirical outcomes that are repugnant with the demeanor theory of possession valuation [34]. This pretension is founded by Hawaldar et al. (2017) and Jain (2017) [20, 22]. One of the anomalies that surfaced calendar month of the year is the result that is the mold in certain months of each year. Jahfer and Inoue (2014) indicate the most common demodulation about the study of the month of the year result are the "January effect" and the "April effect" [21]. It is well-thought-of that stock returns in January and April are main and variant from other months of the year yield. This infract the efficient market hypothesis (EMH) partly outstretched by Fama in the 1960s [15]. Sharpe et al. (1999) tongue there are three reasons of the January result, that is tax-loss selling, window dressing and small and beta stocks [35]. Tax-loss selling is selling stocks with a low value with the purpose of diminishing tax debt, while window dressing sells stocks with low value so the year-end portfolio of a company sight good. A small or beta stock is the tropism in January for more small companies to furnish a higher level of return contrasted to large companies. Bekaert and Hodrick, (2017) describe a return as the outcome gained from a finance [3]. The relapse may be for an investment that has happened or expectances that have not occurred yet but are attended to occurred in the days to come. The stock returns for each day can be accounted exploiting the addendum formula [16, 19, 39]:

$$R_d = \ln \frac{P_d}{P_{d-1}} \times 100 \quad (1)$$

Where $R_d$ is return of stock on day d, $P_d$ is the closing price on day d and $P_{d-1}$ is the closing price on day d–1.

### *2.1. Data Collection Method*

The information analysis contained of many steps, namely numerating each return from January 2017 to 2020 and then regimentation the computed return indexes into months. Moreover, a market dissociation examination eligible anomalous month of the year factors. In this test, the tester examining to analyse the entity of market anomalies about the month of the year result on some Iranian indexes and the world's major indexes pending the perception period, that is 2017 to 2020. scholar in equivalent studies have used the linear regression test (OLS) and the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) method.

### *2.2. Simple Linear Regression Analysis*

Model was executed by gaining a dummy variable with the regression equation, as showed below:

$$R_m = \beta 0 + \beta 1 DJan + \beta 2 DFeb + \beta 3 DMar + \beta 4 DApr + \beta 5 DMay + \beta 6 DJun + \beta 7 DJul + \beta 8 DAug + \beta 9 DSept + \beta 10 DOkt + \beta 11 DNov + et \quad (2)$$

Where, $R_m$ is monthly return index in t; $\beta$ is regression coefficients for the dummy variable of each month except one; $D$ is dummy for each month except one. Hakim (2014) noticed that, to acquire an estimator with the hoped-for properties, or Best Linear Unbiased Estimator, OLS should meet standard guess. the linear regression model are as follows:

$$\text{The Mean Residual}=E\ (u_i|X_i)=0, \quad (3)$$

$$\text{Assumption's Homokedastisitas}=E\ (U_i|X_i - E\ (U_i|X_i))^2=\sigma^2 \quad (4)$$

$$\text{The Assumption of No Serial Correlation}=E\ (U_i|X_i - E\ (U_i|X_i))\ (U_j|X_j - E\ (U_j|X_j))=0,\ _i \neq _j, \quad (5)$$

Since the researcher is exploit time series data, transgression variance cases were often set up that are not constant. Consequently, the time series data has a heteroscedasticity problem. Chatfield (2016), Fryzlewicz and Subba Rao (2014) argued that an error does not obtain a constant variance problem, but it can safely be applied for modelling and auguring [8, 18, 29]. The basic equation using ARCH modelling. In their work Nachrowi and Usman (2006) perceived that the ARCH model is used to overcome the uncertainty of residual risk [29]. The advantage of this approach is that conditional variance, or short-term volatility, is a function of the error on the returns of the past. Bollerslev (1986) noted that the GARCH plan is handled when there is an error variance belonging on the squared error terms pending the last period of the data set [6].

# 3. Results and Discussion

Several of the indexes in the interval 2017 to 2020 show a significant probability value at α=4%, indicating the existence of a market anomaly month of the year effect. In the period 2017 to 2020, the effect on several indexes is seen regarding March, July, August, September and October. The outcome of this research is the November effect on the NIKKEI 225 index. The month of the year result adumbrations that, per the correct plan of financing with relation to time, money principals, financial solicitors and financiers can obtain benefit of this sample.

***Table 1.*** *The Existence of the Month of the Year Effect from 2017 to 2020.*

| Index | Method | Jan | Feb | Mar | Apr | May | Jun |
|---|---|---|---|---|---|---|---|
| BISNIS27 | OLS | 0.003 | 0.0068 | 0.0070 | -0.0016 | -0.0039 | 0.0016 |
| | GARCH (1,1) | 0.0075 | 0.0080 | 0.0076 | -0.0045 | -0.0056 | 0.0047 |
| JKSE | OLS | 0.0037 | 0.0061 | 0.0078 | 0.0013 | -0.0031 | 0.0001 |
| | GARCH (1,1) | 0.0037 | 0.0061 | 0.0078 | 0.0013 | -0.0031 | 0.0001 |
| KOMPAS100 | OLS | 0.0038 | 0.0069 | 0.0075 | -0.0001 | -0.0039 | 0.0000 |
| | GARCH (1,1) | 0.0077 | 0.0075 | 0.0067 | -0.0042 | -0.0034 | 0.0028 |
| LQ45 | OLS | 0.0043 | 0.0067 | 0.0074 | -0.0003 | -0.003 | 0.0011 |
| | GARCH (1,1) | 0.0088 | 0.0074 | 0.0068 | -0.0041 | -0.003 | 0.004 |
| PEFINDO2 5 | OLS | 0.003 | 0.0069 | 0.0105 | 0.0032 | 0.0011 | -0.0028 |
| | GARCH (1,1) | 0.0063 | 0.008 | 0.0102 | 0.0031 | -0.0007 | 0.0037 |
| SRI | OLS | 0.004 | 0.0069 | 0.0084 | -0.0004 | -0.0033 | 0.0022 |
| KEHATI | GARCH (1,1) | 0.0081 | 0.0076 | 0.0077 | -0.0042 | -0.0042 | 0.0053 |
| CAC40 | OLS | 0.0006 | 0.0071 | 0.0018 | -0.001 | -0.0073 | -0.0002 |
| | GARCH (1,1) | 0.0017 | 0.006 | 0.0023 | 0.0025 | -0.0049 | -0.0003 |
| DAX | OLS | 0.0017 | 0.0062 | 0.0042 | 0.0000 | -0.0046 | -0.0012 |
| | GARCH (1,1) | 0.0016 | 0.0057 | 0.0051 | 0.0002 | -0.0041 | -0.0043 |
| FTSE100 | OLS | -0.0006 | 0.0085 | -0.0019 | 0.0019 | -0.0065 | 0.0006 |
| | GARCH (1,1) | -0.0006 | 0.0085 | -0.0019 | 0.0019 | -0.0065 | 0.0006 |
| IBEX35 | OLS | -0.0039 | 0.0023 | 0.0000 | -0.0031 | -0.0107 | -0.0005 |
| | GARCH (1,1) | -0.0024 | 0.0019 | 0.0019 | 0.0004 | -0.0089 | -0.0027 |

***Table 1.*** *Continued.*

| Index | Method | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|
| BISNIS27 | OLS | 0.0070 | -0.0059 | 0.0018 | 0.0058 | -0.0011 | 0.0034 |
| | GARCH (1,1) | 0.0067 | -0.0032 | 0.0090 | 0.003 | -0.0040 | 0.001 |
| JKSE | OLS | 0.0067 | -0.0051 | 0.0021 | 0.0051 | -0.0004 | 0.0027 |
| | GARCH (1,1) | 0.0067 | -0.0051 | 0.0021 | 0.0051 | -0.0004 | 0.0027 |
| KOMPAS100 | OLS | 0.0062 | -0.0059 | 0.0013 | 0.0055 | -0.0007 | 0.0024 |
| | GARCH (1,1) | 0.0062 | -0.0042 | 0.0086 | 0.0037 | -0.0018 | 0.0003 |
| LQ45 | OLS | 0.0064 | -0.0053 | 0.002 | 0.006 | -0.001 | 0.0024 |
| | GARCH (1,1) | 0.0058 | -0.0039 | 0.009 | 0.0041 | -0.0022 | 0.0013 |
| PEFINDO2 5 | OLS | 0.0044 | -0.0112 | 0.0009 | 0.0061 | -0.0025 | 0.0045 |
| | GARCH (1,1) | 0.0107 | -0.0091 | -0.0073 | 0.0021 | -0.0011 | 0.0045 |
| SRI | OLS | 0.0088 | -0.0047 | 0.0018 | 0.0049 | -0.002 | 0.0022 |
| KEHATI | GARCH (1,1) | 0.0085 | -0.0031 | 0.0088 | 0.004 | -0.0032 | 0.0022 |
| CAC40 | OLS | 0.0006 | -0.0035 | 0.0016 | 0.0069 | 0.001 | 0.0022 |

| Index | Method | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|
| DAX | GARCH (1,1) | 0.0044 | -0.002 | 0.0023 | 0.005 | -0.0001 | 0.003 |
| | OLS | -0.0005 | -0.0067 | 0.0031 | 0.0109 | 0.0066 | 0.001 |
| FTSE100 | GARCH (1,1) | 0.0023 | -0.0032 | 0.0041 | 0.0089 | 0.0074 | 0.0022 |
| | OLS | 0.0017 | -0.0023 | 0.0000 | 0.0057 | -0.0005 | 0.0037 |
| IBEX35 | GARCH (1,1) | 0.0017 | -0.0023 | 0.0000 | 0.0057 | -0.0005 | 0.0037 |
| | OLS | -0.0007 | -0.0015 | 0.0069 | 0.0038 | -0.0019 | 0.002 |
| | GARCH (1,1) | 0.0028 | -0.0024 | 0.0056 | 0.0043 | -0.0027 | 0.0026 |

In the entirely duration and the sub-period of 2017 to 2020, the September result is realized in all Iranian indexes. This remedy that topics are changing Iran's capital market in this month likely for the Islamic holy day of 'Eid happened in September in the study period. There is the probability that 'Eid affected the Iranian capital market in September for the vast feck of the Iranian population is Islamic. thus, this celebration results the Iranian capital market but not the world's major capital markets in the research conclusion. moreover, in the sub-period 2017 to 2020, the outcome of April on almost all indexes of Iran can be ascribed to the celebration, or birthday, which befalls in April.

# 4. Conclusions and Recommendations

The main conclusions of the present study can be summarized as follows:

The outcome indicates the phenomenon of the month of the year effect by consuming the GARCH with Iranian indexes in the period 2017 to 2020.

There were no phenomena as to the month of the year and the sub-period effect by using the OLS model.

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