Calendar Anomalies in Emerging Markets: The Case of Jordan

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**Problem:**
According to Fama’s Efficient Market Hypothesis (EMH) the market price of a security reflects all historical information. Therefore, one cannot consistently earn increased returns on the basis of price change predictions made on the basis of a correlation between past prices and future stock prices. In other words, stock prices move randomly and any predictable price change or observable patterns are called anomalies. Over the years, researchers have uncovered many anomalies in the market including: Friday the 13th effect, day of the week effect, Halloween indicator, good weather effect, daylight savings time, January effect, good mood effect, geographical distance, winning home-team effect, and presidential elections effect.

For example, Nippani and Medlin (2002, Journal of Economics and Finance) studied the impact of the delay in the declaration of a winner in the US Presidential Elections of 2000 on the performance of stock markets (S & P 500, DJI, and NASDAQ). There was a significant initial negative reaction to the delay in the election results. The reaction was for only 4 days and most negative reaction was noticed immediately after the delay occurred. The market adjusted for the delay after that (confirming the market efficiency concept).

Many of these anomalies are known to those in the market and according to the efficient market hypothesis investors should take advantage of the return differences. However the phenomena still seems to exist. Furthermore, most previous research has focused on developed financial markets and few studies have included emerging markets.

**Objectives:**
The proposed research will examine the existence of the seasonal stock market anomalies in the Amman Financial Market (AFM) and will test the market for day-of-the-week effect, January effect, and holiday effect.

**Literature Review:**
Balaban (1995, Applied Economics Letters) showed than common stock returns on average are abnormally low on Mondays and abnormally high on Fridays (followed by Wednesday as the second highest day of the week). Data was collected from Turkey and covered the period from 1988 to 1994. The results are consistent with those from US, Japanese, Canadian, and Australian stock markets.
Linden and Louhelainen (2006, Applied Financial Economics Letters) used the Minimum Absolute Deviation (MAD) estimation method to examine weekday anomaly in 18 international stock exchanges (all well-developed markets and mostly large). They found weekday anomaly in 2 markets with OLS method and in 8 stock exchanges with the MAD approach. They suggest that the MAD method is more reliable than the OLS because the residuals of regressions are not normally distributed (??). A low Monday effect was not found in this study.

Lucey (2001, Applied Economics Letters) examined the Friday the 13th anomaly for 19 countries and found that stock market returns tend to be higher on that day than those on other Fridays. The results were obtained in 11 out of the 19 countries showing a statistically significant difference based on a two-tailed t-test at 10%. At the 5% level, the number dropped to five countries. The sample examined did not contain any emerging markets.

Bouman and Jacobsen (2002, The American Economic Review) examined the validity of an old European saying: “Sell in May and go away” which refers to a popular strategy of selling stocks and holding cash in anticipation of a bear market during the summer months. In the United States a similar phenomenon was observed that starts in May and ends in October and dubbed the “Halloween Indicator”. They found that in 20 of the 37 countries there was a significant Sell in May effect at the 10-percent level. For 10 countries the effect was highly significant at the .01 level. They also noticed that in almost all countries, August and September were particularly “bad” months for the stock markets with returns approaching zero or even in the negative. They also found that a Halloween strategy outperforms a Buy and Hold strategy in all countries examined except Hong Kong and South Africa.

**Hypotheses:**
It is anticipated that calendar/seasonal anomalies will exist in the Amman Financial Market as follows:

<table>
<thead>
<tr>
<th>Anomaly</th>
<th>Hypotheses</th>
<th>Possible Explanation</th>
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<tbody>
<tr>
<td>Day-of-the-week-effect</td>
<td>Stock returns tend to be lowest on Mondays</td>
<td>Negative information is held for release until after the markets have closed on Friday. Or, due to differences in number of settlement days available. Or, investors had more time to revaluate portfolio decisions.</td>
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<tr>
<td>January effect</td>
<td>Higher stock returns during January particularly for smaller capitalization firms</td>
<td>Tax-loss argument: it pays to recognize security losses early and gains late. Incentives contract of investments managers: higher motivation to take risk at the beginning of a</td>
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<tr>
<td>Holiday effect</td>
<td>Abnormally high returns on the trading day before a holiday</td>
<td>Possibly related to investors’ positive mood</td>
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**Methodology:**

The data set that will be used in testing the hypotheses consists of daily closing values of the AFM index from January 1987 to December 2007. Daily return is calculated as the percentage logarithmic change in the value of index compared to previous day’s closing value as follows:

\[ r_t = \ln \left( \frac{v_t}{v_{t-1}} - 1 \right) * 100 \]  

\[ r_t = \text{Percentage change in AFM on day } t. \]

\[ v_t = \text{The last value of AFM on day } t. \]

\[ v_{t-1} = \text{The last value of AFM on day } t-1. \]

In order to test whether the seasonality’s in stock returns and trading volume, the same method will be applied as it was used by Gibbons and Hess (1981) by using the following model. For example, to test the day-of-the-week effect:

\[ r_t = D_{1y} + \gamma_2 D_{2t} + \gamma_3 D_{3t} + \gamma_4 D_{4t} + \gamma_5 D_{5t} + \varepsilon_t \]  

\[ r_t = \text{Change in daily value of index in period } t. \]

\[ D_{1t}, D_{2t}, D_{3t}, D_{4t}, D_{5t} = \text{Dummy variables for Monday, Tuesday, Wednesday... respectively.} \]

\[ D_{1t} = \text{Dummy variable for Monday, if day } t \text{ is a Monday, otherwise zero.} \]

\[ \gamma_i = \text{Regression coefficients are expected daily mean stock returns for Monday through Friday.} \]

\[ \varepsilon_t = \text{Random error term for day } t. \]

\[ t = 1, \ldots, T \]

What is being tested here is the equality of the mean changes in stock returns across all the days of the week. If the hypothesis is rejected, it means that strong seasonality in stock returns across the days of the week existed.

\[ \gamma_1 = \gamma_2 = \ldots = \gamma_5 \]  

If the expected return is the same for each day of the week, the estimates of \( \gamma_2, \ldots, \gamma_5 \) will be close to zero and F-statistic measuring the joint significant of the dummy variables should be insignificant.

**Data Collection:**

Stock market indices of historical common share prices from the Amman Financial Market for the years 1987-2007 will be used in testing the hypothesis.
**Validation:**
Multiple countries and observations extending over long periods of time will be examined. The model will be tested on the three main indices in the AFM: Industrial Index, Agricultural Index, and Insurance & Banking.

**Results and Conclusions:**
Since this is only a proposal, this section is not needed.