JANUARY EFFECT, YES!
WHAT ABOUT
MARK TWAIN EFFECT?[*]

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JANUARY EFFECT, YES! WHAT ABOUT MARK TWAIN EFFECT? [1]

Abstract

This paper primarily aims to investigate month of the year effects in an emerging stock market of a developing country namely Turkey. For the period 1988-93, percentage returns on the Istanbul Securities Exchange Composite Index (ISECI) are employed. The paper reports significantly large returns during three months: January, June and September. Among these, January has the highest daily mean return of one percent, reflecting a compounded monthly return of 22 percent which is about four times greater than global return if all months are considered. Compounded return in June and September is about half of that in January. However, these results are not stationary through different subperiods. The paper explains these anomalies by asymmetric information among traders.

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I. INTRODUCTION

Informational efficiency of stock markets, first mentioned by Fama *et al.* (1969), have been in agenda of financial community since then. Following Fama's (1970) influential review of theory and empirical work on efficient capital markets, finance literature has been dominated by voluminous work on informational efficiency.[2] However, efficient market hypothesis has never been out of question.

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For example, any predictable pattern in stock market returns is judged evidence against efficient market hypothesis. A well-known objection to efficient markets in this nature stems from seasonality in stock market returns.

Seasonal anomalies or calendar effects in securities markets have been much discussed among academics and practitioners.[3] Major seasonalities documented in the literature of this field are month of the year effects, day of the week effects, turn of the month effects, turn of the year effects, and holiday effects. Among these, the first one is the scope of this paper.

A major finding in most of the empirical research on monthly seasonality in stock markets is the so-called January effect concerning abnormal returns during this month compared to the rest of the year. The January effect, first mentioned by Wachtel (1942), is more particular for small capitalization companies. A more formal investigation is due to Rozeff and Kinney (1976). In addition, Gültekin and Gültekin (1983) provides evidence in support of the January effect for the U.S. and other industrialized countries. More recently, Agrawal and Tandon (1994) investigate monthly anomalies in eighteen countries other than the U.S.

Another interesting anomaly is the so-called Mark Twain effect which concerns that average returns during the month of October are significantly lower than those in the rest of the year. According to quotation from Cadsby (1989), Twain (1981), in his classic novel, writes "October. This is one of the peculiarly dangerous months to speculate in stocks in. The others are July, January, September,

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[2] For an excellent review, see Fama (1991).
[3] See Thaler (1987), and Ikenberry and Lakonishok (1989), among others, for a survey.

April, November, May, March, June, December, August, and February." Cadsby (1989) provides evidence in the support of the Mark Twain effect in Canadian stock market.

Most of the empirical research on monthly anomalies employs data from developed stock markets. However, there is little work on the Turkish stock market in international literature.[4] This paper primarily aims to investigate month of the year effects in an emerging stock market of developing country namely Turkey.

II. DATA AND METHODOLOGY

Daily observations of the Istanbul Securities Exchange Composite Index (ISECI) are employed in this paper to investigate month of the year effects. Data sources are Capital Market Board and the Central Bank of the Republic of Turkey. ISECI is a weighted index using closing prices of stocks. It is calculated and published by the Istanbul Securities Exchange (ISE). Daily percentage returns on ISECI in each month for the period January 4, 1988-December 31, 1993 are calculated as follows:

$$R_{j,t} = [(I_{j,t} - I_{j,t-1}) / I_{j,t-1}] * 100 \quad (1)$$

where $I_{j,t}$ and $R_{j,t}$ denote index number and return on day *t* in month *j*, respectively.

Assuming that there are 20 trading days in a month,[5] compounded returns are computed as follows:

$$r_j = (1 + mean_j)^{20} - 1 \quad (2)$$

[4] To my knowledge, recent published work includes Metin and Muradoğlu (1995a, b), Balaban (1995), Muradoğlu and Ünal (1994), and Muradoğlu and Önkal (1992).
[5] In fact, average number of trading days slightly differs across months.

where r_j and $mean_j$ refer to compounded return and mean daily return in month *j*, respectively. All calculations are in local currency; i.e., Turkish lira.

Mean daily returns are compared to detect month of the year effects, if any. To this end, the null of equality of mean daily returns across months are tested for the period 1988-93. In addition, variance ratios are also calculated to emphasize volatility differences across months.

Time series stationarity of empirical results are of great importance to financial econometrician. To this end, data set is divided into two subperiods: 1988-90 and 1991-93. All calculations are repeated for these subperiods to check whether the reported results are stationary.

III. EMPIRICAL RESULTS

Table 1 provides summary statistics concerning monthly returns on ISECI for the periods 1988-90, 1991-93, and 1988-93. Mean daily returns are significantly different from zero for these periods if all months are included. In addition, there is no significant difference with respect to mean and standard deviation among these periods. Therefore, risk-return relationship at the ISE does not significantly differ across subperiods under consideration. However, it widely differs across months.

For the period 1988-93, the null of equality of the mean daily return to zero is rejected for only three months: January, June, and September. Each of them has large positive returns during this period. Among these, January has the highest mean daily return which is one percent. Compounded return during the month of January is 22% which is four times greater than global compounded

return if all months are considered. Compounded return in June and September is about half of that in January and double of global return. Thus, the paper reports a June and a September effect in addition to the January effect. However, the results are not stationary across subperiods. First, mean daily return in January for the first subperiod is 50% greater compared to that in the second one. In addition, standard deviation is smaller in the first one. Second, the June effect does not appear during the first subperiod. Third, the September effect is not observed during the second subperiod. Finally, a significant May effect and a November effect are found for the periods 1988-90 and 1991-93, respectively.

March, April, July and October have negative mean daily returns. However, these figures are not significantly different from zero. Therefore, the paper reports no significant Mark Twain effect or any other negative effects at the ISE for the period 1988-93. However, it is still interesting to observe negative mean returns following the months in which significant large returns are reported.

Coefficient of variation, standard deviation divided by mean, provides a better measure for risk-return relationship when mean and/or standard deviation differ across months. Note that January has the least risk per unit of return among others. In this sense, June and September follow January. In addition, coefficient of variation in January is only one-third of that of the whole period. The corresponding figures in June and September are less than half of the global risk per unit of return.

Another measure of dispersion is studentized range; i.e., range divided by standard deviation. For the period 1988-93, three months appear to widely differ with respect to studentized range: April, June

and October. The figures associated with these months are about twice greater than that of the whole period. There seems nothing special with the other months regardless of different periods.

The results of two-sample analysis of equality of daily mean returns across months for the period 1988-93 are summarized in Table 2. In 16 of 66 pairs, the null of equality of mean daily returns between the pairs is rejected at the 10 percent level or better. The month of January is included in half of these 16 pairs. January, June and September mean daily returns are not significantly different from each other. January is more volatile than June is more volatile than September. If mean daily returns do not significantly differ across pairs, variance ratios have further merit to investigate. For example, mean daily return in February is not significantly different from those in the rest of the year except January. However, it is more volatile than the other months. A similar observation applies to November.

IV. DISCUSSION AND FURTHER RESEARCH

The empirical results of this paper are in the support of the previous research findings: monthly seasonals in stock markets are an international phenomenon. The large and significant returns are observed during the months of January, June, and September in the Turkish stock market for the period 1988-93. Among these, January returns are as twice greater as June and September returns. However, the results change in direction and magnitude if a subperiod analysis is included.

Finance literature provides two major explanations for the January effect. First, tax-loss selling at the end of the tax year leads to lower returns in December and higher returns in January. Haugen and Wichern (1973), Dyl (1977), Reinganum (1983), Roll (1983),

among others, support this view. On the other hand, Jones *et al.* (1987) note that the January effect was also observed before capital gains became effective in the U.S. In addition, Agrawal and Tandon (1994) provides evidence for tax year seasonality for most countries but not for all.

A second explanatory factor, suggested by Haugen and Lakonishok (1988), for the January effect is portfolio rebalancing by investors. This argument depends on performance compensation of portfolio managers. In general, performance evaluation is done on a calendar year basis.

The argument of tax-loss selling in explaining the January effect does not apply to the Turkish stock market where there are no capital gains taxes. However, a partial effect may stem from foreign investors who hold large portfolios in the ISE and are subject to capital gains taxation under their national tax codes. In my opinion, performance evaluation cannot explain the January effect at the ISE since portfolio management in Turkey is still infant. In addition, stock prices do not decline in December as expected by both arguments above but indeed increase.

A more powerful explanation for the monthly anomalies detected in the Turkish stock market can be attributed to timing in disclosure of financial statements. In addition, this applies not only for the January effect but also but also for the June and September effects. Companies registered at the ISE have to disclose their cumulative financial statements quarterly throughout the year. The financial year in Turkey runs January through December. Thus, three-month, six-month and nine-month financial statements appear in April, July and October, respectively. Annual statements are

published, in general, during the first four months of the following year. Investors particularly those having large portfolios may well anticipate good performers during a financial reporting period. This is more particular for banks having large holdings in stock market companies. Therefore, investors with superior information, mostly due to cross ownership of companies, may rebalance their portfolios by increasing their holdings in stocks of companies expected to have performed well during the reporting period. This behavior of informed traders attracts liquidity or noise traders to the stock market with the feeling or anticipation of a bull market. However, these uninformed traders buy, on the average, bad performers. What follows is a bear market. Note that, although not significantly different from zero, mean daily returns are negative during the periods financial statements are published. Therefore, one can speculate that asymmetric information among investors may cause the reported monthly anomalies in the Turkish stock market.

One can easily notice that the above argument does not apply in March. What is expected under asymmetric information approach is that March should be a bull market. Two factors appear to have merit in explaining negative March returns. The first one can be that liquidity needs of companies and investors become higher during March since accrued taxes are paid in this month. This leads to a selling market. A second factor is that ordinary annual meetings of shareholders are usually held in March and April. This brings additional noise to the behavior of market participants.

Further research can and should be constructed to investigate to what extend the reported anomalies are valid for individual stocks and portfolios. A sensitivity analysis seems useful to identify size and industry factors in addition to analysis of good/bad performers during

a financial reporting period. Another fruitful area of research is whether a trading strategy based solely on the detected anomalies can beat a buy-and-hold strategy in an emerging market.

Table 1. *Summary Statistics*

	Daily Mean	Compounded Return	Standard Deviation	Studentized Range	Coefficient of Variation
ALL MONTHS					
1988-90	0.25**	5.15	3.01	7.52	11.96
1991-93	0.29***	5.95	2.85	7.33	9.85
1988-93	0.27***	5.55	2.93	7.72	10.85
	1.21[a] ***	27.24	3.01	5.42	2.48
JAN	0.80[b] *	17.20	3.54	5.67	4.45
	1.00[c] ***	22.08	3.30	6.09	3.29
	0.12	2.41	3.25	5.15	27.33
FEB	0.39	8.00	3.39	5.36	8.78
	0.25	5.15	3.32	5.47	13.22
	-0.31	-6.04	2.67	5.74	-8.60
MAR	-0.01	-0.28	2.25	5.27	-159.97
	-0.17	-3.33	2.49	6.16	-14.71
	0.03	0.60	2.20	6.39	74.17
APR	-0.06	-1.16	2.90	5.46	-49.46
	-0.01	-0.26	2.56	16.69	-193.83
	0.59 *	12.54	2.46	4.08	4.15
MAY	0.00	0.05	2.73	4.80	1,006.18
	0.30	6.17	2.61	5.02	8.72
	0.18	3.66	2.15	4.71	11.92
JUN	1.03***	22.65	2.75	5.20	2.68
	0.56**	11.90	2.47	14.29	4.39
	0.38	7.81	2.35	4.85	6.23
JUL	-0.36	-6.88	2.60	4.59	-7.31
	-0.03	-0.63	2.52	4.99	-79.48
	0.05	0.99	3.38	5.17	68.38
AUG	0.45	9.48	2.82	6.83	6.21
	0.25	5.06	3.12	6.16	12.64
	1.02***	22.46	2.93	4.84	2.88
SEP	0.09	1.74	2.36	4.91	27.43
	0.54**	11.48	2.70	5.30	4.95
	-0.09	-1.88	3.67	4.45	-38.65
OCT	-0.30	-5.88	2.28	4.87	-7.55
	-0.19	-3.80	3.09	16.31	-15.96
	-0.61	-11.46	3.08	4.59	-5.07
NOV	1.15***	25.68	3.27	5.35	2.85
	0.26	5.28	3.29	5.43	12.78
	0.55	11.68	3.75	6.04	6.77
DEC	0.35	7.22	2.53	5.55	7.23
	0.45	9.35	3.18	7.13	7.10

[a] 1988-90; [b] 1991-93; [c] 1988-93. ***, ** and * denote statistical significance at the 1 percent, 5 percent and 10 percent levels, respectively, in two-tailed tests, based on the *t*-statistic for the difference of the mean daily return from zero. All figures except studentized range and coefficient of variation are in percentages.

Table 2. *Two-Sample Analysis for Equality of Daily Mean Returns Across Months: 1988-93*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
FEB	1.780 *										
	0.99 [a]										
MAR	3.207***	1.135									
	1.75	1.78									
APR	2.614***	0.872	-0.476								
	1.65	1.68	0.94								
MAY	1.865 *	-0.127	-1.462	-0.923							
	1.59	1.61	0.91	0.96							
JUN	1.170	-0.823	-2.318***	-1.729 *	-0.806						
	1.78	1.80	1.01	1.08	1.12						
JUL	2.762***	0.746	-0.434	0.055	1.011	1.844 *					
	1.71	1.74	0.98	1.04	1.08	0.97					
AUG	1.876 *	0.010	-1.182	-0.695	0.146	0.878	-0.773				
	1.12	1.13	0.64	0.68	0.70	0.63	0.65				
SEP	1.209	-0.765	-2.201**	-1.624	-0.730	0.057	-1.738 *	0.815			
	1.49	1.52	0.85	0.90	0.94	0.84	0.87	1.34			
OCT	2.953***	1.081	0.069	0.482	1.356	2.096**	0.448	1.123	2.015**		
	1.14	1.16	0.65	0.69	0.72	0.64	0.66	1.02	0.76		
NOV	1.804 *	-0.016	-1.174	-0.701	0.112	0.820	-0.777	0.027	0.762	-1.121	
	1.00	1.02	0.57	0.61	0.63	0.56	0.58	0.90	0.67	0.88	
DEC	1.372	-0.478	-1.738 *	-1.222	-0.404	0.319	-1.319	-0.512	0.264	-1.627	-0.472
	1.08	1.09	0.62	0.65	0.68	0.61	0.63	0.97	0.72	0.95	1.08

[a] Variance ratio between months at column and row. ***, ** and * denote statistical significance at the 1 percent, 5 percent and 10 percent levels, respectively, in two-tailed tests, based on the *t*-statistic for equality of mean daily returns across months. The top number is calculated *t*-value.

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