EMPIRICAL EVIDENCE FOR DAY OF THE WEEK EFFECT IN AN EMERGING MARKET: THE TURKISH CASE

Sadullah Çelik[1]
Marmara University

Hüseyin Kaya[2]
Bahçeşehir University

Abstract

There are many studies which have demonstrated the presence of day of the week effect-a well-known market anomaly-for security returns. Moreover, there are some studies which conclude in favor of day of the week effect in exchange rates. However, one rarely finds any studies which examine the validity of day of the week effect for consumer confidence indices. To the best of our knowledge, there is no study on this topic for an emerging market. This is probably one of the first attempts to assess the day of the week effect on both mean and volatility for daily changes in *consumer confidence index* in Turkey using the CNBC-e consumer confidence index data during the period of January 2003-July 2008. Employing ordinary least squares method, there is no favorable evidence for the presence of day of the week effect. When we allow variance of errors to be time dependent and model conditional variance using exponential generalized autoregressive conditional heteroskedasticity (E-GARCH) method, we are able to validate day of the week effect both in mean and volatility of the daily changes in consumer confidence index. In our findings, the mean equation exhibits only Friday effect and the lowest volatility is also observed for Friday. Finally, we use nonparametric stochastic dominance (SD) approach by employing several SD tests and we verify the existence of Friday effects.

Keywords: Day of the Week Effect, Consumer Confidence Index, Volatility, E-GARCH, Stochastic Dominance.

JEL Classification: C32, D11, D12.

[1] Marmara University, Department of Economics, E-mail: scelik@marmara.edu.tr
[2] Bahçeşehir University, Department of Economics, E-mail: huseyin.kaya@bahcesehir.edu.tr

PDF created with pdfFactory trial version www.pdffactory.com

1. Introduction

One of the well known market anomalies, the day of the week effect has been the subject matter of many studies in the literature. Most of these focused on the analysis of stock returns while some were concerned with return on foreign exchange rates.

One of the earliest, Cross (1973) shows that mean return on Friday is higher than mean return on Monday in S&P 500 index during the period of 1953 and 1970. His finding has constituted the building block of day of the week effect literature as many studies questioned whether markets are inclined to rise towards the end of the week. Following Cross, many empirical studies (French, 1980, Gibbons and Hess, 1981, Rogalski, 1984, Jaffe and Westerfield, 1985, Aggarwal and Rivoli, 1989, Chang et al., 1993, Dubois and Louvet, 1996, Tong, 2000, Tsiakas, 2006) find that return on Monday is lower than return on any other day of the week. In a recent attempt, Basher and Sadorsky (2006) examine the behavior of 21 emerging stock markets by including unconditional and conditional risk factors. Their main finding is that there is strong day of the week effect in a few emerging stock markets even under the inclusion of conditional market risk. Mazumder et al. (2008) assess the day of the week effect on return of 17 countries' iShares markets and empirically show that iShares exhibit day of the week effect.

On the other hand, there is also a vast literature which considers return in foreign exchange rates rather than the return on stocks within the day of the week effect theory. Among others, McFarland et al. (1982), Hilliard and Tucker (1992), Cornett et al. (1995), Aydoğan and Booth (2003), Yamori and Kurihara (2004), Berument et al. (2007) conclude in favor of day of the week effect when they evaluate the depreciation of exchange rates.

The present study tries to contribute to the literature by analyzing the day of the week effect on both mean and volatility for daily changes in CBNC-e *consumer confidence index* (CCI) in Turkey. This is original for three reasons: First, to the best of our knowledge, no previous empirical study has examined the day of the week effect on CCI. Second, there exists only one study which evaluates the daily characteristics of CCI for an emerging market like Turkey (Aslanoğlu and Çelik, 2008). Last, due to the first two reasons, there is no study which has examined the validity of day of the week effect in CCI for an emerging market.

PDF created with pdfFactory trial version www.pdffactory.com

Our empirical findings demonstrate that daily changes in CNBC-e consumer confidence index exhibits day of the week effect. Additionally, we find that there is day of the week effect on the variability of index using both parametric and nonparametric methodology. The rest of this study is organized as follows. Section two includes a brief literature survey on consumer confidence index and the Turkish experience on the subject matter. Section three has the data and methodology. Section four includes the empirical findings and section five concludes.

2. Consumer Confidence

One of the common beliefs in economics is that consumers' expectations of future economic outlook play an important role in the future path of macroeconomic variables. Hence, in many countries (both developed and emerging) consumer confidence indices aim to measure consumer attitudes which will proxy the potential impact of the psychological decision-making process of consumers in economics. It is well known that Katona (1960) has been the leading figure in the concept and measurement of consumer confidence.[3] In its simplest terms, consumer confidence index is thought to be a significant leading indicator due to its earlier announcement compared to other economic and financial indicators.

2.1 Brief Literature Review on Consumer Confidence

There are mainly three different approaches in the consumer confidence literature as suggested by Throop (1992):

i) First view argues that consumer confidence measures uncertainty or risk which comprises the possibility of job and/or income loss. Therefore, given an increase in the probability of financial distress it is probable that an individual household would save more in liquid form to meet a possible shortfall in future income. This will lead to postponement of expenditures on consumer durables due to illiquidity on the household side (Mishkin, 1976 and 1978). So, this mechanism builds on the notion that consumer confidence should measure confidence (distrust) instead of optimism (pessimism).

[3] In order to evaluate and analyze the impact of changes in consumer attitudes and expectations, the first survey of consumer confidence was conducted in the United States by University of Michigan.

PDF created with pdfFactory trial version www.pdffactory.com

ii) The second view proposes that consumer confidence predominantly measures optimism or pessimism about future economic conditions. This is better known as the life cycle-permanent income hypothesis (LC-PIH), where current spending depends upon expected future income.[4] Hence, current consumption should depend on the total amount of disposable resources that are expected to be available over the whole lifetime of an individual. Due to its' inherent future looking characteristics, consumer confidence index may represent a better measure than an analysis which has its roots in past income values (Matsusaka and Sbordone, 1995 and Utaka, 2003).[5]

iii) Last approach-which has been recently studied extensively-is the well known Rational Expectations Permanent Income Hypothesis (REPIH) which argues that consumer confidence is a significant forecaster of spending. Hence, in order to make accurate predictions of consumer spending, we should have a survey comprised of a set of questions which are essential in analyzing the future expectations of rational agents (Ludvigson, 2004, Kwan and Cotsomitis, 2004, 2006a, 2006b).

2.2 Consumer Confidence in Turkey

Since 2001, there has been a rising interest in leading economic indicators in emerging markets. This is mainly attributed to the resurgence of rational expectations hypothesis. One of these emerging markets is Turkey, which had no consumer confidence index till 2002, but is rather rich in terms of leading economic indicators with at least two monthly and ongoing consumer confidence indicators at present.[6] It has been empirically shown that consumer confidence should be influenced by many real and financial variables such as industrial production, movements in stock market index and foreign exchange rates in a monthly frequency in an emerging market like Turkey (Güneş et al., 2007).

[4] Modigliani and Brumberg (1954) have developed the life-cycle theory, and Friedman (1957) has introduced the permanent-income hypothesis. Hall (1978) shows that under the permanent income hypothesis, consumption could have high inertia close to a random walk.

[5] Campbell and Mankiw (1991) separate the consumption behavior of households into two parts as those individuals who follow the permanent income hypothesis and those who simply consume their current income.

[6] A third one-prepared by a private company depending on funding from the European Union-has been also announced for the last two years now.

PDF created with pdfFactory trial version www.pdffactory.com

Unfortunately, the data sets for most of the real variables in economics are not available on daily basis. Hence, researchers analyze the relationship between consumer attitudes and real variables such as production, employment and population only for monthly or longer frequencies. Nevertheless, one should expect that changes in daily consumer confidence should be sensitive to daily changes in financial variables through the wealth effect. Indeed, as previous studies already demonstrated that exchange rate markets and the stock markets exhibit day of the week effect in Turkey (Basher and Sadorsky, 2006, Berument, et al., 2007) it is reasonable to claim that anomalies in financial variables may contagion to the consumer confidence. It is possible to detect such a spillover effect by an analysis of the day of the week effect in CCI. A favorable finding will underline the link between financial markets and consumer attitudes. Furthermore, it will stand as the evidence for the dynamic nature of expectation formation and decision making process in emerging markets where participants act rather faster than developed and deep financial markets.

In Turkey, there are two historically well-known consumer confidence indices; CNBC-e Consumer Confidence Index and TCMB – TUİK (CBRT - TURKSTAT) Consumer Confidence Index. In this study, we use the CNBC-e Consumer Confidence Index for the empirical analysis as we are able to calculate its daily data set and also it has the longest data span. The index is composed of the questions below:

1) We would like to learn your current economic situation. Can you compare your (and your family's) current financial situation with last year?

The answers are:

Better	Worse	Same	No Idea

2) What do you think your (and your family's) future financial situation will be in a year?

The answers are:

Better	Worse	Same	No Idea

PDF created with pdfFactory trial version www.pdffactory.com

3) Can you compare your current expectations about Turkish economy with the previous month?

The answers are:

Better	Worse	Same	No Idea

4) What do you think Turkish economy's situation will be in a year?

The answers are:

Better	Worse	Same	No Idea

5) Do you think that the current period is a good time to buy durable consumer goods such as TV, refrigerator and furniture or vehicles or residence?

The answers are:

Good Time	Bad Time	No Idea

The index is calculated according to following formula:
Index Value = (Current period value / Base period value) *100

Current period's value for each question is being calculated as =
((Number of optimistic answers for the question – Number of pessimistic answers for the question) / number of survey)*100) + 100

The current period values of each question are summed up to obtain current period's value for the overall index. The methodology used to compile and to calculate the index has been adopted from the Michigan University index of consumer sentiment.[7] The base period of the

[7] Consumer confidence in the Unites States has been measured nationally by two sources. The University of Michigan produces an index of consumer sentiment based on a telephone survey of 500 households. This survey has been conducted since the 1940s and became a monthly survey in 1978. The other, provided by the Conference Board, is a consumer confidence index that started in 1967 and became monthly in 1977. This index

PDF created with pdfFactory trial version www.pdffactory.com

index is set as January 2002 and the value of the index at this period is 100. The index has a point of scale ranging from 0 to 200. The sample used to collect survey data is chosen from a database maintained by the survey provider. The database contains records of approximately 15,000,000 individuals. The index is compiled of 704 completed surveys. The survey data is obtained from the respondents between the 27th day of the current month and the 26th day of the next month. The distribution of the completed surveys meets seven criteria:

1) 70 percent is selected from Istanbul, Ankara and Izmir, 30 percent selected from other cities and big districts in Turkey.
2) 60 percent is selected from 36-55 age group, 40 percent is selected from 18-35 age group.
3) 50 percent is male and the other half is female.
4) 50 percent of the total surveys are composed of new records.
5) A minimum of 30 percent of new records belongs to individuals who had been successfully surveyed in the previous month.
6) A maximum 20 percent of 704 completed surveys may be composed of additional respondents and these respondents are not called again in the next month.
7) Last and one of the most important criteria is that respondents are not surveyed more than two times. This helps to minimize the biases in the answers of respondents.

3. Data and Methodology[8]

We use the CNBC-e consumer confidence index data for the period of January 1, 2003 - July 25, 2008. The CCI is calculated[9] using the data obtained from CNBC-e Consumer Confidence Index Survey Provider. Change in daily index is calculated as follows:

$$z_t = \ln(\frac{I_t}{I_{t-1}})$$

---

is based on a mail-out survey where approximately 2,500 responses are tabulated as they come in for a given month.

[8] This and next part of the analysis draws heavily on Çelik and Kaya (2009) except the stochastic dominance approach.

[9] The CCI values are calculated daily with reference to the starting base value of January 2002. The daily values for the starting days of the new survey for each month (Between 27th and the end of the month) is set equal to the announced value of the previous month so that a large number of survey responses will be gathered that can be used to calculate the new month's daily values when the new month actually starts on the 1st. 704 surveys are distributed evenly throughout the working days of the month. So, this procedure prevents any statistical bias.

PDF created with pdfFactory trial version www.pdffactory.com

where z is the daily changes in CCI and I stands for the CCI index value.

Table 1 summarizes the main descriptive statistics of CCI for days of week. Kurtosis for all days of the week is very high and therefore null of normality is rejected. Friday has the lowest mean value whereas Monday has the highest one. Daily change in Monday and Tuesday has lowest and highest standard deviations, respectively.

Table 1 - Descriptive Statistics

	Monday	Tuesday	Wednesday	Thursday	Friday
Mean	0.0025	-0.0009	0.0004	-0.0023	-0.0009
Median	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	0.1491	0.4604	0.3323	0.2961	0.2395
Minimum	-0.3105	-0.2739	-0.4983	-0.2579	-0.3157
Std. Dev.	0.0344	0.0506	0.0461	0.0440	0.0376
Skewness	-1.4587	1.4092	-3.2903	0.1153	-2.3254
Kurtosis	30.285	31.706	61.290	24.343	35.840
Jarque-Bera	9004	9984	41436	5505	13293
Probability	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	287	288	289	290	290

3.1 Ordinary Least Squares Analysis

To investigate day of the week effect on daily changes in CCI, first we employ the following regression model by employing ordinary least square technique.

$$z_t = b_1 D_{Mt} + b_2 D_{Tt} + b_3 D_{Wt} + b_4 D_{THt} + b_5 D_{Ft} + \sum_{i=1}^{4} b_{4+i} z_{t-i} + e_t \qquad (1)$$

where z_t is daily change in consumer confidence index, D_{Mt}, D_{Tt}, D_{Wt}, D_{THt}, and D_{Ft} are dummy variables for Monday, Tuesday, Wednesday, Thursday and Friday respectively and e_t is error term. We include one week delay lag for daily changes in CCI to overcome the problem of autocorrelation.

PDF created with pdfFactory trial version www.pdffactory.com

3.2 E-GARCH Method

Another serious problem the data set has could be the variance of residuals not being constant and most probably time varying. ARCH models, introduced by Engle (1982), are proposed to correct the variability of error variance, modeling error variances as a function of past errors. Bollerslev (1986) generalized this approach by adding past variances of error term into the model. After the introduction of GARCH, many additional GARCH models were developed. In this study, we employ Exponential GARCH (E-GARCH) to analyze day of the week effect. E-GARCH model was introduced by Nelson (1991). Generalized structure of E-GARCH model including dummy variables are following:

Mean equation;

$$z_t = b_1 D_{Mt} + b_2 D_{Tt} + b_3 D_{Wt} + b_4 D_{THt} + b_5 D_{Ft} + \sum_{i=1}^{4} b_{5+i} z_{t-i} + e_t \qquad (2a)$$

Variance equation;

$$\log(s^2) = a_1 D_{Mt} + a_2 D_{Tt} + a_2 D_{Wt} + a_4 D_{THt} + a_5 D_{Ft} + \sum_{i=1}^{q} b_i \log(s_{t-i}^2) + \sum_{j=1}^{p} d_j \left| \frac{e_{t-i}}{s_{t-i}} - E\left(\frac{e_{t-i}}{s_{t-i}} \right) \right| + \sum_{k=1}^{r} l_k \frac{e_{t-k}}{s_{t-k}} \qquad (2b)$$

In Equation (2b), left hand size is the logarithm of conditional variance of error term. This model assumes that the leverage effect is exponential. Also, the forecasts of the conditional variances are constrained to be nonnegative.[10]

3.3 Stochastic Dominance Approach

In order to solidify the finding of existence of day of the week effect in CCI we also perform non-parametric stochastic dominance approach which uses the realized distribution of change in CCI. There are three main types of stochastic dominance; first order SD (FSD), second order SD (SSD) and third order SD (TSD).

[10] Nelson and Cao (1992) argued that the non-negativity constraints in the linear GARCH models are too restrictive. In E-GARCH model, there is no non-negativity constraint on the parameter of past values of conditional variance and error term. Here, we assume that error term has normal distribution with zero mean and time varying conditional variance.

PDF created with pdfFactory trial version www.pdffactory.com

Definition: *Let F_1 is cumulative distribution function (CDF) of random variable X with mean of m_x and G_1 is CDF of random variable Y with mean of m_y. Let F_2 and G_2 denote the area under F_1 and G_1 respectively and F_3 and G_3 denote the area under F_2 and G_2, respectively.*

1- *X dominates Y by **FSD** if and only if $F_1(x) \leq G_1(x)$ for all possible x with strict inequality for at least one value of x.*
2- *X dominates Y by **SSD** if and only if $F_2(x) \leq G_2(x)$ for all possible x with strict inequality for at least one value of x.*
3- *X dominates Y by **TSD** if and only if m_x **f** m_y and $F_3 \leq G_3$ for all possible x with strict inequality for at least one value of x.*

Therefore, SD results imply hierarchy in which FSD implies SSD and in turn SSD implies TSD.[11] To analyze the day of the week effect in daily changes in CCI by using SD approach we employ three different SD tests. The first one is proposed by Anderson (1996), the second one by Davidson and Duclos (2000) and last one by Barrett and Donald (2003). Anderson (1996) SD tests are based on t-statistics comparing the object calculated in two independent samples. On the other hand, Davidson and Duclos (2000) SD test is based on tests of inequality constraints which in turn practically lead to small number comparisons that are made by choosing fixed number of arbitrary points. Finally, Barrett and Donald (2003) SD test is a Kolmogorov-Smirnov type test and make comparisons at all.

4. Empirical Results

Table 2 depicts the OLS results of equation (1). The findings of OLS estimation indicate that none of daily dummies is significant. We perform Wald coefficient restriction test to see whether daily dummies are jointly significant but we cannot reject the null of dummies joint insignificance[12]. As a result, OLS estimation shows that there is no day of the effect on daily changes in consumer confidence index. We perform several autocorrelation tests namely Breusch-Godfrey Serial Correlation LM test, Ljung-Box Q test and ARCH-LM test for several different lags and find that there is no serial correlation.

[11] However, the reverse order is not true.

[12] F-statistics and corresponding probability of Wald test statistic are 0.34 and 0.886 respectively.

PDF created with pdfFactory trial version www.pdffactory.com

Table 2 - OLS Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D_M	0.001569	0.002436	0.644178	0.5196
D_T	-0.000767	0.002432	-0.315461	0.7525
D_W	0.000360	0.002428	0.148353	0.8821
D_{TH}	-0.002175	0.002427	-0.896256	0.3703
D_F	-0.001493	0.002419	-0.617206	0.5372
z_{t-1}	-0.284939	0.026358	-10.81020	0.0000
z_{t-2}	-0.168596	0.027238	-6.189823	0.0000
z_{t-3}	-0.105748	0.027230	-3.883544	0.0001
z_{t-4}	-0.070608	0.026331	-2.681521	0.0074

By modeling conditional variance of equation (1) as an E-GARCH (1, 1) process we estimate the mean equation (2a) and variance equation (2b) jointly. In the estimation of variance equation, we exclude the Wednesday dummy to fix the near nonsingular matrix problem. Table 3 shows the results of E-GARCH model.

Estimates of mean equation indicate that there is day of the week effect. All dummies but Friday is insignificant. We also test the coefficients of D_{Mt}, D_{Tt}, D_{Wt}, and D_{THt} jointly and find that joint effect is also insignificant[13]. Only Friday is significant and has negative effect on daily change of CCI. This result shows that consumers become pessimistic as the weekend approaches. There can be several reasons for this rather interesting finding in an emerging market like Turkey:

1) It is well known that the level of spending per se increases at the weekends, and as the weekend approaches consumers start feeling the pressure of their budget constraints.

2) One could also argue that individuals in an emerging market like Turkey hardly have any leisure time at the weekends which is full of fixing the needs of the family, visiting friends, etc. This rather could act as a depressing factor rather than the comfort that leisure should provide.

[13] F-statistics and corresponding probability of Wald test statistic are 1.42 and 0.223 respectively.

PDF created with pdfFactory trial version www.pdffactory.com

3) Another factor could be related to expectations. For many households that have no hope of working at the weekends, leisure is substituted for income. It is quite possible that many of these Turkish households would prefer to work and earn extra income rather than have leisure.

4) Last, many consumers work also at the weekends (at least on Saturdays) and they should feel the loss of much needed leisure time whereas they hardly get paid the worth of their disutility.

Table 3 - Results of E-GARCH(1,1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
D_M	0.002437	0.001626	1.498875	0.1339
D_T	0.003879	0.002835	1.368181	0.1713
D_W	0.005123	0.003564	1.437639	0.1505
D_{TH}	0.001955	0.002093	0.934197	0.3502
D_F	-0.004227	0.001405	-3.007872	0.0026
z_{t-1}	-0.011961	0.051877	-0.230570	0.8176
z_{t-2}	-0.083204	0.033409	-2.490505	0.0128
z_{t-3}	-0.082529	0.033505	-2.463191	0.0138
z_{t-4}	-0.049075	0.030567	-1.605488	0.1084
Variance Equation				
d	0.507563	0.041844	12.12980	0.0000
l	0.116014	0.032979	3.517810	0.0004
b	0.029286	0.030787	0.951261	0.3415
a_1	-0.608180	0.050414	-12.06377	0.0000
a_2	0.050477	0.046464	1.086364	0.2773
a_4	-0.244844	0.048732	-5.024248	0.0000
a_5	-0.750822	0.037079	-20.24910	0.0000
ARCH-LM(5):0.248(*0.940*), ARCH-LM (10): 0.297 (*0.981*), ARCH-LM(20): 0.327 (*0.997*), Ljung-Box Q(36): 21.211 (*0.976*)				

Estimation results of variance equation show that coefficients of three of four dummies, Monday, Thursday and Friday are significant. This finding shows the existence of the day of the week effect for the volatility equation. Among others, Friday has the lowest volatility. To check whether Wednesday dummy is significant, we perform the test by replacing Tuesday with Wednesday and conclude that Wednesday is also insignificant. We test the presence of

PDF created with pdfFactory trial version www.pdffactory.com

autocorrelation by employing ARCH-LM and Ljung-Box test statistics and the results show that there is no autocorrelation.

Last in the empirical part to solidify the findings for Friday, we employ the nonparametric stochastic dominance approach. If Friday has significantly the lowest daily change, we will be able to find that all days dominate Friday in some order.[14] The columns show the *p-values* of all tests considered in this study for the daily change comparisons under the null of M, T, W, Th dominate F.

Table 4: Stochastic Dominance Test Results

		M against F	T against F	W against F	Th against F
Anderson (1996)	**FSD**	0.438	0.435	0.582	0.131
	SSD	0.402	0.196	0.285	0.040
	TSD	0.361	0.179	0.237	0.044
Davidson and Duclos (2000)	**FSD**	0.459	0.428	0.561	0.110
	SSD	0.639	0.086	0.600	0.438
	TSD	0.393	0.127	0.513	0.521
Barrett and Donald (2003)	**FSD**	0.450	0.403	0.549	0.450
	SSD	0.735	0.013	0.396	0.186
	TSD	0.689	0.004	0.281	0.260

For Anderson (1996), we report *p-values* for simulated and 10 evolution points. For Davidson and Duclos (2000), we report *p-values* of Wald test and 10 evolution points. For Barrett and Donald (2003), we report *p-values* of KS1 model.

The main finding of our test results is that all days dominate Friday in first order. Anderson (1996) SD test and Davidson and Duclos (2000) SD test suggest that Thursday and Tuesday cannot dominate Friday at second and third order, respectively. However, as SD results imply hierarchy we conclude that all other days of the week dominate Friday, strengthening our parametric results with the non-parametric stochastic dominance approach results.

5. Conclusion

This paper examines day of the week effect on daily changes in consumer confidence index and their volatility. We start by employing OLS and find no day of the week effect. Considering the time varying variance, next we assess day of the week effect with E-GARCH specification. Our estimates of the mean equation show that daily changes of consumer

[14] Like in previous sections, M, T, W, Th and F represent Monday, Tuesday, Wednesday, Thursday and Friday, respectively.

PDF created with pdfFactory trial version www.pdffactory.com

confidence index in Turkey exhibits Friday effect. Moreover, estimates of variance equation indicate that there is day of the week effect on variability of confidence index. Last, we employ several nonparametric SD tests and verify the Friday effect. These results are striking as they demonstrate the dynamic response of individuals in an emerging market to the changing conditions of the global world. Moreover, they validate the intrinsic nature of expectation formation, which is characterized by economic, cultural, psychological and sociological factors.

References

Aggarwal, R. and Rivoli, P., (1989), "Seasonal and day of the week effect in four emerging stock markets", *Financial Review,* 24, 541-550.

Anderson, G., (1996), "Nonparametric tests for stochastic dominance", *Econometrica,* 64, 1183-1193.

Aslanoğlu, E. and Çelik, S., (2008), "The relationship between consumer confidence and financial markets: The case of Turkey", *Paper presented at the 7th International Conference of the Middle East Economic Association*, 29-31 May, Gazimagosa, North Cyprus.

Aydoğan, K. and Booth, G., (2003), "Calendar anomalies in the Turkish foreign exchange markets", *Applied Financial Economics*, 13, 353–360.

Barrett, G. F. and Donald, S. G., (2003), "Consistent tests for stochastic dominance", *Econometrica*, 71(1), 71-104.

Basher, S. A. and Sadorsky, P., (2006), "Day-of-the-week effects in emerging stock markets", *Applied Economic Letters*, 13, 621-628.

Berument, H., Coşkun, M. N., and Şahin, A., (2007), "Day of the week effect on foreign exchange market volatility: Evidence from Turkey", *Research in International Business and Finance*, 21, 87–97.

Bollerslev, T. (1986), "Generalized autoregressive conditional heteroskedasticity", *Journal of Econometrics*, 31, 307-327.

PDF created with pdfFactory trial version www.pdffactory.com

Campbell, J. Y. and Mankiw, N. G., (1991), "The response of consumption to income—a cross-country investigation", *European Economic Review*, 35, 723–756.

Chang, E., Pinegar, M., and Ravichandran, R., (1993), "International evidence on the robustness of the day of the-week effect", *Journal of Financial and Quantitative Analysis*, 28, 497-513.

Cornett M. M., Schwarz T. V., and Szakmary A. C., (1995), "Seasonalities and intraday return patterns in the foreign currency futures market", *Journal of Banking and Finance*, 19, 843–869.

Cross, F. (1973), "The behavior of stock prices on Fridays and Mondays", *Financial Analyst Journal*, November-December, 29, 67-69.

Çelik, S. and Kaya, H., (2009), "Day of the week effect in Turkish consumer confidence index", *Paper presented at the 8th International Conference of the Middle East Economic Association*, 18-20 March, Nice and Monaco, France and Monaco.

Davidson, R. and Duclos, Y. J., (2000), "Statistical inference for stochastic dominance and for the measurement of poverty and inequality", *Econometrica*, 68, 1435-1464.

Dubois, M. and Louvet, P., (1996), "The day-of-the-week effect: the international evidence", *Journal of Banking and Finance*, 20, 1463–1485.

Engle, R. (1982), "Autoregressive conditional heteroskedasticity with estimates of the variance of UK inflation", *Econometrica*, 50, 987-1007.

French, K. (1980), "Stock returns and the weekend effect", *Journal of Financial Economics*, 8, 55-69.

Friedman, M. (1957), *A theory of the consumption function*, Princeton: Princeton University Press.

Gibbons, M. and Hess, P., (1981), "Day of the week effects and asset returns", *Journal of Business*, 54, 579- 596.

PDF created with pdfFactory trial version www.pdffactory.com

Güneş, H., Aslanoğlu, E., and Çelik, S., (2006), "Consumer confidence and economic growth in emerging economies: A panel data analysis", *Paper presented at the Emerging Markets: Finance and Economics Conference*, 6-8 September, Bilgi University, İstanbul, Turkey.

Hall, R. E. (1978), "Stochastic implications of the life cycle-permanent income hypothesis: theory and evidence", *Journal of Political Economy*, 86, 971–987.

Hilliard, J. E., and Tucker, A. L., (1992), "A note on weekday, intraday, and overnight patterns in the interbank foreign exchange and listed currency options markets", *Journal of Banking and Finance*, 16, 1159–1171.

Jaffe, J., and Westerfield, R., (1985), "The weekend effect in common stock returns: the international evidence", *Journal of Finance*, 40, 433-454.

Katona, G. (1960), *The powerful consumer*, New York: McGraw Hill.

Kwan A. C. C. and Cotsomitis, J. A., (2004), "Can consumer attitudes forecast household spending in United States? Further evidence from the Michigan surveys of consumers", *Southern Economic Journal*, 71, 136-144.

Kwan A. C. C. and Cotsomitis, J. A., (2006a), "The usefulness of consumer confidence in forecasting household spending in Canada: A national and regional analysis", *Economic Inquiry*, 44, 185-197.

Kwan A. C. C. and Cotsomitis, J. A., (2006b), "Can consumer confidence forecast household spending? Evidence from the European commission business and consumer surveys", *Southern Economic Journal*, 72, 597-610.

Ludvigson, S. C. (2004), "Consumer confidence and consumer spending", *Journal of Economic Perspectives*, 18, 29-50.

Matsusaka, J. G. and Sbordone, A., (1995), "Consumer confidence and economic fluctuations", *Economic Inquiry*, 33, 296-318.

Mazumder, M. I., Chu, T. H., Miller, E. M., and Prather, L. J., (2008), "International day-of-the-week effects: An empirical examination of iShares", *International Review of Financial Analysis*, 17, 699–715.

PDF created with pdfFactory trial version www.pdffactory.com

McFarland, J. W., Richardson, P., Pettit, R., and Sung, S. K., (1982), "The distribution of foreign exchange price changes: trading day effects and risk measurement". *Journal of Finance*, 37, 693–715.

Mishkin, F. S. (1976), "Illiquidity, consumer durable expenditure, and monetary policy", *American Economic Review*, 66, 642-654.

Mishkin, F. S. (1978), "Consumer sentiment and spending on durable goods", *Brookings Papers on Economic Activity*, 1, 217-232.

Modigliani, F. and Brumberg, R. E., (1954), "Utility analysis and the consumption function: an interpretation of cross-section data", in K. K. Kurihara (ed.) Post-Keynesian Economics, New Brunswick, N.J.: Rutgers University Press.

Nelson, D. B. (1991), "Conditional Heteroskedasticity in Asset Returns: A New Approach", *Econometrica*, 59, 347-370.

Nelson, D. B. and Cao, C. Q., (1992), I"nequality constraints in the univariate GARCH model", *Journal of Business and Economic Statistics*, 10, 229-235.

Rogalski, R. J. (1984), "New findings regarding day of the week returns over trading and nontrading periods: A note", *Journal of Finance*, 39, 1603-1614.

Throop, A. W. (1992), "Consumer sentiment: Its causes and effects", *Federal Reserve Bank of San Francisco Economic Review*, 1, 35-59.

Tong, W. (2000), "International evidence on weekend anomalies", Journal *of Financial Research*, 23, 495−522.

Tsiakas, I. (2006), "Periodic stochastic volatility and fat tails", *Journal of Financial Econometrics*, 4, 90−135.

Utaka, A. (2003), "Confidence and the real economy: the Japanese case", *Applied Economics*, 35, 337-342.

PDF created with pdfFactory trial version www.pdffactory.com

Yamori, N. and Kurihara, Y., (2004), "The day-of-the-week effect in foreign exchange Markets: multi-currency evidence", *Research in International Business and Finance*, 18, 51–57.

PDF created with pdfFactory trial version www.pdffactory.com