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CHANGES IN THE DOW EFFECTS IN THE ROMANIAN FOREIGN EXCHANGE MARKET

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Abstract
This paper explores the changes in the daily seasonality of the Romanian foreign market from January 2005 to February 2010. Our investigation employs data from the prices in the Romanian national currency, of the two main currencies used in the financial transactions: euro and US dollar. For the euro we find evidence of a Monday effect between January 2005 and June 2007, no DOW effect between July 2007 and September 2008, a Tuesday effect between October 2008 and April 2009 and a Thursday effect between May 2009 and February 2010. For the US dollar we identify only a Tuesday effect between October 2008 and April 2009. We relate these changes with the consequences of the Romania's adhesion to the European Union and with the effects of the global crisis.

Key words: *Day-of-the-week effect, Foreign Exchange Rates, Romanian Financial Market, Global Crisis, Seasonality*

JEL Classification: G02, G01, G14

1. Introduction

Many financial markets are characterized by significant seasonalities which have to be taken into consideration in the investment decisions. One of the most important types of such seasonality is the day-of-the-week (DOW) effect which consists in a systematic pattern exhibited for some days of the week by the evolution of a financial asset price. The DOW effect is common mainly on the stock markets, being related to the speculators behavior. It was also observed in some foreign exchange markets where speculative operations are significant. Identifying the DOW effect for the foreign exchange rates is important not only for the investment but also for some international business operations.

In the last decades there were revealed changes in the DOW effects that occurred for some foreign exchange markets. These were related to the influence of some external factors such as the crisis or transformation of the economic systems.

In this paper we study the DOW effect on the Romanian foreign exchange market for a period of time between January 2005 and February 2010. To our knowledge no other attempts were made to investigate this subject. It was a complex period affected by some important processes. Since 2005, the National Bank of Romania (NBR) adopted the "inflation targeting" as a monetary strategy which implied its intervention on the foreign market became less consistent. Since the same year the barriers against the foreign portfolio investment were step by step removed.

In 2007 Romania's adhesion to the European Union stimulated the presence of the foreign investors on the stock market. From the last quarter of 2008 the Romanian financial markets were affected by the global crisis. These processes had significant consequences on the exchange rates evolution (Figure 1). We investigate if the changes in the DOW effects occurred in that period of time. We use daily values of the exchange rates which express the price, in

the Romanian national currency (RON) of two important foreign currencies: euro and US dollar. We separate our data in four sub-samples corresponding to the consequences of some major processes affecting the exchange rates. We employ two models in which the eventual DOW effects are captured through the dummy variables corresponding to the working days of a week.

The rest of this paper is organized as follows. The second part approaches the relevant literature. The third part describes the data and methodology. The empirical results of our investigation are presented in the fourth part and the fifth part concludes.

2. Literature review

The subject of the day-of-the-day effect on the financial markets is well documented in the literature. Fama (1965), Cross (1973) and French (1980) revealed significant differences between the stock prices of the last day of a week and of the first day of the next week. The so-called "weekend effect" was confirmed by several empirical researches: Gibbons and Hess (1981), Keim and Stambaugh (1984), Rogalski (1984), Harris (1986), Flannary and Protopapadakis (1988), Dubois and Louvet (1996) etc.

Numerous explanations were offered for the weekend effect. Penman (1987) considered the high incidence of important news arriving in the weekend as responsible for the differences between the Monday stocks prices and from the other days of the week. Miller (1988) explained the DOW effect by the lack of broker's advice over the weekend. Bell and Levin (1998) added the investors' reluctance to keep liquidity during the non – trading periods and the difficulties in obtaining funds during the weekends. Chen and Singal (2003) revealed that many speculators tended to close with risky positions on Friday and to reestablish new short positions on Monday.

Other researchers identified systematic patterns of the financial assets returns for other days of the week. Jaffe and Westerfield (1985) found that Tuesday returns tended to be at low levels on the Japanese stock market. Similar results were obtained by Brooks and Persarand (2001) in a study about the seasonality on the South – East Asian financial markets. Lin and Lin (2001) explained this situation by the links between USA and Asia – Pacific stock markets and by the presence of the one-day out of phase.

Some studies revealed changes in some circumstances in the Dow effect. Mehdian and Perry (2001) found that after 1987 the weekend effect was not visible on the US stock market. Kohers et al (2009) studied the behavior of the world's largest equity markets and they concluded that in most of them the DOW effect disappeared.

Like other stock prices seasonal behavior, the DOW effect could be considered as being in contradiction with the classical theory of the efficient market theory which denied the possibility the investors could apply strategies to benefit from the return regularities. However, some recent approaches of this theory incorporated the seasonal behavior of the assets price (for example Brooks, 2008).

From the stock prices the study of seasonal effects was extended to other financial assets, among them being the exchange rates. Frenkel (1981) argued that, like other financial assets, the exchange rates reflected on short term the market expectations. Hsieh (1988) found the mean and the variance exhibited significant differences across days of the week. Bossaert and Hillon (1991) approached some particularities of the DOW effects for the exchange markets since the central bank intervention often occurred at the end of the week. Yamori and Kurihara (2004) studied the behavior of twenty – nine foreign exchange rates and they concluded that for most of them DOW effects were obvious in the 1980s but they disappeared in the 1990s.

3. Data and Methodology

We employ daily values of RON/EUR and RON/USD provided by NBR. Our sample of data covers a period of time from January 2005 to February 2010. In order to capture the consequences of some processes which could determine changes in DOW effect we divided this sample in four sub-samples:

- first sub-sample (S1), from 3rd January 2005 to 30th June 2007;
- second sub-sample (S2), from 1st July, 2007 to 30th September 2008;

- third sub-sample (S3), from 1st October 2008 to 30th April 2009;
- fourth sub-sample (S4), from 3rd May 2009 to 28th February 2010.

For both series of time we calculate the daily returns as it follows:

$$R_t=100 * [\ln(S_t) - \ln(S_{t-1})] \qquad (1)$$

where S_t and S_{t-1} are the average exchange rates in the days t and t-1, respectively.

We use two variables to express the returns of the two time series:
- RUSD as the returns for RON / USD daily exchange rates;
- REUR as the returns for RON / EUR daily exchange rates.

In the Table 1 there are presented the descriptive statistics of the two variables for the four sub – samples. There are reflected significant differences suggesting substantial changes. The means of returns are negative for the first and the fourth sub – samples and they are positive for the second and the third ones. The highest values of the standard deviation occurred for the third sub-sample when the most acute consequences of the global crisis came into effect.

In order to avoid spurious regressions we test the stationarity of the time series by employing the Augmented Dickey-Fuller Test. In the Table 2 there are presented the results of this test for REUR indicating the rejection of non stationarity hypothesis for all four sub– samples.

The results of the Augmented Dickey-Fuller Test for RUSD are presented in the Table 3. Again they indicate the rejection of the non stationary hypothesis.

In order to capture eventually DOW effects we use two models: a simple one and an autoregressive one.

The simple model has the form:

$$R_t = \sum_{i=1}^{5} a_i * d_{it} + u_t \qquad (2)$$

where d_{it} is a daily dummy variable taking the value one for the day i and zero otherwise.
An a_i coefficient could be interpreted as the average returns in the day i.

The autoregressive model has the equation:

$$R_t = \sum_{i=1}^{5} b_i * d_{it} + \sum_{j=1}^{p} c_j * R_{t-j} + u_t \qquad (3)$$

where p is the number of lagged values, chosen mainly by Akaike criterion.

For both models we determine the coefficients using OLS regressions.

4. Empirical Results

In the Table 4 there are presented the coefficients of the simple model for REUR from 3rd January 2005 to 30th June 2007 indicating a Monday effect. However, the value of the F-test indicates that the model is not very well fitted with the data.

The coefficients of the autoregressive model for REUR from 3rd January 2005 to 30th June 2007 are presented in the Table 5. It is indicated a Monday effect and the value of F test suggests a better fit with the data than the simple model.

In the Table 6 there are presented the coefficients of the simple model for RUSD from 3rd January 2005 to 30th June 2007. It results there are no DOW effect and, anyway, the F-test value suggests the model is not well fitted.

The absence of the DOW effect for RUSD from 3rd January 2005 to 30th June 2007 was confirmed by the coefficients of the autoregressive model, presented in the Table 7. The value of F test indicates that this model is not very well fitted with data.

In the Table 8 there are presented the results of the simple model for REUR from 1st July 2007 to 30th September 2008. The values of t-ratio for coefficients and of the F-test could not confirm the hypothesis of a DOW effect.

The coefficients of the autoregressive model for REUR from 1st July 2007 to 30th

September 2008 are presented in the Table 9. Again it couldn't confirm the hypothesis of a DOW effect.

In the Table 10 there are presented the coefficients of the simple model for RUSD from 1st July 2007 to 30th September 2008. These values couldn't confirm the hypothesis of a DOW effect.

The results of the autoregressive model for RUSD from 1st July 2007 to 30th September 2008 are presented in Table 11. They fail to confirm the hypothesis of a DOW effect.

In the Table 12 there are presented the coefficients of the simple model for REUR from 1st October 2008 to 30th April 2009. It indicates a Tuesday effect but the values of F-test and of Adjusted R-squared suggest a not very well fitting with the data.

The coefficients of the autoregressive model for REUR from 1st October 2008 to 30th April 2009 are presented in the Table 13. They suggest a Tuesday effect.

In the Table 14 there are presented the coefficients of the simple model effects for RUSD from 1st October 2008 to 30th April 2009. They indicate a Tuesday effect but the value of F-test suggests a not very well fitted model.

The coefficients of the autoregressive model for RUSD from 1st October 2008 to 30th April 2009 are presented in the Table 15. They indicate again a Tuesday effect.

In the Table 16 there are presented the coefficients of the simple model for REUR from 1st May 2009 to 28th February 2010. These results couldn't confirm the hypothesis of a DOW effect.

The coefficients of the autoregressive model for REUR from 1st May 2009 to 28th February 2010 are presented in the Table 17. They could be considered as evidence of a Thursday effect.

In the Table 18 there are presented the coefficients of the simple model for RUSD from 1st May 2009 to 28th February 2010. They could not confirm the hypothesis of a DOW effect.

The coefficients of the autoregressive model for RUSD from 1st May 2009 to 28th February 2010 are presented in the Table 19. This model fails to confirm the hypothesis of a DOW effect.

5. Conclusions and implications

In this paper we investigated the DOW effects presence on the Romanian Foreign exchange market during a period of time from January 2005 to February 2010. We split our data into four sub-samples and we analyzed the DOW effects for RON / EUR and RON / USD using a simple model and an autoregressive one. For all the four sub-samples the autoregressive model proved to be better fitted than the simple one. This fact suggests a significant dependence of the exchange rates on the past evolution.

For the first sub-sample, from January 2005 until June 2007, we found evidences of a Monday effect for RON / EUR but not for RON / USD. In this period of time the Romanian stock markets became very attractive for the foreign investors. Euro replaced the US dollar as the main financial transactions currency since the Romania's orientation to the European Union. The Monday effect could be considered as a result of the important role played by the speculative operations on the Romanian foreign exchange market.

For the second sub-sample, from July 2007 until September 2008 we found no evidence of a DOW effect. It was a period of time when the stock prices raised almost constantly and we could consider this evolution annihilated the DOW effect.

For the third sub-sample, between October 2008 and April 2009 we identified a Tuesday effect both for RON / EUR and for RON / USD. In this period of time the Romanian financial markets were highly affected by the global crisis. The Tuesday effect could be explained by the fact that in this period the Romanian stock market became very sensitive to the evolution of the New York Stock Exchange by which is out of phase.

For the fourth sub-sample we detected a Thursday effect for RON / EUR but no DOW effect for RON / USD. In this period of time the stock prices begin to rise again after the

decline from the previous months, but this recovery is still fragile since the global crisis didn't end. The Thursday effect could be explained by the highly risk perceptions of investors for the end of the week.

This research should be continued with investigations about the future effects of the actual global crisis. It should be also completed with investigations about the daily seasonality of the exchange rates volatility.

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APPENDIX

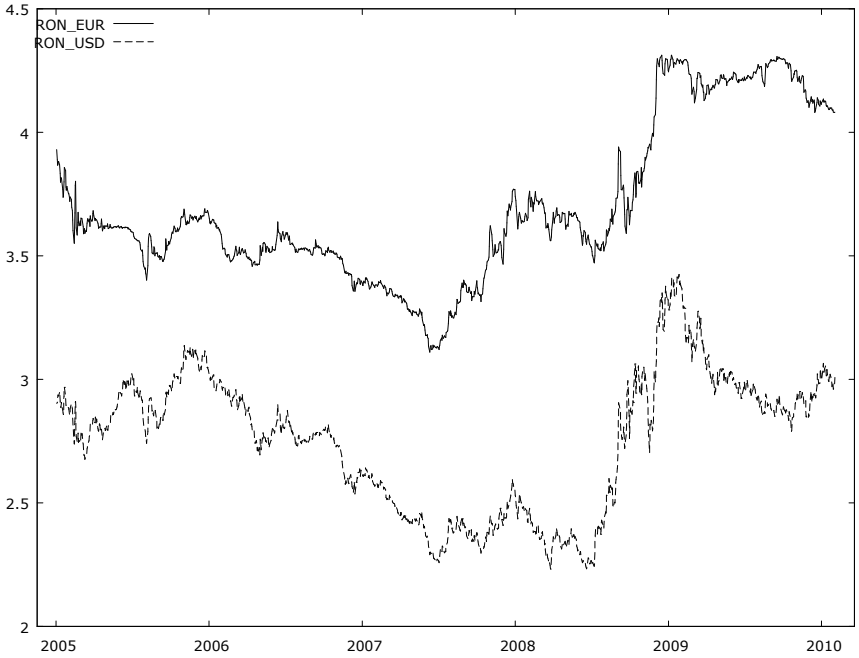

Figure 1 – The evolution of RON/EUR and RON/USD exchange rates from January 2005 to February 2010

Table 1 - Descriptive Statistics

Data Period	**S1**		**S2**		**S3**		**S4**	
Return	REUR	RUSD	REUR	RUSD	REUR	RUSD	REUR	RUSD
Mean	-0.036	-0.035	0.057	0.039	0.078	0.121	-0.010	-0.022
Median	-0.041	-0.036	0.025	-0.061	-0.009	-0.022	-0.022	-0.047
Minimum	-5.106	-4.968	-2.081	-2.950	-2.540	-4.815	1.217	-2.270
Maximum	3.386	3.290	2.298	3.301	2.927	4.435	1.217	1.931
Std. Dev.	0.485	0.688	0.572	0.810	0.779	1.621	0.293	0.751
Skewness	-0.530	-0.166	0.463	0.575	0.036	0.123	-0.225	0.165
Kurtosis	25.483	5.453	1.470	1.366	2.285	0.713	2.435	0.161
Jarque-Bera test	17184.7	788.33	40.11	42.4	31.58	3.44	53.63	1.18
p- value for Jarque-Bera test	0.001	0.001	0.001	0.001	0.001	0.179	0.001	0.554
Valid observations	634	634	319	319	145	145	210	210

Table 2 - Augmented Dickey-Fuller Test for REUR

Data Period	Deterministic terms	Lagged differences	Test statistics	Asymptotic p-value
S1	No constant and no trend	18	-4.53222	0.001
	Constant and no trend	18	-4.84547	0.001
S2	No constant and no trend	15	-15.1459	0.001
	Constant and no trend	15	-11.1468	0.001
S3	No constant and no trend	6	-3.09525	0.002
	Constant and no trend	6	-3.17149	0.022
S4	No constant and no trend	9	-4.6037	0.001
	Constant and no trend	9	-4.60818	0.001

Note: The number of the lagged differences was chosen based on the Akaike Information Criteria.

Table 3 - Augmented Dickey-Fuller Test for RUSD

Data Period	Deterministic terms	Lagged differences	Test statistics	Asymptotic p-value
S1	No constant and no trend	18	-4.67204	0.001
	Constant and no trend	18	-4.82196	0.001
S2	No constant and no trend	11	-5.10904	0.001
	Constant and no trend	11	-5.18749	0.001
S3	No constant and no trend	8	-3.91414	0.001
	Constant and no trend	8	-3.98359	0.002
S4	No constant and no trend	12	-4.25479	0.001
	Constant and no trend	12	-4.24114	0.001

Note: The number of the lagged differences was chosen based on Akaike Information Criteria.

Table 4 – The DOW effects for REUR from 3rd January 2005 to 30th June 2007 in a simple model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.0977107	0.0376291	-2.5967	0.00963***
d_2 (Tuesday)	-0.0353466	0.0459809	-0.7687	0.44235
d_3 (Wednesday)	0.0160785	0.0386206	0.4163	0.67732
d_4 (Thursday)	-0.00739651	0.0392533	-0.1884	0.85060
d_5 (Friday)	-0.0580269	0.0573149	-1.0124	0.31173

Mean dependent var	-0.035739	S.D. dependent var	0.485167
Sum squared resid	148.0158	S.E. of regression	0.485097

R-squared	0.006604	Adjusted R-squared	0.000287
F(4, 629)	1.746965	P-value(F)	0.137998
Log-likelihood	-438.4576	Akaike criterion	886.9151
Schwarz criterion	909.1754	Hannan-Quinn	895.5591
rho	0.160502	Durbin-Watson	1.667577

Table 5 - The DOW effects for REUR from 3rd January 2005 to 30th June 2007 in an autoregressive model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.0866104	0.0376715	-2.2991	0.02183**
d_2 (Tuesday)	-0.0206342	0.0400425	-0.5153	0.60652
d_3 (Wednesday)	-0.0019834	0.0296103	-0.0670	0.94662
d_4 (Thursday)	-0.034604	0.0395473	-0.8750	0.38191
d_5 (Friday)	-0.0532232	0.0479747	-1.1094	0.26769
REUR_1	0.167406	0.0694566	2.4102	0.01623**
REUR_2	-0.228013	0.0762369	-2.9909	0.00289***
REUR_3	-0.206283	0.0981234	-2.1023	0.03593**
REUR_4	0.102674	0.0516891	1.9864	0.04743**

Mean dependent var	-0.034016	S.D. dependent var	0.484300
Sum squared resid	124.5026	S.E. of regression	0.447758
R-squared	0.156085	Adjusted R-squared	0.145214
F(8, 621)	2.736703	P-value(F)	0.005671
Log-likelihood	-383.1924	Akaike criterion	784.3848
Schwarz criterion	824.3963	Hannan-Quinn	799.9263
rho	0.002456	Durbin-Watson	1.986236

Table 6 - The DOW effects for RUSD from 3rd January 2005 to 30th June 2007 in a simple model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.0688077	0.0690348	-0.9967	0.31929
d_2 (Tuesday)	0.00600559	0.0554384	0.1083	0.91377
d_3 (Wednesday)	-0.0311533	0.0539133	-0.5778	0.56358
d_4 (Thursday)	-0.0433534	0.0598508	-0.7244	0.46912
d_5 (Friday)	-0.0388464	0.0702563	-0.5529	0.58051

Mean dependent var	-0.035030	S.D. dependent var	0.688410
Sum squared resid	299.6202	S.E. of regression	0.690177
R-squared	0.001214	Adjusted R-squared	-0.005138
F(4, 629)	0.481381	P-value(F)	0.749434
Log-likelihood	-662.0050	Akaike criterion	1334.010
Schwarz criterion	1356.270	Hannan-Quinn	1342.654
rho	0.065691	Durbin-Watson	1.864982

Table 7 - The DOW effects for RUSD from 3rd January 2005 to 30th June 2007 in an autoregressive model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.0787232	0.070162	-1.1220	0.26229

d_2 (Tuesday)	0.00507368	0.0542944	0.0934	0.92558
d_3 (Wednesday)	-0.0390832	0.0514323	-0.7599	0.44760
d_4 (Thursday)	-0.0538316	0.0622832	-0.8643	0.38775
d_5 (Friday)	-0.0404726	0.0698572	-0.5794	0.56255
RUSD_1	0.0598515	0.0490902	1.2192	0.22322
RUSD_2	-0.0686511	0.0681886	-1.0068	0.31443
RUSD_3	-0.12301	0.0737312	-1.6684	0.09575*

Mean dependent var	-0.037053	S.D. dependent var	0.689302
Sum squared resid	291.5082	S.E. of regression	0.684040
R-squared	0.026153	Adjusted R-squared	0.015210
F(7, 623)	0.801961	P-value(F)	0.585835
Log-likelihood	-651.7092	Akaike criterion	1319.418
Schwarz criterion	1354.997	Hannan-Quinn	1333.237
rho	0.007278	Durbin-Watson	1.981419

Table 8 - The DOW effects for REUR from 1st July 2007 to 30th September 2008 in a simple model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.0409824	0.0773817	-0.5296	0.59675
d_2 (Tuesday)	0.0778089	0.05812	1.3388	0.18162
d_3 (Wednesday)	0.0603914	0.0613697	0.9841	0.32584
d_4 (Thursday)	0.0743559	0.0652688	1.1392	0.25548
d_5 (Friday)	0.11426	0.0815452	1.4012	0.16215

Mean dependent var	0.057168	S.D. dependent var	0.571983
Sum squared resid	103.1661	S.E. of regression	0.573197
R-squared	0.008383	Adjusted R-squared	-0.004249
F(4, 314)	1.186918	P-value(F)	0.316461
Log-likelihood	-272.5897	Akaike criterion	555.1794
Schwarz criterion	574.0054	Hannan-Quinn	562.6978
rho	0.153003	Durbin-Watson	1.689310

Table 9 - The DOW effects for REUR from 1st July 2007 to 30th September 2008 in an autoregressive model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.043175	0.0790545	-0.5461	0.58536
d_2 (Tuesday)	0.0901069	0.0610444	1.4761	0.14094
d_3 (Wednesday)	0.0513176	0.0598571	0.8573	0.39193
d_4 (Thursday)	0.0680744	0.0650603	1.0463	0.29623
d_5 (Friday)	0.109483	0.0798035	1.3719	0.17109
REUR_1	0.15641	0.0623328	2.5093	0.01261**
REUR_2	-0.0595444	0.0581644	-1.0237	0.30677
REUR_3	-0.0949477	0.050194	-1.8916	0.05948*

Mean dependent var	0.055208	S.D. dependent var	0.574089
Sum squared resid	99.11269	S.E. of regression	0.567269
R-squared	0.045315	Adjusted R-squared	0.023617
F(7, 308)	1.805989	P-value(F)	0.085572

Log-likelihood	-265.1860	Akaike criterion	546.3720
Schwarz criterion	576.4179	Hannan-Quinn	558.3752
rho	-0.001156	Durbin-Watson	1.994831

Table 10 - The DOW effects for RUSD from 1st July 2007 to 30th September 2008 in a simple model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.126244	0.108644	-1.1620	0.24612
d_2 (Tuesday)	0.0981983	0.0889396	1.1041	0.27039
d_3 (Wednesday)	0.0442427	0.0916304	0.4828	0.62955
d_4 (Thursday)	0.0291531	0.0906933	0.3214	0.74809
d_5 (Friday)	0.149573	0.110737	1.3507	0.17776

Mean dependent var	0.039185	S.D. dependent var	0.810178
Sum squared resid	205.9657	S.E. of regression	0.809902
R-squared	0.013250	Adjusted R-squared	0.000680
F(4, 314)	1.009148	P-value(F)	0.402820
Log-likelihood	-382.8631	Akaike criterion	775.7262
Schwarz criterion	794.5522	Hannan-Quinn	783.2446
rho	0.145218	Durbin-Watson	1.708996

Table 11 - The DOW effects for RUSD from 1st July 2007 to 30th September 2008 in an autoregressive model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.146228	0.104631	-1.3976	0.16325
d_2 (Tuesday)	0.126289	0.0927053	1.3623	0.17410
d_3 (Wednesday)	0.0155698	0.0913376	0.1705	0.86476
d_4 (Thursday)	0.0315343	0.0882993	0.3571	0.72124
d_5 (Friday)	0.147064	0.110016	1.3368	0.18228
RUSD_1	0.159191	0.059005	2.6979	0.00736***
RUSD_2	-0.095966	0.0438995	-2.1860	0.02956**

Mean dependent var	0.037962	S.D. dependent var	0.812582
Sum squared resid	199.7094	S.E. of regression	0.802636
R-squared	0.042857	Adjusted R-squared	0.024332
F(6, 310)	2.134407	P-value(F)	0.049312
Log-likelihood	-376.5704	Akaike criterion	767.1408
Schwarz criterion	793.4531	Hannan-Quinn	777.6513
rho	0.002325	Durbin-Watson	1.994893

Table 12 - The DOW effects for REUR from 1st October 2008 to 30th April 2009 in a simple model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	0.136935	0.12313	1.1121	0.26799
d_2 (Tuesday)	0.257183	0.119904	2.1449	0.03369**
d_3 (Wednesday)	0.0136331	0.112161	0.1215	0.90343
d_4 (Thursday)	0.041331	0.139194	0.2969	0.76696
d_5 (Friday)	-0.0545653	0.199766	-0.2731	0.78514

Mean dependent var	0.078244	S.D. dependent var	0.779436
Sum squared resid	85.78441	S.E. of regression	0.782781
R-squared	0.019415	Adjusted R-squared	-0.008602
F(4, 140)	1.040985	P-value(F)	0.388390
Log-likelihood	-167.6911	Akaike criterion	345.3822
Schwarz criterion	360.2659	Hannan-Quinn	351.4299
rho	0.321377	Durbin-Watson	1.351905

Table 13 - The DOW effects for REUR from 1st October 2008 to 30th April 2009 in an autoregressive model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	0.125375	0.103568	1.2106	0.22816
d_2 (Tuesday)	0.252612	0.124087	2.0358	0.04371**
d_3 (Wednesday)	-0.0664794	0.11611	-0.5726	0.56789
d_4 (Thursday)	0.0559503	0.136479	0.4100	0.68248
d_5 (Friday)	-0.165599	0.153289	-1.0803	0.28192
REUR_1	0.34967	0.107289	3.2591	0.00141***
REUR_2	-0.161071	0.0865371	-1.8613	0.06486*

Mean dependent var	0.054110	S.D. dependent var	0.745504
Sum squared resid	66.50946	S.E. of regression	0.699314
R-squared	0.157256	Adjusted R-squared	0.120076
F(6, 136)	5.344192	P-value(F)	0.000056
Log-likelihood	-148.1749	Akaike criterion	310.3499
Schwarz criterion	331.0898	Hannan-Quinn	318.7776
rho	-0.038489	Durbin-Watson	2.068876

Table 14 - The DOW effects for RUSD from 1st October 2008 to 30th April 2009 in a simple model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	0.243697	0.304472	0.8004	0.42484
d_2 (Tuesday)	0.54353	0.258514	2.1025	0.03730**
d_3 (Wednesday)	-0.171883	0.275585	-0.6237	0.53384
d_4 (Thursday)	-0.288371	0.2903	-0.9934	0.32225
d_5 (Friday)	0.296313	0.344559	0.8600	0.39127

Mean dependent var	0.120988	S.D. dependent var	1.620942
Sum squared resid	364.3480	S.E. of regression	1.613222
R-squared	0.037017	Adjusted R-squared	0.009503
F(4, 140)	1.445138	P-value(F)	0.222323
Log-likelihood	-272.5458	Akaike criterion	555.0916
Schwarz criterion	569.9753	Hannan-Quinn	561.1394
rho	0.175210	Durbin-Watson	1.629913

Table 15 - The DOW effects for RUSD from 1st October 2008 to 30th April 2009 in an autoregressive model

Variable	Coefficient	Std. Error	t-ratio	p-value

d_1 (Monday)	0.177849	0.286482	0.6208	0.53575
d_2 (Tuesday)	0.513864	0.255927	2.0079	0.04661**
d_3 (Wednesday)	-0.267218	0.277482	-0.9630	0.33723
d_4 (Thursday)	-0.349528	0.270893	-1.2903	0.19911
d_5 (Friday)	0.343944	0.350664	0.9808	0.32839
RUSD_1	0.175399	0.0724031	2.4225	0.01671**

Mean dependent var	0.105443	S.D. dependent var	1.615718
Sum squared resid	345.9110	S.E. of regression	1.583225
R-squared	0.073389	Adjusted R-squared	0.039816
F(5, 138)	2.759959	P-value(F)	0.020775
Log-likelihood	-267.4257	Akaike criterion	546.8513
Schwarz criterion	564.6702	Hannan-Quinn	554.0919
rho	0.002981	Durbin's h	0.071241

Table 16 - The DOW effects for REUR from 1st May 2009 to 28th February 2010 in a simple model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.0543386	0.0441561	-1.2306	0.21988
d_2 (Tuesday)	-0.0379177	0.0354277	-1.0703	0.28575
d_3 (Wednesday)	-0.0382561	0.0445505	-0.8587	0.39150
d_4 (Thursday)	0.081496	0.054977	1.4824	0.13978
d_5 (Friday)	-0.00320082	0.0381839	-0.0838	0.93328

Mean dependent var	-0.009720	S.D. dependent var	0.293052
Sum squared resid	17.44117	S.E. of regression	0.291683
R-squared	0.028281	Adjusted R-squared	0.009320
F(4, 205)	1.000739	P-value(F)	0.408225
Log-likelihood	-36.70834	Akaike criterion	83.41668
Schwarz criterion	100.1522	Hannan-Quinn	90.18224
rho	0.177957	Durbin-Watson	1.607548

Table 17 – The DOW effects for REUR from 1st May 2009 to 28th February 2010 in an autoregressive model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.0451622	0.0415753	-1.0863	0.27867
d_2 (Tuesday)	-0.0043846	0.0326042	-0.1345	0.89316
d_3 (Wednesday)	-0.0427194	0.043792	-0.9755	0.33049
d_4 (Thursday)	0.106549	0.0495081	2.1521	0.03259**
d_5 (Friday)	-0.0291121	0.0382579	-0.7609	0.44759
REUR_1	0.22126	0.0812807	2.7222	0.00706***
REUR_2	-0.165922	0.0502074	-3.3047	0.00113***
REUR_3	-0.0555031	0.0703931	-0.7885	0.43136

Mean dependent var	-0.002440	S.D. dependent var	0.284304
Sum squared resid	14.78984	S.E. of regression	0.272618
R-squared	0.111759	Adjusted R-squared	0.080514
F(7, 199)	2.674664	P-value(F)	0.011458
Log-likelihood	-20.60674	Akaike criterion	57.21349

Schwarz criterion	83.87524	Hannan-Quinn	67.99527
rho	0.026056	Durbin-Watson	1.925552

Table 18 - The DOW effects for RUSD from 1st May 2009 to 28th February 2010 in a simple model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.08494	0.131739	-0.6448	0.51980
d_2 (Tuesday)	-0.0799861	0.111644	-0.7164	0.47454
d_3 (Wednesday)	-0.122959	0.0994876	-1.2359	0.21790
d_4 (Thursday)	0.171335	0.114122	1.5013	0.13481
d_5 (Friday)	-0.00063236	0.115273	-0.0055	0.99563

Mean dependent var	-0.022397	S.D. dependent var	0.751135
Sum squared resid	115.5541	S.E. of regression	0.750785
R-squared	0.020051	Adjusted R-squared	0.000930
F(4, 205)	1.019029	P-value(F)	0.398516
Log-likelihood	-235.2534	Akaike criterion	480.5067
Schwarz criterion	497.2423	Hannan-Quinn	487.2723
rho	-0.045940	Durbin-Watson	2.055050

Table 19 – The DOW effects for RUSD from 1st May 2009 to 28th February 2010 in an autoregressive model

Variable	Coefficient	Std. Error	t-ratio	p-value
d_1 (Monday)	-0.0923935	0.126604	-0.7298	0.46638
d_2 (Tuesday)	-0.00898683	0.104692	-0.0858	0.93168
d_3 (Wednesday)	-0.145585	0.103402	-1.4080	0.16070
d_4 (Thursday)	0.175353	0.110961	1.5803	0.11563
d_5 (Friday)	-0.0260537	0.109592	-0.2377	0.81233
RUSD_1	-0.0417938	0.0609581	-0.6856	0.49375
RUSD_2	-0.0856537	0.0559385	-1.5312	0.12730
RUSD_3	-0.197224	0.0571795	-3.4492	0.00069***

Mean dependent var	-0.013524	S.D. dependent var	0.744842
Sum squared resid	106.3874	S.E. of regression	0.731170
R-squared	0.069117	Adjusted R-squared	0.036372
F(7, 199)	2.914765	P-value(F)	0.006341
Log-likelihood	-224.8274	Akaike criterion	465.6549
Schwarz criterion	492.3166	Hannan-Quinn	476.4366
rho	-0.003714	Durbin's h	-0.110061