Day-of-the-week effect on Romanian foreign exchange market during quiet and turbulent times

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1. Introduction

The characteristics of operations from the foreign exchange markets could induce some particularities to the Calendar anomalies.

The Day-of-the-week (DOW) effect, one the most known calendar anomalies, refers to abnormal returns that occur in some certain days of the week.

As in the case of many calendar effects, the DOW effect is not necessary persistent in time. Sometimes, the changes are caused by the passing from quiet to turbulent times.

The investigation of DOW effect on Romanian foreign exchange market covers three periods:
- The first one, from January 2010 to December 2014 was affected by the Great Recession.
- The second one, from January 2015 to December 2019 could be considered as a relatively quiet one.
- The third one, from January 2020 to August 2022 was marked by events such as political and commercial tension between USA and China, the COVID-19 pandemic, the recent global energy crisis and Russian invasion of Ukraine.

2. Data and Methodology

a. Data

Daily values of the official exchange rates for the Romanian leu (RON), the Romanian national currency, in terms of euro (EUR) and United States dollar (USD).
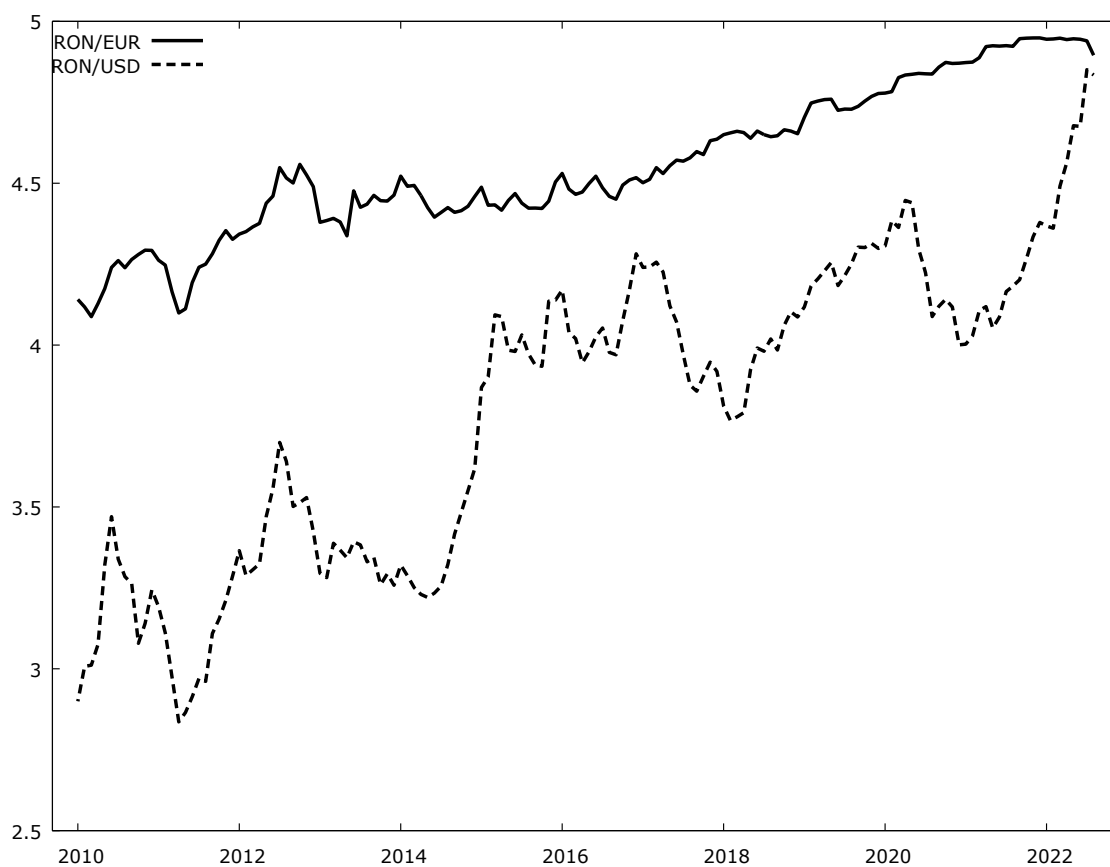

Figure 1. Monthly exchange rates against the Romanian national currency of euro (RON/EUR) and US dollar (RON/USD) in the period

January 2010 – August 2022

Source of data: National Bank of Romania

For both exchange rates there are computed logarithmic returns. The descriptive statistics of them are reported in the Table 1. For all three sub-samples the average

returns were larger for RON/USD than for RON/EUR. For the third sub-sample the national currency experienced the highest devaluation against US dollar but the lowest one against euro.

In fact, between January 2020 and August 2022, faced with a complex context, National Bank of Romania (NBR) resorted to consistent interventions in order to stabilize daily exchange rate volatilities against euro. In the same period, US dollar appreciated against the major currencies. The values of Standard Deviation (Std. Dev.), Coefficient of Variation (C.V.) and Interquartile (IQ) Range suggest that substantial volatilities occurred for the returns of RON/EUR in the first sub-sample and for RON/USD in the first and second sub-samples.

Table 1. Descriptive statistics of the exchange rates returns for the three sub-samples

Variable	First sub-sample		Second sub-sample		Third sub-sample	
	r_RON/ EUR	r_RON/ USD	r_RON/ EUR	r_RON/ USD	r_RON/ EUR	r_RON/ USD
Mean	0.005	0.018	0.005	0.012	0.003	0.020
Median	-0.007	-0.010	0.002	0.009	0.001	0.015
Minimum	-1.607	-2.881	-0.764	-2.526	-0.369	-1.637
Maximum	1.710	2.876	0.902	3.200	0.426	2.062
Skewness	-0.082	0.271	-0.095	0.111	0.638	0.287
Ex. kurtosis	5.203	1.494	4.437	3.037	14.787	1.695
Std. Dev.	0.274	0.699	0.153	0.552	0.058	0.465
C.V.	59.568	38.969	29.949	47.955	23.306	23.376
IQ range	0.268	0.817	0.145	0.591	0.036	0.540

Source of data: National Bank of Romania

Augmented Dickey – Fuller (ADF) unit root tests indicated the stationarity of returns for all the indexes.

b. Methodology

Regression with dummy variables:
- OLS;
- GARCH.

3. Empirical Results

a. The first sub-sample (January 2010 - December 2014)

- no abnormal returns for the two exchange rates

b. The second sub-sample (January 2015 - December 2019)

i. for RON/EUR returns:

- abnormal negative returns on Monday;
- abnormal positive returns on Wednesday and on Friday.

 ii. for RON/USD returns:

- abnormal negative returns on Thursday.

c. The third sub-sample (January 2020 - August 2022)

i. for RON/EUR returns:

- abnormal positive returns on Tuesday and on Friday.

ii. for RON/USD returns:

- no abnormal negative returns were detected.

4. Conclusions

This investigation revealed some significant differences regarding the manifestation of DOW Effect for the three periods. On the first one, which could be considered as turbulent, this calendar anomaly was not detected. For the second period, which was quieter, we found it for both RON/EUR and RON/USD. In the third period we identified the presence of DOW Effects for RON/EUR but not for RON/USD. In that case, it has to be taken into consideration the aspect that RON/EUR was not very volatile while RON/USD experienced a significant raise.

The abnormal positive returns identified for Friday and the abnormal negative returns detected for Monday could be linked to the uncertainty about the events that could occur during weekends.