EXCHANGE RATE VS. INTEREST RATE: HOW MUCH DOES UIP WORK FOR ROMANIA? (STUDY CASE ON THE EUR/RON CURRENCY)

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Abstract: *This paper is part of a larger research that aims to analyze the deviation between the Real Exchange Rate and the Equilibrium Exchange Rate in Romania (EUR/RON currency) and to come up with conclusions regarding this deviation and with solutions to minimize it, if the case. Because this is the most important discussion after having the empirical results: what do emergent markets like Romania need to do to keep up with the EU trend? Which are the concessions they have to make in order to maintain a sustainable growth? Do these concessions include breaking the present equilibrium for a future BETTER? Starting with the most well-known methods to calculate the Equilibrium Exchange Rate, this article`s purpose is to create an accurate overview on the UIP model in Romania (the interest rate differential), to verify, using the latest data if the economic environment has brought any changes on the results of this model in the latest years. Is the UIP model a trustworthy equation to establish the Equilibrium Exchange Rate? In order to verify if the UIP model was more reliable in returning a value for the Equilibrium Exchange rate in the latest years on the Romanian market, this paper presents an empirical study containing recent compiled data from the last 10 years, analyzing the 2005 – 2014 period. The NEW in this article is that the used data is very fresh, currently, most probably the only study that verifies the UIP model in Romania for this specific period of time. Why is it useful? Why is it important? Because it doesn`t only bring a confirmation of weather the UIP works for Romania or not but comes up with hints and conclusions regarding the current economic situation of Romania. We can see what has been changed in the local market in the last ten years in terms of monetary policy and what has this change brought with it – if the results are those expected or not and also, what would be the direction for the next years – to most suitable direction to be adopted.*
Keywords: macroeconomic variables, exchange rate, interest rate, UIP, depreciation, appreciation.
Jell classification: E4, E5, E6.

1. Introduction

The Uncovered Interest Parity model it`s an equilibrium model, an equation that in ideal situations returns the expected value of the forward exchange rate, a value that takes in count the current values of one, very important, macroeconomic variable – the interest rate. Part of a larger research that aims to analyze the evolution of the real exchange rate in Romania (the EUR/RON currency), to compare it with the equilibrium exchange rate and to come up with some conclusions and suggestions regarding the related economic policies that would help develop an emerging market, this article has the goal to offer an overview on how the evolution of the interest rate affects the exchange rate. The result is important also for knowing if the interest rate is a variable that can be taken in count in other, more complex models also. The most important aspect of this study is that the used data is very fresh, the time series that were used include numbers for 2014 also and, taking this in count, it`s easier to verify if Romania`s emerging market has changed from the last studies or not and if yes, in what way.

The Uncovered Interest Parity`s equation is this:

$$1. \quad S_t - S_{t-1} = a + b(r_i - r_i^*) - e$$

2. The Specific Literature Tells us That the UIP can be Interpreted in More Than one way

2.1. How the evolution of the exchange rate affects the spot exchange rate:

UIP tells us what should happen to the exchange rate when one of the interest rates gets to a higher value. For example, if the interest rate that defines the deposits made in RON rises with 1% then the other part of the equation should rise with 1%. When the interest rate grows, the investors will find the RON more attractive, they will buy it and this makes that the first effect on the exchange rate to be the appreciation with 1%.

2.2. Determining the expected exchange rate:

If, for example, the interest parity it`s 2% then the expectations are for the RON to grow with 2%. The interest parity it`s generally the criteria that banks take in count when they decide whether to buy/sell currency using a forward contract.

2.3 The effect that the expected exchange rate has on the spot exchange rate:

Let's suppose that UIP works. If the expectations are for the RON to depreciate more than 1% than in the last 12 months, the spot exchange rate will decrease with 1% in the present. The noise we hear in the markets affects the exchange rate`s volatility most of the times.

3. Case Study – How Much Does UIP Work For Romania in the Present?

3.1. This case study aims to analyze, verify and interpret the following points:

- To verify in what percent UIP works for Romania in the present;
- To calculate the equilibrium exchange rate in case that the model doesn`t apply and to analyze the reasons for the existence of the deviation from the equilibrium exchange rate;
- To offer a set of useful conclusions in regards to the relevance and utility of using the UIP inside this type of studies.

3.2. The used data base for this study is formed by three main time series out of which resulted other times series:

- The EUR/RON exchange rate on a 10 years period of time: 2005 – 2014; the frequency of the used data was daily, monthly and annually (**figure** 1);

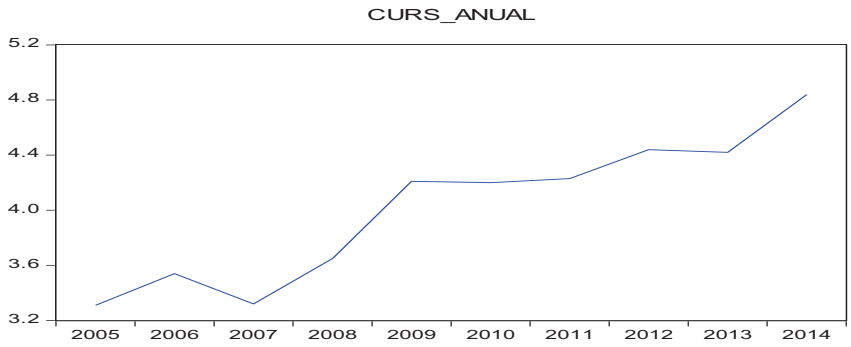


Figure 1: The annually evolution of the EUR/RON currency between 2005 – 2014
Source: Own processing of the time series taken from INSSE.ro and BNR.ro

- The interbank interest rate - the deposits attracted in Romania: Robid on a period of 10 years; the frequency of the used data was daily, monthly and annually (figure 2);

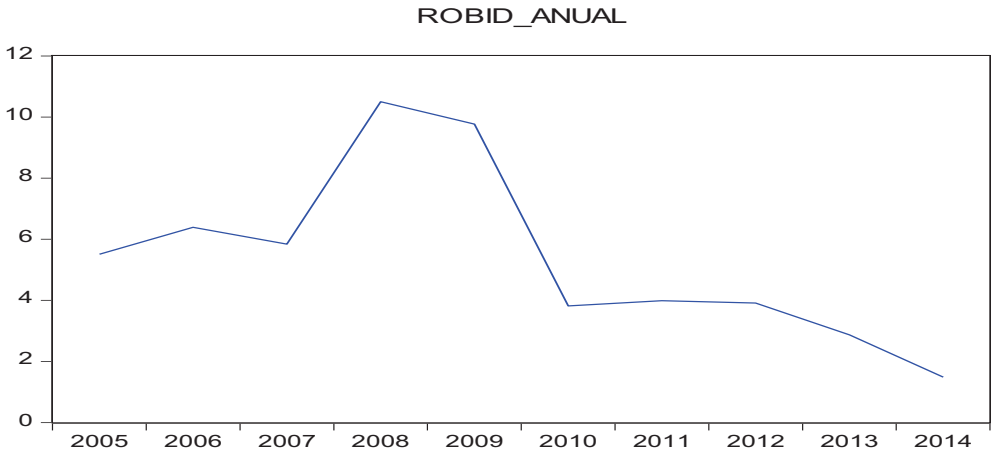


Figure 2: The annually **evolution** of Robid between 2005 – 2014
Source: Own processing of the time series taken from INSSE.ro and BNR.ro

- The interbank interest rate - the credits taken in UE: Euribor on a period of 10 years; the frequency of the used data was daily, monthly and annually (figure 3);

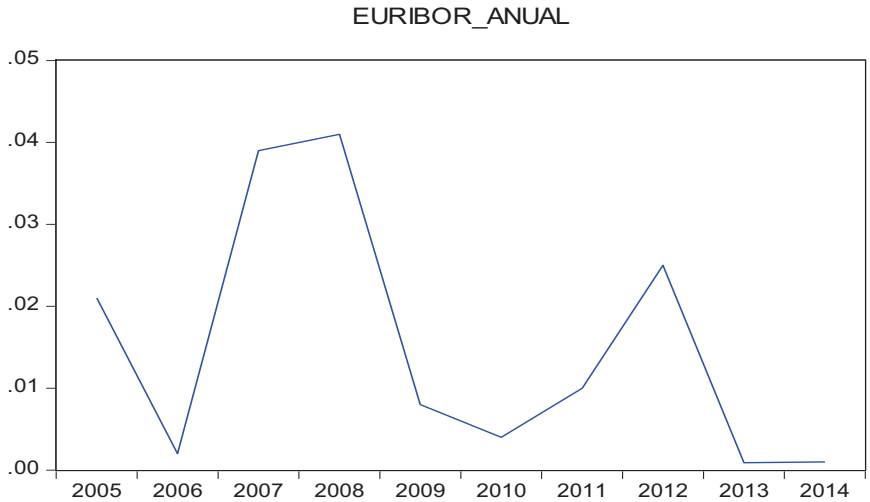


Figure 3: The annually evolution of EURIBOR between 2005 - 2014
Source: Own processing of the time series taken from ECB`s official site

3.3. The research methodology was the following: using the UIP model to analyze if the interest parity influences and in what percent the evolution of the exchange rate.

The used model was the following:
Sfwd – Sspot = a + b(Robid – Euribor) + e;
The equilibrium condition in this case is:
a = 0;
b = 1;
***The risk premium = e = 0*;**

3.4. Results:

3.4.1. The results for the daily frequency time series:
For the daily frequency time series, the ***b*** coefficient that shows in what percent the interest parity influences the expected exchange rate had a very low value. This shows that the market needs some time to incorporate new information and to react at changes, a period of time that is usually larger than one day.

3.4.2. *The results for the monthly frequency time series:*

Table 1: The UIP model results for the monthly series

Dependent Variable: DIF_CURS_LUNAR
Method: Least Squares
Date: 12/07/14 Time: 14:19
Sample (adjusted): 3 119
Included observations: 117 after adjustments
DIF_CURS_LUNAR=C(1)+C(2)*DIF_DOB_LUNARA

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.001394	0.006614	0.210789	0.8334
C(2)	0.001536	0.004795	0.320295	0.7493

R-squared	0.000891	Mean dependent var	0.001325
Adjusted R-squared	-0.007797	S.D. dependent var	0.071230
S.E. of	0.071507	Akaike info criterion	-2.421098

regression			
Sum squared resid	0.588023	Schwarz criterion	-2.373881
Log likelihood	143.6342	Hannan-Quinn criter.	-2.401928
F-statistic	0.102589	Durbin-Watson stat	2.680186
Prob(F-statistic)	0.749326		

Source: own calculations using the times series

We can observe that b coefficient still has a very low value, very close to 0. This result shows that the connection between the interest parity and the expected exchange rate is very weak.

3.4.3. ***The results for the annually frequency time series are the following:***

Table 2: The UIP model results for the annually frequency time series

Dependent Variable: DIF_CURS_ANUAL
Method: Least Squares
Date: 12/07/14 Time: 13:57
Sample (adjusted): 2007 2014
Included observations: 8 after adjustments
DIF_CURS_ANUAL=C(1)+C(2)*DIF_DOB_ANUALA

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.085005	0.112728	0.754073	0.4793
C(2)	0.100029	0.040872	2.447353	0.0500

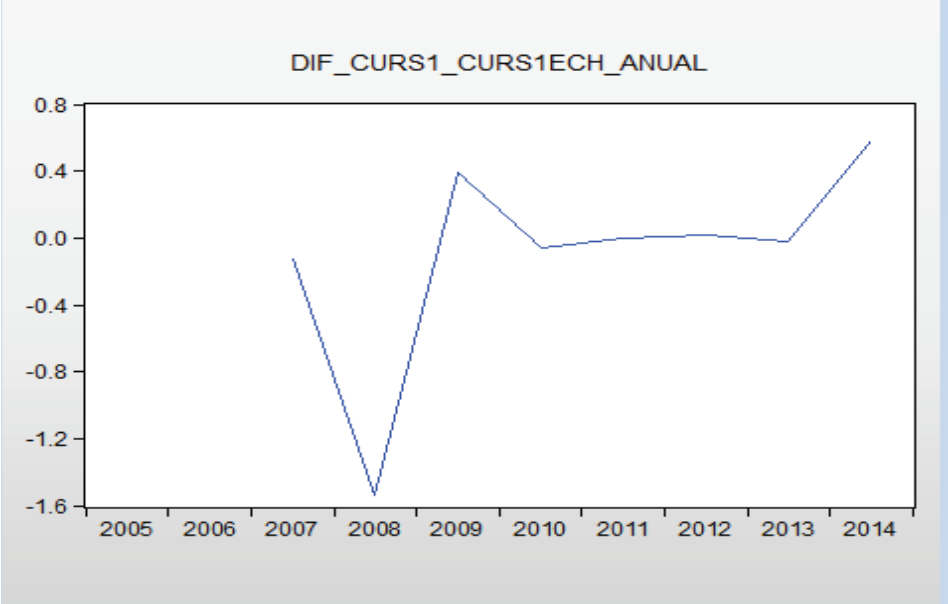
R-squared	0.499564	Mean dependent vary	0.023750
Adjusted R-squared	0.416158	S.D. dependent vary	0.406867
S.E. of regression	0.310886	Akanke info criterion	0.713535
Sum squared reside	0.579899	Schwarz criterion	0.733395
Log likelihood	-0.854140	Hanna-Quinn critter.	0.579585
F-statistic	5.989536	Durbin-Watson stat	1.682495
Probe(F-statistic)	0.049970		

Source: own calculations using the time series.

This time, the connection between the exchange rate and the interest parity is a little stronger, 10% from the modification of the exchange rate being a result of the two interest rates difference. These results show that, in an emerging economy like Romania has, UIP can`t be applied most likely.

3.5. Comparing the obtained results with the equilibrium exchange rate:

Table 3: The deviation between the real exchange rate and the equilibrium exchange rate



Source: Own processing of the main used time series.

Even though UIP doesn`t work for Romania, we can see that besides the beginning of the general economic crisis from 2008 that covered the entire globe, the real exchange rate wasn`t too far from the equilibrium exchange rate. This means that, even though an emerging market, Romania has some solid background at least in making economic policy being efficient in regards to the exchange rate`s objective.

4. Conclusions:

- It`s well known that UIP doesn`t usually work so Romania it`s not an exception.
- These type of studies aim rather to verify in what percent does UIP work for a certain country because the results give details about the maturity of that certain market, about how many investors is it able to attract in different conditions.
- The results of UIP can give also information about local specific policies that an investor should know about.
- Romania is an emerging market and because of this, even though the interest rates are attractive, many other aspects have to be taken in count when bringing a large amount of money here; these aspect regard stability and sustainability.
- Having less functional instruments than the developed countries, Romania needs to play the depreciated currency role, in order to increase exports and to bring money to the budget.
- Having to choose between the present equilibrium and the future sustainability, the emerging country Romania usually chose the medium – long term objective.

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