ARE REAL-NEGATIVE INTEREST RATES ARRIVED IN EASTERN EUROPE COUNTRIES? – REGRESSION MODEL FOR MACRO AND MICRO RATIONS ESTIMATION

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ABSTRACT: *Negative interest rates have reached the majority of the regional banks, placing break to the clients' appetite for saving and reducing financial resources. As a result, banks stopped financing the investments, therefore decreasing the chances of economic growth.*
The strength of this academic theme is the research based on econometric modeling. We analyze trends in micro and macro indicators of some CEE countries and we compare them with previous periods and forecasts for the coming years (2017-2022). The work is a quantitative research based on an econometric model calculation, which will apply a set of macro and micro-economic indicators of Romania. It will make the comparison between the set of indicators calculated for Romania and another five countries from Europe in the past four years and it will be an extrapolation by mathematical modeling/forecast for the future.
The study is aiming to define a structure that similar future evaluations might benefit from and to assess a level of development regarding econometrics.

KEYWORDS: *rates, regression, EEC, banks, market.*

I. Introduction

In the last five years, Europe's financial institutions kept attracting clients' appetite for saving consequential banks stopped financing investment, thus reducing the chances of economic growth.

The purpose of this paper is to do research upon factors that influence the level of interest rates in several countries in Europe. Using techniques and official updated statistic data from the field of mathematical modeling, this researches wish to present new development opportunities for market strategies of the actors on the financial market.The benefits of our research for the scientific research show the possible limits and future research directions.

We ought to firstly present the utility of rates' work through the mind of a person who gets to make appropriate decisions. One's attitude would be that of schemes and precaution, in the beginning. This would be because of the uncertainty that may utterly arise from some additional sources of risk that weren't accounted for regarding the necessity of such an enterprise. This concept—the prudence—was first defined and acknowledged with strength by Kimball(1990). Kimball is liked therefore with the optimal utility level that might be taken adrift by certain unknown risks.

Ultimately, the effective financial management of flood risk requires governments to consider the best use of their limited resources, taking into account the cost and benefits of different approaches including the incentives created by different interventions. In particular, governments need to examine the causes of under-

investment in risk reduction prevalent in most countries and the best means to correct this imbalance. Achieving this will require effective coordination across government departments and different levels of government along with strong leadership aimed at addressing the financial vulnerabilities created by flood risk.

II. Research methodology and assumptions / objectives pursued

§1. Formulas

Growth of interest rates in the long term has been calculated in term of a compound rate of growth referring to each of the years.

Short-term movements in interest rates depend on monetary conditions on the internal economic situation with reference to the business cycle, and on interest rates internationally.

In the simple interest method, an interest amount in each period is computed based on a principal sum in the period. The computation can be stated as:

$FV = PV(1+I)$

Where:

FV= future value of sum

PV= present value of sum

I= interest rate.

Consumer credit a certain number of repayment periods which is obviously more than a year, such as personal loan or hire purchase. The computation is based on the simple formula

Interest= Principle* Rate*Time

The usual requirement for developing a regression equation trat includes a three-way interaction is that all first order and second order terms must be included in the equation. As before, each of the predictor variables should be centered to maximize interpretability and to minimize problems of multicollinearity. The predictor for the three way interaction is form by multiplying together the three predictors. This consideration result in the following regression equation:

$Y = b1X + b2Z + b3W + b4XZ + b5XW + B6ZW + B7XZW + B0$

While the formula for simple regresion is the following:

$Y = (b1 + b4Z + b5W + b7ZW)X + (b2Z + b3W + b6ZW + bo)$

Or:

$Y = b1X + b2Z + b0$

In this equation, the test of the b7 coefficient indicates whether the three – way interaction is significant. The two way interactions now represent conditional interaction effects, evaluated by the scale of the predictor just as are first order terms X and Z in the presence of the XZ interaction. With centered predictor variables, the two-way interaction is interpreted as conditional interaction effects at the mean of the variable not involved in the interaction. First order effects may also be interpreted as conditional effects.

As Aiken and West argued (1991, p.13), if the XZW interaction in equation is significant, then this interaction in the regression equation is not significant.

§2. Indicators

By 2011, east European Banks continued to get bounded because of the volumes that recurred (more than 14 percent between 2010 and 2011) and also due to the difference that arose regarding risk and cost cycle post the peak of 2009 (15% going down in 2011 as opposed to 2010).

Despite getting a bit of margin deterioration (13 basis points (bps) declining by 2011),

the revenues on a post-risk costing basis increased by 20%. The move gains potency towards 2012, even if that was slowly done. The initial figure showed that the annual growth would give some 8%. Having strong and stable margins while recovering from extreme risk, the enhancements in revenues on a post-risk-cost basis went for 2012 from a growth of 12% to one of almost 15 percent.

The east European market within banking was, without argue, shaped by two things. These factors were:

First, recovering from the status of the poorest regional gathering worldwide when considering financial richness as opposed to nominal GDP. That being even below the edge of Africa; second, the employees of these banks are aging at the same generous speed of that in Western Europe.

Such dynamics, like these two factors, are the basis that give shape to the banking sector and shows its performance and weaknesses. One point of view gives that, the low penetration of financial availability levels do not make for an increasing revenue. On the other side of the show, these levels, together with the lousy trends that keep the area very eager to depend on external money, makes the respective market so volatile.

Capitalization of the sector's market still stands under its loom since the 2007 standard, while the eastern region owns the biggest number of banks in the world that give a sub unitary price-to-book value (P/BV). We don't have to neglect the fact that it is really no wonder that such a high held show of professionalism still persists within the participants of the market. Therefore, the Eastern Region in Europe is a place that looks up on strategy.

In recent years, economic imbalances subject was discussed with the wish to find the main causes of these imbalances and the formulation of hypotheses and theories applicable to any market participant to minimize the associated risk. Studies in this area are based on the analysis of the main factors that destabilize the economy by putting the spotlight exchange rate fluctuations, inflation and interest rate as well as economic growth rate and indebtedness. Among those elements were discovered, often interdependence relations. Interest rates, inflation and exchange rates are all highly correlated. Through „manipulation" of interest rates, central banks influence on inflation and the exchange rate. Therefore, higher interest rates attract foreign capital which determines the currency appreciation. Interest rate impact is attenuated, however, if other factors lead to currency depreciation.

Like all would have expected, the National Romanian Bank put its trademark money policy rate under an unchanged status of 1.75 b.p. on February seventh 2017. The makers of policies also held the requirements of ratio within foreign exchange-denominated availabilities unchanged at 10 b.p. and for RON denominated liabilities by 8 percent. The Interest rate in Romania got boosted from 6.10% in between 2005 and 2017 to 12.50 percent in the period of May 2005 and the lowest 1.75 b.p. in the same month, in 2015. At its policy meeting on 4th. November 2015 the National Bank of Romania (NBR) met market expectations in deciding to keep the monetary policy rate unchanged at 1.75%, where it has been since May 2015. The Bank also left unchanged the reserve requirement on foreign-currency-denominated liabilities, which it had lowered at its previous meeting from 12.00% to 10.00%, as well as the minimum reserve requirement ratio on credit institutions' RON-denominated liabilities at 8.00%.In its accompanying statement, the NBR noted that economic conditions were positive following Q2's impressive 6.0%

GDP growth. Inflation remained subdued but will return close to target in 2017 (2.5% plus/minus 1.0 b.p.), thanks in part to a better functioning of monetary policy transmission. Against a backdrop of heightened uncertainty in Romania and abroad as well as low inflation expectations, the NBR decided to keep the rate unchanged in order to "ensure and preserve price stability over the medium term in a manner conducive to achieving sustainable economic growth.

Romania's economic growth accelerated in the first quarter more than estimated as tax cuts and wage increases buoyed consumers.

Gross domestic product rose by a preliminary 4.3 percent from a year earlier, compared with a 3.8 percent gain in the previous three months, the National Statistics Institute said Friday. That's more than the 3.9 percent median estimate of 11 economists in a Bloomberg survey. GDP grew a seasonally adjusted 1.6 percent from the fourth quarter.

"Domestic demand is likely to remain the main driver of growth, supported by a positive fiscal impulse as well as accommodative financial conditions," Andrew Matheny, a London-based economist at Goldman Sachs Group Inc., said in an e-mailed note before the data were released.

With the economy already among the EU's fastest-growing, Romania has implemented tax cuts and state-wage increases before elections later this year. The European Commission predicts GDP will expand at the bloc's second-fastest pace in 2016, behind Ireland. Central bank Governor Mugur Isarescu has warned growth may slow because of a mortgage walk-away law that risks curbing lending.

The leu is this year's fifth-best performer against the euro among 24 emerging-market currencies tracked by Bloomberg, gaining 0.6 percent. It was little changed at 4.4974 per euro at 9 a.m. in Bucharest. Full GDP figures are due June 7.

Basically, over time, economists' views on the effects of the budget deficits on the economic performance of a state were related to two main approaches. On the other hand, it was considered that the deficits resulting from the reduction in marginal rates of the tax have an incentive effect on the labor productivity. On the other hand, the budget deficits have been considered a cause of the economic stagnation and its instability (Romer, 1988, p. 63).

§3. Years of past data regression

Effective interest rate transmission is crucial for the National Bank of Romania to signal its monetary policy stance in credible manner. Under the current inflation targheting monetary policy stance and uses open market operation to control liquidity in the banking system.

Long-run pass-thought of changes in the policy rate to interbank rates has been close to complete, but impulses are transmited slowly. Rolling regresion, usin data since August 2005 when the inflation targeting regime was put into place, suggest that long –run pass-throaugh from the policy rate to money market market rates was initially below 80% but has since increased to 100 %. The speed of transmission also improved but continues to be relatively low, with only about 80 % of total pass-throught reaching market rates within two months following a policz change.

Pass-throught to retail lending rates was initially weak but now compares well to that in other emerging markets. The findings suggests pass-throught to retail lending rates reached over 70 percent for the period as a whole , placing Romania above the median for emerging markets. However, short-run pass-throught was low in the early years of inflation targeting – just above 20 %- and increased to a moderate 60% in recent years.

A more effective transmission mechanism would require a more developed and better regulated financial system. While the monetary policy framework in Romania is adequate, financial markets remain shallow compared to most of Romania's peers, are highly dollarized, and fequenty have excess liquidity.

Financial sector developments in Europe pose challenges to Romania's banking system through several channels. Romania's asset markets and spreads tend to co-move closely with its regional peers and have been strongly impacted by both the 2008 financial crisis and the intensification of the euro area crisis. Increases in Romania's CDS - price charts and Emerging Markets Bond Index Global spreads directly impact bank financing costs. The banks are also exposed to funding risk as deleveraging takes hold. The significant presence ao Greek banks heightens these risk further.

A gradual parent funding retrenchment and fragmentation of interbank markets have led to a deterioration of bank liquidity for some banks. Compared to regional peers, foreign –owned bank deleveraging has been orderly and moderate so far. Nevertheless, interbank markets are fragmented due to perceived counterparty risk , and some banks with stained liquidity have been offering above-average deposit rates to compensate for lower parent founding. Greek banks continue to have limited acces to interbank funding and rely primarily on parents and swap markets as foreign exchange sources. To help reduce interbank market fragmentation , the NBR is preparing measures to enable banks to engage in collateralized interbank lending.

III. Research results

In the fallowing, we will explain the conclusions of the   research and how we achieve the working hypotheses.

The cooperative system in the former Soviet countries has been re-established further to the fall of Communism or, in a few cases, has coexisted with the state-owned mono-bank.

The cooperative credit in Poland has very ancient origins since in dates back to 1861, the year of establishment in the city of Poznan of the Tawarzystwo Pozyazkowe dla Przemyslawcow Miesta Poznania, the first Polish cooperative credit bank.

The passage from planned economy was characterized by a period of severe economic and financial crisis that caused innumerable bank failures.

The entire cooperative credit sector was strongly reformed in 2001 further to the issue of the Act on the Operation of Cooperative Banks, Teir Affiliation, and Affiliating Banks, subsequently amended in 2003.

With reference to the Polish banks, the recourse to the ROE decomposition permits to single out the factors that have contributed the most to the creation of the return to equity. In particular, the performance of the Polish banking system in terms of return on equity reports a trend on the increase, although attained under progressively increasing leverage conditions.

With reference to the characteristic management, it may be noted that the Polish cooperative credit system constantly reports a higher Interest Margin on Total Assets ratio than rest of the banking system. The incidence of the income components resulting from services, defined by the Intermediation Margin on Interest Margin ratio, proves systematically limited in the cooperative credit system tan in the rest of the banking system.

As far as the incidence of operational costs (measured by the Operational Result on Intermediation Margin ratio) is concerned, the cooperative credit system.

Taking into consideration the evolution of the trend of growth reported in the last few years and the positive influence on the economy resulting from the ascension to the EU, it may be assumed that the Polish cooperative credit banks will continue their expansion phase, in all probability increasing the margin from services resulting from the extension of the rage of increasingly more complex and high-value added products.Poland is finding a backdoor to monetary easing after all.

An outlier in Europe that's kept interest rates on hold since March 2015, the National Bank of Poland hasn't bent to a record stretch of price declines or last year's economic slowdown, even as its counterparts from Frankfurt to Budapest loosened policy.

The central bank has made financial stability its overriding focus under the stewardship of Governor Adam Glapinski, sticking with a stance he's called "conservative and cautious" and ruling out any unconventional measures. The tide of reflation sweeping Europe is putting that policy to a test, with Glapinski previously committing to tightening as the next move -- but probably not before 2018.

"If real rates turn negative, it will be for a short period of time," Glapinski told reporters in Warsaw on Wednesday. "It's not worth adjusting our rates" in this scenario, he said, adding that MPC is in "full agreement" over the central bank's "wait-and-see" stance.

Zloty forward-rate agreements, an indication of rate expectations, signal no change over the next six months. The zloty, Europe's best-performing currency this year after the Norwegian krone, was little changed at 4.3136 against the euro at 4:49 p.m. HSBC Bank Plc said the Polish currency will reverse recent gains if the country's central bank doesn't adopt a more hawkish rhetoric,

predicting it depreciating to 4.6 per euro by the end of 2017.

We will focus in the following on the case of Romania as a country in transition.

Starting with the year 2000 the disinflation was always present in Romania until 2007; this fact is confirmed by the annual inflation average rate which has descreased each year, from 45,7 per cent in 2000 to 6,56 per cent in 2006 and to 4,84 per cent in 2007. In 2012, the inflation rate increased reaching at 4,85 per cent which is bigger than the objective set by Romania's National Bank (3 per cent). The causes of these increases were the increase in prices of raw materials for food and energy, alongside the evolution of the echange rate, slightlyimproved by persistance of the demand deficit and the descrease in the imported inflation for non-food good.(Banca Nationala a Romaniei-BNR.)

IV. CONCLUSION

For the year 2013, the National Bank reduced its inflation prognosis to 1,8 per cent. Likewise. The National Prognosis Commision revised and descreased the number for the inflation prognosis for the end of 2013 from 3,5 per cent to 2 per cent . These numbers were set keeping in mind this year's great agricultural outcome and the reduction of Vallue Tax Added for some bread products starting with September 1 st 2013. The risk associated with this projection of the inflation rate include both external components, generated by relevant European and International facts (the fragidity of recovery perspectives of the economies of Romania's main commercial parteners sustanibility problems of public debt and the private bank sector of certain countries in the Euro Zone, issues within the American financial system; the possible descrease of the halt economic growth of the major emergent econoimies)

as well as internal factors(increases in taxes for certain goods, measures included in the agreement signed by the Romanian authorities with EU, IMF and World Bank, structural rigidities which prelude the necesarly adjustments in the national economy(BNR, August 2013, BNR November 2013.)

The descrease of the risk degree associated to the Romanian economy has contributed greatly to the diminish of the long term interest rate compared to the reference level of maximum 3,7 per cent decided in 2009 to 1,5 per cent in 2011 and to 1,6 per cent at the end of 2012. Subsequently, this trend should continued to descrease, registring a leve of in 0,9 per cent in May 2013, due to general descreasing rend of long term interest rate and the increased of reference value.(BNR 2012).

Having in view the ones above, we could observe in the fallowing table that decision of the BNR (The National Bank of Romania) was to mantain the monetary policy rate unchange in february , this year at 1.75 per cent. The minimum reserve requirements ratio on foreign exchange-denominated liabilities of credit institutions remain at 10 percent and the minimum reserve requirements ratio on leu-denominated liabilities at 8 percent. Interest Rate in Romania averaged 6.10 percent from 2005 until 2017, reaching an all time high of 12.50 percent in May of 2005 and a record low of 1.75 percent in May of 2015.

Inflation expectation is one of the most important channels through which monetary policy affects economic activity; - Inflation expectations play a decisive role in the transmission mechanism of interest rate impulses to the real economy (the real interest rate is calculated as the difference between the nominal rate and the expected inflation rate); - The interest rate is treated with importance in the current economy due to its role as leverage for savings and the

income redistribution (state used to guide economic activity)

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