RevistaEconomică
Journal of economic-financial theory and practice
Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

TO WHAT EXTENT DO THE MONETARY POLICY DECISIONS LEAD TO THE FULFILLMENT OF THE OBJECTIVE OF THE NATIONAL BANK OF ROMANIA?

Eliza-Alexandra VASILE[1], Gabriela DOBROTĂ[2]

[1]Lucian Blaga University of Sibiu, Romania, 0009-0008-1304-6573
[2]"Constantin Brâncuși" University of Târgu-Jiu, Romania, 0000-0001-7082-1830

Abstract: *Monetary policy has had perhaps the most controversial definition and evolution over time, starting from maintaining the target of the gold standard, to creating a regulated set of measures and strategies by which the competent monetary authorities fulfill their main objective of keeping price stability. Considering the magnitude of the inflationary phenomenon in recent years, the Central Bank acted promptly and made several changes to monetary policy decisions. This research employs econometric analysis to address the query: "To what extent does the consumer price index impact monetary policy decisions?". To answer this question and to identify the positive and negative effects brought by the sudden change of monetary policy decisions a binomial econometric model was created with five variables, namely, a dependent variable, represented by the consumer price index, and four independent variables, respectively the monetary policy interest rate, the lending facility interest rate (lombard), the interest rate on the deposit facility and the exchange rate (EUR/RON). The research methodology is comprehensive, encompassing empirical qualitative and comparative analysis to scrutinize the inflationary phenomenon. Simultaneously, it utilizes econometric modelling to quantify pertinent indicators, which leads this paper, from the perspective of the nature of the research, towards a quantitative, test research. The results obtained highlight a significant and direct relationship between interest rates, the exchange rate and inflation.*

Keywords: *Banking System, Central Banks, Monetary Policy, Inflation, Econometric Model*

JEL classification: *E58, E59*

1. Introduction

Monetary policy decisions play a crucial role in fulfilling the main objective of Central Banks to maintain price stability. Through these decisions, the supply of money and the cost of credit in the economy is influenced, having an impact on the general level of prices. By adjusting the reference interest rate and using other monetary policy tools, the competent authorities aim to keep inflation within a set target range, usually around 2%. Depending on the needs of the economy and the fulfillment of its objectives, central banks adjust monetary policy decisions on the one hand, following economic analyzes and risk assessment, taking into account internal and external economic developments, and on the other hand by carefully monitoring macroeconomic indices and factors that influence the inflationary phenomenon.

The National Bank of Romania is the institution responsible at national level for developing monetary policy and maintaining price stability, thus ensuring a predictable and favorable economic environment for consumers, businesses and investors. It is important to emphasize that monetary policies are not the only instruments converging to meet the NBR's objectives. Other macroprudential measures and regulations in coordination with other financial institutions and government authorities can also contribute to the creation of a stable financial environment and the fulfillment of the NBR's price stability objectives.

But the central bank's role in ensuring financial security and implementing monetary policies is undeniable. Starting from the scheme of ordering people's needs stipulated in Maslow's Pyramid, it is

[1] *elizaalexandra.vasile@yahoo.com*
[2] *gdobrota70@gmail.com*

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

observed at the base of the pyramid, after the basic physiological need, the need for personal security (Dorel Ailenei, 2012). The need for personal security means, on the one hand, the need for order, discipline and justice, i.e. the need for a safe, danger-free environment, and on the other hand, the need for individual stability and financial security, i.e. security of service, security of income monthly income, security of their preservation, security that can give each individual a certain lifestyle considered sufficient for his physical and mental comfort. Of course, the fulfillment of this need cannot be achieved on an individual level depending only on oneself, on education and on the ability to self-coordinate, and here comes the need to establish institutions designed to sustainably contribute to ensuring the fulfillment of this need.

The idea of fulfilling the need for financial stability and security has been manifested since ancient times by shaping banking activity in a general way, namely attracting deposits and granting loans (people who owned a larger amount of grain, gold or other things considered valuable stored them in temples for exchange, loan and sale). Taking into account the rapid evolution of the banking activity, but also in order to limit the risks associated with this activity, risks both for people and for the institution itself, the clear need for support and regulation of this activity by another authority was manifested. Thus, more than 350 years ago, the world's first central bank came into being called Sveriges Riksbank headquartered in Sweden, established "for a strong and secure economy" and originally intended to remedy the lack of coins and stimulate trade . (Riskbank.se, 2000)

The concern of specialists examining the concepts of independence and accountability of central banks towards society and government, analyzing recent developments and emphasizing the need for a balance between independence and public accountability, has been felt since the 90s (Goodhart, 1994). Also after the 90s, central banks started to communicate and it was concluded that effective communication plays a crucial role in shaping market expectations and underlines that the ability of central banks to influence the economy depends rather on its ability to influence market expectations than the current rate level. (Alan S. Blinder, 2008)

Currently, globally, whether it is the Federal Reserve Bank, the Reserved Bank of Australia, the Reserved Bank of India, South Africa or the European Central Bank, their common goal of ensuring the financial stability of the country is notable. In order to achieve this objective, central banks perform several functions at the same time, i.e. develop monetary policy to limit inflation and unemployment, ensure an efficient payment and settlement system and monitor financial institutions to reduce the phenomenon of contagion in case of possible systemic risks .

At the national level, the banking system has seen a reconfiguration of the model of regulation and supervision of banks as well as the principles that underlie them against the background of its inclusion in a European financial context, but also of the trend of globalization and unification of supervisory systems .

Therefore, the National Bank of Romania was established on April 17, 1880, after the appearance of the first project to establish a national bank, ranking 16th worldwide. The founder of this institution was Eugeniu Carada and the first governor was Ion I Câmpineanu. With Romania's accession to the European Union (January 1, 2007), the NBR became a member of the European System of Central Banks (ESCB), and the governor is a member of the General Council of the European Central Bank (ECB). (National Bank of Romania, no year).

Following the developments in the economy and society, the main and fundamental objective of the central bank of Romania is to ensure and maintain price stability, and the state BNR has been perfected and assumes the following attributions: the development and application of monetary policy and exchange rate policy ; authorization, regulation and prudential supervision of credit institutions, promotion and monitoring of the good functioning of payment systems to ensure financial stability; issuance of banknotes and coins as legal means of payment on the territory of Romania; establishing the currency regime and supervising its compliance; administration of Romania's international reserves. (Parliament of Romania, 2004)

In other words, we need a central bank to fulfill the basic needs of long-term financial security, i.e. for price stability so that the purchasing power of money remains constant, for the supervision of

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

credit institutions, making sure that they are able to manage difficult situations, systemic risk situations so that our savings are safe, and to maintain the efficient operation of electronic payments or digital fund transfers to ensure that these operations are processed quickly and securely.

Starting from the aspects mentioned above, it is important to identify the variables that exert an influence on inflation, so that the necessary monetary policy measures can be adopted to ensure financial stability. As a result, the main objective of the conducted research is limited to this problem. The research hypotheses are:

H1: The monetary policy interest rate, the interest rate on the lending facility (pawnshop), the interest rate on the deposit facility and the exchange rate of the average Eur currency market (EUR/RON) influence the consumer price index;

H2: The monetary policy interest rate, the interest rate on the lending facility (pawnshop), the interest rate on the deposit facility and the exchange rate of the average Eur currency market (EUR/RON) do not influence the consumer price index;

In the context of the previous clarifications, this article is further structured as follows: Section 2. Monetary policy as an anti-inflationary system, in which the relationship between monetary policy and inflation is explained, Section 3. Research methodology and data processing, in which the econometric modeling of monetary policy indicators and inflation is carried out, and Section 4. Conclusions.

2. Monetary policy as an anti-inflationary system

From a philosophical perspective, the goal of monetary policy is to create a perfect economic balance. So monetary policy and inflation can be transposed into the Chinese Ying and Yang symbol, where Ying "the black side" or the negative, vague, dark principle is represented by the inflationary phenomenon, and Yang "the white side" or the principle of solidity, the positive and active force is represented by monetary policy. There can be no Yin without Yang and no Yang without Yin, i.e. there can be no inflation without monetary policy and no monetary policy without inflation. Although it may seem paradoxical, there is no conflict between these two opposing forces, on the contrary, they are complementary. (Lin, 2006)

From an economic perspective, inflation and monetary policy decisions are influenced by several theories such as: the economic theory that describes the relationship between inflation rates and nominal interest rates is the Fisher effect and according to this theory, there is a positive relationship between inflation and nominal interest rates. The Fisher effect argues that an increase in the inflation rate will cause a proportional increase in nominal interest rates, thus keeping the real interest rate constant. (European Central Bank, 2009). The Fisher effect suggests that adjusting nominal interest rates in line with the expected level of inflation can keep the real interest rate stable and influence investment, spending, and other economic variables. However, the Fisher effect is a theoretical simplification and does not take into account many other factors and variables that can influence interest rates and inflation in reality.

Quantity Theory of Money: This theory, particularly associated with classical economist David Hume (Hume, 2017) and monetarist economist Milton Friedman, holds that inflation is primarily driven by an increase in the amount of money in the economy. According to this theory, an increase in the money supply at a faster rate than the increase in real output leads to inflation. (Friedman, 2007)

Cost Theory: This theory, developed by Neo-Keynesian economist A. W. Phillips, (Phillips, 1958) suggests that inflation results from rising production costs, especially wages. According to this theory, an increase in wages leads to an increase in prices and, implicitly, to inflation.

Adaptive Expectations Theory: This theory is based on the idea that inflation is influenced by economic expectations and anticipations of economic agents. According to this theory, individuals adjust prices and wages based on the anticipated level of inflation and past experiences.

Rational Expectations Theory: This theory, developed by the American economist Robert Lucas (Jr, 1972) and other economists, claims that economic agents form inflation expectations in a rational

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

way, taking into account all available information. According to this theory, monetary policy can affect inflation only in the short run, while economic agents quickly adjust their expectations and behavior according to changes in monetary policies.

Of course, monetary policy and inflation mean more than that because their effects have attracted worldwide attention and the objective of maintaining price stability by directly targeting inflation has become central banks' most prominent mandate. The adoption of the strategy of direct inflation targeting by the National Bank of Romania in 2005 represents a framework that allows the central bank to exercise "constrained discretion" in the implementation of monetary policy, with inflation targets as the nominal anchor. This strategy of direct inflation targeting is considered to be an approach where monetary policy is connected to the medium and long term without diminishing the central bank's ability to react to short-term developments. (National Bank of Romania, 2009).

The BNR monetary policy strategy has been perfected, and monetary policy can be argued to be an anti-inflationary system because through monetary policy instruments, namely operations on the money market, permanent facilities granted to credit institutions and minimum mandatory reserves (National Bank of Romania, 2005) achieves control of money supply, stabilization of aggregate demand and control of interest rates.

Moreover, anti-inflationary monetary policy can have an anchoring effect on expectations. When economic agents trust that the central bank will act to control inflation, they will be less likely to adjust their prices and wages in a way that fuels the inflationary spiral. This anchoring effect can help maintain price stability and prevent inflation from running out of control.

In other words, a sound and efficient monetary system can strengthen confidence in the economy and promote stability. Coherent and transparent monetary policy, with clear inflation control objectives, can ensure the predictability of the economic and financial environment. This can reduce uncertainty and the risk of inflation and encourage investment and sustainable economic development.

3. Research methodology and data processing

The research took shape on the one hand, starting from the economic theories mentioned above and from the importance of fulfilling the objective of maintaining price stability by the National Bank of Romania and on the other hand by formulating the hypothesis according to which the monetary policy interest rate, the interest rate on the lending facility (pawnshop), the interest rate on the deposit facility and the exchange rate of the average Eur foreign exchange market (EUR/RON) have an influence on the consumer price index. To investigate these relationships between the independent variables represented by the monetary policy interest rate, the interest rate on the lending facility (pawnshop), the interest rate on the deposit facility and the exchange rate of the average Eur foreign exchange market (EUR/RON) and the variable dependent represented by the consumer price index, an econometric analysis was performed.

The research methodology used in this paper is of mixed type. This approach is based both on the qualitative and comparative analysis of the inflationary phenomenon, as well as on the econometric modeling of the relevant indicators in accordance with the topic addressed. Thus, from the point of view of the character of the research, it can be classified as an empirical, qualitative and comparative research because it is based on the analysis and interpretation of the data observed in relation to inflation and the effects of changing monetary policy decisions. Moreover, this research also involves the econometric modeling of relevant indicators, and this aspect leads the paper to a quantitative, test research, as it uses statistical methods and techniques to estimate and analyze the relationships and influences between different economic variables. This study can be useful to both the providers of banking financial services and their beneficiaries because any change in the monetary policy interest rate is aimed at changing the interest rates on lending and deposit facilities.

The econometric model was built by using "time series" type data through which the concordance relationships between the dependent variable and the independent variables are established and "Output" validity tests are performed to admit the results obtained. To carry out this econometric study, we used

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

the E-views application, and the data of the variables are related to the period January 2006 - December 2022, the data being collected from www.bnr.ro (Appendix 1).

To facilitate data analysis and interpretation, the variables used in the study were named according to the following convention: "R_dob_pol_monetară" - monetary policy interest rate (source www.bnr.ro), "R_dob_ creditare (lombard)" - interest rate on the loan facility lending (pawnshop) (source www.bnr.ro), R_dob_depozit - the interest rate at the deposit facility (source www.bnr.ro), "Curs_EUR/RON" - for the monthly exchange rate eur/ron (source www.bnr. ro) and "IPC" - for the consumer price index (own monthly processing, based on the data provided by www.insse.ro and www.bnr.ro).

The forecasting of the dependent variable IPC calculated in E-views and the validation of the results are reflected in Figures 1-9:

The equation of the regression model to be estimated is as follows:

IPC = a + b1 R_dob_pol_monetară + b2 R_dob_depozit + b3 R_dob_creditare_lom + b4 Curs_eur_ron

IPC = -19.76 + 2.81 R_dob_pol_monetară – 0.19 R_dob_depozit – 1.01 R_dob_creditare_lom + 4.33 Curs_eur_ron

Figure 1: Estimation output

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: IPC
Method: Least Squares
Date: 04/11/23 Time: 16:23
Sample: 1/01/2006 12/01/2022
Included observations: 205

Variable	Coefficient	Std. Error	t-Statistic	Prob.
R_DOB_POL_MONETARA	2.811128	0.527375	5.330414	0.0000
R_DOB__CREDITARE__LOMBARD_	-1.014180	0.299887	-3.381875	0.0009
R_DOB__DEPOZIT	-0.198228	0.287460	-0.689584	0.4913
CURS_EUR_RON	4.335970	0.946230	4.582365	0.0000
C	-19.76891	4.724294	-4.184520	0.0000

R-squared	0.514647	Mean dependent var	4.401073
Adjusted R-squared	0.504940	S.D. dependent var	3.718467
S.E. of regression	2.616333	Akaike info criterion	4.785512
Sum squared resid	1369.040	Schwarz criterion	4.866561
Log likelihood	-485.5150	Hannan-Quinn criter.	4.818295
F-statistic	53.01773	Durbin-Watson stat	0.097439
Prob(F-statistic)	0.000000		

Own processing, E-views

From the obtained result it is understood that there is a direct connection between the independent variables and the dependent variable, namely:

- If R_dob_pol increases by one unit, then CPI increases by 2.81 units keeping other factors constant
- If R_dob_credit_lomb increases by one unit, then CPI decreases by 1.01 units keeping other factors constant
- If R_dob_depozit increases by one unit, then CPI decreases by 0.19 units keeping other factors constant
- If Curs_Eur_Ron increases by one unit, then CPI increases by 4.33 units keeping other factors constant

The margin of error of this model is interpreted according to the significance threshold level of 10% and is given by the Prob coefficient. Value and the value of the F-statistic test. So, if Prob. Value is greater than 10% means that there is a high chance that the regression model is erroneous, and if the coefficient Prob. Value is less than 10% means regression is significant. In our model the value of Prob. is less than 10% and means that the model rejects the null hypothesis and is a valid model and all variables are significant based on probable error rates.

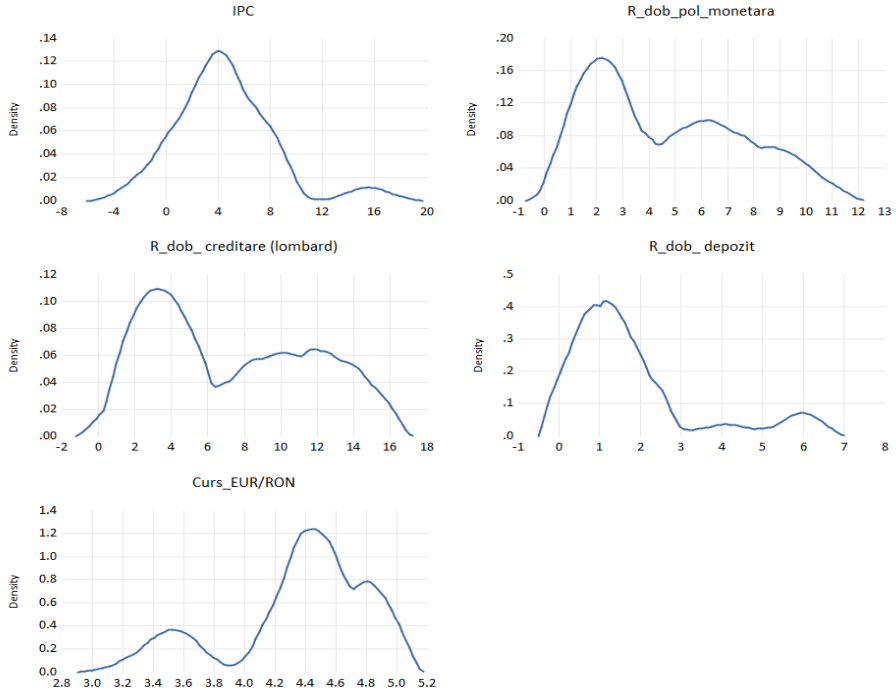
Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

F. statistic combines the effect of all independent variables on the dependent variable and applies the same interpretation as in Prob. Value namely:

- If Prob. Value (F. statistic) is greater than 10% means that the chances of error are high and we can conclude that the combination effect is insignificant
- If Prob. Value (F. statistic) is less than 10% means that the combining effect is significant or considerable, our case.

The importance of the dependent variable in the equation is highlighted using the R-squared statistic. If the value of the R-squared statistic is equal to 1, it is a perfect fit, and if it has a value of 0, it means that it does not fit, in which case the Adjusted R-squared alternative can be used. (Bobeica, 2010). In this model, the R-squared Coefficient of Determination is 0.514 which means that this model is probably correct and the related percentage 51.4% can be used in economic studies and analysis.

Figure 2: Kernel Density distribution graph



Own processing, E-views

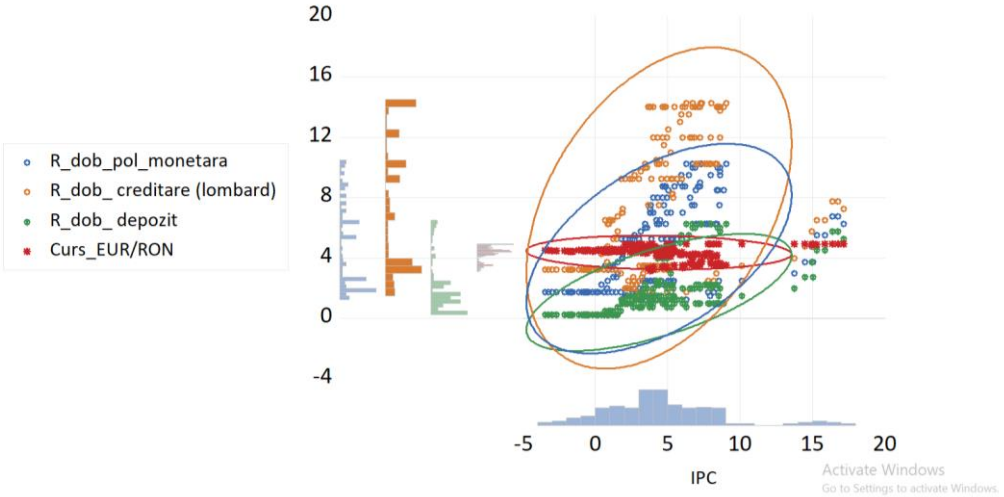
To visually quantify the distribution density function of a variable, the distribution graph determined by "kernel" functions was used. This type of graph indicates the probability of the occurrence of certain events (Bobeica, 2010).

In our model it is observed that:

- The CPI is "more likely" to take values around 4 than to take values around 20
- The policy interest rate is "more likely" to be around 2 than around 12
- The lending interest rate (pawnshop) is "more likely" to take values around the figure 3 than to take values around the figure 18
- The interest rate on the deposit facility is "more likely" to take values around 1 than to take values around 7
- The Eur/Ron exchange rate is "more likely" to take values around 4.4 than to take values around 5.2

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

Figure 3: Distribution density graph



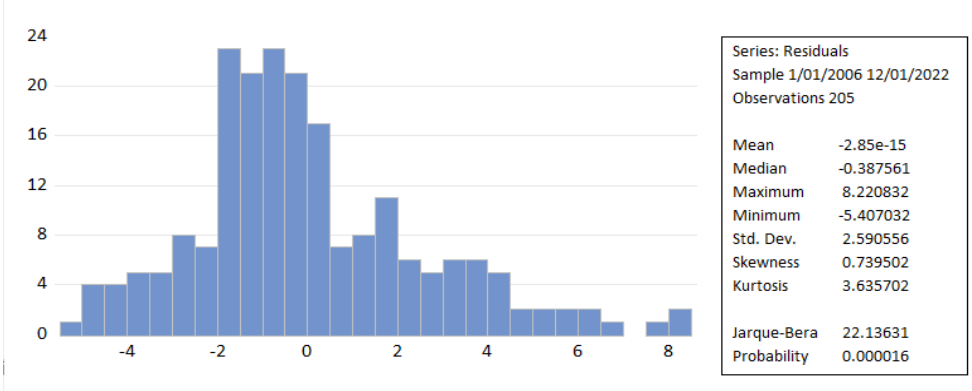
Own processing, E-views

In the above figure we observe both the multidimensional distribution density with the help of the cloud of points and ellipses that mark the probability areas, as well as the marginal distribution density for all variables by means of histograms (Bobeica, 2010).

By means of this distribution density graph, information can be obtained about the probability of a simultaneous event of some values for all the selected variables.

So it is "unlikely" that the CPI is around -5 and at the same time the other variables are around 0, but it is "more likely" that the CPI is around 5 and at the same time R_dob_pol_monetara should have the value around 2, R_dob_creditare (Lombard) around 3, R_dob_depozit around 0 and the exchange rate around 5.

Figure 4: Normality test



Own processing, E-views

The output represented above shows us the histogram of the distribution, the median, the mean, the maximum values and the minimum values, the coefficient of asymmetry (skewness), the standard deviation, the kurtotics of the series and the Jarque-Bera test.

Considering the shape of the histogram of the distribution ("tail on the right") we can say that the distribution is asymmetric and correct, and its positive value is given by the relationship between the mean and the median. The 0.73 value of the skewness coefficient indicates that the distribution is asymmetric-moderate.

The kurtosis of the series has a value greater than 3, which means that this distribution is leptokurtotic (Codirlașu, 2007). The leptokurtotic distribution assumes that the probability of occurrence

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

of an extreme event is much higher than the probability of occurrence of that event in a normal distribution.

The Jarque-bera test shows us that the series is normally distributed (Codirlașu, 2007) and is based on the null hypothesis, in our case, considering that the probability has the value 0, the null hypothesis is rejected and it is extremely unlikely that the data follow a normal distribution. (Startz, 2019).

Figure 5: Autocorrelation with Eviews

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: IPC
Method: Least Squares
Date: 05/21/23 Time: 13:01
Sample: 1/01/2006 12/01/2022
Included observations: 205
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

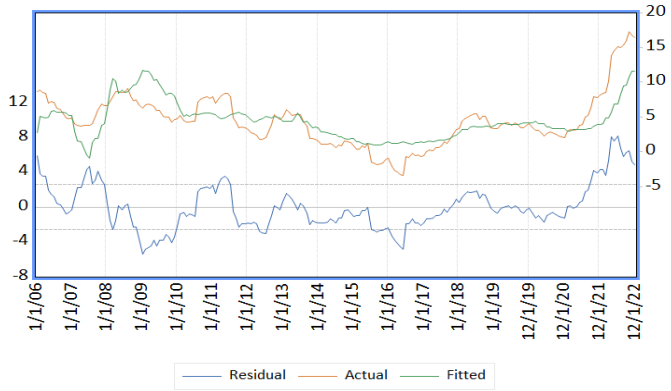
Variable	Coefficient	Std. Error	t-Statistic	Prob.
R_DOB_POL_MONETARA	2.811128	0.927015	3.032451	0.0027
R_DOB__CREDITARE__LOMBARD_	-1.014180	0.477117	-2.125642	0.0348
R_DOB__DEPOZIT	-0.198228	0.487806	-0.406366	0.6849
CURS_EUR_RON	4.335970	2.060099	2.104738	0.0366
C	-19.76891	10.10862	-1.955648	0.0519

R-squared	0.514647	Mean dependent var	4.401073
Adjusted R-squared	0.504940	S.D. dependent var	3.718467
S.E. of regression	2.616333	Akaike info criterion	4.785512
Sum squared resid	1369.040	Schwarz criterion	4.866561
Log likelihood	-485.5150	Hannan-Quinn criter.	4.818295
F-statistic	53.01773	Durbin-Watson stat	0.097439
Prob(F-statistic)	0.000000	Wald F-statistic	9.992923
Prob(Wald F-statistic)	0.000000		

Own processing, E-views

Tests that indicate serial autocorrelation of residuals are the Serial Correlation LM test and the Durbin-Watson Statistic (DW) test. The hypothesis of serial correlation of the LM test is "no autocorrelation", and the relevant value to test the hypothesis is given by Prob F. and if the value of Prob F. is less than 0.10, the null hypothesis is rejected, which means that there is autocorrelation of of errors in the regression model (Jawaid, 2020) The HAC test was applied to analyze the existence of serial correlation of the errors of the regression equation. After applying the test, the model is free of autocorrelation and the value of the Durbin Watson variable and Prob F is no longer taken into account.

Figure 6: Graphical autocorrelation of errors



Own processing, E-views

In this graph you can see the direct linear relationship between the dependent variable and the independent variables.

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

Figure 7: Detection in multicoliniarity

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Variance Inflation Factors
Date: 05/21/23 Time: 21:16
Sample: 1/01/2006 12/01/2022
Included observations: 205

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
R_DOB__DEPOZIT	0.034565	4.947856	2.239213
R_DOB__CREDITA...	0.015328	29.07165	7.487169
CURS_EUR_RON	0.995173	504.8698	5.406017
C	24.90393	656.3119	NA

Own processing, E-views

To test the existence of multicollinearity (according to which there is a relationship of dependence between the variables of the model) the VIF (Variance Inflation Factor) test was used, considering the fact that, if the value is less than 10, (Jawaid, 2020) the phenomenon of multicollinearity does not is present in this model. The regression model meets the condition that the Centered VIF has a value lower than 10, which means that the phenomenon of multicollinearity is not present and can be used as a reliable model.

Figure 8: Testing for heteroskedasticity

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: IPC
Method: Least Squares
Date: 05/22/23 Time: 01:21
Sample: 1/01/2006 12/01/2022
Included observations: 205
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
R_DOB_POL_MONETARA	2.811128	0.927015	3.032451	0.0027
R_DOB__CREDITARE__LOMBARD_	-1.014180	0.477117	-2.125642	0.0348
R_DOB__DEPOZIT	-0.198228	0.487806	-0.406366	0.6849
CURS_EUR_RON	4.335970	2.060099	2.104738	0.0366
C	-19.76891	10.10862	-1.955648	0.0519

R-squared	0.514647	Mean dependent var	4.401073
Adjusted R-squared	0.504940	S.D. dependent var	3.718467
S.E. of regression	2.616333	Akaike info criterion	4.785512
Sum squared resid	1369.040	Schwarz criterion	4.866561
Log likelihood	-485.5150	Hannan-Quinn criter.	4.818295
F-statistic	53.01773	Durbin-Watson stat	0.097439
Prob(F-statistic)	0.000000	Wald F-statistic	9.992923
Prob(Wald F-statistic)	0.000000		

Own processing, E-views

Heteroscedasticity testing was performed with the HAC test and accepts the null hypothesis that the regression model is not heteroskedastic.

Figure 9: Granger Causality

View | Proc | Object | Print | Name | Freeze | Sample | Sheet | Stats | Spec

Pairwise Granger Causality Tests
Date: 06/25/23 Time: 23:49
Sample: 1/01/2006 12/01/2022
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
R_DOB_POL_MONETARA does not Granger Cause IPC	204	8.41392	0.0041
IPC does not Granger Cause R_DOB_POL_MONETARA		63.4383	1.E-13

Own processing, E-views

To test the causal relationships between two variables, the Granger Causality test was performed. The null hypothesis H0 is X does not Granger Cause Y. If the Prob value is greater than 0.10 then the H0 hypothesis is accepted and there is no causality, and if the Prob value. is less than 0.10 then the

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

hypothesis H0 is not accepted and there is causality between the variables (Jawaid, 2020). In this model we have a Prob value greater than 0.10 which means that the null hypothesis is accepted and there is no causality or CPI does not Granger cause the Monetary Policy Interest Rate and a value less than 0.10 which means that the null hypothesis is not accepted and there is a causal relationship or the Monetary Policy Interest Rate does Granger Cause CPI. Thus, in the same model, when one hypothesis is accepted and the other is rejected, it is suggested that there is unidirectional causality from the Monetary Policy Interest Rate to the CPI. This means that changes in the Monetary Policy Interest Rate can influence the CPI, but not vice versa.

Consequently, the obtained results allow the validation of hypothesis H1. Several studies provide key insights into the influence of inflation on the financial banking system. On the one hand, it is emphasized that inflation has a greater impact on systemic risk than interest rates, and aggressive monetary policy interventions may be necessary to maintain financial stability, and especially that there is no evidence to indicate that increased systemic risk would be linked to excessive lending during periods of economic boom (García & Rambaud, 2023), and on the other hand, the importance of interconnections between long-term inflationary expectations that have a significant impact on monetary policy is highlighted (Diegel & Nautz, 2021), the projections realistic inflation for the elaboration of the monetary policy strategy (Álvarez & Sánchez, 2019), and the evaluation of the effect of monetary policy response actions to shock situations on the economy (Lovcha & Perez-Laborda, 2018). Other studies draw attention to the impact of media communication about the monetary policy strategy and the way these communications are transmitted and received in the financial-banking markets (Picault, et al., 2022), but also to the fact that central banks go in the same direction direction in transparent communication with the general public, but with limited success (Blinder, 2018).

4. Conclusions

In conclusion, the central bank is necessary to ensure financial stability and meet the financial security needs of individuals. By implementing monetary policy, supervising financial institutions, and managing payment systems, the central bank helps maintain price stability, protect individual savings, and ensure a secure environment for financial transactions. Thus, the role of the central bank is essential in the economy to ensure a robust financial framework and to protect the interests of the public.

Another conclusion emerges from the goal of monetary policy to create a perfect economic balance by directly targeting inflation that leads to the creation of a sound and efficient monetary system that can reduce uncertainty and inflation risk, encouraging investment and sustainable economic development.

Following the research carried out and the validation of the assumptions of the regression model, it can be observed that there is a direct link between the independent variables and the dependent variable and any sudden change in the value of one variable positively or negatively influences the other variables. The econometric model is valid and can be used in economic analyses.

According to the results obtained and contrary to economic theories, it can be concluded that an increase in the monetary policy interest rate does not lead to a decrease in inflation, this measure actually having the opposite effect, namely, an increase in prices and implicitly the inflationary phenomenon. Also important to highlight is the fact that an increase in the EUR/RON exchange rate, respectively a depreciation of the local currency RON in relation to the foreign currency EUR has an effect of stimulating inflation. If the increase in the above mentioned variables lead to inflation, the increase in the interest rate on the credit facility (Lombard) and the increase in the interest rate on the deposit have a disincentive effect on inflation. Moreover, the sudden increase in prices and monetary policy interest rates may lead to the emergence of a new crisis-type event.

The distribution plot based on "kernel" functions highlights the probability of occurrence of certain values for the variables involved in the model, and this can provide important information about the behavior and distribution of these variables.

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

Thus, overall, the conclusion is that there is a significant and direct relationship between interest rates, exchange rates and inflation. Changes in these variables can influence the level of inflation, the causal relationship is unidirectional and these results can be used to understand and manage monetary policy in order to maintain price stability.

References

- Ailenei, D. & Bălan, E., 2012. *Economie.* București: s.n.;
- Álvarez, L. J. & Sánchez, I., 2019. Inflation projections for monetary policy decision making. *Jounal of Policies Modeling*, Volume 41, pp. 568-585;
- Banca Centrală Europeană, 2009. *Stabilitatea prețurilor. De ce este importantă?,* Frankfurt: s.n.;
- Banca Națională a României, 2005. *Instrumente de politică monetară,* Bucuresti: www.bnr.ro/Instrumentele-de-politica-monetara-3327.aspx;
- Banca Națională a României, 2009. Caiete de studii nr. 25. *Caiete de studii*, August;
- Banca Națională a României, fără an *Istoria BNR*, București: www.bnr.ro;
- Blinder, A. S., 2018. Through a Crystal Ball Darkly: The Future of Monetary Policy Communication. *AEA Papers and Proceedings CENTRAL BANK COMMUNICATIONS*, pp. 567-571;
- Blinder, A.S. et al., 2008. CENTRAL BANK COMMUNICATION AND MONETARY POLICY. *Working paper series*;
- Bobeică, G., 2010. *Econometria seriilor de timp -note de curs,* București: s.n.;
- Codirlașu, A., 2007. *Econometrie aplicată utilizând Eviews 5.1,* Bucuresti: www.dofin.ase.ro;
- Diegel, M. & Nautz, D., 2021. Long-term inflation expectations and the transmission of monetary policy shocks: Evidence from a SVAR analysis. *Journal of Economic Dymanics and Control*, Volume 130;
- Friedman, M., 2007. *Price Theory.* USA: Aldine Transaction;
- García, J. S. & Rambaud, S. C., 2023. Inflation and systemic risk: A network econometric mode. *Finance Research Letters* , Volume 56;
- Goodhart, C., 1994. *Central Bank Independence.* London: Palgrave Macmillan;
- Hume, D., 2017. *Of Money, and Other Economic Essays.* s.l.:K. Y. Scott;
- Jawaid, T., 2020. *Econometric Lessons,* s.l.: TJ Academy;
- Lin, H. B., 2006. *Secretele medicinei chineze. Sanatate de la A la Z.* București: Polirom;
- Lovcha, Y. & Perez-Laborda, A., 2018. Monetary policy shocks, inflation persistence, and long memory. *Journal of Macroeconomics,* Volume 55 (117-127);
- Lucas Jr, R. E., 1972. Expectations and the neutrality of money. *JOURNAL OF ECONOMIC THEORY,* Volumul 4, pp. 103-124;
- Parlamentul României, 2004. *Legea nr 312,* 2004: Monitorul Oficial;
- Phillips, A. W., 1958. The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957. *Economica*, Volume 25, pp. 283-299;
- Picault, M., Pinter, J. & Renault, T., 2022. Media sentiment on monetary policy: Determinants and relevance for inflation expectations. *Journal of International Money and Finance,* Volume 124;
- Pirosca Ioana, P. I.-M., fără an *Proiect -Serii de timp,* București: Academia de Studii Economice;
- Riskbank.se, 2000. *Historical timeline*, Suedia: www.Riskbank.se;
- Startz, R., 2019. *Eviews illustrated.* Santa Barbara: s.n.;
- Walsh, C. E., 2010. *Monetary Theory and Policy Third Edition.* s.l.:Massachusetts Institute of Technology.

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

Appendix 1

Date	R_dob_pol_monetară	R_dob_ creditare (lombard)	R_dob_ depozit	Curs_EUR/RON	IPC
Jan. 2006	7.50	14.00	1.00	3.6445	8.60
Feb. 2006	8.50	14.00	1.00	3.5404	8.89
Mar. 2006	8.50	14.00	1.00	3.5074	8.49
Apr. 2006	8.50	14.00	1.00	3.4911	8.41
May. 2006	8.50	14.00	1.00	3.5071	6.92
Jun. 2006	8.75	14.00	1.00	3.5483	7.26
Jul. 2006	8.75	14.00	1.00	3.5723	7.11
Aug. 2006	8.75	14.00	1.00	3.5277	6.21
Sep. 2006	8.75	14.00	1.00	3.5270	6.02
Oct. 2006	8.75	14.00	1.00	3.5192	5.48
Nov. 2006	8.75	14.00	1.00	3.4954	4.80
Dec. 2006	8.75	14.00	1.00	3.4141	4.67
Jan. 2007	8.75	14.00	1.00	3.3937	4.87
Feb. 2007	8.00	14.00	1.00	3.3824	4.01
Mar. 2007	7.50	14.00	1.00	3.3694	3.81
Apr. 2007	7.50	14.00	1.00	3.3349	3.66
May. 2007	7.25	14.00	1.00	3.2850	3.77
Jun. 2007	7.00	14.00	1.00	3.2264	3.81
Jul. 2007	7.00	14.00	1.00	3.1337	3.80
Aug. 2007	7.00	12.00	2.00	3.2237	3.99
Sep. 2007	7.00	12.00	2.00	3.3466	4.96
Oct. 2007	7.00	12.00	2.00	3.3525	6.03
Nov. 2007	7.50	12.00	2.00	3.4707	6.84
Dec. 2007	7.50	12.00	2.00	3.5289	6.67
Jan. 2008	8.00	12.00	2.00	3.6930	6.57
Feb. 2008	9.00	12.00	2.00	3.6528	7.26
Mar. 2008	9.50	12.00	2.00	3.7218	7.97
Apr. 2008	9.50	12.00	2.00	3.6426	8.63
May. 2008	9.75	13.75	5.75	3.6594	8.62
Jun. 2008	10.00	14.00	6.00	3.6557	8.46
Jul. 2008	10.00	14.00	6.00	3.5792	8.61
Aug. 2008	10.25	14.25	6.25	3.5268	9.04
Sep. 2008	10.25	14.25	6.25	3.6254	8.02
Oct. 2008	10.25	14.25	6.25	3.7454	7.30
Nov. 2008	10.25	14.25	6.25	3.7753	7.39
Dec. 2008	10.25	14.25	6.25	3.9153	6.74
Jan. 2009	10.25	14.25	6.25	4.2327	6.30
Feb. 2009	10.00	14.00	6.00	4.2839	6.71
Mar. 2009	10.00	14.00	6.00	4.2821	6.89
Apr. 2009	10.00	14.00	6.00	4.1954	6.71
May. 2009	9.50	13.50	5.50	4.1689	6.45
Jun. 2009	9.50	13.50	5.50	4.2126	5.95

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

Date	R_dob_pol_monetară	R_dob_ creditare (lombard)	R_dob_ depozit	Curs_EUR/RON	IPC
Jul. 2009	9.00	13.00	5.00	4.2168	5.86
Aug. 2009	8.50	12.50	4.50	4.2185	5.06
Sep. 2009	8.00	12.00	4.00	4.2389	4.96
Oct. 2009	8.00	12.00	4.00	4.2848	4.94
Nov. 2009	8.00	12.00	4.00	4.2881	4.30
Dec. 2009	8.00	12.00	4.00	4.2248	4.65
Jan. 2010	7.50	11.50	3.50	4.1409	4.74
Feb. 2010	7.00	11.00	3.00	4.1179	5.20
Mar. 2010	6.50	10.50	2.50	4.0879	4.49
Apr. 2010	6.50	10.50	2.50	4.1285	4.20
May. 2010	6.25	10.25	2.25	4.1743	4.28
Jun. 2010	6.25	10.25	2.25	4.2396	4.42
Jul. 2010	6.25	10.25	2.25	4.2611	4.38
Aug. 2010	6.25	10.25	2.25	4.2389	7.14
Sep. 2010	6.25	10.25	2.25	4.2642	7.58
Oct. 2010	6.25	10.25	2.25	4.2798	7.77
Nov. 2010	6.25	10.25	2.25	4.2931	7.88
Dec. 2010	6.25	10.25	2.25	4.2925	7.73
Jan. 2011	6.25	10.25	2.25	4.2622	7.96
Feb. 2011	6.25	10.25	2.25	4.2472	6.99
Mar. 2011	6.25	10.25	2.25	4.1646	7.60
Apr. 2011	6.25	10.25	2.25	4.0992	8.01
May. 2011	6.25	10.25	2.25	4.1120	8.34
Jun. 2011	6.25	10.25	2.25	4.1929	8.41
Jul. 2011	6.25	10.25	2.25	4.2405	7.93
Aug. 2011	6.25	10.25	2.25	4.2501	4.85
Sep. 2011	6.25	10.25	2.25	4.2820	4.25
Oct. 2011	6.25	10.25	2.25	4.3238	3.45
Nov. 2011	6.00	10.00	2.00	4.3536	3.55
Dec. 2011	6.00	10.00	2.00	4.3267	3.44
Jan. 2012	5.75	9.75	1.75	4.3428	3.14
Feb. 2012	5.50	9.50	1.50	4.3506	2.72
Mar. 2012	5.25	9.25	1.25	4.3652	2.59
Apr. 2012	5.25	9.25	1.25	4.3760	2.40
May. 2012	5.25	9.25	1.25	4.4381	1.80
Jun. 2012	5.25	9.25	1.25	4.4603	1.79
Jul. 2012	5.25	9.25	1.25	4.5484	2.04
Aug. 2012	5.25	9.25	1.25	4.5163	3.00
Sep. 2012	5.25	9.25	1.25	4.5007	3.88
Oct. 2012	5.25	9.25	1.25	4.5583	5.33
Nov. 2012	5.25	9.25	1.25	4.5255	4.96
Dec. 2012	5.25	9.25	1.25	4.4895	4.56
Jan. 2013	5.25	9.25	1.25	4.3793	4.95
Feb. 2013	5.25	9.25	1.25	4.3848	5.97

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

Date	R_dob_pol_monetară	R_dob_ creditare (lombard)	R_dob_ depozit	Curs_EUR/RON	IPC
Mar. 2013	5.25	9.25	1.25	4.3915	5.65
Apr. 2013	5.25	9.25	1.25	4.3802	5.25
May. 2013	5.25	8.25	2.25	4.3375	5.29
Jun. 2013	5.25	8.25	2.25	4.4765	5.32
Jul. 2013	5.00	8.00	2.00	4.4257	5.37
Aug. 2013	4.50	7.50	1.50	4.4353	4.41
Sep. 2013	4.50	7.50	1.50	4.4627	3.67
Oct. 2013	4.25	7.25	1.25	4.4462	1.88
Nov. 2013	4.00	7.00	1.00	4.4448	1.88
Dec. 2013	4.00	7.00	1.00	4.4633	1.83
Jan. 2014	3.75	6.75	0.75	4.5219	1.55
Feb. 2014	3.50	6.50	0.50	4.4906	1.06
Mar. 2014	3.50	6.50	0.50	4.4931	1.05
Apr. 2014	3.50	6.50	0.50	4.4620	1.04
May. 2014	3.50	6.50	0.50	4.4245	1.21
Jun. 2014	3.50	6.50	0.50	4.3951	0.94
Jul. 2014	3.50	6.50	0.50	4.4097	0.66
Aug. 2014	3.25	6.25	0.25	4.4249	0.95
Sep. 2014	3.25	6.25	0.25	4.4100	0.84
Oct. 2014	3.00	5.75	0.25	4.4152	1.54
Nov. 2014	2.75	5.25	0.25	4.4289	1.44
Dec. 2014	2.75	5.25	0.25	4.4591	1.26
Jan. 2015	2.50	4.75	0.25	4.4877	0.83
Feb. 2015	2.25	4.25	0.25	4.4320	0.41
Mar. 2015	2.25	4.25	0.25	4.4330	0.40
Apr. 2015	2.00	3.75	0.25	4.4166	0.79
May. 2015	1.75	3.25	0.25	4.4469	0.65
Jun. 2015	1.75	3.25	0.25	4.4682	1.16
Jul. 2015	1.75	3.25	0.25	4.4385	-1.55
Aug. 2015	1.75	3.25	0.25	4.4230	-1.67
Sep. 2015	1.75	3.25	0.25	4.4232	-1.87
Oct. 2015	1.75	3.25	0.25	4.4220	-1.73
Nov. 2015	1.75	3.25	0.25	4.4445	-1.64
Dec. 2015	1.75	3.25	0.25	4.5040	-1.14
Jan. 2016	1.75	3.25	0.25	4.5303	-0.93
Feb. 2016	1.75	3.25	0.25	4.4818	-2.13
Mar. 2016	1.75	3.25	0.25	4.4657	-2.68
Apr. 2016	1.75	3.25	0.25	4.4727	-2.98
May. 2016	1.75	3.25	0.25	4.4994	-3.25
Jun. 2016	1.75	3.25	0.25	4.5218	-3.46
Jul. 2016	1.75	3.25	0.25	4.4858	-0.70
Aug. 2016	1.75	3.25	0.25	4.4594	-0.78
Sep. 2016	1.75	3.25	0.25	4.4506	-0.20
Oct. 2016	1.75	3.25	0.25	4.4942	-0.57

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

Date	R_dob_pol_monetară	R_dob_ creditare (lombard)	R_dob_ depozit	Curs_EUR/RON	IPC
Nov. 2016	1.75	3.25	0.25	4.5102	-0.43
Dec. 2016	1.75	3.25	0.25	4.5173	-0.67
Jan. 2017	1.75	3.25	0.25	4.5016	-0.54
Feb. 2017	1.75	3.25	0.25	4.5120	0.05
Mar. 2017	1.75	3.25	0.25	4.5482	0.20
Apr. 2017	1.75	3.25	0.25	4.5299	0.18
May. 2017	1.75	3.25	0.25	4.5540	0.61
Jun. 2017	1.75	3.25	0.25	4.5714	0.64
Jul. 2017	1.75	3.25	0.25	4.5681	0.85
Aug. 2017	1.75	3.25	0.25	4.5784	1.42
Sep. 2017	1.75	3.25	0.25	4.5978	1.15
Oct. 2017	1.75	3.00	0.50	4.5885	1.77
Nov. 2017	1.75	2.75	0.75	4.6314	2.63
Dec. 2017	1.75	2.75	0.75	4.6359	3.23
Jan. 2018	2.00	3.00	1.00	4.6500	3.32
Feb. 2018	2.25	3.25	1.25	4.6555	4.32
Mar. 2018	2.25	3.25	1.25	4.6605	4.72
Apr. 2018	2.25	3.25	1.25	4.6565	4.95
May. 2018	2.50	3.50	1.50	4.6387	5.22
Jun. 2018	2.50	3.50	1.50	4.6611	5.41
Jul. 2018	2.50	3.50	1.50	4.6502	5.40
Aug. 2018	2.50	3.50	1.50	4.6437	4.56
Sep. 2018	2.50	3.50	1.50	4.6466	5.06
Oct. 2018	2.50	3.50	1.50	4.6651	5.03
Nov. 2018	2.50	3.50	1.50	4.6610	4.25
Dec. 2018	2.50	3.50	1.50	4.6530	3.43
Jan. 2019	2.50	3.50	1.50	4.7037	3.27
Jan. 2019	2.50	3.50	1.50	4.7478	3.32
Feb. 2019	2.50	3.50	1.50	4.7538	3.83
Mar. 2019	2.50	3.50	1.50	4.7583	4.03
Apr. 2019	2.50	3.50	1.50	4.7595	4.11
May. 2019	2.50	3.50	1.50	4.7252	4.10
Jun. 2019	2.50	3.50	1.50	4.7290	3.84
Jul. 2019	2.50	3.50	1.50	4.7286	4.12
Aug. 2019	2.50	3.50	1.50	4.7376	3.89
Sep. 2019	2.50	3.50	1.50	4.7538	3.49
Oct. 2019	2.50	3.50	1.50	4.7683	3.40
Nov. 2019	2.50	3.50	1.50	4.7773	3.77
Dec. 2019	2.50	3.50	1.50	4.7785	4.04
Jan. 2020	2.50	3.50	1.50	4.7828	3.60
Feb. 2020	2.50	3.50	1.50	4.8263	3.05
Mar. 2020	2.00	2.50	1.50	4.8342	3.05
Apr. 2020	2.00	2.50	1.50	4.8365	2.68
May. 2020	2.00	2.50	1.50	4.8393	2.26

Vol. 75, issue 4 Year 2023
DOI: 10.56043/reveco-2023-0041

Date	R_dob_pol_monetară	R_dob_ creditare (lombard)	R_dob_ depozit	Curs_EUR/RON	IPC
Jun. 2020	1.75	2.25	1.25	4.8380	2.58
Jul. 2020	1.75	2.25	1.25	4.8372	2.80
Aug. 2020	1.50	2.00	1.00	4.8586	2.68
Sep. 2020	1.50	2.00	1.00	4.8733	2.45
Oct. 2020	1.50	2.00	1.00	4.8699	2.24
Nov. 2020	1.50	2.00	1.00	4.8707	2.14
Dec. 2020	1.50	2.00	1.00	4.8728	2.06
Jan. 2021	1.25	1.75	0.75	4.8741	2.99
Feb. 2021	1.25	1.75	0.75	4.8878	3.16
Mar. 2021	1.25	1.75	0.75	4.9221	3.05
Apr. 2021	1.25	1.75	0.75	4.9247	3.24
May. 2021	1.25	1.75	0.75	4.9236	3.75
Jun. 2021	1.25	1.75	0.75	4.9250	3.94
Jul. 2021	1.25	1.75	0.75	4.9229	4.95
Aug. 2021	1.25	1.75	0.75	4.9465	5.25
Sep. 2021	1.25	1.75	0.75	4.9481	6.29
Oct. 2021	1.50	2.00	1.00	4.9488	7.94
Nov. 2021	1.75	2.50	1.00	4.9489	7.80
Dec. 2021	1.75	2.50	1.00	4.9448	8.19
Jan. 2022	2.00	3.00	1.00	4.9456	8.35
Feb. 2022	2.50	3.50	1.50	4.9481	8.53
Mar. 2022	2.50	3.50	1.50	4.9437	10.15
Apr. 2022	3.00	4.00	2.00	4.9462	13.76
May. 2022	3.75	4.75	2.75	4.9448	14.49
Jun. 2022	3.75	4.75	2.75	4.9398	15.05
Jul. 2022	4.75	5.75	3.75	4.8953	14.96
Aug. 2022	5.50	6.50	4.50	4.9080	15.32
Sep. 2022	5.50	6.50	4.50	4.9266	15.88
Oct. 2022	6.25	7.25	5.25	4.9131	17.18
Nov. 2022	6.75	7.75	5.75	4.9224	16.8
Dec. 2022	6.75	7.75	5.75	4.9227	16.4