Central Bank's Role in Ensuring Financial Stability and An Efficient Pass-Through of Monetary Policy Measures

Gabriela LĂȚEA
The Romanian Academy, "Costin C. Kirițescu" Economic Research National Institute, Bucharest, Romania

Abstract. *After the emergence of effects from the major financial crisis of 2007-2008, central banks have become centrepieces in ensuring financial stability. The National Bank of Romania plays an intrinsic role in safeguarding financial stability from a dual perspective, i.e. the monetary authority and the prudential authority. In order to examine the efficiency of the pass-through of the effects of changes in the policy rate to the economic agents, we have analysed the existing mechanisms, starting from the interest rates traded on the interbank market and short-term rates on certain banking products targeting households and non-financial corporations. The results confirm the presence of connections, providing quantitative insight on the functioning of these mechanisms.*

Keywords: financial stability, monetary policy, interbank market, policy rate.

JEL classification: E52, E58.

1. Introduction

The concept of "stability" in connection with the financial system is not necessarily an exclusively economic expression. For instance, Allen and Wood (2006) made a comparative analysis of physical and economic phenomena in the financial field in order to pin down the features of a system's stability. Starting from the definition of stability in physics, i.e. a feature of a system and not a fact per se, authors found that a system can be defined as stable provided it reverts to steady state after certain shocks or disruptions became manifest. Thus, if the system is not a linear one, it may act differently to disruptions of various intensities. The system may, however, be unstable at low disruptions as well, but as the disruptions reach a certain level, forces emerge that mitigate the shocks and, hence, the system as a whole returns to steady state. There is, of course, the opposite of such a situation when a system does not have a reaction force to weaker shocks and, thus, may become unstable whenever more significant shocks occur. Therefore, we can grasp the connection between the concept of stability and the concept of steady state.

Researchers have been on the lookout for the most appropriate definition for describing as accurately as possible the concept of "financial stability". Various and many definitions have been put forward and they can basically fall into two wide categories: definitions based on information flows and definitions geared mainly towards financial institutions in the system.

Seen as a trailblazer in the field, Mishkin (1997) suggested that the financial instability inherent to financial markets is based on the economic agents' overly optimistic behaviour. On the other hand, Crockett (2003) states that financial stability refers to the stability of key institutions, as part of the system, and key markets, and "requires (a) that the key institutions in the financial system are stable, in that there is a high degree of confidence that they can continue to meet their contractual obligations without interruption or outside assistance; and (ii) that the key markets are stable, in that participants can confidently transact in them at prices that reflect fundamental forces and that do not vary substantially over short periods when there have been no changes in fundamentals".

Issing (2003) and Foot (2003) suggested in their papers that financial stability is connected to the emergence of speculative bubbles on financial markets, yet they are not per se a typical feature of financial system fragility or financial instability. Similarly, financial market imperfections increase the likelihood of financial instability, but they are not their real determinants.

On the other hand, Haldane et al. (2004) reckon that the departures from the optimal saving-investment ratio, which are caused by financial sector imperfections, are a must for defining financial instability. Also associated with saving, Issing (2003) noted that the efficient allocation of resources for investment should not be part of the definition of financial stability, even though it undoubtedly is a requirement in any economy. In the same vein, Gjdrem (2005) states that financial stability is reached when companies and households attain, in time, an optimal level of investment and consumption, amid a properly functioning financial system that can act as an intermediary between lenders and borrowers by redistributing risk effectively and making proof of the allocation of economic resources over time.

Germany's central bank (Deutsche Bundesbank, 2003) published a definition of financial stability as a steady state in which the financial system efficiently performs its key economic functions and is able to do so even in the event of shocks, stress situations and periods of profound structural change.

In fact, the European Central Bank also strives to provide an as precise definition as possible, considering that financial stability is the condition that the financial system – comprising financial intermediaries, markets and market infrastructures – has the capacity to withstand shocks and financial imbalances, thereby mitigating the likelihood of disruptions in financial intermediation that are severe enough to significantly alter the allocation of resources towards profitable investment opportunities.

On the other hand, a number of researchers promote the idea that financial stability cannot be directly defined, but solely by defining the notion of "financial instability". Thus, Mishkin (1999) showed that financial instability becomes manifest when shocks to the financial system interact with the information flows, so that the financial system can no longer channel funds to the holders of profitable investment opportunities. Moreover, Ferguson and Shockley (2003) defined financial instability as a situation characterised by three overriding criteria: (a) prices of some classes of key financial assets appear to no longer match financial fundamentals; (b) market functioning and credit availability are severely impaired; and (c) aggregate expenditure deviates markedly from the productive capacity of the economy.

Goodhart et al. (2006) provided a definition of financial instability by focusing on the effects of welfare on the economy and the distribution of effects stemming from episodes of financial instability, arguing that the likelihood that some banks and some economic agents face payment default, together with low bank profitability, is a feature of fragile/unstable financial regimes of some economies.

All these definitions comprise of course crucial aspects linked to financial stability. However, they could not capture the major reason why decision-makers also focus on instability elements such as: the ensuing welfare and the effects of its distribution. In other words, the existing definitions highlight the inefficiency and volatility of asset prices that an unstable financial regime generates, but do not explicitly link them to the idea of welfare, which is why they are not employed/applied for analytical purposes.

On the other hand, the payment default hitting many players in the markets, as well as the significant decline in banks' profitability, weigh on financial and capital markets, and eventually trading goes into a tailspin, affecting all stakeholders.

Therefore, a systemic financial crisis of the economy can be reinterpreted as a state of lacking balance. Thus, the importance of the central bank extends beyond its traditional functions, including the accountability of ensuring stability of the financial system as a whole (Georgescu, 2006).

2. Objectives

Given the importance of financial stability, this concept is a function of paramount importance for modern central banks, not least important than market operations and the formulation of monetary policy (Sinclair, 2000). On the other hand, financial stability is a sine-qua-non condition for a sustainable economy, as relevant as price stability. In Schinasi's view (2004), a stable financial system fosters economic performance, whereas an unstable financial system leads to lacklustre economic performance.

In view of the above, we aim at exploring the avenues of the pass-through of the Romanian central bank's monetary policy measures by employing an estimated dynamic aggregate model. This method involves a string of pros and cons compared to other alternative methods. The major advantage is the possibility of using a smaller number of variables, which can help mitigate the model's uncertainty and the major weakness is the lower degree of transparency than that of the calibrated models.

The efficacy of the pass-through of monetary policy measures has been investigated by looking at specific economic and financial channels, as well as at how short-term interbank rates act as vectors carrying this information.

3. Methods

With a view to exploring the manner in which short-term interbank rates act as vectors carrying these monetary policy stimuli, we decided to measure the effects of a change in the policy rate on the real economy via short-term interbank rates.

The analysis will be made in two stages: first, we quantified the level of the pass-through of central bank's policy rate moves onto short-term interbank rates; second, we quantified how the changes in interest rates traded on the interbank market feed through into the economy.

Testing for data sets stationarity hinged on the Augmented Dickey-Fuller test, which starts from an AR(1) process, as follows:

$$y_t = \mu + \alpha y_{t-1} + \varepsilon_t \qquad (1)$$

where μ and α are the parameters to be estimated and ε_t is white noise.

The null hypothesis of the test is that the analysed series has a unit root H_0 : $\gamma = 0$, and the alternative hypothesis is that the data sets has no unit root, i.e. $H_1 : \gamma \neq 0$.

In order to test the level of cointegration, the Johansen (1998) test was employed. It tests the cointegration of the sets in a p -value VAR:

$$y_t = \mu + A_1 y_{t-1} + ... + A_p y_{t-p} + \varepsilon_t \qquad (2)$$

where y_t is an nx1 vector of variables that are rank one integrated and ε_t is an nx1 innovation vector.

Equation (2) may also be rewritten as:

$$\Delta y_t = \Pi y_{t-k} + \Gamma_1 \Delta y_{t-1} + \Gamma_2 \Delta y_{t-2} + ... + \Gamma_{k-1} \Delta y_{t-(k-1)} + \varepsilon_t \quad (3)$$

where $\Pi = \sum_{i=1}^{p} A_i - I$ and $\Gamma_i = -\sum_{j=i+1}^{p} A_j$.

If the matrix of Π coefficients has a low rank r<n, then we can assert that there are nxr matrixes, with α and β each of rank r, so that $\Pi = \alpha\beta'$ and β' y is stationary, with r being the number of cointegrating relationships. Elements of α are known as being the adjustment parameters in the error correction vector model, and each column in β takes the form of a cointegrating vector.

Johansen proposes two different tests to establish the number of correlations, so the low rank of matrix Π is given by the trace test and the maximum eigenvalue test:

$$\lambda_{trace}(r) = -T\sum_{i=r+1}^{g} \ln(1-\hat{\lambda}_i) \quad (4)$$

$$\lambda_{\max}(r, r+1) = -T\ln(1-\hat{\lambda}_{r+1}) \quad (5)$$

where T is the size of the series, r is the number of cointegrating vectors and $\hat{\lambda}_i$ is the estimated eigenvalue of order i of matrix Π.

The null hypothesis for λ_{trace} test is that the number of cointegrating relationships is lower or equal to r and the alternative hypothesis is that the number of cointegrating relationships is higher than r.

For the $\lambda_{\max}$ test, the null hypothesis is that the number of cointegrating relationships is equal to r and the alternative hypothesis is that the number of cointegrating relationships is equal to $r+1$.

In order to analyse the relationships emerging between the variables, the following Error Correction Model was used:

$$\Delta y_t = \beta_1 \Delta x_t + \beta_2 \Delta w_t + \beta_3 (y_{t-1} - \delta_1 x_{t-1} - \delta_2 w_{t-1}) + u_t \quad (6)$$

where: δ - defines the long-term relationship between variables y and x.

β_1 - defines the short-term relationship between the changes to variable x and those to variable y.

β_2 - describes the pace of adjustment to steady state.

The data sets used in this analysis are monthly series taken from the National Bank of Romania for January 2008 – June 2018. The programme employed to achieve the econometric construction was Eviews and the variable used are set out in Table 1.

Table 1. Description of the variables

Variable	Description
PR	Policy rate
1M ROBOR	1M ROBOR (one-month deposit rate)
1Y HLC	Interest rate on loans to households; consumer loans; for expanding a business and other purposes; up to or equal to 1 year original maturity
OLH	Interest rate on overdraft loans to households
1Y NFCL	Interest rate on loans to non-financial corporations; up to or equal to 1 year original maturity
OLNFC	Interest rate on overdraft loans to non-financial corporations

Source: own construction

4. Results and Discussions

Stationarity of data sets used was tested in an Augmented Dickey-Fuller (ADF) test. Having examined the results, the null hypothesis was rejected for all the six variables, i.e. the series proved un-stationary in terms of level, yet stationary in the first difference. The results are shown below.

Table 2. ADF unit-root test for PR

Null Hypothesis: D_PR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.398036	0.0000
Test critical values:	1% level	-3.483751	
	5% level	-2.884856	
	10% level	-2.579282	

*MacKinnon (1996) one-sided p-values
Source: own construction using Eviews

Table 3. ADF unit-root test for 1M ROBOR

Null Hypothesis: D_1MROBOR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.34266	0.0000
Test critical values:	1% level	-3.483751	
	5% level	-2.884856	
	10% level	-2.579282	

*MacKinnon (1996) one-sided p-values.
Source: own construction using Eviews

Table 3. ADF unit-root test for 1Y HLC

Null Hypothesis: D_1YHLC has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.472160	0.0004
Test critical values:	1% level	-3.484653	
	5% level	-2.885249	
	10% level	-2.579491	

*MacKinnon (1996) one-sided p-values.
Source: own construction using Eviews

Table 4. ADF unit-root test for OLH

Null Hypothesis: D_OLH has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.461339	0.0004
Test critical values:	1% level	-3.484653	
	5% level	-2.885249	
	10% level	-2.579491	

*MacKinnon (1996) one-sided p-values.

Source: own construction using Eviews

Table 5. ADF unit-root test for 1Y NFCL

Null Hypothesis: D_1YNFCL has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.127548	0.0000
Test critical values:	1% level	-3.483751	
	5% level	-2.884856	
	10% level	-2.579282	

*MacKinnon (1996) one-sided p-values.

Source: own construction using Eviews

Table 6. ADF unit-root test for OLNFC

Null Hypothesis: D_OLNFC has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.113933	0.0000
Test critical values:	1% level	-3.484198	
	5% level	-2.885051	
	10% level	-2.579386	

*MacKinnon (1996) one-sided p-values.

Source: own construction using Eviews

By employing a VAR(p) model, we can check whether there are any cointegrating relationships between the policy rate and the 1M ROBOR based on the Johansen (1988) test. The disparity duration of the VAR model was selected based on the Akaike and Schwarz information criteria.

Table 7. Johansen Cointegration Test for PR and 1M ROBOR

Sample (adjusted): 2008M07 2018M06
Included observations: 120 after adjustments
Trend assumption: Linear deterministic trend
Series: D_1MROBOR D_PR
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.358567	67.62488	15.49471	0.0000
At most 1 *	0.112627	14.33875	3.841466	0.0002

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.358567	53.28613	14.26460	0.0000
At most 1 *	0.112627	14.33875	3.841466	0.0002

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: own construction using Eviews

In order to estimate the cointegrating vector between the policy rate and 1M ROBOR, we will use the linear regression according to Engle-Granger methodology, then we will extract the estimates for the residuals.

Table 8. Engle-Granger estimates for 1M ROBOR

Dependent Variable: 1M ROBOR
Method: Least Squares
Sample: 2008M01 2018M06
Included observations: 126

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.857167	0.177488	-10.46362	0.0000
PR	1.332729	0.031468	42.35146	0.0000

R-squared	0.935337	Mean dependent var	4.676905
Adjusted R-squared	0.934816	S.D. dependent var	3.857729
S.E. of regression	0.984924	Akaike info criterion	2.823240
Sum squared resid	120.2892	Schwarz criterion	2.868261
Log likelihood	-175.8641	Hannan-Quinn criter.	2.841531

F-statistic	1793.646	Durbin-Watson stat	0.430889
Prob(F-statistic)	0.000000		

Source: own construction using Eviews

Considering that the Engle-Granger test assesses the residuals arising from the linear equation between the two variables, the critical values differ from those resulting from the ADF test, Engle and Yoo (1987) indicating a critical threshold of 3.37 for a significance level of 5%. The resulting t-statistic value shows that the null hypothesis is rejected, leading to the residuals of the cointegrating relationship between 1M ROBOR and the policy rate that are stationary, thus the relationship proves valid.

Table 9. ADF unit-root test for 1M ROBOR residuals

Null Hypothesis: RES_1MROBOR_PR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.739358	0.0046
Test critical values:	1% level	-3.483312	
	5% level	-2.884665	
	10% level	-2.579180	

*MacKinnon (1996) one-sided p-values.
Source: own construction using Eviews

The second stage of the analyses explores how short-term interbank market rates act as vectors carrying the monetary policy stimuli, quantifying the pass-through of interest rates traded on the interbank market via the current market rates on loans to households; consumer loans; for expanding a business and other purposes; equal to and up to 1 year original maturity, overdraft loans to households, loans to non-financial corporations; equal to and up to 1 year original maturity and overdraft loans to non-financial corporations. The cointegrating relationships will be examined via the Johansen cointegration test.

Table 10. ADF Johansen Cointegration Test for 1M ROBOR, 1Y HLC, OLH, OLNCF, 1Y NFCL

Sample (adjusted): 2008M06 2018M06
Included observations: 121 after adjustments
Trend assumption: Linear deterministic trend
Series: 1MROBOR 1YHLC OLH OLNCF 1YNFCL
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.399510	132.8099	69.81889	0.0000
At most 1 *	0.278379	71.09883	47.85613	0.0001
At most 2 *	0.132070	31.62189	29.79707	0.0305
At most 3	0.095499	14.48289	15.49471	0.0706

At most 4	0.019136	2.337942	3.841466	0.1263

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.399510	61.71112	33.87687	0.0000
At most 1 *	0.278379	39.47694	27.58434	0.0010
At most 2	0.132070	17.13901	21.13162	0.1655
At most 3	0.095499	12.14494	14.26460	0.1053
At most 4	0.019136	2.337942	3.841466	0.1263

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: own construction using Eviews

The existing relationship between the two cointegrated variables can be described by the agency of an error correction model. The residuals from the cointegrating equation (capturing the long-term imbalances) will be considered in the dynamic model, being factored in the model.

Table 11. ECM results for 1Y HLC and 1M ROBOR

Dependent Variable: D_1YHLC
Method: Least Squares
Sample (adjusted): 2008M02 2018M06
Included observations: 125 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.101798	0.042708	-2.383552	0.0187
1MROBOR	0.003507	0.007083	0.495148	0.6214
RES_1YHLC_1MROBOR(-1)	-0.114019	0.017130	-6.656122	0.0000

R-squared	0.267112	Mean dependent var	-0.086640
Adjusted R-squared	0.255098	S.D. dependent var	0.352575
S.E. of regression	0.304300	Akaike info criterion	0.482099
Sum squared resid	11.29699	Schwarz criterion	0.549979
Log likelihood	-27.13122	Hannan-Quinn criter.	0.509675
F-statistic	22.23238	Durbin-Watson stat	1.893580
Prob(F-statistic)	0.000000		

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	413.7435	Prob. F(2,121)	0.0000
Obs*R-squared	109.9260	Prob. Chi-Square(2)	0.0000

Source: own construction using Eviews

Table 12. ECM results for OLH and 1M ROBOR

Dependent Variable: OLH
Method: Least Squares
Sample (adjusted): 2008M02 2018M06
Included observations: 125 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.069271	0.122616	65.80932	0.0000
1MROBOR1M	1.172744	0.020335	57.67262	0.0000
RES_OLH_1MROBOR(-1)	0.869626	0.043120	20.16777	0.0000

R-squared	0.968489	Mean dependent var	13.53661
Adjusted R-squared	0.967972	S.D. dependent var	4.881829
S.E. of regression	0.873666	Akaike info criterion	2.591471
Sum squared resid	93.12171	Schwarz criterion	2.659350
Log likelihood	-158.9669	Hannan-Quinn criter.	2.619046
F-statistic	1874.823	Durbin-Watson stat	1.808028
Prob(F-statistic)	0.000000		

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1655.601	Prob. F(2,121)	0.0000
Obs*R-squared	121.5580	Prob. Chi-Square(2)	0.0000

Source: own construction using Eviews

Table 13. ECM results for 1Y NFCL and 1M ROBOR

Dependent Variable: 1YNFCL
Method: Least Squares
Sample (adjusted): 2008M02 2018M06
Included observations: 125 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.746079	0.092684	40.41764	0.0000
1MROBOR	1.136147	0.015372	73.91250	0.0000
RES_1YNFCL_1MROBOR(-1)	0.838477	0.049911	16.79933	0.0000

R-squared	0.978914	Mean dependent var	9.034778
Adjusted R-squared	0.978569	S.D. dependent var	4.508579
S.E. of regression	0.660030	Akaike info criterion	2.030643
Sum squared resid	53.14796	Schwarz criterion	2.098523
Log likelihood	-123.9152	Hannan-Quinn criter.	2.058219
F-statistic	2831.972	Durbin-Watson stat	2.204871
Prob(F-statistic)	0.000000		

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	27076.86	Prob. F(2,121)	0.0000
Obs*R-squared	125.7191	Prob. Chi-Square(2)	0.0000

Source: own construction using Eviews

Table 14. ECM results for OLNFC and 1M ROBOR

Dependent Variable: OLNFC
Method: Least Squares
Sample (adjusted): 2008M02 2018M06
Included observations: 125 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.337229	0.086045	38.78452	0.0000
1MROBOR1M	1.114227	0.014272	78.07169	0.0000
RES_OLNFC_1MROBOR(-1)	0.685522	0.066101	10.37079	0.0000

R-squared	0.980534	Mean dependent var	8.519600
Adjusted R-squared	0.980215	S.D. dependent var	4.355635
S.E. of regression	0.612657	Akaike info criterion	1.881685
Sum squared resid	45.79256	Schwarz criterion	1.949564
Log likelihood	-114.6053	Hannan-Quinn criter.	1.909261
F-statistic	3072.715	Durbin-Watson stat	2.291215
Prob(F-statistic)	0.000000		

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2865.789	Prob. F(2,121)	0.0000
Obs*R-squared	123.3950	Prob. Chi-Square(2)	0.0000

Source: own construction using Eviews

By investigating the results from the estimates of the multiplier between the variables and the pace of adjustment between 1M ROBOR and the ruling market rates on loans to households; consumer loans; for expanding a business and other purposes; equal to and up to 1 year, overdraft loans to households, loans to non-financial corporations; equal to and up to 1 year original maturity and overdraft loans to non-financial corporations, it can be inferred first that stable connections between all the analysed variables were identified, and they are all statistically significant.

5. Conclusions

This research work focused on identifying and quantifying the mechanisms whereby the short-term interbank market rates act as vectors carrying the monetary policy stimuli sent by the National Bank of Romania, as part of the fairly significant role this institution plays in safeguarding financial stability in Romania.

Eventually, a first pass-through channel for monetary policy stimuli was identified, involving the lending rate on consumer loans to households, loans for expanding a business and other purposes, with equal to and up to 1 year original maturity. For this variable, a negative error correction coefficient was identified, i.e. -0.1018, which is statistically significant. The pace of adjustment of imbalances is not so high at 11.40%.

The second pass-through channel for monetary policy stimuli was identified via the interest rate on overdraft loans to households. For this variable, the error correction coefficient was positive at 8.0693 and statistically significant. The pace of adjustment of imbalances in the market is very high at 86.96% and statistically significant.

The third pass-through channel identified in the paper relies on monetary policy stimuli feeding through to the real economy via the interest rates on loans to non-financial corporations, with equal to and up to 1 year original maturity. For this channel too, the error correction coefficient was positive at 3.7461 and statistically significant. Moreover, the pace of adjustment for this variable is high at 83.38%.

The fourth pass-through channel identified as playing a role in the pass-through of monetary policy stimuli was that of the interest rate on overdraft loans to non-financial corporations. For this variable, the error correction coefficient was positive at 3.3372 and statistically significant. Its pace of adjustment is around the average at 68.55%.

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