# MONETARY POLICY MEASURES AND STRATEGIES IN THE CONTEXT OF THE ADOPTION OF THE EURO CURRENCY

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#### Abstract

The importance of knowing the effects resulting from the adoption and implementation of monetary policy decisions on economic variables is a decisive factor of this article, which directed our attention to the issue of monetary policy measures. Taking into account the thematic area, this concept falls, without exception, in the field of the monetary economy, so it allows the author to carry out a rigorous, complex analysis supported by notions found in the field of finance, economic-financial integration, international relations, as well as macroeconomics.

Identifying the behavior of central banks in establishing monetary policy strategies constitutes the fundamental objective of the paper and can provide a conclusive and appropriate picture of both the objectives considered and their prioritization. A standard approach in this context is to estimate a central bank reaction function in the form of a Taylor rule. By using the previously mentioned method, the identification of the final objectives of the monetary policy authorities through the lens of the promoted policy is considered. The analysis will focus on states such as Romania, Hungary, Poland, and the Czech Republic, all committed to adopting a single currency according to the Treaty on the Functioning of the European Union. The present analysis has brought to the fore the monetary policy measures and strategies used mainly by Central and Eastern European central banks.

### Keywords

Monetary policy, European Union, economic-financial integration, macroeconomics

### JEL Classification

E02, E32, E61, E52

### Introduction

The present article addresses the operational frameworks related to monetary policy in the states located in Central and Eastern Europe on the path to adopting the single currency, the euro. Both the use of indirect monetary policy instruments, such as money

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market operations, minimum reserve systems, and permanent facilities, and the use of exchange rate intervention instruments are pursued distinctly from the point of view of the monetary policy strategies followed by the monetary authorities of the analyzed states. Moreover, as a result of the advantages determined in the line of facilitating the process of adopting the single currency and the high efficiency with which they are used within the Eurosystem, the identification of the degree of harmonization of the monetary policy instruments of the countries in the process of convergence is considered with the standards of the European Central Bank.

Monetary policy is the main responsibility of central banks. Over the years, this has generated many challenges, such as the anti-inflationary approach, which led the bank to act as a lender of last resort, to avoid a generalized crisis of the entire banking system. At the same time, the regulation and prudential supervision of the banking system evolved simultaneously, thus making it possible to create an appropriate and appropriate framework for the operation of the central bank's activity at standards similar to those in Western states. However, the banking system has suffered many difficulties and problems over the years, but the sustainable monetary policy has managed to lead the whole system to financial stability and of course, to a fairly high capacity to be considered the engine of the real economy.

From the point of view of specialized economic literature, the first transmission channel of monetary policy is the interest rate channel. In other words, the key interest rate recorded at a given moment, more precisely its anticipated evolution, considerably influences the nominal interest rate in the short, medium, and long term. At the same time, the guiding interest rate established by the central bank directly influences the important interest rates that economic agents take into account in consumption, investment, and saving decisions, decisions from which aggregate demand results on a macroeconomic level.

The second channel is that of credit. Its importance varies from one state to another, in close correlation with the financial and monetary structure of the respective country and acting both on the volume of credits that commercial banks have to grant to clients and on the actual cost of those loans.

For this reason, the monetary policy strategy occupies a fundamental role in the picture of the economy, given the fact that it involves an assessment to deal with the prospects of the economy, regarding the appearance of deflation, respectively hyperinflation. It must be stated that the realization of a strategy also means the analysis of each macroeconomic and monetary indicator that is commonly used in economic practice and theory. Taking into account the current context, the creation and development of a monetary policy strategy must take into account the significant uncertainty affecting the economic outlook, determined, in general, by the rapid deterioration of a state's economic situation, the lack of transparency, the emergence and application of a new procedure for amplifying the effects resulting from initial impulses, etc.



### Figure 1. The main elements of monetary policy

Source: Author processing based on specialized literature

The figure presented above highlights, in a broad sense, the connection between the monetary policy strategy and its transmission mechanism. It should be noted that this connection is a dual one, given the fact that the two previously mentioned components are interrelated. Moreover, the use of a certain monetary policy measure or strategy leads to the perpetuation of a series of events, bearing in mind that economic policies subsequently affect the entire economic activity. For this reason, it is important to consider the potential size of the effects exerted through the lens of various transmission channels.

# 1. Review of the scientific literature

The term strategy comes from the military field and was later taken into the colloquial language to mean a long-term action or a sustainable plan designed to achieve a concrete objective. In this situation, the strategy is used to solve a problem much faster and in real time. From an economic perspective, the concept of strategy can be found in the activity of organizing, planning, and, last but not least, leading the actions involved in fulfilling a certain well-established objective (Cerna, 2009).

Within the monetary policy, strategy becomes a broad and complex term that defines the use of all possible and available means to ensure the success of the monetary policy.

Taking into account the complexity of the whole process, a concrete definition of the concept of monetary policy strategy must concisely encompass the need for essentialization at the same time as the risk of gradually losing specificity. Therefore, the most appropriate definition in this sense must consist of the following three elements:

- Explicitly highlighting the components found in the monetary policy strategy;
- Emphasizing its main element;
- Presentation of the objective pursued by policymakers through its adoption.

In the specialized economic literature, there are not many ways to define the notion of monetary policy strategy, and in this context, the economic notion acquires an explanatory nuance that is relatively distinct. In most situations, monetary policy measures and strategies are approached at a narrow level, thus referring to the nominal anchor that is used by monetary policymakers in setting the measures. An eloquent example to support the previously mentioned information can be represented by Mishkin, who is also the most representative in this field of activity, during his entire career when he approached the issue related to the monetary policy strategy, he went directly to the presentation and detailing the specifics in close correlation with the nominal anchor used, without initially defining the concept of strategy. Therefore, the nominal anchor used by the national banks is without a doubt the main element of particularization of the various types of monetary policy measures and strategies, being also their defining element.

In the following, a series of definitions of monetary policy measures and strategies will be presented, which can be found in the specialized economic literature, but also the perspectives of the European central banks.

The monetary policy strategy currently consists of all the institutional arrangements at which monetary policy decisions are applied and implemented (McNees, 1987).

The monetary policy strategy assumes a much more complex approach to the management of monetary policy, it is formed by a quantitative definition of the primary objective, such as price stability, but also an analytical framework that is represented by a monetary and economic analysis. All this, therefore, forms the basis of the general assessment of the risks underlying the adoption of monetary policy decisions (Manolescu, 2009).

The monetary policy strategy is essentially the connection that is made between the objectives and the essential instruments of the monetary policy (Central Bank of Denmark).

It is the monetary policy strategy that provides the framework for the adoption of monetary policy decisions (Central Bank of Austria).

The monetary policy strategy reflects in a structured and coherent manner how the monetary policy decisions will be implemented to fulfill the purpose assumed by the European central bank (European Central Bank, 2012).

The monetary policy strategy consists of a set of procedures and criteria that are, in fact, at the basis of the adoption, implementation, and subsequent communication of the decisions of the monetary authority to fulfill the main objective of the monetary policy, namely, price stability (National Bank of Romania).

The main advantage of stabilizing the price level is based on the ability of central banks to shape future expectations (Mele, 2020). We show that price stabilization is no longer optimal when the central bank can shape the expectations of agents with incomplete knowledge, who must learn about the implemented policy (Caines, 2021). An eloquent example to support the previously mentioned information is represented by the real interest rate, which increases with expectations regarding capital gains and the level of asset prices (Eo, Y., McClung, 2021). When the asset is in fixed supply, the optimal policy increases interest rates when expected capital gains are high, but stops before asset prices stabilize (Ryczkowski, M., & Zinecker, M. 2022). In the long run, the central bank loses its ability to shape agents' beliefs, and the economy converges to a rational expectations equilibrium where the policy does not stabilize prices. The economic activity of central banks has a strong character in the whole process. In the United States, it has been shown that a surprise tightening of monetary policy can lead to declines in unemployment rate forecasts and increases in GDP forecasts. These results are consistent with the idea that monetary policy surprises contain information about the economy. The findings also suggest that the information effect could indeed be a powerful channel of monetary policy. However, Bauer and Swanson provide evidence that the results in these papers are confounded by economic news that affects both central bank policy response and private forecasts.

# 2. Research methodology

The present work is based on the use of a mixed research methodology because it includes both a review of the specialized literature and an econometric analysis. The descriptive analysis method was used to identify the most relevant scientific studies from the specialized literature to achieve the state of knowledge. Moreover, the econometric modeling part focused on the objectives of the central banks in the process of convergence to the eurozone using the Taylor-type monetary strategy.

The Taylor-type rule used in this work is an econometric model that defines the relationship between operational objectives and other macroeconomic indicators, for example, inflation rate, interest rates, gross domestic product increase, etc. The Taylor rule is interpreted by economists both as a way to forecast monetary policy and as a fixed-rule policy to guide monetary policy in response to potential economic changes. In other words, the Taylor rule helps the central bank to set short-term interest rates when the inflation rate does not match the expected inflation rate and suggests that when there is an increase in inflation above the target level or GDP growth is too high than expected wait, then the Central Bank should raise interest rates.

To carry out the case study, statistical data were identified and collected from the Eurostat international database, as well as from the central banks. As for the qualitative data, they consisted of the descriptive analysis method used for the specialized literature review, and several platforms were used for this stage, including Enformation, which includes a diversified base of platforms such as Scopus, ProQuest, ScienceDirect, and many others.

# 3. Results and discussions

Analysis of the action of central banks about the proposed objectives. The case of states wishing to adopt the euro single currency

Analyzing and identifying the behavior of central banks in setting the monetary policy interest rate can create a complex and precise picture of the objectives considered and their prioritization. An insight into this is highlighted using a reaction function of central banks, which is found in the form of a rule, called Taylor.

To estimate by methods of some different specifications of the Taylor-type monetary policy rule, the purpose proposed in this paper is to present: both the final objectives pursued by the monetary policy decision-makers specific to the states in the region through the promoted monetary policy and the determination of some changes that could intervene along the way due to the manifestation of recent crises.

The novelty of this approach, through the Taylor-type rule, is to observe what is in reality the orientation of the monetary policy in the member states of the European Union that want to join the eurozone, and through it, the strategies pursued by the central banks to ensure the maintenance of stability financial medium and long term.

As for the Taylor rule, over the years it has seen a series of changes aimed at highlighting in a more precise manner the monetary policy decisions of central banks. It should be noted that this work places particular emphasis on the states of Eastern and Central Europe, given the fact that these countries are emerging economies, in the process of convergence towards the Eurozone and with a high level of openness to this process. Moreover, within this analysis, a series of variables related to financial stability will be introduced, to identify how monetary policy decision-makers will approach the economic issue in the whole process.

As a result of the aforementioned, the analysis of this paper will mainly focus on the Eastern European states that want to adopt a single currency and that, moreover, have an independent monetary policy, more precisely: Romania, Poland, Hungary, and the Czech Republic.

The specialized economic literature claims that the monetary policy managed by central banks in developed countries can be represented through such a reaction function (Clarida et al., 1998). However, emerging states, such as those in Central and Eastern Europe, do not respond as well to these equations. Therefore, the studies highlight a relatively small number of researches focused on the analysis of the rules applied within the framework of monetary policies by national banks. Unfortunately, this limitation is due, on the one hand, to the lack of long time series, and on the other hand, most countries have not followed the same monetary policy strategy.

### Taylor rule estimation results specific to open economies

From the perspective of the quality of the estimation, the results highlighted in the following table are relatively satisfactory, given the fact that the following values were recorded: R-squared high values, the Durbin-Wastson specific statistic reached a higher value compared to the one related to R-squared, and the standard errors of the regression are reduced. An important point to note is the idea that, from a statistical point of view, a Durbin-Wastson indicator value of less than 1.5 reveals several defining problems with the serial correlation of the errors. However, obtaining higher statistics

for Durbin-Watson compared to R-squared is a favorable result, taking into account that in the present work a Taylor-type statistic is performed using MGM. Moreover, Rudebush (2002) states that most static regressions determine obtaining a higher Rsquared compared to the Durbin-Watson statistic, for this reason, a series of questions are raised concerning the correctness of the regression and the results obtained.

Taking into account the estimation results, the idea can be stated that all the values obtained for the  $\beta\pi$  coefficient are statistically significant. Regarding the specific values of the inflation deviation coefficient from the target, they are above unity. It follows that, in all cases performed previously, the Taylor principle is respected. Taylor 1993 argued that the stabilization of the inflation rate is achieved only in the context where the inflation deviation coefficient is greater than one. Such a principle, known in the specialized economic literature as the Taylor principle (Woodford, 2001), highlights the idea that a stabilizing monetary policy must aim at increasing the nominal interest rate to a greater extent compared to increasing the inflation rate. More precisely, the inflation rate will remain under control, unless the level of real interest rates increases in response to the increase in the inflation rate, and such a situation requires the existence of a  $\beta\pi$  coefficient greater than 1 (Clarida et al., 2000). An eloquent example to support the previously mentioned information is given by the Czech Republic, since the adoption of the decision to directly target the inflation rate, an increase in the expected annual inflation led monetary policymakers to increase the interest rate by 0.21 percentage points. Through the lens of the  $\beta\pi$  indicator, which is significantly higher than one, as can be seen in the attached table, the Czech central bank managed to increase its real interest rate in response to the pressures generated by the inflation rate. An important aspect to mention is represented by the high values of the gap-inflation coefficient concerning those specific to the other macroeconomic variables, highlighting the strong orientation that these countries have towards fulfilling their primary objective, namely, maintaining price stability.

The estimated coefficients specific to the GDP deviation are statistically significant for all countries considered in the analysis, the only exception being Hungary. As for the case of the Czech Republic, in the context of maintaining a constant level of the other variables, the 1% increase in the anticipated deviation of real GDP generated a reaction from the monetary authority to increase the nominal interest rate, in the short term, by 31%.

Regarding the coefficients of inertia  $\rho$  that were obtained from the present analysis, they are significant because they were in the range of (0.937 and 0.949). Moreover, the resulting estimates were much higher, given that it took about 12 months for half of the interest rate changes to occur. Inevitably, the national banks of the countries under consideration tried to reach a compromise in terms of aggressive interest rate changes, so as not to cause instability in the financial markets. It must be stated that the inclusion of the smoothing coefficient of the interest rate in the framework of the monetary policy constitutes, indisputably, an econometric solution to be able to obtain significant and coherent results in the context of the existence of serial autocorrelation problems.

For the  $\beta$ s coefficient, the values are statistically significant in most of the analyzed states, the only exception being this time Poland. Hence the importance that monetary policymakers attach to exchange rate stability. The methodology regarding the calculation of the effective real exchange rate emphasizes that an increase in it implies the appreciation of the national currency. For this reason, the minus sign in front of the indicator reveals a depreciation of the national currency which will attract the action of the national bank to increase the nominal interest rate in the medium and short term.

An eloquent example to support the previously mentioned information is represented by the case of Hungary and Romania, where the orientation of the national banks towards the stabilization of the exchange rate through the prism of the nominal interest rate is quite obvious, in contrast to the Czech Republic, where the estimated value for the  $\beta$ s indicator has marginal importance on monetary policy decisions. Considering the degree of openness of the Polish and Czech economies, these statistically insignificant results are a surprise. In other words, in Hungary's situation, the real depreciation of the national currency with the single currency, the euro, caused the short-term nominal interest rate to increase by approximately 0.42 percentage points. In the case of the Czech Republic, the same depreciation led to the increase of the interest rate to a much lower value of 0.07%.

	Romania	Poland	Hungary	Czech Republic
0	0.9444***	0.949***	0.937***	0.947***
ρ	(0.018)	(0.005)	(0.028)	(0.008)
	[0.000]	[0.000]	[0.000]	[0.000]
	[0.000]	[0.000]	[0.000]	[0.000]
α	-3.462	-0.392	1.191	-0.542
	(3.964)	(0.693)	(1.957)	(0.662)
	[0.361]	[0.572]	[0.543]	[0.413]
βπ	1.782***	1.722*	1.260***	1.217***
	(0.619)	(0.200)	(0.350)	(0.215)
	[0.005]	[0.000]	[0.000]	[0.000]
βy	1.582**	0.762***	0.197	-0.313**
	(0.723)	(0.206)	(0.336)	(0.124)
	[0.031]	[0.000]	[0.558]	[0.012]
βs	-1.162***	-0.30	-0.421**	-0.074**
	(0.385)	(0.030)	(0.196)	(0.042)
	[0.003]	[0.321]	[0.033]	[0.048]
R-squared	0.923	0.996	0.886	0.991
S.E. of regression	0.867	0.287	0.644	0.165
DW-statistic	2.018	1.401	2.057	1.203
J-statistic	12.487	16.206	14.891	14.369
Prob (J-statistic)	0.709	0.438	0.532	0.571

 

 Table 1: Estimation by means of MGM of the Taylor-type monetary policy rule, the case of states with a high level of openness

Source: Author calculations

Note: Standard errors are reported in round brackets, and p-values are shown in square brackets.

DW stands for the Durbin Watson statistic and refers to testing for serial correlation. J-statistic represents the minimized value of the objective function, and Prob (Jstatistic) represents the p-value of the statistical test with a null hypothesis.

As a result of the analysis carried out, the idea was reached according to which, in all the states presented, it is evident the application of a strategy aimed at the direct targeting of the inflation rate from its flexible perspective, thus leaving room for the process of stabilizing the exchange rate and the real economic activity in parallel. The distinction between the strategy of strict inflation rate targeting, where the national bank directly aims to maintain the inflation rate at a level as close as possible to the established target, respectively flexible inflation targeting, at the level at which the national bank considers the fulfillment of other objectives, among which: the stability of interest rates, the level of employment and the exchange rate.

### Synthesis of the results obtained after estimation by the VEC method

Next, an analysis of the estimation using the VEC method of Taylor-type monetary policy measures on the states located in Eastern and Central Europe, which support an independent monetary policy, will be presented. The following table highlights, on the one hand, the results related to the cointegration vectors, and on the other, integral results specific to the estimation.

The rule specific to open economies						
	România	Polonia	Ungaria	Republica Cehă		
βπ	1.622***	2.610***	2.325***	0.927**		
βy	0.541**	1.429***	-0.616***	-0.232		
βs	-0.053	-0.297**	-0.323**	-0.337***		
The specific rule for open economies that are in the process of converging towards the euro area						
βπ	0.616***	2.543***	2.588***	0.212***		
βy	-0.292***	-0.658**	-1.306***	-0.080**		
βs	-0.162***	-0.433***	-0.638***	-0.047**		
$\beta^{EUR}$	0.974***	0.806*	0.811	0.940***		
Specific rules for open economies including aspects related to the financial stability process						
$\beta\pi$	1.276***	2.904***	1.107***	3.488***		
βy	0.991***	0.893**	0.311**	0.494**		
βs	-0.589***	0.100	-0.213**	0.149		
βb	0.041	0.222***	0.061***	0.075***		
βc	0.122***	0.033	-0.008	-0.082		

 Table 2. VEC estimation of the three monetary policy measures

Source: Author calculations

Note: \*, \*\*, \*\*\* represent the significance of coefficients of 1%, 5% and 10%.

As a result of the data presented in the table, it can be stated that the VEC approach to monetary policy rules in the case of open economies reflects the orientation of Central and Eastern European countries towards the fulfillment of the fundamental objective of monetary policy, namely, price stability. A result that was also concretized and confirmed following the estimates of the Taylor-type rule specific to open economies. However, in the case of the Czech Republic, the coefficient of the inflation deviation is less than one suggesting non-compliance with the Taylor principle. Moreover, the estimated coefficients for the gross domestic product deviation are statistically significant for Romania and Poland and counterintuitive in the case of Hungary. It should be noted that the orientation towards the stabilization of the exchange rate

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through the prism of the nominal interest rate is evident for the following countries: Hungary, the Czech Republic, and Poland.

The inclusion of the convergence feature in the case of central bank-specific reaction functions somewhat changes the results that were obtained previously. An eloquent example to support the previously mentioned information is represented by the fact that the main inclination of the monetary policy decision-makers is consistent with the strategy of direct targeting of the inflation rate, and the inclination towards the stabilization of real economic activity, which was previously observed, is no longer equally prevalent in the context of none of the states considered in the analysis. Therefore, the Taylor-type rule highlights a relatively low involvement of monetary policymakers. At the opposite pole, the inclination towards the stabilization of the exchange rate could be observed. In light of what has been discussed, it can be added that the adjustments of the reference interest rates follow the changes that took place in the short-term nominal interest rate in the euro area. The only exception to this situation is represented by Hungary.

As for the rule specific to open economies that includes elements corresponding to the financial stability process, it emphasizes the importance and primacy of maintaining price stability. In addition to this objective, central banks considered the stabilization of aggregate output and the exchange rate.

### 4. Research limits and future directions

Similar to a magnet that exhibits two poles, this work has both pluses and minuses. In addition to the representative aspects of this work, a series of shortcomings were identified during the research, but these are not the author's fault. A limitation of the present work was the existence of a relative amount of information regarding the policies and measures applied by the analyzed states. Databases and other specialized works focus on this topic at a general level, and the information in some circumstances is not sufficient. Therefore, limiting the selection of these studies to only a few specialized scientific journals, as well as the relatively small number of scientific papers analyzed, indicates other elements that can be subject to criticism. From a methodological point of view, only econometric analysis was used, since an article should not have an extensive number of pages. Because, without just and perhaps, the present work could have combined qualitative and quantitative methods.

Following the identified limits and the complexity of the problem presented at the European level, we point out a series of future directions opened by this work. The first direction aims at the analysis of other quantitative methods in the desire to be integrated into a coherent and complex system built in close accordance with the coordinates of a mixed methodology. The second proposal is, this time, of an empirical order, more precisely the development of the present work by applying an interview to the decision-makers of monetary policies within the analyzed states, on a representative sample, but which should also include specialists from various university centers and research institutions. And finally, also from the perspective of expanding the current research,

other mixed research strategies should be used to evaluate the use of research methods from the economic and financial fields.

# Conclusions

As a result of the analysis carried out in the present paper, it was concluded that the strategy of direct inflation targeting brings with it both advantages and disadvantages for the states that apply this monetary policy strategy. One of the benefits of this measure is the possibility of promoting an independent monetary strategy, which is not directly based on the relationship that manifests itself between inflation and money, which alleviates the shocks produced by the increase in inflation. The disadvantage of such a measure is given by the relatively delayed signaling of the monetary policy orientation, the potential increase in aggregate output fluctuations, as well as much too high rigidity.

Using this paper, the aim was to highlight an operational framework of the monetary policy of the states that wish to join the eurozone, which is characterized, in the current period, by the use of indirect intervention instruments, such as permanent facilities, money market operations and last but not least row, the system of mandatory minimum reserves. It must be stated that the money market operations used to direct the interest rate, manage liquidity at the market level, as well as guiding the monetary policy strategy constitute one of the most important monetary policy instruments used by policymakers within countries that are on the path to adopting the euro and use the direct inflation targeting strategy. Concerning maintaining a level of the exchange rate and influencing the exchange rate of the national currency, in the sense of its appreciation or depreciation, the monetary policy decision-makers of the analyzed states use the instruments of intervention on the exchange rate. In other words, direct interventions are the prerogative of monetary policymakers who apply the strategy of direct inflation targeting, which is often found in the case of states that focus on exchange rate targeting. For the states analyzed in this work, the instrument used is represented by the indirect interventions that are associated with the interest rate policy.

Therefore, it is necessary to harmonize the monetary policy instruments that the central banks in the process of convergence use with those of the European Central Bank, because this would lead both to facilitating the process of adopting the single currency and to increasing the effectiveness presented in the operational framework. The main changes that will result in this context are the gradual transformation of the system of mandatory minimum reserves, the reduction of the rate of mandatory minimum reserves, the simplification of the range of liabilities related to the mandatory minimum reserves, etc.

According to a study carried out by the European Central Bank, the most appropriate monetary policy strategy for former communist blocs, such as Romania and Poland, is the strategy of direct inflation targeting, given the fact that it does not ignore the traditional objectives of economic stabilization, national banks being oriented towards mitigating fluctuations in the level of production and employment. All states that use direct inflation targeting have been focused on minimizing representative fluctuations at the output level through a gradual lowering of medium-term inflation targets, on the way to achieving long-term objectives. Therefore, the conclusion reached in the present paper is also confirmed by other studies.

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