Central bank independence and its impact on the macroeconomic performance. Evidence from Romania before and after crisis×

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Abstract

This paper aims to approach an overheated topic in the context of dynamic economies and modern democracies, namely the central bank independence related to the adopted monetary policy strategy, as well as their impact on the good functioning of the economy. The independence of the central bank (CBI) is a pillar for the effectiveness of the monetary policy, providing the premise of a credible and depoliticized institution. To put it differently, a high level of CBI may be linked to a smaller level of corruption and political interference; therefore, the central bank has an appropriate margin of maneuver, which increases financial stability. The central bank independence has been measured under various forms after signing the Maastricht Treaty in 1992, but the initiators are Cukierman and GMT, who provided the fundamental indices. Measuring the central bank autonomy both legally (de jure) and informally (de facto) represents a complex endeavor in a dynamic and volatile socio-economic context. This paper's objective is to calculate CBI starting from the CUK and GMT indices, but also to empirically approach the relationship between CBI and macroeconomic performance, namely price stability and output (GDP). Hence, the study starts from the hypothesis of a correlation between the GDP and CBI, on the one hand, and between inflation and CBI, on the other hand. Numerous studies have shown an insignificant positive correlation between independence and GDP, and also the fact that a negative correlation between inflation and CBI is not generally valid. Accordingly, this paper aims to demonstrate whether CBI is a viable determinant of growth and inflation volatility. The analyzed time series encompass the 2007-2016 period of time and the subject of the research is the National Bank of

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Romania, whose credibility in the post crisis era is high, due to the lack of bank failures and to the general stability and soundness of the banking system.

***Keywords**: Central bank independence, economic growth, inflation*
***JEL classification**: E31;E52; E58;F43*

1. Introduction

First of all, we have to incessantly approach the matter of central bank independence related to the fundamental objectives of central banks in the context of a dynamic economic , political and social environment. In order to establish how independent a central bank should be for a leveraged monetary policy, we have to acknowledge the monetary policy strategies and instruments applied in the national economy.

Having a look behind the history of central banks (Bordo, Michael, A brief history of Central Banks, Federal Reserve Bank of Cleveland, 2007) we can draw the conclusion that the main purpose of creating the first central banks (Bank of England, 1694, Swedish Riksbank, 1668) was to ‘’purchase the government debt’’ and hence safeguard states from insolvency, given the pressures of unemployment and hyperinflation that prevailed upon the global economy in the 18-19th centuries. Not only were banks chartered with banknotes issuing, but they also operated as banks for the bankers, a role which is nowadays played by commercial banks.

The 19th century represented a full-length film characterized by financial distress, fiscal dominance and real economy non-performing outputs; therefore, a shift in the central banks goals ocurred and financial and economic stability became the epicentre of the monetary policy.

This period was characterized by the turmoil of change and by the reconfiguration of a hermetic banking system, whose legislation narrowed the entry into the banking industry. From a cumbersome process, laying the groundwork of a new bank became a common charter for individuals. Therefore, banks legal operationally was conditional on only two prerequisites: the notes issued by the bank ‘’had to be backed by state bonds deposited at the state auditor’s office’’ and it was mandatory that the notes were ‘’redeemable on demand at par, or face, value’’(Rolnick A.J., Weber W.E., 2010). Amid the growing number of banks and a less controlled framework of issuance, many financial institutions gone bankrupt, generating panic and instability.

The preoccupation with macroeconomic performance aroused more interest on the relationship between governments and central banks and a new key collocation intruded in the current language of economists : central bank independence.

2. Central bank independence – between concept, principles and practice

In a wide operational framework of central banks, the underpinning of central bank independence finds its roots in the Treaty on the Functioning of the European Union (Article 130) and in the Statute of the European System of Central Banks and of the European Central Bank, Protocol (No 4)(Article 7). From a narrower perspective, at the national level, central bank independence is set out in the Statute of the National Bank of Romania (NBR), which refers to the multidimensional concept of independence, namely the functional, institutional, personal and financial aspects that are enforced regarding the relationship of a central bank with other institutions, bodies and officials.

The four dimensions of the core concept of this paper are described in the Convergence Reports of the European Central Bank and they are a tool in assessing the harmonization of the national legislation with the enforced legislation at the European level.

Beyond the stipulations regarding independence in the Statute, we need to scrutinize the modern concept of independence and differentiate the de jure independence from the de facto one. From a modern point of view, legal independence is considered to be a pillar of economic and financial soundness and „a way to improve a country's (or region's) inflationary performance" (Gabriel Mangano, The Subjectivity of CBI Indices and its Consequences). It is important to highlight the fact that independence is not a sine qua non requirement for a successful monetary policy. To put it differently, being independent does not guarantee the central bank that the inflation target is going to be met, given the fact that „inflation is not always a monetary phenomenon" (Milton Friedman). For example, the great inflation is an event that proved how ephemeral can numbers or the expectations about numbers be; Fed, which was thought as a highly de jure independent bank, failed in maintaining stability.

It is also claimed that ,'central banks have accumulated a much wider range of powers than was common at the time the consensus around central bank independence was built, in areas of unconventional monetary policy, crisis response and financial stability'' (Andries, Alin Podpiera, Anca, NBR Seminar, 2018). Therefore, independence is not an unalloyed good, given the

multitude of indirect goals that a central bank aims at. In the context of the financial crisis in 2008, central banks exceeded their narrow operations to supplying liquidity to the banking sector and to the government as well. The implication of central banks in this systemic matter was also meant to recover investors' and consumers' trust in the financial markets and the economy.

3. Measures of central bank independence – literature survey

Central bank independence is not only a concept, but an indicator represented differently according to each author's perspective and national peculiarities. Over time, CBI has been the focus of numerous authors, such as Rogoff (1985), Wagner (1998), Kydland and Prescott (1977), Bade Parkin (1988), Grilli et al. (1991), Cukierman et al. (1992), Barro and Gordon (1993), Meade and Crowe (2007), Arnone et al. (2009) and so on. There are multitudinous empirical studies assessing the independence of several central banks and testing the determining factors upon CBI. Most of the studies use measures of legal (de jure) independence, wheres others focus on the actual (de facto) independence, for whose quantification there is no yardstick. Therefore, some scholars develop their studies based on questionnaires, whilst the turnover rate of the governors has been gaining ground in literature. However, ''questionnaires may not be the most reliable measure of CBI, particularly because of their narrow coverage, their problematic cross-sectional comparability, and their little within-country variation'' (Cukierman & Webb, 1995).

These fundamental indices, referred to as GMT and CUK, encompass criteria providing information about the legal independence level of central banks, whereas the actual independence is not thoroughly represented. The de jure independence depends on the jurisdictional laws of every country, but the normalized values of the indices provide a comparable basis in a cross country analysis. ''Measures based on statutes have been criticized because laws do not contemplate all contingencies that might affect the relations between the central bank and the government'' (Garriga, 2016).

In order to determine the indices of independence for NBR, I analyzed the currently enforced law regarding the statute of the NBR(law no.312/2004), which replaced the law no.101/1998 and which stipulates that NBR ''is an independent public institution with its headquarters in Bucharest". Therefore, we start from the widespread premise that NBR, as a central bank, is insulated from

political engagement and the governor and the Board of NBR are not elected and have no party affiliation.

On the one hand, the index calculated following the methodology of Cukierman consists of four sections of criteria, which are graded in the closed interval [0,1]. The components of the composite index are relating to, respectively, appointment procedures for the head of the central bank, the resolution of conflict between the central bank and the executive branch of government, the use of an explicit policy target, and rules limiting lending to government''. (Crowe et al., 2008)

The fact that each of the 16 variables holds a certain weight (LVAW - Legal Variables – Weighted) offers a more accurate view on the bank's relationship with the Government. Namely, the higher the level of the index, the greater the level of independence is against political interference.

Table 1 The calculation of CBI index of NBR in 2018 using CUK methodology

Variables	Weight of variables	Score
Chief executive officer	**0.2**	
term of office (mandate)	0.05	0.5
appointment	0.05	0.5
dismissal	0.05	0.83
is the governor allowed to have other public positions	0.05	1
Policy formulation	**0.15**	
Who formulates the monetary policy	0.05	1
Who has authority in the resolution of conflicts	0.05	0.8
Role in the government's budgetary process	0.05	0
Objectives	**0.15**	
Price stability importance amongst other monetary objectives	**0.15**	0.8
Limitations on lending to the government		
Advances	0.15	1
Securitized lending	0.1	1
Terms of lending	0.1	1
Potential borrowers	0.05	1
Definition of limits	0.025	0.67
Maturity of loans	0.025	1
Interest rates	0.025	0.75
Buying or selling on the primary market	0.025	1

Source: author's calculations based on Cukierman's methodology published in '' 'Measuring the independence of central banks and its effect on policy outcomes'', World Bank Economic Review, 6(3), 353–398

On the other hand, the independence level is quantified according to the GMT methodology following two directions, namely the political approach of the central bank and the financial autonomyof the bank. Consequently, the 15 variables converging to the index are divided into the two categories: political independence and economic independence. Firstly, the political interference is determined by aggregating the results for the eight criteria marked with 1 if the requirements are met or with 0 otherwise.

The assessment of economic independence is similarly developed, aggregating the results regarding the involvement of the central bank in the public policies' financing. Hence, an

independent central bank should not charter monetary instruments or issue tenders for paying the public debt of a country.

The variables are marked with 1 whether the requirements are met or with 0 otherwise, according to the framework outlined by Cukierman et al.

Table 2 The calculation of CBI index of NBR in 2018 using GMT methodology

Political independence	**Appointments**				**Relationship with government**		**Constitutiony**	
	1	2	3	4	5	6	7	8
	*	*	*	*	*	*	*	
Economic independence	**Direct credit to the government (financing the deficit)**					**Monetary instruments**		
	1	2	3	4	5	6	7	
	*	*	*	*	*	*		

Source: author's processing based on GMT methodology published in Grilli, V., D. Masciandaro, Tabellini, G.(1991), Political and Monetary Institutions, and Public Finance Policies in the Industrial Countries, Economic Policy, Issue 13

Assessing the actual or de facto independence regards indicators such as ''the turnover rate of governors, the personalities of central bank governors, the design of policy coordination mechanisms in practice''(Dvorsky, 2000). The most reasonable proxy for actual independence is the turnover rate, which reveals the substitution frequency of the governor and has been proved that it can influence the degree of real independence, at least in terms of reputation (reputation can influence the population expectations). Cukierman et al. (1992) disclosed this fact in their case study of Argentina, where the legal mandate term of the governor is 4 years, but as a tradition, the governor usually resigns in the case of government or Chancellor of Exchequer change. (Chrigui et al., 2011)

The turnover rate is calculated dividing the number of governors by the number of years or fractions of years of a certain period of time, meaning that the more frequent the substitutions, the smaller the independence degree. Moreover, the political debates that lead to such substitutions, the conflicts between the government and the central bank and their controversies that may appear in the political life of a nation are undoubtedly significant determinants of the real independence.

In Romania, despite the political instability and the turmoil that has been invariably hovering over our country, the governor of the central bank is one of the most credible personality. His mandate started in 1990, the first year of transition from communism towards capitalism (our country is still considered to be part of the developing countries or an emergent economy), and his fifth and last mandate is going to end in 2019. Therefore, the governor and the other NBR specialists and employees managed to conduct a credible, transparent and independent monetary policy, keeping open a two-way communication channel with the Government, without accepting external intrusive pressures.

Turnover rate : 2006-2016= 1/11=0.09

Figure 1 The average annual turnover of the central bank governor around the world

Average annual turnover	1995-2007		2008-2013	
	Total	Irregular	Total	Irregular
Advanced economies [1]	4.4	2.7	4.2	1.3
Commonwealth of Independent States	1.2	0.9	1.2	1.0
Emerging and Developing Asia [2]	4.2	2.9	2.7	2.0
Emerging and Developing Europe	1.8	0.8	1.0	0.5
Latin America and the Caribbean [3]	6.6	4.8	4.3	2.7
Middle East, North Africa, Afghanistan and Pakistan	2.1	1.7	2.7	2.2
Sub-Saharan Africa [4]	4.1	2.2	3.8	2.5

Source: De Haan, J., Eijjfinger, S., The politics of central bank independence, DNB Working Paper, No.539, 2016, p.16

Governments do not benefit of such credibility as central banks and their commitment to non-expansionary policies can affect the expectations of potential consumers and tax payers. Hence, the solution to this problem is to delegate monetary policy to an independent central bank that

commits to a low-inflation target (Rogoff 1985; Walsh 1995). Even though the governor is not allowed to be invested with other public duty (at least in Romania) and a party (governing or opposition) affiliation is significantly reducing the central bank independence, it is possible that the duration of the governor's tenure depends on the government's interference as well. (Jedenastik, L., 2013)

4. An overview on the macroeconomic performance of Romania in the pre and postcrisis era

Key performance indicators of the Romanian economy from 2006 hitherto

Table 3 The evolution of the inflation rate in Romania in the period 2006-2018

Inflation rate, average consumer prices (Annual	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Romania	6.6	4.8	7.8	5.6	6.1	5.8	3.3	4	1.1	-0.6	-1.6	1.3	4.7
Eastern Europe	7.2	7.4	11.9	8.5	5.5	7.7	5.4	4.8	5.3	10.2	4.4	3.5	3.2
Advanced economies	2.4	2.2	3.4	0.2	1.5	2.7	2	1.4	1.4	0.3	0.8	1.7	2
Euro area	2.2	2.2	3.3	0.3	1.6	2.7	2.5	1.3	0.4	0	0.2	1.5	1.5
European Union	2.3	2.4	3.7	1	2	3.1	2.6	1.5	0.5	0	0.2	1.7	1.9

Source: Source: IMF Data Mapper, 2018

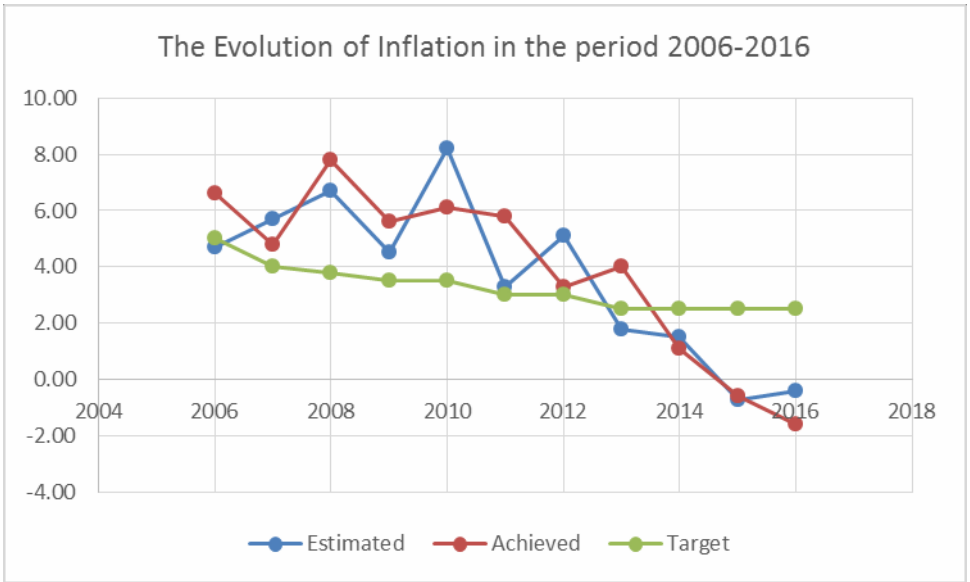
Table 4 The evolution of the inflation rate target as opposed to the achieved inflation rate and the forecasted inflation rate in Romania from the year 2006 hitherto

	Estimated(%)	*Achieved (%)*	*Target(%)*
2006	4.7	**6.6**	5
2007	5.7	**4.8**	4
2008	6.7	**7.8**	3.8
2009	4.5	**5.6**	3.5
2010	8.2	**6.1**	3.5
2011	3.3	**5.8**	3
2012	5.1	**3.3**	3
2013	1.8	**4**	2.5
2014	1.5	**1.1**	2.5
2015	-0.7	**-0.6**	2.5
2016	-0.4	**-1.6**	2.5

Source: data collected from the Inflation Reports of NBR over the period 2006-2016

The deviation of the achieved inflation rates from the target in the analysed period of time is represented in the graph below. The negative inflation recorded in 2016 was marked by the fiscal easing measures (direct effect - reduction of VAT from 24% to 20%), by higher disposable income and by developments in main commodity prices on international markets, according to the NBR Inflation Report in 2016. Hence, the causes of negative inflation are not monetary and have no direct connection to the NBR monetary policy, meaning the policy did not fail due to internal malfunctions.

Graph 1 The evolution of inflation in Romania in the period 2006-2016



Source: author's projection based on the collected data from the NBR Inflation Reports

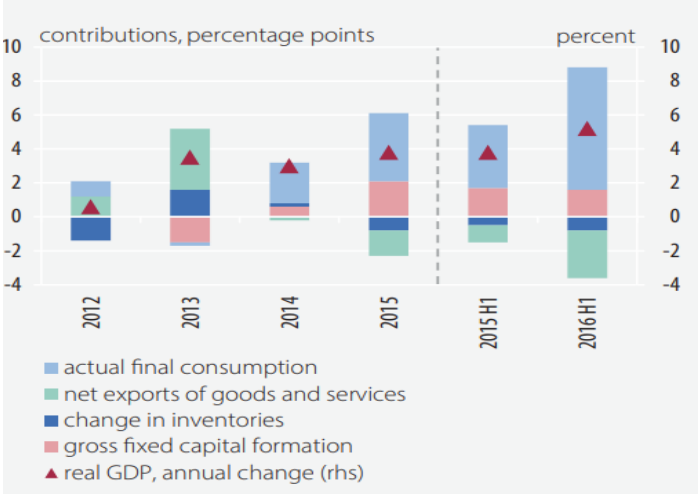
Table 5 The evolution of real GDP growth in Romania in the period 2006-2018

Real GDP growth (Annual percent change)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Romania	8.1	6.9	8.3	-5.9	-2.8	2	1.2	3.5	3.1	4	4.8	7	5.1
Eastern Europe	7.5	7.7	4.8	-6.2	3.2	4.4	2.3	1.6	1.1	-0.4	1.2	2.8	2.8
Advanced economies	3	2.7	0.1	-3.4	3	1.7	1.2	1.3	2.1	2.3	1.7	2.3	2.5
European Union	3.6	3.3	0.7	-4.2	2	1.8	-0.3	0.3	1.8	2.4	2	2.7	2.5

Source: IMF Data Mapper, 2018

The higher rate of economic growth has been generated mostly by an increase in the household consumption, which has been the driver of economic growth and partly due to a better absorption of EU structural funds, as presented in Figure 2.

Figure 2 The Structural Evolution of real GDP in Romania



Source: NBR Financial Stability Report, 2016

5. The correlation between CBI and macroeconomic indicators (inflation rate, real GDP) – case study

The central bank independence necessity gained momentum along with the Maastricht Treaty, which stipulated that central banks have to meet a certain degree of independence. Subsequently, there were carried out numerous studies focusing on the optimal independence, the relationship between macroeconomic variables such as CBI and inflation, CBI and GDP and other major variables related to the monetary policy.

To begin with, some of the easiest ways to determine the macroeconomic performance of a country are the inflation rate and GDP, mostly the real GDP, GDP per capita and GDP based on purchasing power parity (PPP). Generally, the hypothesis is that there should be an inverse relationship between inflation and CBI and a positive correlation between CBI and GDP. Bearing in mind that no phenomenon can be exhaustively tackled, each finding is significant, namely: some authors claimed in previous studies (Bade, Parkin, 1985) that the CBI is not a significant determinant of macroeconomic performance, that there is a negative correlation between them, but not statistically significant (Grilli, Masciandaro, Tabellini, 1991) or that significance is substantial and the correlation exists and can be empirically trusted (Alessina, 1988; Cukierman 1991, 1992). On the other hand, the results of testing the correlation between

the level of independence and the economic output, namely the growth rate of GDP revealed that CBI does not affect the economic output (GMT, 1991; Alessina and Summers, 1993; Cukierman, 1993).

More recent evidence shows that there is no or non-significant relationship between the variability of real GDP growth and CBI as well (Anastasiou, A., 2009; Dumiter, F., 2011), meaning that the economic output lies in other explanatory variables, such as employment rate, openness of the economy, inflation rate, exchange rate volatility and so on. I consider that even if statistically the degree of confidence is high for a correlation, from the real economy point of view, one cannot determine a reliable correlation only between 2 variables in a ceteris paribus situation.

Table 6 The evolution of CBI, the inflation rate and the real GDP growth in Romania from 2006 hitherto

year	cbi	Inflation(%)	real gdp growth (%)
2006	0.35	6.60	8.10
2007	0.35	4.80	6.90
2008	0.35	7.80	8.30
2009	0.35	5.60	-5.90
2010	0.59	6.10	-2.80
2011	0.59	5.80	2.00
2012	0.59	3.30	1.20
2013	0.81	4.00	3.50
2014	0.81	1.10	3.10
2015	0.81	-0.60	4.00
2016	0.81	-1.60	4.80

Source: author's data processing

Figure 3 The regression statistics of CBI and inflation

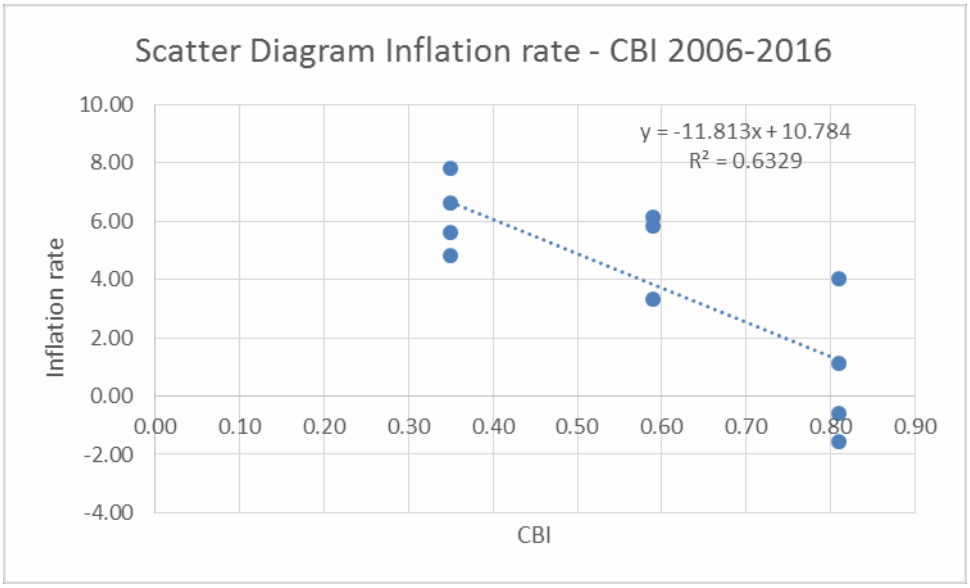
Regression Statistics								
Multiple R	0.795570213							
R Square	0.632931964							
Adjusted R Square	0.592146627							
Standard Error	1.95133777							
Observations	11							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	59.09052817	59.0905282	15.51861541	0.003409232			
Residual	9	34.26947183	3.80771909					
Total	10	93.36						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	10.78397887	1.843869383	5.848559	0.000244197	6.612856542	14.955101	6.612856542	14.9551012
cbi	-11.8133803	2.998801361	-3.9393674	0.003409232	-18.5971403	-5.0296203	-18.59714026	-5.029620302

Source: author's calculations in Excel Data Analysis

The results outline the following aspects: there is an inverse correlation between CBI and the inflation rate, given by the coefficient's value and sign (-11.83); the coefficient of determination (R Square), which is the proportion of variability of the independent variable (CBI) in the dependent variable (inflation rate) is 0.63, meaning that 63% of the inflation level is determined by the CBI; the standard error shows the precision with which the coefficient is measured; p-value or significance F is 0.003 < 0.05, meaning that the p-value is smaller than the significance threshold (0.05) and the correlation is statistically significant. Another measure of observing the trend of the variables' coexistence is generating the scatter plot. (Graph 2)

In other words, the correlation is significant and sticks to the previous studies' findings regarding the relationship between the CBI and the inflation rate. From my point of view, price stability as a fundamental goal for NBR could have not been achieved by a dependent central bank. Moreover, even though the inflation target has been missed in the recent years, the deviation is not alarming and this was not due to internal factors and it would not be rational to question NBR's independence, transparency and accountability.

Graph 2



Source: author's projection in Excel Data Analysis

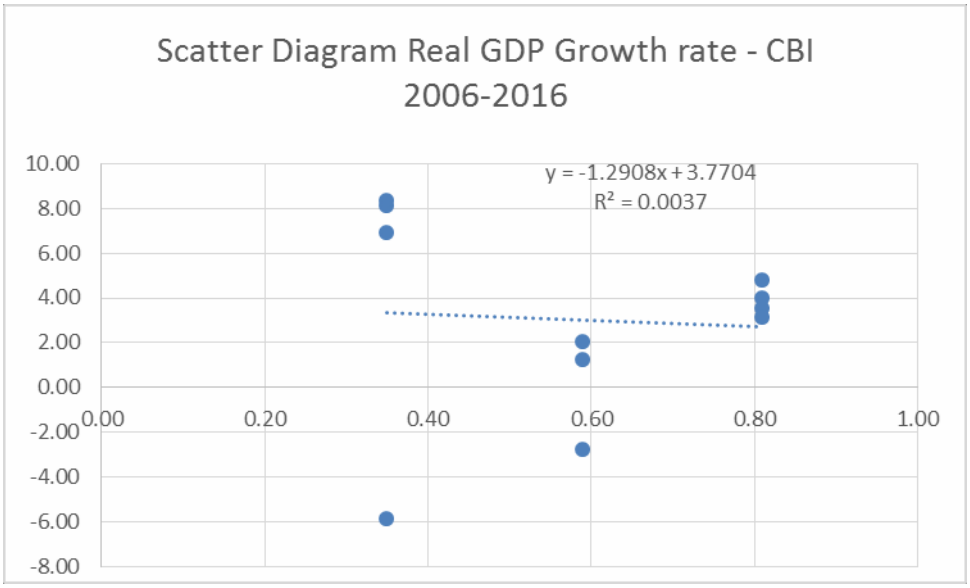
Figure 4 The regression statistics of CBI and real GDP

Regression Statistics								
Multiple R	0.060791479							
R Square	0.003695604							
Adjusted R Square	-0.107004885							
Standard Error	4.596990396							
Observations	11							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.705477343	0.705477	0.03338381	0.85907325			
Residual	9	190.1908863	21.13232					
Total	10	190.8963636						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	3.770362418	4.343814779	0.867984	0.40795094	-6.056029297	13.59675	-6.05603	13.59675413
cbi	-1.290793542	7.064620626	-0.18271	0.85907325	-17.27207569	14.69049	-17.2721	14.69048861

Source: author's calculations in Excel Data Analysis

The regression statistics do not reveal any correlation between the analysed variables, given the p value (0.8590), which is much higher than 0.05 and the R Square, which clearly states that the correlation is not valid. The scatter plot generated in order to visualize the relationship between CBI and GDP conveys the absence of correlation as well.

Graph 3



Source: author's projection in Excel Data Analysis

6. Conclusions

Central bank independence is a multidimensional concept whose quantification is hard to encompass all the significant aspects regarding the central bank, the governor and the Board of governors, as well as the management of the relationship between the central bank and the government.

David Ricardo was one of the first authors to recognize this inherent conflict between government and the money supply, but also extended the argument to public discretionary control over the money supply. Ricardo suggested that no entity, whether it is the state or a bank, could be trusted to manage paper money and the issuance responsibility without being prone to abuse. The state is a conglomerate of public policies that should converge to the single goal of economic and financial sustainable development. At this juncture though, ''under the umbrella of the public interest'' (Cargill& O'Driscoll, 2012), the state can become a furnace of private interests, serving individual agendas. Due to the lack of transparency of the budget execution, inefficient allocation of public financial resources and political turnovers, the state is more likely to control the money supply poorly backed by the necessities of the real economy. To put it in a nutshell, history has proven that power is a bone of contention. I share Hamilton's belief that giving all power to the many will

cause the oppression of the few and giving all power to the few will lead to the oppression of the many. (Hamilton, 1787)

The stabilization of the price level is not reached only by rendering the central bank the responsibilities of safeguarding the banking system or controlling money issuance, but stipulating the legal central bank independence is able to increase credibility, transparency and accountability.

In democratic societies, entrusting non-elected officials the lead in hand may trigger discomfort amongst citizens; the central bank governor is the most important non-elected policy maker and he cannot be impeached of political affiliation. Adoption of a credible nominal anchor and achieving price stability, however, require an important precondition for a successful monetary policy: central bank independence.

The study I carried out, in spite of the small extent of observations, confirms the results obtained by previous studies regarding the impact of CBI on the inflation rate and economic output in the analyzed period of time. To put it in a nutshell, a negative correlation was observed between CBI and the inflation rate, whereas the growth rate of the economic output is not affected by CBI. CBI did not fluctuate during and after the crisis, but the macroeconomic performance had a significant variability, due to the financial impairment.

To conclude, no matter the degree of legal independence, central banks are not completely insulated by the government's interference. However, legal CBI in Romania is high, with a level of 0.81/1(CUK) or 13/15 (GMT). In addition, the actual independence can be well reflected by the turnover rate, given the fact that NBR has had the same governor for the past 28 years, meaning that the monetary policy was elaborated, conducted transparently and monitored according to the real economy needs and the international context.

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