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THE EFFECT OF CENTRAL BANKS INDEPENDENCE ON GROWTH VOLATILITY: A POOLED REGRESSION ANALYSIS

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Abstract

It is one of the basic tools in fighting against inflation to increase independence of the central banks. But the findings of the research for performances of different countries show that an increase of independence level of central banks effects economic growth negatively. In this paper the relationship between the independency of central bank and economic growth will be analyzed by taking some country cases into account.

The aim of this paper is that shows the relationship between the volatility of economic growth and independence of central banks for countries including Brazil, United Kingdom, Turkey, Chile and Israel. In this context in econometrical part we use panel OLS method with the reel GDP data of countries and dummy variable which represent independence of central bank for analysis. We expect that independence of central bank affects economic growth volatility positively.

Keywords: central bank independence, economic growth, GDP, inflation rate, panel regression.

1. INTRODUCTION

Monetary control and the central bank debates currently brought into agenda due to the increasing monetary policy implementations. Because, the basic source of inflation remains to be the disparity between the economic conjuncture and the monetary growth. This is the reason why

governments increase the budget deficits in order to finance the increased government spendings instead of increasing the tax revenues due to the electoral concerns. Free use of central bank resources causes the institution to be kept under the governmental coordination (pressures). This situation brings barriers to the efficient use of monetary policies.

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Monetary policy tools have an important place within the governments' economic interventions. The governments, with the hope of monetary adjustment accordingly with their output and employment targets, try to make policy implementations with the tools of open market operations and the reserve requirement ratios based on the general economic conditions. The most important factor with the use of these tools is the existence of an independent monetary authority.

Increasing the central bank autonomy debates are brought into agenda with the latest reforms in order to dispel the devastations caused by the inflation problem observed in many countries and also ameliorate the social structure in these countries. Debates reveal that there are four conditions required in the making of a sound monetary policy strategy. It is essential to examine these conditions under the institutional framework. The discussions concerning the issues such as setting these conditions within an institutional framework, and justification of the need for these conditions are of special importance. Bringing the central banks into an independent position render the use of monetary policy tools more efficient in attaining the price stability target. First; the central bank autonomy definition, indicators and the relationship between the central bank independency and the economic performance issues are evaluated within this paper. Second, the effects of an independent central bank to the economies' growth are examined based on the cross – country applications.

2. DEFINITION AND INDICATORS OF AUTONOMY OF THE CENTRAL BANK

According to the definition widely accepted in the literature, autonomy of the central bank is defined as a situation when Central Bank can enjoy the initiative to develop and implement strategies suitable for economic conditions avoiding being abused for short-term interests of governments (Erdogan, 2004). Concept of autonomy has generally been classified into political and economic autonomy. Oktar defines the autonomy of central bank as follows (Oktar, 1996): “the initiative and flexibility for implementation in the direction of given targets and for adjustment when necessary without feeling the effect of monetary policy and political authority”. This definition implies that granting the rights to the central bank to define the targets of monetary policy and the right to utilize such defined tools in a flexible manner is sufficient for autonomy, but autonomy does not necessarily mean that the central bank should be equipped with the right to define the final objectives of monetary policies.

Another issue included by this definition is that political authority should not influence and power of disposal on implementations of monetary policy. In this context, for the central bank to have legal autonomy, regulations must ensure that governments and other public entities cannot interfere. In other words, when governors and members of board of directors of the central bank are assigned, dismissed or their terms are defined, policies to implement are formulated, regulations regarding goals of the central bank and also borrowing of public sector from the central bank are being designed, influence and power of disposal by

the political authority must never be tolerated (Cukierman,1998).

Here another issue which deserves attention is that even a high-level autonomy may not be able to completely protect the central bank from political pressures. Some researches have proved that even in most autonomous central banks of the world, a considerable political influence is felt. In a research, N. Beck notes that the monetary policy followed by FED is considerably affected by the presidential requests (Beck, 1982). In another definition, autonomy of the central bank is defined as “ensuring that monetary value is not sacrificed to short-term interests of the government and arbitrary applications” (Yuksel,1993).

Assurances received on legislative level gain meaning when directors of the central bank and governments act responsibly. Autonomy of the central bank is defined in application as independence of monetary policies, which means that power of the central bank to move freely in determination and implementation of monetary policy can be considered as the basic indicator. One research conducted by Cukierman, Webb and Neyaptı express this issue in a more detailed and concrete way. Cukierman, Webb and Neyaptı handle four different variables as indicators of autonomy (Cukierman et al., 1993).

According to the first variable, when autonomy of the central bank is being assessed, length of terms of governor and members of board of directors of the central bank are taken into consideration. In this regard, a term defined above eight years is an indicator of autonomy. Another important point here is which post assigns and dismisses the governor and members of board of directors of the central bank. When the term of the governor of central bank

depends upon the term of the government, that government is not constrained in receiving funds for their arbitrary expenditures. This means that in such a process it shall be easier to resort to resources of the central bank. Such a process is witnessed by influencing the governor of the central bank. Therefore, based upon the principle that “governor of the central bank cannot be dismissed in developed countries”, term of the central bank is expanded to a relatively long period. For example, governor and deputy governor and members of board of executive “Direktorium” are selected for eight years. In the USA, governor of the central bank is chosen for fourteen years, and in France, council members and governor of the bank are chosen for a term of six years (Orhan & Erdogan, 2005).

Second variable is related to the process and functioning of determination of monetary policies. This means that role of central bank on decisions on monetary policy and its effectiveness in functioning process of the budget is increasing in scale. With this viewpoint, important indicators of the autonomy are individual determination of monetary policy and the fact that it has the final word in case of problems. On the other hand, even if the central bank does not play an active role in the functioning process of government budget, this is one of the issues which deserves assessment within the context of autonomy. In recent years many countries have paid efforts to increase the levels of autonomy in the process of decision-making on monetary policy, which is an important development. In 1989 legislative adjustments were made for this purpose in Chile and in New Zealand. On the other hand, specific efforts are paid in this issue in a number of Latin American and

Eastern European countries (Castello Branco & Swinburne, 1992).

Third variable is defined as deciding on priority goal(s) of the central bank. Identification of price stability as a basic goal and right to final word in case of a divergence with other goals of the government is indicators of autonomy. Setting price stability as a priority goal for central banks can be defined as a basic requirement in achievement of a low inflation rate at sustainable levels. In the autonomy index prepared within a research containing 17 OECD member countries, Cukierman, Webb and Neyaptı displayed this fact explicitly (Cukierman et al., 1992). The reason for such a situation is to purify the bank from political interferences as a result of a duty for price stability.

Final, another argument which increases the degree of autonomy is reductions in the credits received from the central bank and reduction of the share of central bank resources in government revenues. In this case, the right of central bank to resort to restrictions such as volume, term and interest rate can be mentioned as a final criterion.

Basic goal for autonomy of central banks is to prevent abuse of monetary policies by the governments for short-term objectives (Orhan & Erdogan, 2005). However, the most important point to be mentioned is that this should not be perceived as central banks have to perform policies completely different from those of the government. Bundesbank, which is credited as a totally autonomous bank in terms of the phenomenon of autonomy is given as the most striking example. Germany achieved a low inflation rate and high growth rate thanks to its autonomous central bank.

Hyperinflation experienced especially after the Second World War brought about

the emergence of Bundesbank as a central bank autonomous from government. The most important issue here is that Bundesbank was able to turn the legal autonomy into a de facto autonomy as a result of successful policies applied within time and faith and support by the people in its cause. Anglo-Saxon countries were also scenes for a struggle for autonomy of central banks on which several legislative regulations were done. For example, an agreement has been signed between the central bank and government in New Zealand which grants limited autonomy to the central bank, and the government declared that it would respect the autonomy of the central (Pospısil, 1997).

3. RELATIONSHIP BETWEEN THE AUTONOMY OF THE CENTRAL BANK AND PERFORMANCE

It is possible to assess empirical studies on economic impacts of measurement of autonomy in the following manner. In an empirical study by Grilli, Masciandaro and Tabellini, eighteen countries have been assessed in terms of political and economic autonomy criteria regarding the period between 1950 – 1989. Findings of this research indicate that there is a negative correlation between autonomy and inflation, which was also commented in other studies. Beside, this study displayed that, while political autonomy was meaningful in only 1970s, economic autonomy was significant in periods of high inflation. According to another finding of this study, autonomy of the central bank does not have an impact between level and variability of growth (Grilli et al., 1991)

Cukierman, Webb and Neyaptı attempted to measure the autonomy of central banks

through a research comprising 21 developed and 51 developing countries and data belonging to the period between 1950-1989. As a result of the findings of this research, they came to the following conclusions on effect of an autonomous central bank on economic performance (Cukierman et al., 1992).

- In developed countries, there is a reverse and systematic correlation between inflation and legislative autonomy. Developing countries lack such a correlation.

- Terms of governor of central bank in developing countries is a more clear indicator of autonomy.

- The above explanations also apply for inflation variability.

In his "Macroeconomics and Politics" titled research published in 1988, Alesina exhibits the presence of a negative correlation between central bank and both inflation variability and level of inflation. Findings of Alessina's research conducted with Sammers later, lead to the conclusion that, autonomy of the central bank has no impact on real interest and unemployment rates and level or variability of economic growth (Alesina & Summers, 1993).

In a research titled "Central Bank Laws and Monetary Policy" which was published by Bade and Parkin in 1986 examining data of twenty developed countries between 1972 and 1986, presence of a meaningful negative correlation between inflation rate and autonomy of central bank (Eijffinger et al. 1993). On the other hand, no correlation has been detected between variability of inflation and autonomy of central bank (Eijffinger et al., 1996).

It can be seen that researches on impact of central bank autonomy on national economies display completely overlapping results. Thus, it can be stated that autonomy

is an indispensable feature of an effective monetary policy applied on the stable structure which is planned to be built on its direct impact on shaping central bank motives and indirect impact on reliability.

4. CORRELATION BETWEEN AUTONOMY OF CENTRAL BANK AND ECONOMIC GROWTH

Level of autonomy of central banks is an important factor in determination of influence power of governments on general economic conditions. It is difficult to prove a direct relationship between variability of product and level of autonomy of central bank. Problem of price stability due to non-autonomous central banks can lead to instability in production.

One research came to conclusions which support the view that autonomous central banks would pull down rate of inflation. However, the same research did not agree that autonomous central banks would increase variability in product, or that it would lead less destabilization. Abovementioned research attracts attentions to the fact that a potential variability in product stems from two resources; economic and political. Although it agrees that autonomous central banks trying to keep inflation low and stable cannot sufficiently prevent economic variability that arise from Money demand and supply shocks, it also highlights that central bank policies protected against political pressures can decrease the level of political variabilities stemming from the future route (Alessina & Gatti, 1995).

In the said research, impact of central bank autonomy on product variability is accepted to be unclear, but it concluded that

there is no correlation between central bank autonomy and product variability and that political product variability is a more important factor, thus, an autonomous central bank can decrease the inflation level avoiding a noticeable real cost on unemployment and product (Alessina & Gatti, 1995). Variability of product is a more important problem than instability of product. In this context affect of central bank autonomy on product variability should be underlined.

Increases in prices in nations which have autonomous central banks are witnessed to be lower. According to most indexes developed to measure levels of autonomy of central banks, increasing autonomy rate is accompanied by low levels of inflation in the long run (Schaling, 1995). On the other hand, increased level of autonomy decreases the impact of seigniorage revenues on financing of public expenditures. An empirical study covering 18 OECD member countries based on data from 1972-1989 (Berument, 1998), it has been found out that there was a reverse correlation between increased legislative autonomy levels of central banks and increase in seigniorage revenues. Also, autonomization of central bank eliminates the problem of inconsistency of time. As the presence of autonomous central banks will decrease surprise monetary expansions resulting from political pressures, inflationist expectations shall diminish and demands for increase in wages and prices shall be moderated (Oatley, 1999; Banaian & Luksetich, 2001).

After such explanations, it can be expressed that autonomy of central banks have an undeniable effectiveness on prevention of opportunistic monetary policies. Another effect of central banks on national economies is their potential to

generate political business cycles. Bearing in mind that central bank directors have a political tendency, any central bank governor or director acting in favour of any political party closer to his views can cause such business cycles in election times. Governors who do not lose their impartiality eliminate such a possibility.

Within economic literature, some economists have suggested GDP growth rate as a target variable for monetary policy instead of inflation. According to the economists who propose the said target variable, inflation is an indicator which is difficult to estimate even in the short run. According to the conclusions of a research by Cecchetti, inflation is difficult to estimate even for quarters of a year. This research also stresses that relationship between inflation variability and tools of monetary policy are difficult to estimate clearly (Cecchetti, 1995).

However, despite such claims, a general comparison can reveal that inflation targeting strategy has more superior features in terms of effectiveness of monetary policy.

1. There is relatively more opportunity to reach information on prices in frequent and rather short intervals.

2. When concepts of GDP and inflation are compared, inflation is more understandable by the public opinion, as real and nominal values of GDP variable can be manipulated by politicians, which can make it less comprehensible. Due to this feature GDP variable is not considered as an indicator of economic performance by public bodies, market stakeholders and public opinion.

3. Nominal GDP targeting compels central bank or government to declare a numerical target for potential GDP growth rate. Which should be better emphasized is

that the problem in definite estimation of potential GDP rate is essential for the success of this strategy. Potential GDP rate which is estimated to progress at high levels starts to shape expectations in this direction. In other words, high estimates regarding GDP growth rate can be perceived as a target declared by authorities. It is obvious that this situation will trigger positive inflationist tendencies (Bernanke & Mishkin, 1997; Mishkin, 1999; Truman, 2003).

5. METHODOLOGY AND DATA

The effect of central bank independence on growth is an empirical subject. The aim of this study is to research that Brazil, Turkey, Chile, UK and Israel Central Bank independences' effect on GDP growth. We took the real GDP numbers from WDI for the years 1968-2007. When the real GDP numbers for countries are different from their growth Standard deviations, we use them for volatility. On the other hand, until the countries' central bank independence we gave 0 and there after 1 as dummies¹.

The regression between real GDP growth rate volatility and central bank independence dummies are showed as:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon_{it} \quad (1)$$

In Equation (1); Y showed the difference between real GDP growth rate and Standard

deviation, and volatility. X showed the dummy until the independence 0 afterwards 1. Lastly e error term. In the equation, i showed the cross section and f time periods.

But we can get spurious results with this equation. Because there exists autocorrelation problem in the cross section data. To stop autocorrelation we added the lag value of dependent variable to the right part of the model. We added volatility lag value to the equation (1), and model becomes:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + Y_{it(-1)} \varepsilon_{it} \quad (2)$$

Error term is showed as: $\varepsilon_{it} = \alpha_{it} + \eta_{it}$

where firstly it is assumed that η_{it} is uncorrelated with explanatory variable. However, α_{it} which is called individual effect may or may not be correlated with explanatory variable. In other words, for random effects model α_{it} is uncorrelated with explanatory variable; for fixed effects model α_{it} is correlated with explanatory variable (Johnston & Dinardo, 1996). As well, if α_{it} is a constant term, then the model will be pooled regression (Greene, 2003). Furthermore in panel data analysis have three version: pooled regression, fixed effects model and random effects model.

This study discusses (2) equation using pooled regression (Pooled OLS), fixed effects and random effects methods. But

Table 1. LLC and ADF Test Results

Variables	LLC		ADF	
	Individual intercept and trend	Individual intercept	Individual intercept and trend	Individual intercept
Volatility*	-7.15114	-7.89904	59.2893	73.7063
Volatility(-1)**	-7.62400	-7.06298	57.6920	71.3827

*, Volatility = Y_{it} = real GNP minus standard deviations; **, Volatility(-1) = $Y_{it}(-1)$ = first lag of volatility.

¹In this paper, the contribution of Durmuş Çağrı Yıldırım is limited with econometric part. Econometric part is written by Durmuş Çağrı Yıldırım

which method will be used will be determined with Hausman Analysis.

When series are non-stationary, so there exists a problem of spurious relations. Because of this, first the series will be observed. LLC tests are preferred for panel data series. In this study, we used LLC and ADF. The results are showed in Table1.

When we observe Table 1, we see that the volatility and lag variables do not have unit root. The level values are stationary. Therefore, regression (2) will not lead to spurious regression. Firstly equation (2) is estimated using Pooled OLS. This method assumes that for a given country, observations are uncorrelated and, the errors are homoscedastic for across countries and time. Results of Pooled OLS can see from Table 2.

From Table 2, we see that the firstly dependent variable's first lag has a positive value. But this is not important for our study. X variable showing the central bank independence has a positive effect on growth. Countries may have fixed and random effects. It is going to be analyzed with Houseman test if we will use pooled regression or not. Table 3 shows the Hausman test results for fixed and random effects.

6. EMPIRICAL RESULTS

When we look at the results in Table 3, Hausman test results for fixed effects and random effects shows that equation (2) must be estimated with a pooled regression.

After seeing that the best method is pooled regression for equation (2), if we reobserve the results we see that central bank independence has a positive effect on real GDP volatility for the countries. As a result we can say that, central bank independence makes countries' growth path more stable.

7. CONCLUSION

Central bank autonomy is very important within the context of economic performance. High degree of independence should not to be affected by short term interets of politicians in power and their discretionary applications. Briefly independence should not to be sacrificed for this kind of application. The most important of these effects is negative and systematic relationship between the legal independence and the inflation rate in developed countries. This relationship is not seen in developing countries. On the other hand, terms of

Table 2. Test Results of Pooled Regression

Dependent Variable: Y					
	Independent Variables	Coefficient	Std. Error	t-Statistic	Prob.
	X	0.457552	0.205792	2.223367	0.0274
	Y(-1)	0.996680	0.001479	674.0485	0.0000

Table 3. Hausmann Analysis Results

	FEM*	REM**
Hausman Test Statistics	3.163328	0.5309
Hausman P-Value	0.121034	0.7279

* FEM: Fixed Effects Models, and ** REM: Random Effects Models.

governor of central bank in developing countries is a more clear indicator of autonomy. Lastly the variability of inflation rate and the differences of inflation rate across countries are the circumstances of the effects of central bank autonomy on economic performance.

Level of autonomy of central banks is an important factor in determination of influence power of governments on general economic conditions. It is difficult to prove a direct relationship between variability of product and level of autonomy of central bank. Problem of price stability due to non-autonomous central banks can lead to instability in production. Another effect of central banks on national economies is their potential to generate political business cycles. Bearing in mind that central bank directors have a political tendency, any central bank governor or director acting in favour of any political party closer to his views can cause such business cycles in election times. Governors who do not lose their impartiality eliminate such a possibility.

In some empirical works it is seen that central bank autonomy does not have effects on unemployment, real interest rate, the level of economic growth and revenue variability. In this study we analyze economic growth performances of the selected countries before and after they get central bank autonomy and we see that central bank autonomy does not have effected on economic growth. However, it is important to point out this fact. The reason of high degree of variability in tables are inter countries economic crisis on the individual economic crisis in countries. But by analyzing the economic performance of selected countries we can say that central bank autonomy leaves economic growth rate in some stable level. Because the

experiences of sample countries show that their economic performances before and after central bank autonomy does not exhibit significant variability. Therefore, central bank autonomy does not only contradict with the macroeconomic issues such as price stability growth and unemployment rate but it is also a prerequisite for the stable growth performance.

ЕФЕКТИ НЕЗАВИСНОСТИ ЦЕНТРАЛНЕ БАНКЕ НА ДУГОТРАЈНОСТ ЕКОНОМСКОГ РАЗВОЈА: КОМБИНОВАНА РЕГРЕСИОНА АНАЛИЗА

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Извод

Један од основних алата у борби против инфлације је повећање независности централне банке. Ипак, резултати истраживања која су спрведена у различитим земљама показују да повећање нивоа независности централних банака негативно утиче на економски раст. У овом раду анализирана је повезаност између независности централне банке и економског раста уз узимање у разматрање случајева појединих земаља.

Циљ овог рада је да прикаже постојање везе између краткотрајности економског развоја и независности централне банке у земљама као што су Бразил, Велика Британија, Турска, Чиле и Израел. У овом контексту, у економетријском делу, коришћен је панел ОЛС метода са стварним ГДП подацима земаља и уз коришћење помоћне променљиве која представља независност централне банке. Очекивано је да независност централне банке позитивно утиче на економски раст, као наша полазна хипотеза.

Кључне речи: независност централне банке, економски раст, ГДП, инфлација, панел регресија.

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