THE RELATIONSHIP BETWEEN CENTRAL BANK INDEPENDENCE, FINANCIAL FREEDOM, AND ECONOMIC GROWTH: A PANEL ARDL BOUNDS TESTING APPROACH

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ABSTRACT The purpose of this study is to investigate the nexus between central bank independence, financial freedom, and economic growth in EU member countries from 1995 to 2011 by employing panel ARDL bounds testing approach. The results suggest that there is a positive and statistically significant evidence between central bank independence, financial freedom, and economic growth in both long and short-term. Besides, long-term empirical results refer that current period central bank independence and financial freedom are the important factors for determining the national output level. In addition, the results of the short-term dynamics are parallel with the long-term estimation results.
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Keywords Central bank independence, Financial freedom, Economic growth, Panel ARDL Bounds Testing Approach

ÖZ Bu çalışmanın amacı, AB üyesi ülkelerde merkez bankası bağımsızlığı, finansal özgürlük ve ekonomik büyüme arasındaki ilişkileri 1995-2011 dönemi itibarıyla panel ARDL sınır testi yaklaşımını kullanarak incelemektir. Çalışmanın sonuçları, hem uzun ve hem de kısa dönemde merkez bankası bağımsızlığı, finansal özgürlük ve ekonomik büyüme arasında pozitif ve istatistiki bakımdan anlamlı ilişkilerin varlığını göstermiştir. Ayrıca, uzun dönemli ampirik sonuçlar, cari dönem merkez bankası bağımsızlığının ve finansal özgürlüğün ulusal çıktı düzeyini belirleyen önemli faktörler olduğunu ortaya koymuştur. İlaveten, kısa dönem dinamiklerine ilişkin bulguların uzun dönemli tahmin sonuçları ile paralellik gösterdiği de belirlenmiştir.
MERKEZ BANKASI BAĞIMSIZLIĞI, FİNANSAL ÖZGÜRLÜK VE EKONOMİK BÜYÜME ARASINDAKİ İLİŞKİ: BİR PANEL ARDL SINIR TESTİ YAKLAŞIMI
JEL C33, E58, F36, O47
Anahtar Kelimeler Merkez bankası bağımsızlığı, Finansal özgürlük, Ekonomik büyüme, Panel ARDL Sınır Testi Yaklaşımı

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1. Introduction

The world's oldest existing central bank, Sweden's Riksbank, opened its doors in 1668. The Bank of England began operating in 1694. For centuries, central banks have been evolving in their assigned tasks, their relationship to the state, their interaction with financial market participants, and their internal management and decision-making processes. But although evolution of central banking is nothing new, the past two decades have seen enormous changes in central banks and their practices, especially in reforms of how those banks are governed (Crowe and Meade, 2007).

Nowadays, it is widely believed that high levels of central bank independence (CBI) are important institutional devices to assure price stability, due to the fact that one of the most important duties of central banks is to carry out the price stability is thought. An independent central bank can give full priority to low levels of inflation whereas, in countries with a more dependent central bank, other considerations may interfere with the objective of price stability. If the central bank cannot determine the ultimate objectives of monetary policy, it has no goal independence (Eijffinger and Hoeberichts, 2002). De Haan *et al.* (1999) distinguish three main features of central bank independence. These are (i) decisions about the explicit definition and ranking of objectives of monetary policy, (ii) transparency of actual monetary policy, and (iii) who bears final responsibility with respect to monetary policy. Depending on these factors, central banks have become key institutions in the process of economic policy-making (Goodman, 1991).

Because of the relationship with financial markets of CBI, as financial market development and freedom result from both market forces and an institutional framework that facilitates efficient allocation of financial resources, developed financial freedom allocate funds to maximize profits and typically generate funds through their own operations (Neyapti, 2003). Financial freedom can be expressed as a banking system that is independent from government control. In an ideal banking and financing environment where a minimum level of government interference exists, independent central bank supervision and regulation of financial institutions are limited to enforcing contractual obligations and preventing fraud. Therefore, the level and size of banking, independence of central bank and the development of the stock market have an impact on the process of economic

growth how the design of the financial system and freedom may help to improve welfare. In a broad sense, the design of the financial freedom involves the choice between two dominant systems: The market-oriented financial system on the one hand, and the bank-dominated system on the other hand (Hermes and Lensink, 2000). The common point of the two systems is that both of them are needed effective central bank policies that is independent from political pressure to spur higher economic growth process.

In addition, there are also various arguments why CBI may matter for the freedom and stability of the financial system. First, greater independence from outside political pressures implies that the central bank is less constrained in preventing financial distress, which should allow the bank to act earlier and more decisively before a crisis erupts. Second, there is a time inconsistency problem in financial stability policy-making. The time inconsistency problem can be illustrated as follows: The policymaker has two possible responses in the face of financial instability, "tough" and "lenient". If the policy maker is able to let the market believe that he is tough, he has a short-term motivation to act leniently in case of financial stress, as the short-term costs will be lower than those of a tough reaction. However, in case of rational expectations, market participants know the policymakers' incentives and therefore expect the policymaker to be lenient. Third, restraining the influence of politicians on the central bank policy removes the problem that a financial crisis can be used as an issue in the re-election campaign of the incumbent government (Klomp and De Haan, 2009).

Because of the relations mentioned above, it can be said that both CBI and financial freedom might improve real economic performance for several reasons. First, an independent central bank that is free from political pressure may behave more predictably, promoting economic stability and reducing risk premia in real interest rates (Alesina and Summers, 1993). Second, to stimulate economic growth in the long-term and to avoid financial crunch, interest rate and exchange rate implications of monetary contractions, independent central banks have tended to adopt appropriate policies by taking the world economic and financial trends into consideration. Third, an independent central bank is less likely to be exposed to the inflationary bias and is more aware of the inflation costs of expansionary monetary policy (Coric and Cvrlje, 2009). As well as CBI, financial freedom may improve the functioning of domestic financial system, with beneficial effects on savings and allocation by generating international competition. As a direct effect, it is expected to generate international competition for funds, thereby driving capital towards the most

productive projects. Indirectly, financial freedom may foster financial development and hence economic growth which in turn positively affects productivity.

In this study, in order to examine the effects of CBI and financial freedom process on the economic growth using panel Autoregressive Distributed Lag (ARDL) approach in EU member countries, the annual data of the period 1995-2011 are taken into consideration. For this purpose, this study consists of five sections. The literature review is introduced in the second section, the method and data belonging to the empirical application of the study are described in the third section, research findings are shown in the fourth section. The study comes to an end in the fifth section where a general evalution is made.

2. Literature Review

The case of CBI, while not a new one, has been strengthened by a growing body of empirical evidence, and by recent developments in economic theory. Most of the empirical studies have focused on the relationship between CBI and inflation, only a few of them have investigated the links between CBI and economic growth. Although the studies made by Cukierman *et al.* (1993), Fischer (1995), Loungani and Sheets (1997), Banaian and Luksetich (2001), and Demertzis and Hallett (2007) showed that there was a positive relationship between CBI and economic growth; no links between the mentioned variables were found in the papers made by Grilli *et al.* (1991), Eijffinger *et* al. (1998), Akhand (1998), Crosby (1998), De Haan and Kooi (2000), and Chortareas *et al.* (2001). Jordan (1997) argued that the more independent central bank, sacrifice ratio and output loss higher in disinflation episodes; whereas during accelerating inflation episodes, central bank independence had no influence on either benefice ratio or the output growth. Conversely, Ismihan and Ozkan (2004) and Wray (2007) implied that a negative relationship between CBI and economic growth was valid.

In spite of the fact that there are a few studies examining the relationship between CBI and economic growth, the effects of financial liberalization on economic growth have been mostly investigated in literature. The studies made by Robinson (1952), Kuznets (1955), Debreu (1959), Friedman and Schwartz (1963), Arrow (1964), Goldsmith (1969), McKinnon (1973), Shaw (1973), Fry (1978), Diamond and Dybvig (1983), Jung (1986), Bencivenga and Smith (1991), King and Levine (1993), De Gregorio and Guidotti (1995), Demetriades and Hussein (1996), Arestis *et al*. (2001), Hermes and Lensink (2003), Christopoulos and Tsionas (2004), Chang and Caudill

(2005), Ang (2008) and Fung (2009) demonstrated that there was a positive relationship between financial freedom and economic growth, while Chandavarkar (1992) and Ram (1999) could not find such a relation.

Neyapti (2001) argued that both the measures of CBI and the measures of financial market development showed significant association with macroeconomic variables. Also, a positive association between CBI and financial freedom was exhitibed in the paper. The importance of this study is that it is the only one which considers the relationship between CBI and financial freedom. Besides, there are not any studies in literature which take the relationship between CBI, financial freedom and economic growth into account. Therefore, it can be said that this paper will introduce a new perspective to the literature.

3. Method and Data

In this study, in order to examine the effects of the CBI and the financial freedom on the economic growth, ARDL approach is applied. To estimate the relations between the variables for EU member countries, annual time series of the period 1995-2011 are taken into account. In order to measure central bank independence and financial freedom the data set introduced by Heritage Foundation are used. Each of the mentioned variables is individually scored on a scale of 0 to 100. If the general score of the related variables close up to the score of 100, it is said that a country's central bank is negligible government interference and financial market is free from all types of obstacles. The index scores the level of an economy's financial freedom and central bank independence by looking into the following seven broad areas: (i) The extent of government regulation of the action of central banks and financial services, (ii) the degree of state intervention in banks and other financial firms through direct and indirect ownership, (iii) the extent of financial and capital market development, (iv) government influence on the allocation of credit (v) openness to foreign competition, (vi) the weighted average inflation rate for the most recent three years and (vii) price controls. To measure the worth of economic growth, the annual percentages of constant price with expenditure-based gross domestic product calculated by International Monetary Fund (IMF) are taken into consideration. The data are obtained from the offical websites of Heritage Foundation and IMF. In the paper, to investigate the effects of the CBI and the financial freedom on the economic growth, Equation 1 is used:

$$GDP_{it} = \alpha_0 + \alpha_1 CBI_{it} + \alpha_2 FF_{it} + e_{it} \tag{1}$$

Where *GDP* represents the gross domestic product, *CBI* denotes the central bank independence, *FF* implies the financial freedom and *e* shows the white noise error term.

To investigate the relations between the variables for EU member countries, this study employed recently developed ARDL bounds testing approach of cointegration introduced by Pesaran *et al.* (2001). The ARDL cointegration approach has numerous advantages in comparison with other cointegration methods such as Engle and Granger (1987), Johansen (1988), and Johansen and Juselius (1990) procedures. First, the ARDL procedure can be applied whether the regressors are *I(0)* or *I(1)*. This means that the ARDL procedure has advantage of avoiding the classification of variables into *I(0)* or *I(1)* and no need for unit root pre-testing. Second, while the Johansen cointegration techniques require large data samples for validity, the ARDL procedure is the more statistically significant approach to determine the cointegration relation in small samples. Third, the ARDL procedure allows that the variables may have different optimal lags, while it is impossible with conventional procedures. Finally, the ARDL procedure employs a single reduced form equation, while the conventional cointegration procedures estimate the long-run relationships within a context of system equations (Ozturk and Acaravci, 2010).

The ARDL bounds testing approach is based on the estimation of Ordinary Least Squares (OLS) estimator and unrestricted error correction model. The cointegration relationship in the regression Equation 1 is determined by applying bounds test to the unrestricted error correction model. Therefore, Equation 1 can be presented at the following ARDL form:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i} \Delta GDP_{it-k} + \sum_{k=0}^{m} \alpha_{2i} \Delta CBI_{it-k} + \sum_{k=0}^{m} \alpha_{3i} \Delta FF_{it-k} + \beta_1 GDP_{it-1} + \beta_2 CBI_{it-1} + \beta_3 FF_{it-1} + \nu_{it} \quad (2)$$

Where Δ and ν_{it} are the first difference operator and white noise term, respectively. An appropriate lag selection based on a criterion such as Akakike Information Criterion (AIC), Schwarz-Bayesian Criterion (SBC), Final Prediction Error (FPE), and Hannan-Quinn Information Criterion (HQ). The bounds testing procedure is based on the joint *F-statistic* or *Wald statistic* that is tested the null of no cointegration, $H_0 : \beta_r = 0$. The value of the calculated *F-statistic* is compared with two sets of critical values, the lower and the upper. If the calculated *F-statistics* lies above the upper level of the band, the null is rejected, implying cointegration. If the calculated *F-statistics* is below the lower critical value, we cannot reject the null hypothesis of no cointegration. Finally, if it lies between the bounds, a clear

comment on the cointegration cannot be made. The lower and the upper critical values can be obtained from Pesaran *et al*. (2001) (Yüce, 2013).

If a cointegration relationship is found between the variables, both long and short-term models can also be estimated with the help of Equation 3 and Equation 4, respectively:

$$GDP_{it} = \alpha_0 + \sum_{k=1}^{m} \alpha_{1i} GDP_{it-k} + \sum_{k=0}^{m} \alpha_{2i} CBI_{it-k} + \sum_{k=0}^{m} \alpha_{3i} FF_{it-k} + e_{it} \qquad (3)$$

$$\Delta GDP_{it} = \alpha_0 + \alpha_1 EC_{it-1} + \sum_{k=1}^{m} \alpha_{2i} \Delta GDP_{it-k} + \sum_{k=0}^{m} \alpha_{3i} \Delta CBI_{it-k} + \sum_{k=0}^{m} \alpha_{4i} \Delta FF_{it-k} + e_{it} \quad (4)$$

The variable *EC* in Equation 4 represents the error correction term which is obtained from long-term dynamic. It shows how quickly variables converge to equilibrium and it should have a statistically significant coefficient with a negative sign.

The method specified by Kamas and Joyce (1993) is applied for determining the optimum lag lengths in this paper. Within this method's framework, the optimum lag number is determined according to SBC and to do so, the maximum lag number is taken as five.

4. Empirical Findings

In this study we investigate the cointegration relationship between central bank independence, financial freedom and economic growth in EU member countries from 1995 to 2011 by applying the panel ARDL bounds testing approach. In first step, we explore the optimal lag length for the model and determine whether autocorrelation is valid. The SBC is generally used in preference to other criterias because it tends to define more parsimonious specifications. Therefore, this study used the SBC to select an appropriate lag for the ARDL model. Appendix 1 presents the SBC values and the results of the autocorrelation test. In Appendix 1, the optimum lag length is selected of two because its SBC value is minimum and this value does not include the autocorrelation problem.

After the selection the optimum lag length, the cointegration relationship between the variables is tested with the help of the bounds testing approach. Table 1 shows the results of the bounds testing analysis.

Table 1. The Results of the Bounds Testing Analysis

k[*]	F-Statistic	1% Critical Values		5% Critical Values	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound
2	36.695	5.15	6.36	3.79	4.85

[*] k represents the number of independent variables in the Equation 2. Critical values were obtained from the study made by Pesaran *et al*. (2001).

These critical values are valid for the two independent variables and the 1% significant level. It is possible to say that there is a cointegration relationship between the variables because the calculated *F-statistic* is above the upper critical level. It means that the process of economic growth, central bank independence and financial freedom are cointegrated with each other, in other words they will act together in the long-run. In this context, it can be indicated that any changes in central bank dependence and financial freedom will occur the possible effects upon the process of economic growth. Therefore, ARDL model can be used in order to determine long and short-term dynamics between the variables.

To estimate the long-term relationship between the variables, the optimum lag lengths in Equation 3 is determined by taking SBC values into account. In this context, it is decided to estimate the ARDL (1, 1, 0) model and Table 2 shows the results of the long term dynamics between GDP, CBI and FF.

Table 2. The Results of the Long-Term Dynamics of ARDL (1, 1, 0) Model

Variable	Coefficient	*t*-Statistic	*p*-Value
C	1.940[*]	1.828	0.068
GDP(-1)	0.455[***]	10.348	0.000
CBI	0.011[**]	1.961	0.048
CBI(-1)	-0.021	-0.693	0.488
FF	0.004[*]	1.861	0.065
Descriptive Statistics			
$R^2 = 0.613$	$F(p) = 29.023^{***}$ (0.000)		$\chi^2_{LM} = 0.065$ (0.189)
$\overline{R}^2 = 0.608$	$DW = 1.962$		

Note: [*], [**] and [***] represent the significant level of 10%, 5%, and 1%, respectively.

The results of the long-term dynamics point out that there is a positive and significant relationship between *GDP* and *GDP(-1)*. In this context, it can be said that the previous values of *GDP* need to be taken into consideration for estimating its next period values. Furthermore, there are positive and significant relationship between *CBI*, *FF*, and *GDP*, but no significant

relations could be obtained between *CBI(-1)* and *GDP*. These results refer that current period central bank independence and financial freedom are the important factors for determining the national output level. Therefore, it can be said that increasing financial liberalization and central bank independence would assure the price stability and accelerate the gross domestic product especially via decreasing current account imbalances, and inflation rates. These factors would lead to gain a competitive advantage for the countries in foreign markets, and hence better well being. Accordingly, it is obvious for EU member countries that the central bank independence and the financial freedom are the fundamental issues which tirgger the *GDP* level in the period of 1995-2011.

The short-term relationship between the variables is investigated by taking error correction model into account which is based on Equation 4. ARDL (2, 0, 2) model is considered appropriate to examine the short-term dynamics, and the results of this model is shown in Table 3.

Table 3. The Results of the Short-Term Dynamics of ARDL (2, 0, 2) Model

Variable	Coefficient	*t*-Statistic	*p*-Value
C	-0.084	-0.471	0.637
$\Delta GDP(-1)$	0.679^{***}	5.938	0.000
$\Delta GDP(-2)$	-0.039	-0.536	0.592
ΔCBI	0.017^{**}	1.982	0.041
ΔFF	0.044^{*}	1.725	0.085
$\Delta FF(-1)$	0.024	0.957	0.338
$\Delta FF(-2)$	0.017	0.646	0.518
$EC(-1)$	-1.171^{***}	-8.847	0.000
Descriptive Statistics			
$R^2 = 0.723$	$F(p) = 25.307^{***}$ (0.000)		$\chi^2_{LM} = 0.028$ (0.594)
$\overline{R}^2 = 0.710$	$DW = 2.041$		

Note: *, ** and *** represent the significant level of 10%, 5%, and 1%, respectively.

The results of the short-term dynamics in Table 3 show the positive and significant relationship between ΔGDP and $\Delta GDP(-1)$, but such a relationship could not find between ΔGDP and $\Delta GDP(-2)$. Hence, it can be said that the one period previous values of *GDP* need to be taken into consideration for estimating its next period values. In addition, there are positive and significant relationship between ΔCBI, ΔFF, and ΔGDP,

but no significant relations could be obtained between $\Delta FF(-1)$, $\Delta FF(-2)$ and ΔGDP. Therefore, to estimate the next period values of GDP levels, only current period values of financial freedom and central bank independence must be considered. Besides, because the error correction term, EC, is found negative and statistically significant, it can be said that the variables converge to equilibrium, and short-term imbalances will be overcomed in the long-term. In general, the results of the short-term dynamics are parallel with the long-term estimation results.

5. Conclusion

This paper investigates the nexus between central bank independence, financial freedom, and economic growth for EU member countries from 1995 to 2011. To examine this linkage, we use the two-step procedure from panel ARDL bounds testing model introduced by Pesaran *et al*. (2001): In first step, we explore the long-run relationship between the variables by using panel ARDL bounds testing approach of cointegration. Secondly, we employ a dynamic error correction model to explore the short-term relationship between the variables.

In the context of ARDL bounds testing approach, the cointegration linkages between the variables are investigated and the results point out that the process of economic growth, central bank independence and financial freedom are cointegrated with each other, in other words they will act together in the long-run. Therefore, it can be indicated that any changes in central bank dependence and financial freedom will reflect the changes upon the process of economic growth in the positive direction. Because of obtaining the cointegration nexus between the variables, long and short-term effects of central bank independence and financial freedom on economic growth are investigated and all results suggest that there is a positive and statistically significant evidence between central bank independence, financial freedom, and economic growth in both long and short-term. Besides, long-term empirical results refer that current period central bank independence and financial freedom are the important factors for determining the national output level. Therefore, it can be said that liberalising the financial markets and central banks would assure the price stability and accelerate the gross domestic product via decreasing current account imbalances, and inflation rates. The price instability problem generally arises from non-autonomous central banks and this problem brings about instability in output level. Hence, it is important to bear in mind that high independence level of central banks can give rise to raise economic performance and growth rate, at least leaves these factors in stable level.

Such a finding can clearly be indicated since the experiences of EU member countries show better economic performance with the help of more autonomous central bank and liberalised financial markets. These factors would lead to gain a competitive advantage for EU member countries in foreign markets, and hence better well-being. In addition, the results of the short-term dynamics are parallel with the long-term estimation results. Furthermore, because the error correction term is found negative and statistically significant, it can be said that the variables converge to equilibrium, and short-term imbalances will be overcomed in the long-term. In general, these results suggest that both financial freedom and monetary discipline associated with central bank independence increase the large benefits in terms of real macroeconomic performance. Therefore, the findings here suggest that it is possible for EU member countries to achive better well-being without setting a monetary rule by insulating the central bank from political control and liberalising their financial markets.

References

Akhand, H. A. 1998. Central Bank Independence and Growth: A Sensitivity Analysis. *The Canadian Journal of Economics* 31(2): 303-317.

Alesina, A. and Summers, L. H. 1993. Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence. *Journal of Money, Credit and Banking* 25(2): 151-162.

Ang, J. B. 2008. What Are the Mechanisms Linking Financial Development and Economic Growth in Malaysia. *Economic Modelling* 25(1): 38-53.

Arestis, P., Demetriades, P. O. and Luintel, K. B. 2001. Financial Development and Economic Growth: The Role of Stock Markets. *Journal of Money, Credit and Banking* 33(1): 16-41.

Arrow, K. J. 1964. The Role of Securities in the Optimal Allocation of Risk-Bearing. *The Review of Economic Studies* 31(2): 91-96.

Banaian, K. and Luksetich, W. A. 2001. Central Bank Independence, Economic Freedom, and Inflation Rates. *Economic Inquiry* 39(1): 149-161.

Bencivenga, V. R. and Smith, B. D. 1991. Financial Intermediation and Endogenous Growth. *Review of Economic Studies* 58(2): 195-209.

Chandavarkar, A. 1992. Of Finance and Development: Neglected and Unsettled Questions. *World Development* 20(1): 133-142.

Chang, T. and Caudill, S. B. 2005. Financial Development and Economic Growth: The Case of Taiwan. *Applied Economics* 37(12): 1329-1335.

Chortareas, G. E., Stasavage, D. and Sterne, G. 2001. Does It Play to be Transparent? International Evidence from Central Bank Forecasts. *Bank of England Working Paper* No: 143.

Christopoulos, D. K. and Tsionas, E. G. 2004. Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Tests. *Journal of Development Economics* 73(1): 55-74.

Coric, T. and Cvrlje, D. 2009. Central Bank Independence: The Case of Croatia. *University of Zagreb Working Paper Series* No: 09-09.

Crosby, M. 1998. Central Bank Independence and Output Variability. *Economics Letters* 60(1): 67-75.

Crowe, C. and Meade, E. E. 2007. The Evolution of Central Bank Governance Around the World. *The Journal of Economic Perspectives* 21(4): 69-90.

Cukierman, A., Kalaitzidakis, P., Summers, L. H. and Webb, S. B. 1993. Central Bank Independence, Growth, Investment, and Real Rates. *Carnegie-Rochester Conference Series on Public Policy* 39: 95-140.

De Gregorio, J. and Guidotti, P. E. 1995. Financial Development and Economic Growth. *World Development* 23(3): 433-448.

De Haan, J., Amtenbrink, F. and Eijffinger, S. C. W. 1999. Accountability of Central Banks: Aspects and Quantification. *Banca Nationale del Lavoro Quarterly Review* 209: 169-193.

De Haan, J. and Kooi, W. J. 2000. Does Central Bank Independence Really Matter? New Evidence for Developing Countries Using a New Indicator. *Journal of Banking & Finance* 24(4): 643-664.

Debreu, G. 1959. *Theory of Value: An Axiomatic Analysis of Economic Equilibrium*. USA: Yale University Press.

Demertzis, M. and Hallett, A. H. 2007. Central Bank Transparency in Theory and Practice. *Journal of Macroeconomics* 29(4): 760-789.

Demetriades, P. O. and Hussein, K. A. 1996. Does Financial Development Cause Economic Growth? Time-Series Evidence from 16 Countries. *Journal of Development Economics* 51(2): 387-411.

Diamond, D. W. and Dybvig, P. H. 1983. Bank Runs, Deposit Insurance and Liquidity. *The Journal of Political Economy* 91(3): 401-419.

Eijffinger, S. C. W., Schaling, E. and Hoeberichts, M. 1998. Central Bank Independence: A Sensitivity Analysis. *European Journal of Political Economy* 14(1): 73-88.

Eijffinger, S. C. W. and Hoeberichts, M. 2002. Central Bank Accountability and Transparency: Theory and Some Evidence. *International Finance* 5(1): 73-96.

Engle, R. F. and Granger, C. W. J. 1987. Co-Integration and Error Correction: Representation, Estimation, and Testing. *Econometrica* 55(2): 251-276.

Fischer, S. 1995. Central-Bank Independence Revisited. *The American Economic Review* 85(2): 201-206.

Friedman, M. and Schwartz, A. J. 1963. *A Monetary History of the United States*. USA: Princeton University Press.

Fry, M. J. 1978. Money and Capital or Financial Deepening in Economic Development?. *Journal of Money, Credit and Banking* 10(4): 464-475.

Fung, M. K. 2009. Financial Development and Economic Growth: Convergence or Divergence. *Journal of International Money and Finance* 28(1): 56-67.

Goldsmith, R. W. 1969. *Financial Structure and Development*. USA: Yale University Press.

Goodman, J. B. 1991. The Politics of Central Bank Independence. *Comparative Politics* 23(3): 329-349.

Grilli, V., Masciandaro, D. and Tabellini, G. 1991. Political and Monetary Institutions and Public Financial Policies in the Industrial Countries. *Economic Policy* 6(13): 341-392.

Hermes, N. and Lensink, R. 2000. Financial System Development in Transition Economies. *Journal of Banking & Finance* 24(4): 507-524.

Hermes, N. and Lensink, R. 2003. Foreign Direct Investment, Financial Development and Economic Growth. *Journal of Development Studies* 40(1): 142-163.

Ismihan, M. and Ozkan, F. G. 2004. Does Central Bank Independence Lower Inflation?. *Economics Letters* 84(3): 305-309.

Johansen, S. 1988. Statistical Analysis of Cointegration Vectors. *Journal of Economic Dynamics and Control* 12(2-3): 231-254.

Johansen, S. and Juselius, K. 1990. Maximum Likelihood Estimation and Inference on Cointegration with Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics* 52(2): 169-210.

Jordan, T. J. 1997. Disinflation Costs, Accelerating Inflation Gains, and Central Bank Independence. *Review of World Economics* 133(1): 1-21.

Jung, W. S. 1986. Financial Development and Economic Growth: International Evidence. *Economic Development and Cultural Change* 34(2): 333-346.

Kamas, L. and Joyce, J. P. 1993. Money, Income and Prices Under Fixed Exchange Rates: Evidence from Causality Tests and VARs. *Journal of Macroeconomics* 15(4): 747-768.

King, R. G. and Levine, R. 1993. Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics* 108(3): 717-737.

Klomp, J. and De Haan, J. 2009. Central Bank Independence and Financial Instability. *Journal of Financial Stability* 5(4): 321-338.

Kuznets, S. 1955. Economic Growth and Income Inequality. *The American Economic Review* 45(1): 1-28.

Loungani, P. and Sheets, N. 1997. Central Bank Independence, Inflation, and Growth in Transition Economies. *Journal of Money, Credit and Banking* 29(3): 381-399.

McKinnon, R. I. 1973. *Money & Capital in Economic Development*. USA: The Brookings Institution.

Neyapti, B. 2001. Central Bank Independence and Economic Performance in Eastern Europe. *Economic Systems* 25(4): 381-399.

Neyapti, B. 2003. Budget Deficits and Inflation: The Roles of Central Bank Independence and Financial Market Development. *Contemporary Economic Policy* 21(4): 458-475.

Ozturk, I. and Acaravci, A. 2010. The Causal Relationship Between Energy Consumption and GDP in Albania, Bulgaria, Hungary and Romania: Evidence from ARDL Bounds Testing Approach. *Applied Energy* 87(6): 1938-1943.

Pesaran, M. H., Shin, Y. and Smith, R. J. 2001. Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics* 16(3): 289-326.

Ram, R. 1999. Financial Development and Economic Growth: Additional Evidence. *Journal of Development Studies* 35(4): 164-174.

Robinson, J. 1952. *The Rate of Interest and Other Essays*. London: Macmillan.

Shaw, E. S. 1973. *Financial Deepening in Economic Development*. London: Oxford University Press.

Wray, L. R. 2007. A Post Keynesian View of Central Bank Independence, Policy Targets, and the Rules Versus Discretion Debate. *Journal of Post Keynesian Economics* 30(1): 119-141.

Yüce, G. 2013. Finansal Özgürlükler, Finansal Derinlik ve Yatırım Fonları Arasındaki İlişki: Panel Sınır Testi Yaklaşımı. *İşletme Araştırmaları Dergisi* 5(1): 152-169.

Appendix 1.

The Selection of the Optimum Lag Length

Number of the Lags (m)	SBC	Autocorrelation Test
0	5.259	0.699
1	5.250	0.567
2	**5.248**	**0.931**
3	5.316	0.678
4	5.371	0.489
5	5.440	0.517