

Examining the Role of Budget Deficit Policies in Economic Growth from A Keynesian Perspective

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Abstract

Functional fiscal policy implementation has always been a matter of debate particularly in recessed economies. This study aims to analyze the European Debt Crisis stemming from the 2008 Global Crisis within Keynesian budget deficit policies. We examined the best 5 and worst 5 countries in the Eurozone according to their debt ratios and discussed the growth rates, debt ratios and budget deficit variables of these countries. Panel ARDL model was used for the 2000Q1–2011Q4 period. The analysis results showed that conjunctural deficit policy (functional fiscal policy) had positive effect on economic growth in the short run.

Keywords: budget deficit policy, Keynesian theory, European debt crisis, panel ARDL

1. Introduction

Stability-providing fiscal policies are classified as monetary and financial. Debates over this classification focus more on the necessity or unnecessity of government intervention in economy than the efficacy of the two policy types in economic stability. In other words, debates focus either on the classical assumption that economy will attain full employment level without any government intervention or on the Keynesian approach that full employment will be established only by government intervention in case of underemployment.

Monetary policy is implemented by central bank policies on money supply regulation when used as a tool for intervention. On the other hand, governments use some instruments such as public expenditure, taxation, budget management and borrowing preference for the implementation of fiscal policy if the intervention is via fiscal policy. The classical approach rejects functional fiscal policy in fiscal policy preference and highlights the concept of balanced budget whereas the Keynesian view prefers functional fiscal policy and a conjuncture-based concept of budget, pointing to the importance of budget deficit policy to recessed economies.

The 2008 Global Crisis was a banking- and loan-oriented crisis whereas the crisis breaking out in 2010 in Europe was a debt crisis. Particularly the countries in the Eurozone implemented Keynesian budget deficit policies beyond their purposes and tried to finance budget deficits by the way of borrowing. Those efforts dragged debts into an uncontrollable level and led to a crisis.

This study aims to test the functionality of Keynesian budget deficit policy for the Eurozone. First, we will give theoretical approaches toward budget policy. Second, a literature review will be given. Third, we will examine the empirical findings. Last, we will give conclusions and an overall assessment.

2. Theoretical Debates over Budget Deficit Policy

The government's role in economic territory has always been a matter debate. Debates focus on the assumption that government intervention in economy via monetary or fiscal policy will disrupt the natural function of economic mechanism. The economic theory that attributes government intervention in economy to monetary and fiscal policies bases the intervention in monetary policy on the regulative role of central bank in money supply. However, the intervention in fiscal policy is attributed to the government's regulative role in public expenditure and taxes. Fiscal policy-makers use public expenditure and taxes as two critical instruments of fiscal policy. Thus,

policy-makers obtain authorization to use these instruments from budget. Budget implementations include some alternatives such as balanced budget, budget deficit and budget surplus and debates are over these alternatives.

In classical theory, economy will always be at full employment level with flexible prices and wages and underemployment will be an exceptional case that will attain full employment again with price mechanism (market clearing assumption). Thus, government is expected to abstain from intervening in economy via monetary or fiscal policy. However, balanced budget that means the balance between public expenditure and public revenue is preferable for intervening in economy via fiscal policy so that market order could *not* be disrupted. Classical theory regards government as unproductive and extravagant (Dileyici & Özkivrak, 2006). The primary aim of balanced budget implementation is to abstain from debts and bring public expenditure under control by reducing the government's role in economy (Kogar, 1996, p. 301). Furthermore, classicists object to budget deficit policy for the assumption that if public expenditure is financed by borrowing, interest rates will rise and private sector investments will be reduced in proportion to the increase in public expenditure (Carlson & Spencer, 1975, p. 5).

The 1929 Great Depression brought the assumptions of classical economics into question. In other words, the 1929 Great Depression refuted the assertion that economy was at full employment level that was based on 'each supply creates its own demand'. Keynes put forward alternative opinions to classical economics in his work, *General Theory of Employment, Interest and Money*, in 1936 (Aktan, 2002). Keynesian economists rejected the classicist budget deficit approach for minimizing the government's role in economy because the 1929 Depression was based on demand sufficiency and private consumption and investment expenditures were unable to meet demand deficiency (Orhan & Erdogan, 2007, p. 4). Furthermore, they suggested that government intervene in economy via public expenditure-increasing and tax-decreasing policies to boost aggregate demand (Dileyici & Özkivrak, 2006) and introduced the concept of functional fiscal policy. In budget implementations, functional fiscal policy is to compensate for demand deficiency via conjunctural budget deficit policy in recessions rather than restrictive balanced budget. Keynesian economics suggests overcoming the existing economic problems by making functional use of financial instruments such as expenditure, taxation, borrowing and budget. In this sense, financing public expenditure via taxes or nontax sources (central bank sources and borrowing) is acceptable. Functional fiscal policy supporters adopted a different approach that focused more on economic balance than financial balance. This approach was accepted in Keynesian circles and implemented in many countries, leading to destabilizing results due to constant budget deficits. Some negative results stemmed from the Keynesian assumption that the ideas in *General Theory* for escaping from the Second World War and 1929 Great Depression were perceived as generalized policies that could be implemented to any case any time (Aktan, 2002). Destabilizing effects of functional fiscal policy emerged with the 1970s stagflation crisis.

Critical monetarist views on Keynesian functional fiscal policy date back to the 1970s stagflation crisis. Simultaneous increase in inflation and unemployment (stagflation crisis), uncontrollable public expenditure rise, budget deficits and countries' exceeding rates damaged the manageability of economies severely (Greiner & Fincke, 2009, p. 2). The monetarist theory criticized Keynesian budget deficit and financing policies that were based on taxes and debts. Financing budget deficits via taxes affects private consumption and investment demand negatively whereas financing via debt increases interest rates and decreases private investments (crowding out). Allegedly, there will be no increase in output (Carlson & Spencer, 1975, p. 9; Orhan & Erdoğan, 2007, p. 255).

Neoclassical economics (rational expectations) is based on the idea that citizens will have to pay more taxes in the ensuing years for closing budget deficits and increasing savings will have no effect on real output. The idea was first introduced by David Ricardo as a part of the Ricardian Equivalence Theorem and later developed by Robert Barro (Barro, 1974, 1095).

3. Literature Review

The effects of excessive debt stock resulting from Keynesian budget deficit policy have always been popular in the economic literature. Public debt stocks in developing countries, particularly USA and Japan, have increased the interest in the relationship between budget deficit and growth after the 2008 Global Crisis and European Debt Crisis.

Reinhart and Rogoff (2010) argued that the debt stock-GDP ratio exceeding 90% would reduce economic activities and have negative effect on growth. The authors suggested the countries with excessive debt stocks, such as USA, Japan, Greece and Italy, implement austerity policies for closing the budget deficits. Checherita and Rother (2010) obtained similar results.

Reinhart et al. (2012) examined the 1800–2011 period for developed and developing economies and obtained

similar results as Reinhart and Rogoff (2010). The results showed that the debt stock-GDP ratio exceeding 90% would affect growth negatively. Furthermore, the negative relationship between debt stock and growth was accompanied by high interest rates. In other words, the study found that interest rates were low in the countries with high debt stocks and low growth rates. The outbreak of financial crises and recessions in the countries with high debts stocks has supported the argument of the study in the last 5 years. The economic recession and shrinkage due to the high debt stock of Greece and the debt crisis in the Eurozone, the long-lasting recession in Japan with 200% debt stock-GDP ratio and 90% debt stock-GDP ratio of USA by 2010 are the evidence for the aforementioned case.

Brender et al. (2013) agreed that an increase in the debt stock-GDP would have negative effect on economy and introduced the concept of the limit of public borrowing that meant the capacity of public debt service. At this point, the concepts of total debt and net debt come into prominence. The debt stock-public revenue ratio must be followed carefully just as the debt stock-GDP ratio. Greece and Italy are among the top 3 risky countries for the two ratios (Japan is at the top of the list). Such a negative case increases the bankruptcy risk for a country and doubles the cost of borrowing, leading to economic shrinkage.

Pescatori et al. (2014) referred to Reinhart and Rogoff (2010) and examined the long-run causal relationship between debt stock and growth. The results showed there was a weak causal relationship between debt and growth in the medium term and debt level would refer to the next growth process. Economic growth increases in parallel with the decrease in debt stock in countries with high but shrinking debt stocks. The study regarded average growth rate as %2,25 and the debt stock-GDP ratio as 55% in developed countries. If a country with 90% debt stock-GDP ratio and < %2 growth rate exceeds 90% ratio, the growth rate will also exceed 2%. In the study with unbalanced panel data, the starting date was different for each country and varied between 1821 and 1912 but the ending date was 2011 for all countries.

Orthodox Keynesian economics still defends the opinion that the policies to close budget deficits will decrease economic activities. Schlarek (2004) and Panizza and Presbitero (2012) found no negative relationship between debt stock and growth in developed countries. These studies showed that primary budget surplus (noninterest surplus) reduced economic activities. IMF (2010) stated policies on budget deficit shrinkage would decrease growth. Hogan (2004), another supporter of the Keynesian view, examined the effect of expansionary fiscal contraction (EFC) on economy with panel data analysis. The author used mean group estimator (MG) that enabled the dynamic use of fixed effects model developed by Pesaran and Smith (1995). The primary question of the author was "Does reducing public expenditure increase or decrease private sector expenditure?" The results showed the reductions on public expenditure had detractive effects on total economic activities since private sector expenditures failed to compensate for the decrease in public expenditure. Furthermore, the study found positive and statistically significant relationship between the increase in public expenditure and private sector expenditures. This finding supported the Keynesian view.

The trouble facing the PIIGS countries started with the 2010 Greece debt crisis that was due to excessive debt stock and became a threat to the stability and even sustainability of the Eurozone. Debates were over the underlying reasons for the debt crisis and over the precautions taken for the solution.

Caporaso and Kim (2012) argued that the PIIGS crisis was due to the erroneous adaptation of the Maastricht Criteria, capital flows, budget deficits and the difference between the competitiveness of the central and peripheral countries. Those countries were divided into two groups: Spain and Ireland and Greece, Portugal and Italy. Spain and Ireland suffered basically from a consumption-, construction- and infrastructure-based problem that was dependent on international capital flows. The problem of the other group was based on the economic troubles stemming from irregular public expenditures. Price increase was excessively high in all PIIGS countries except for Ireland. Furthermore, productivity increase was at different levels in all PIIGS countries. Germany's score of price increase was behind productivity increase and it created a disadvantageous balance of foreign trade for the PIIGS countries.

Buti and Carnot (2012) argued that the failure to establish fiscal discipline was the main reason for the economic instability of the PIIGS countries. Divergence from the Maastricht Criteria damaged the economic stability of the monetary union. The increase in budget deficit led to an increase in debt stock and became a threat to economic stability. Furthermore, the increasing debt stocks increased the risk and interest rates in those countries.

Lane (2012) stated that the divergence from fiscal discipline was the underlying reason for risk increase that led to the debt crisis in the Eurozone. The failure to establish fiscal discipline was due to the troubles in designing the institutional structure of the Eurozone. The structure led to the emergence of a debt crisis. For example, the debt stock-GDP ratio of Italy and Greece was around 90% as from 1990s and never dropped below 60% even

after they joined the monetary union. The debt stock-GDP ratio of Germany and France was around 60% in pre-crisis period. Portugal constantly increased the debt stock as from 2000. Compared to other peripheral countries, Ireland and Spain had relatively healthier structures for establishing fiscal discipline. The author remarked the main reason for the crisis in peripheral countries was the excessive credit expansion and current deficits in the 2002–2007 period. The effect of budget deficit on growth was smaller in central countries and led to a nominal increase in GDP in peripheral countries.

Broner et al. (2013) examined the relationship between the debt stock-GDP ratio and budget deficit, interest rate and growth rate for the central and peripheral countries in the Eurozone for the post-2008 period. The author determined the differences between the PIIGS countries and Germany and France and found no significant difference in debt dynamics in the crisis period. However, growth rate was the main element that led to differentiation between debt stock-GDP ratios. Thus, the PIIGS countries underwent economic shrinkage and the decreased GDPs increased the debt stock-GDP ratios. After 2010, Germany and France recovered to a certain degree and decreased the debt stock-GDP ratio whereas Greece suffered from the increasing trend for negative growth. Furthermore, the cost of the increase in the debt stock of Germany and of France was low because of low interest rates in the two countries whereas ever-increasing interest rates raised the cost of the debt stocks of the PIIGS countries. As a result, the PIIGS countries faced with increasing debt stocks and recessions after 2010. Increasing debt stocks minimized the chance of long-run borrowing for the PIIGS countries. The percentage of short-run borrowings increased in total debts. The increase in Treasury bond spreads decreased foreign tendency to buy bonds and increased the share of domestic investors in the debt stocks of the PIIGS countries. Local banks bought more bonds than any other purchasing agent. The PIIGS countries were expected to exclude private investments as a result of increasing debt stocks and high interest rates. Bank loans for private sector decreased whereas those for public sector increased remarkably after 2010. The growth rate of housing and working capital loans first stopped and later decreased in Portugal, Ireland and Spain. However, the crisis had little effect on the loans for the two sectors in Germany and France. Housing and working spreads increased in parallel with the increase in Treasury bond spreads. To sum up, the crisis created crowding out effect in the PIIGS countries.

Ghosh et al. (2013) studied on the optimum size of debt stock for governments. The author aimed to determine the circle of sustainable public debt for developed countries and introduced the optimum size of debt stock in the face of fiscal cliff between developed and the PIIGS countries in the post-2008 Financial Crisis period. The increase in unsustainable primary deficit is responsible for fiscal fatigue. Bankruptcy risk and fiscal fatigue will increase when increasing interest rates exceed growth rate. Ever-increasing Treasury bond risk premium points to potential bankruptcy. If deferment in primary budget deficit of a country follows a positively ever-increasing course, the country is assumed to have improved the budget performance in the relevant period and steered away from bankruptcy risk or weak sustainability. The study suggested that the debt stock exceeding the country's calculated debt limit would pose bankruptcy risk. Fiscal policy shocks increase primary budget deficit suddenly and rapidly and this will escalate bankruptcy risk as in Greece.

Faini et al. (2006) examined the debt stock-interest rate relationship in the Eurozone and focused on two effects of budget deficit: One was the detractive effect of budget deficit on savings that will lead to interest rate hike and crowding-out. The other was the assumption that bankruptcy risk will be escalated and the spread of financial stress will increase other countries' supports for financial markets if fiscal expansion creates a perception of unsustainable budget deficit in financial markets. These circumstances will damage other countries' budget performances and spread crowding-out. Furthermore, global interest rates will be raised and net debtor states will be affected negatively. Interest rate hike will oblige governments to boost taxes and this will affect income distribution negatively. Using the panel regression model, the study showed that 1% unit increase in budget deficit in the Eurozone would lead to 41-basis-point increase in interest rates.

Engen and Hubbard (2004) calculated the long-run effect of debt stock on interests. The authors argued that 1% increase in the debt stock-GDP ratio would lead to 2- or 3-basis-point interest rate hike –which is an unremarkable increase(1). The study regarded the aforementioned values as the basic unit of measurement for examining the effects of fiscal policy on interests. The calculations indicated that the effect of budget deficit on interests was bigger than that of debt stock and it was statistically more significant.

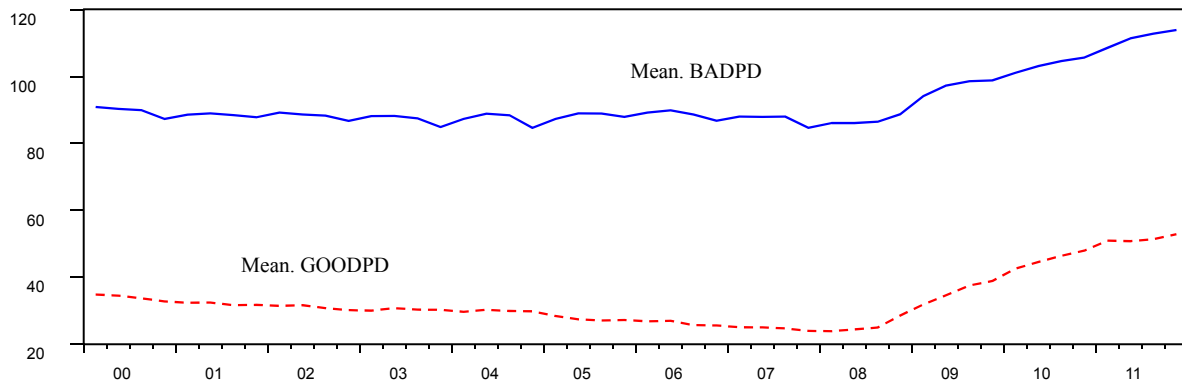
4. Data and Model

This study examined the potential effect of budget deficit policies on economic growth from a Keynesian perspective. We used the 2001Q1–2011Q4 data on the best 5 (Luxembourg, Ireland, Slovakia, Slovenia and Finland) and 5 worst countries (Austria, Belgium, Italy, Portugal and Greece) by their debt levels. The quarterly (three-month) data was collected from Eurostat databank.

We used the panel ARDL model for examining the effect of budget deficit policies on growth. The panel ARDL model is more advantageous than the cointegration analyses developed by Engle and Granger (1988) and Johansen (1995) because it can still be used even in case of different cointegration levels of variables. Furthermore, it is a reliable model in big and small samples (Pesaran et al., 1999).

The models being used in the study are defined within the ARDL (p, q_1, q_2, q_3) as follow:

$$GR_{it} = \sum_{j=1}^p \alpha_{ij} GR_{i,t-j} + \sum_{j=0}^{q_1} \delta_{ij} BD_{i,t-j} + \sum_{j=0}^{q_2} \gamma_{ij} PD_{i,t-j} + \sum_{j=0}^{q_3} \phi_{ij} PE_{i,t-j} + \mu_i + \varepsilon_{it} \quad (1)$$



When $i = 1, \dots, N$ and $t = 1, \dots, T$, GR_{it} is the growth rate of the i^{th} country at t time; BD_{it} is the budget deficit of the i^{th} country at t time; PD_{it} is the public debt of the i^{th} country at t time; and PE_{it} is the public expenditure of the i^{th} country at t time.

If there are long-run relationships among the variables in Equation 1, the ARDL (p, q_1, q_2, q_3) will be formed within the error correction model as follow:

$$\begin{aligned} \Delta GR_{it} = & \phi_i (ECT_{i,t-1}) + \sum_{j=1}^p \alpha_{ij} \Delta GR_{i,t-j} + \sum_{j=0}^p \delta_{ij} \Delta BD_{i,t-j} \\ & + \sum_{j=0}^{q_1} \gamma_{ij} \Delta PD_{i,t-j} + \sum_{j=0}^{q_2} \xi_{ij} \Delta PE_{i,t-j} + \eta_i + v_{it} \end{aligned} \quad (2)$$

In Equation 2, the $ECT_{i,t-1}$ variable shows one-term lag of the residues obtained from long-run relationship. $\phi_i = 0$ indicates there is no long-run relationship between the variables. Thus, these parameters are expected to be statistically significant and negative. The variables will converge on equilibrium value more quickly. The Pesaran panel ARDL model (1999) deals with three estimators: Mean group estimator (MG), pooled mean group estimator (PMG) and dynamic fixed effect estimator. MG imposes no restrictions on the parameters of ARDL specification and derives long-run parameters from the average of long-run parameters obtained from the ARDL estimators. The basic drawback of MG is to hinder the uniformity of certain parameters among panel-forming units. PGM is used for removing the drawback. PMG imposes the condition that long-run parameters be same for all panel-forming countries and it allows constant term, error variances and short-run parameters to vary by countries. In the panel ARDL model, PGM allows for short-run heterogeneity with regard to long-run homogeneity. However, the decision between the two alternative estimators is a common modelling problem. Pesaran et al. (1999) suggested using the Hausman (1978) test for testing the homogeneity of long-run parameters (Erdem et al., 2010, pp. 375-76; Güler & Özyurt, 2011, p. 15). In other words, the Hausman test is used for determining the validity of EM, PGM or DFE.

Figure 1 and 2 show the average changes in public debt and public expenditure.

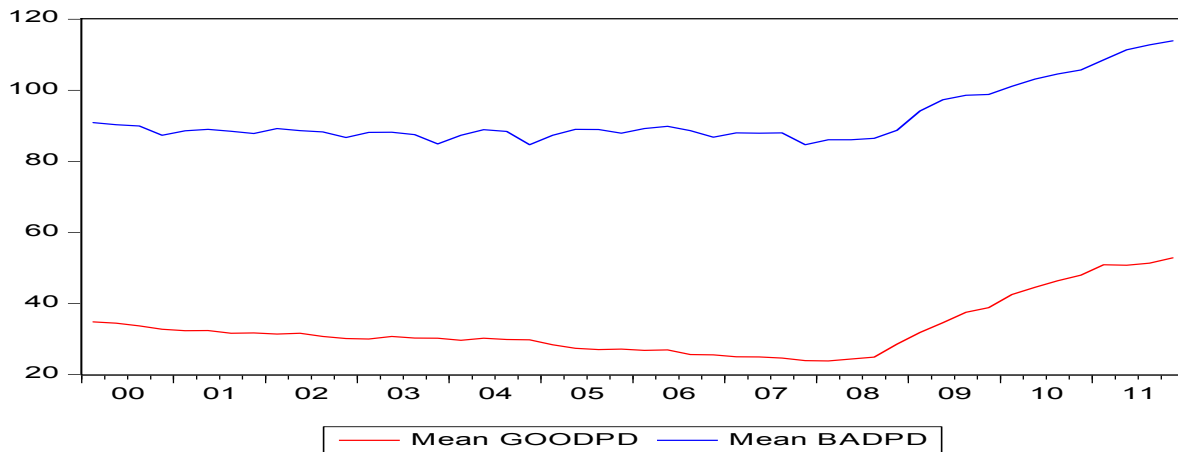


Figure 1. Averages of public debt-GDP for the best 5 (GOODPD) and worst 5 (BADPD) countries

For the best 5 countries (Luxembourg, Ireland, Slovakia, Slovenia and Finland) with the lowest public debts, public debt dropped down to 24% before the 2008 Global Crisis and underwent a remarkable structural change in the post-2008 period, attaining 50s%. For the worst 5 countries (Austria, Belgium, Italy, Portugal and Greece) with the highest debts, it was still above 90s% even before the 2008 Crisis and exceeded 100% in the post-crisis period. Thus, Figure 1 shows explicitly that the sustainability of public debt is considerably difficult for the worst 5 countries. These countries have suffered severely from the effects of the crisis since they are included in the Eurozone. The two group of countries adopted similar attitudes in the post-2008 period despite the level gap. This result indicates that there may be cointegration between the two groups since they are included in the Eurozone.

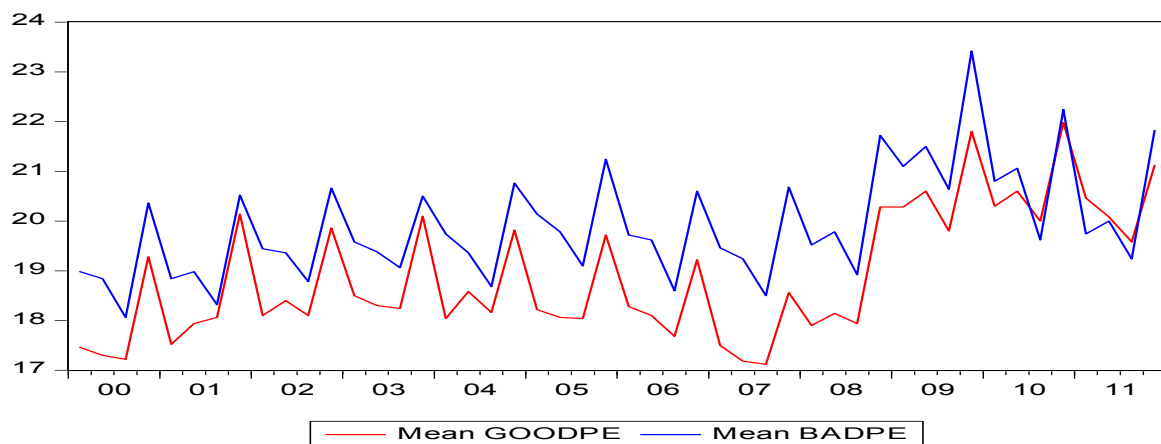


Figure 2. Averages of public expenditure-GDP for the best 5 (GOODPD) and worst 5 (BADPE) countries

As is seen in Figure 2, the public expenditure averages of the worst 5 countries exceeded those of the best 5 countries. Furthermore, public expenditures of the two groups of countries increased in the post-2008 period and the increase in public expenditure of the best 5 countries was more significant. Figure 2 shows the 2008 Global Crisis had remarkable effect on public expenditures.

5. Empirical Results

Panel unit root tests were conducted for determining the stationarity of the variables. Table 1 shows Panel A for the unit root results of the best 5 countries (Top 5) with the lowest debt rates and Panel B for the worst 5 countries (Bottom 5) with the highest debt rates.

Table 1. Panel unit root tests

	Growth Rate (GR)	Budged Deficits (BD)	Public Debt (PD)	Public Expenditures (PE)
Panel A: Top 5 Countries				
Breitung	-1.300*	-2.189**	5.261 (-7.21***)	-2.202**
Im, Pesaran, Shin	-2.365***	-1.124 (-6.73***)	1.768 (-10.7***)	-1.353*
ADF Choi Z	-2.35***	-0.933 (-5.71***)	1.739 (-8.71***)	-1.237 (-5.35***)
PP Choi Z	-12.19***	-6.052***	3.521 (-9.77***)	-3.640***
Panel B: Bottom 5 Countries				
Breitung	-0.433 (-2.61***)	-2.293**	4.868 (-1.753**)	-1.041 (-3.59***)
Im, Pesaran, Shin	-3.229***	-5.552***	4.976 (-4.13***)	-2.129**
ADF Choi Z	-3.218***	-4.613***	4.338 (-3.96***)	-2.089**
PP Choi Z	-10.16***	-11.03***	3.846 (-10.6***)	-9.352***

Note. Values in brackets show the first-degree difference of the relevant variable. Panel unit root tests were applied to the model with constant ***, ** and * show 1%, 5% and 10% significance level, respectively.

Table 1 shows panel unit roots tests obtained different results. Some of the variables were stationary whereas others were first-degree integrated I(1). Thus, for determining the presence of long-run relationships among the variables, it is unadvisable to use such cointegration techniques as Kao (1999) and/or Pedroni (2004) that suggest variables be integrated to the same degree. The most proper method is the panel ARDL developed by Pesaran et al. (1999).

Table 2 shows the panel ARDL estimation results for Equation 2.

Table 2. Estimation results for Eq. (2)

	Panel A: Top 5 Countries			Panel B: Bottom 5 Countries		
	PMG	MG	DFE	PMG	MG	DFE
Long-run Effects						
$BD_{i,t}$	0.0392 (0.0413)	0.2427** (0.0967)	0.0870 (0.0675)	0.0326 (0.0434)	-0.0159 (0.0703)	-0.1592* (0.0827)
$PD_{i,t}$	0.0159 (0.0140)	0.1669* (0.0893)	0.0671** (0.0260)	-0.0147 (0.0096)	0.1061 (0.0935)	-0.0084 (0.0179)
$PE_{i,t-4}$	0.0978 (0.1067)	-0.4595 (0.6056)	-0.5290*** (0.1760)	-0.0282 (0.0859)	-0.7172* (0.3956)	-0.664*** (0.1911)
Short-run Effects						
$ECT_{i,t-1}$	-1.6390*** (0.1099)	-1.654*** (0.1309)	-1.4670*** (0.0603)	-1.292*** (0.1487)	-1.365*** (0.1417)	-1.305*** (0.0578)
$\Delta BD_{i,t-1}$	0.1853 (0.2839)	0.0272 (0.2885)	-0.0863 (0.0718)	0.2983*** (0.1121)	0.2348** (0.1151)	0.3896*** (0.0684)
$\Delta PD_{i,t-1}$	-0.4025** (0.1742)	-0.5182** (0.2087)	-0.3167** (0.1604)	-0.2921* (0.1567)	-0.3649** (0.1532)	-0.316*** (0.1061)
$\Delta PE_{i,t-4}$	-0.2304 (0.4616)	0.3743 (0.6605)	1.0084*** (0.1962)	0.1422 (0.7069)	0.7740* (0.4344)	0.8085*** (0.1677)
Constant	-2.1916*** (0.5879)	2.0618 (13.6525)	12.9198*** (4.5869)	3.2361*** (0.5460)	6.4417 (4.9773)	18.0448*** (4.6691)
Hausman ⁽²⁾ PMG		-	-	PMG	-	-

Note. We used the akaike info criterion to find optimal lag length. In addition, we were used the seasonal lag for public expenditure variable. Values in brackets show standard error for the relevant parameter. ***, ** and * show 1%, 5% and 10% significance level, respectively.

Table 2 shows the estimations for unrestricted MG, mutual long-run efficient PGM and DFE assuming that all trend and error variances are equal for the two groups of countries. The estimated models obtained similar results for the three methods. However, determination of the most proper method to be used is very important. The Hausman (1978) test can be used for the homogeneity of parameters (Pesaran et al., 1999, p. 627). The tests showed the PGM estimator was valid for the two panels.

In the PGM model, the short-run coefficients show that the parameters for the effect of budget deficit on economic growth were positive as expected. However, the parameter was statistically insignificant in Panel A but significant at 1% in Panel B. Thus, the increase in budget deficit would have positive effect on economic growth in Panel B only. From a Keynesian perspective, the countries in Panel B used budget deficit as an instrument for increasing economic growth.

In the PGM model, we obtained similar results for the short-run parameters for Panel A and B. There was a negative 10% significant relationship between public debt and growth. The result shows an increase in public debt will reduce economic growth. Contrary to the various results in the literature, Reinhart and Rogoff (2010), Checherita and Rother (2010), and Panizza and Presbitero (2012) have indicated that high public debt affects economic growth negatively. The estimation results obtained in this study accord with the literature.

We obtained different results for the public expenditure parameter for Panel A and B. The parameter was negative and insignificant for Panel A but positive and insignificant for Panel B. In the literature, there was no consensus on the relationship between public expenditure and economic growth. However, we found the public expenditure parameter was insignificant for the two panels. Error correction terms were negative and statistically significant in all models. However, the parameter values showed all error correction terms were <1 . Furthermore, the relationship signs of the estimated short-run parameters were contrary to our expectations and most of the parameters were statistically insignificant. The result showed there was no long-run relationship between the relevant variables. Thus, we concluded budget deficit policies would have no effect on economic growth in the long run.

6. Conclusion

Using the 2000Q1–2011Q1 data, we examined the potential validity or invalidity of budget deficit policies for the best 5 (Panel A) and worst 5 countries (Panel B) in the Eurozone within the panel ARDL model from a Keynesian perspective. There is short-run negative relationship between public debt and economic growth for the two groups of countries. In other words, an increase in public debt will reduce economic growth. We obtained different results for the relationship between public expenditure and economic growth for the two groups. The parameter was negative in Panel A and positive in Panel B but statistically insignificant in the two groups.

The effect of budget deficit on economic growth was positive and significant in Panel B and insignificant in Panel A in the short run. The results indicated that the countries in Panel B only adopted Keynesian budget deficit policies for supporting economic growth in the short run. The long-run estimation results showed budget deficit policies had no effect on economic growth in Panel A and B.

References

- Aktan, C. C. (2002). Lord Keynes, Keynesyenler ve Fonksiyonistler. *Yeni Türkiye Dergisi*, 2002/1. Retrieved from http://Www.Canaktan.Org/Ekonomi/Kamu_Maliyesi/Maliye-İflas/Lord-Keynes.Htm
- Barışık, S. & Kesikoğlu, F. (2006). Türkiye'de Bütçe Açıklarının Temel Makro Ekonomik Değişkenler Üzerine Etkisi (1987-2003) VAR, Etki-Tepki Analizi, Varyans Ayrıştırması. *Ankara Üniversitesi SBF Dergisi*, 61(4), 59–82.
- Barro, R. J. (1974). Are Government Bonds Net Wealth? *Journal of Political Economy*, 82(6), 1095–1117. <http://dx.doi.org/10.1086/260266>
- Brender, A., Pisani, F., & Ganga, E. (2013). *The Sovereign Debt Crisis Placing A Curb On Growth*. Centre For European Policy Studies (Ceps), Update Edition.
- Broner, F., Erce, A., Martin, A., & Ventura, J. (2013). *Sovereign Debt Markets In Turbulent Times: Creditor Discrimination And Crowding-Out*. IMF Working Paper, No. 13/270, International Monetary Fund.
- Buti, M., & Carnot, N. (2012). The Emu Debt Crisis: Early Lessons and Reforms. *Journal of Common Market Studies*, 50(6), 899–911. <http://dx.doi.org/10.1111/j.1468-5965.2012.02288.x>
- Caporaso, J. A., & Min-Hyung, K. (2012). The Maastricht Treaty At Twenty: A Greco-European Tragedy? *Journal of European Integration*, 34(7), 769–789. <http://dx.doi.org/10.1080/07036337.2012.726014>

- Carlson, K. M., & Spencer, R. W. (1975). *Crowding Out and Its Critics*. Federal Reserve Bank Of St. Louis. Retrieved from http://Research.Stlouisfed.OrgPublications/Review/75/12/Crowding_Dec1975.Pdf
- Checherita, C., & Rother, P. (2010). *The Impact of High and Growing Government Debt on Economic Growth: An Empirical Investigation For The Euro Area*. European Central Bank Working Paper, No. 1237.
- Dileyici, D., & Özkıvrak, Ö. (2006). Bütçe Anlayışındaki Değişim Süreci: Denk Bütçe İlkesinin Erozyonu ve Açık Bütçe Politikası. *Hukuk ve İktisat Araştırmaları Dergisi*, 2(1), 33–55.
- Engen, E., & Hubbard, G. (2004). *Federal Government Debts And Interest Rates*. NBER Working Paper, No. 10681, NBER, Cambridge.
- Erdem, E., Güloğlu, B., & Nazlıoğlu, Ş. (2010). The Macroeconomy And Turkish Agricultural Trade Balance With The EU Countries: Panel ARDL Analysis. *International Journal of Economic Perspectives*, 4(1), 371–379.
- Faini, R., Duranton, G., & Harald, H. (2006). Fiscal Policy and Interest Rates in Europe. *Economic Policy*, 21(47), 443–489. <http://dx.doi.org/10.1111/j.1468-0327.2006.00163.x>
- Ghosh, A. R., Kim, J. I., Mendoza, E. G., Ostry, J. D., & Qureshi, M. S. (2013). Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies. *The Economic Journal*, 123, 4–30. <http://dx.doi.org/10.1111/eoj.12010>
- Greiner, A., & Fincke, B. (2009). *Public Debt and Economic Growth*. Springer-Verlag Berlin Heidelberg. <http://dx.doi.org/10.1007/978-3-642-01745-2>
- Güler, A., & Özyurt, H. (2011). Merkez Bankası Bağımsızlığı ve Reel Ekonomik Performans: Panel ARDL Analizi. *Ekonomi Bilimleri Dergisi*, 3(2), 11–20.
- Güngör, K. (1999). Kamu Harcamaları Bütçe Açıkları İlişkisi. *Afyon Kocatepe Üniversitesi İİBF Dergisi*, 1(2), 1–18.
- Hausman, J. A. (1978). Specification Tests in Econometrics. *Econometrica*, 46, 1251–1271. <http://dx.doi.org/10.2307/1913827>
- Hogan, V. (2004). Fiscal Contractions? Evidence From Panel Data. *The Scandinavian Journal of Economics*, 106(4), 647–659. <http://dx.doi.org/10.1111/j.0347-0520.2004.00381.x>
- IMF. (2010). *World Economic Outlook*. Washington, Dc: International Monetary Fund.
- Kao, C. (1999). Spurious Regression & Residual-Based Tests For Cointegration İn Panel Data. *Journal of Econometrics*, 90, 1–44. [http://dx.doi.org/10.1016/S0304-4076\(98\)00023-2](http://dx.doi.org/10.1016/S0304-4076(98)00023-2)
- Koçar, Ç. İ. (1996). *Denk Bütçe Teorisi ve Uygulanabilirliği Üzerine Bir Not*. Türkiye Cumhuriyet Merkez Bankası (Tcmb) Tartışma Tebliği No: 9630, 299–308
- Lane, P. R. (2012). The European Sovereign Debt Crisis. *The Journal of Economic Perspectives*, 26(3), 49–67. <http://dx.doi.org/10.1257/jep.26.3.49>
- Orhan, O. Z., & Erdoğan, S. (2007). *Para Politikası*. Yazıt Yayınları, Ankara.
- Panizza, U., & Presbitero, A. F. (2012). *Public Debt And Economic Growth: Is There A Causal Effect?* Institute of Public Policy and Public Choice Working Paper, No. 168.
- Paseran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled Mean Group Estimation of Dynamic Heterogeneous Panels. *Journal of The American Statistical Association*, 94(446), 621–634. <http://dx.doi.org/10.1080/01621459.1999.10474156>
- Pedroni, P. (2004). Panel Cointegration; Asymptotic And Finite Sample Properties of Pooled Time Series Tests with An Application To The PPP Hypothesis. *Econometric Theory*, 20, 597–625. <http://dx.doi.org/10.1017/S0266466604203073>
- Pescatori, A., Sandri, D., & Simon, J. (2014). *Debt and Growth: Is There A Magic Threshold?* IMF Working Paper, No. 14/34.
- Reinhart, C. M., & Rogoff, K. S. (2010). Growth in A Time of Debt. *American Economic Review*, 100(2), 573–78. <http://dx.doi.org/10.1257/aer.100.2.573>
- Reinhart, C. M., Reinhart, V. R., & Rogoff, K. S. (2012). Public Debt Overhangs: Advanced Economy Episodes Since 1800. *Journal of Economic Perspectives*, 26(3), 69–86. <http://dx.doi.org/10.1257/jep.26.3.69>
- Schclarek, A. (2004). *Debt and Economic Growth in Developing and Industrial Countries*. Lund University

Department of Economics Working Paper, No. 2005/34.

Notes

Note 1. 100-basis-point increase equals to 1% interest rate hike. Thus, 2- or 3-basis-point increase equals to 0, 02% increase in interests.

Note 2. We can share the results on demand.

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