

THE IMPACT OF BUDGET DEFICIT ON ECONOMIC GROWTH IN NORTH CYPRUS

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Abstract

Budget deficit or budget surplus is one of the most important macroeconomic factor that has an impact on economic growth (Fischer, 1993). Budget deficit or surplus is a result of fiscal policy of a government. As Fischer (1993) indicated it is not easy to use budget deficit as a representative of fiscal policy or to estimate the impact of fiscal policy effect by using only budget deficit. However, it is one of the most reliable and measurable indicator which has an impact on economic growth. On the other hand budget deficit has an impact on all the macroeconomic variables and at the same time macroeconomic indicators affects budget deficit or budget balance (Risti et. al., 2013). It is indicated by many studies that there is a relation between budget deficit and economic growth; however the impact of budget deficit on growth is directly related according to the source of budget deficit (Kneller et. al., 1999). Mainly increase at productive spending and non-productive spending will result with budget deficit but would have different impact on economic growth.

Economic instability has become one of the biggest structural problems of North Cyprus. However budget deficit has to be considered as a main problem for the economy. The source of the budget deficit could be explained either with inability of collecting taxes or high government spending or both of them. But it does not matter what would be the answer the problem is common for each case: the result is budget deficit. For North Cyprus this could be explained with being a developing country. As Brender (2008) explained in his study developing countries vote for expansionary fiscal policy, however developed countries vote for low inflation. But high government spending or budget deficit does not always result with negative impact on the economy. If the budget expenditure is too high and if the government use it for productive purposes and not for political interest then the budget deficit could result with economic growth (Gupta et. al., 2005). There is no study which analyzes the reasons of budget deficit or estimates the impact of budget deficit on economic growth or their causal relationships for North Cyprus. There are always political discussions and few academic discussions for the solutions to budget deficit problem in North Cyprus. It is not easy for a country to minimize its budget deficit with a small economy which suffers from isolations and disadvantages in competition like North Cyprus.

This study will use time series secondary data for 28 years (1983-2010). After 2010 the source of data has changed and for the reliability of the study and consistency of the results we prefer not to include 2011-2013. The causal relationship of budget deficit and economic growth in the long run is tested by Granger Causality test and with other econometric methods such as; Dickey Fuller and Augmented Dikey Fuller unit root tests. Autoregressive Distributed Lag approach is also used to estimate the relation between all other variables. While selecting the method we reviewed the literature and summarized it under a table to see the methods and findings. Most of them used panel data for a group of country and some of them analyzed only a country with similar econometric methods. Because North Cyprus has different characteristics then other countries we preferred to analyze individually by using appropriate econometric methods used by other studies.

Keywords: Budget deficit, economic growth, causality, productive expenditure, non-productive expenditure.

Introduction

Economic instability has become common structural problem for many developing countries. However budget deficit has to be considered as a main problem for the economy. The source of the budget deficit could be explained either with inability of collecting taxes or high government spending or both of them. But it does not matter what would be the answer the problem is common for each case: the result is budget deficit. In the case of North Cyprus this could be explained with being a developing country. As Brender (2008) explained in his study developing countries vote for expansionary fiscal policy, however developed countries vote for low inflation. But high government spending or budget deficit does not always result with negative impact on the economy. If the budget expenditure is too high and if the government use it for productive purposes and not for political interest then the budget deficit could result with economic growth (Gupta *et. al.*, 2005). There is no study which analyzes the reasons of budget deficit or estimates the impact of budget deficit on economic growth or their causal relationships for North Cyprus. There are always political discussions and limited academic discussions on solutions to budget deficit problem in North Cyprus. It is not easy for a country to minimize its budget deficit with a small economy which suffers from isolations and disadvantages in competition like North Cyprus.

As a common structure of developing countries North Cyprus is suffering from capital which is essential for investment and this makes the country dependent to the external sources. Developing countries tries to make investment environment attractive for the foreign investors however NC is not attractive for foreign investors because of Cyprus problem. The only country that recognized NC is Turkey and Turkey has two important financial contributions which has an impact on economic growth through investment. The first one is foreign aid which has a share of 5.4 % of GDP in 2010. In recent years foreign aid goes for the infrastructure investment and it has a positive impact on the economy. The second one is loans from Turkey for the budget deficit. The share of budget deficit as a percent of GDP in 2010 was 10% and 9.7 % of it financed by Turkey (SPO, 2012). The study aims to analyze the impact of the budget deficit on economic growth by differentiating productive and non-productive investment. This is one of the main goal of this study. The study will try to analyze and find out if productive expenditure (investment) has positive impact on economic growth of North Cyprus as most of the literature find out. And will try to find out the causal relation between nonproductive spending (personnel payments) and compare it with the related literature.

Figure 1 shows the economic growth rate and budget deficit rates as a percent of GNP of NC between 1983-2010. As it is clear from the figure the growth of NC economy can be summarized with instable path. Between 1983-2010 North Cyprus budget expenditures has been always higher then budget revenues. But GNP growth rates are more instable during the same period.

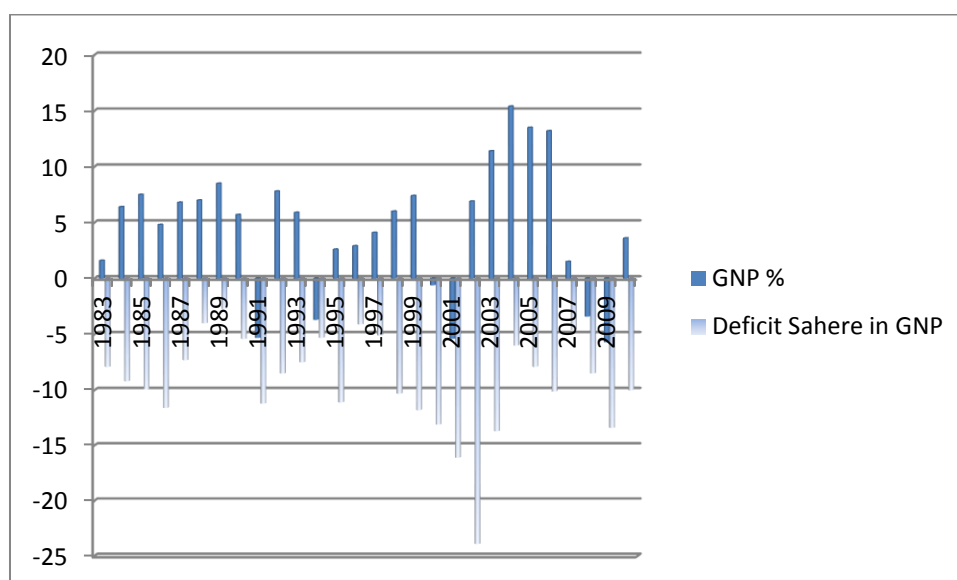


Figure 1: GNP growth rate and budget deficit share in GNP between 1983-2010

Figure 2 shows us the independent variables between 1983-2010. As it is clear from the figure non-productive spending (personnel payments) has an important share on the budget expenditures of North Cyprus.

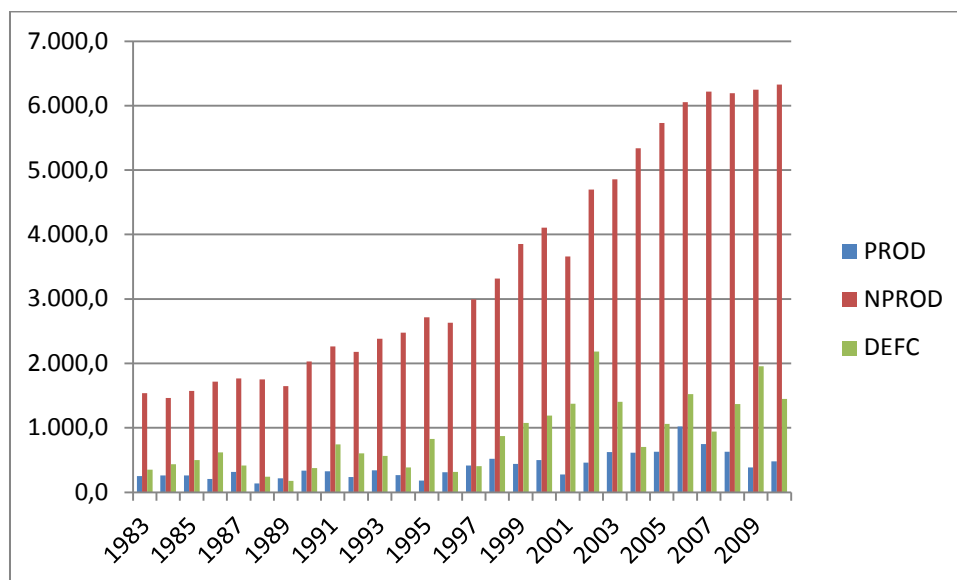


Figure 2: Productive, Nonproductive spending and budget deficits between 1983-2010

Literature Review

Budget deficit or budget surplus is one of the most important macroeconomic factor that has an impact on economic growth (Fischer, 1993). But it is possible to say that budget deficit or surplus is a result of fiscal policy instrument of a government. As Fischer (1993) indicated that, it is not easy to use budget deficit as a representative of fiscal policy or to estimate the impact of fiscal policy effect by using only budget deficit. It is one of the most reliable and effective indicator which has an impact on economic growth. On the other hand budget deficit has an impact on all the macroeconomic variables and at the same time macroeconomic indicators have an effect on budget deficit or budget balance (Risti *et. al.*, 2013). It is indicated by many studies that there is a relation between budget deficit and economic growth; however the impact of budget deficit on growth is directly related according to the source of budget deficit (Kneller *et. al.*, 1999). Mainly increase at productive spending and non-productive spending which could result with budget deficit would have different impact on economic growth.

There are lots of studies which analyzes the relationship between budget deficit and economic growth by using different methods. The theoretical roots of the macroeconomic perspective are based on two controversial approaches which explain the relation between budget deficit and economic growth. The neo-classical approach supports the idea that there is a negative relationship and Keynesian theory claimed that there is a positive relationship between budget deficit and economic growth (Rahman, 2012). The two main perspectives are reflecting different opinions as they have different theoretical background. The theory introduced by David Ricardo that is known Ricardian Equivalence. According to Ricardo budget deficits would not increase aggregate demand therefore in the short the relation between budget deficit and economic growth will be neutral (Bittante, 2013). These theories tested with various studies for different countries by using empirical methods. However it is not difficult to say that many studies conclude with support to neo-classical approach. It is not possible to include every single study in detail but after explaining the leading studies we tried to summarize all the relevant studies according to their method, theory hypothesis and findings.

Starting from literature that concluded with support to neo-classical theory Adam and Bevan (2005) found out that 1.5% decrease at budget deficit as a percent of GDP will have positive impact on economic growth. This reverse causal relationship was also supported by Fischer (1993). Fisher in his cross sectional growth regression found out that there is a negative relation between inflation, budget deficit and economic growth.

In his study Fischer (1991), used Levine-Renelt growth model to analyze the impact of macroeconomic variables on economic growth and he found out that budget deficit is negatively associated with per capita growth. Easterly and Rebelo (1993) in their cross-sectional panel data analysis specified the productive spending with spending on transport and communication.

The same study also found out that budget surplus is correlated with growth and they connected this with high budget deficits will have negative impact on economic growth. Similar to Fisher (1993) this study explained the negative relation of budget deficit and economic growth with budget deficits will result with instable macro economy.

Adak (2010), analyzed the impact of budget deficit on economic growth for Turkey by using different models including stationary and non-stationary and he applied regression technique and he found that budget deficit has negative impact on economic growth. However he did not find significant result for the long run relationship or in other words budget deficit in current year does not affect economic growth of the following years.

Keynesian theory tested by several academic studies. The study on low-income countries conducted by Gupta et al (2005) resulted with positive impact of budget deficit on economic growth both on the short run and on the long run. They also estimated the impact of productive and non-productive budget expenditure on economic growth. They found out that countries which have a budget deficit but they spent public expenditure to non-productive expenditures have very limited economic growth but countries with higher public expenditure for productive expenditure have higher economic growth rate. In both cases they found out that an acceptable budget deficit will result with a positive causal relationship. Bose et al (2007) conducted a panel data for 30 developing countries and they found out that if the budget deficit is a result of productive spending then the budget deficit will have positive impact on economic growth. Odhiambo et al. (2013) found out that there is a positive relationship between budget deficit and economic growth by using causality techniques.

A variety of studies on the same issue concluded with no significant relation between budget deficit and economic growth. Velnampy and Achchuthan (2013) analyzed the impact of fiscal deficit on economic growth for Sri Lanka and they found no significant relation. Rahman (2012) found out that there is no relation between economic growth and budget deficit in the long run, however they found out that there is a positive relation between increase at productive budget expenditure and economic growth.

Kneller *et al* (1999) found out that there are various impacts of budget deficit on economic growth due to the source of budget deficit. If budget deficit is a result of minimization of distortionary taxes or increase at productive public expenditure economic growth will be positively affected. But if the deficit is because of non-productive public expenditure, the economic growth will be affected negatively.

Table 1: Summary of Literature on Budget Deficit and Economic Growth

Author/date	Macro-economic approach	Method	Findings
Fischer, S. (1993)	Neo-classical	Cross sectional and panel regression - causality	Inflation and budget deficit reduces economic growth by reducing investment and productivity growth. Macroeconomic policy causes economic growth.
Fischer, S. (1991)	Neo-classical	Levine-Renelt growth model	Conclusion: budget deficit is negatively associated with per capita growth
Easterly and Rebelo (1993)	Neo-classical	Cross sectional and panel data	High budget deficit will have negative impact on growth and budget surplus will promote economic growth.
Adam and Bevan (2005)	Neo-classical	Cross country OLG-growth model	1.5% decrease at budget deficit as a percent of GDP will have positive impact on economic growth.
Rahman, N. A. (2012)	Recardian Equivalence	ARDL model	Economic growth has no long-run nexus with budget deficit, but positively related to productive expenditures in Malaysia.
Adak M. (2010)	Neo-classical & Ricardian Equivalence	Regression	In the short run budget deficit has negative impact on growth but in the long run the relation is neutral.
Gupta <i>et al</i> (2005)	Keynesian	Low income countries a panel data cross country	Both in the short run and in the long run positive relationship between budget deficit and economic growth. Both productive and nonproductive spending have a positive impact.
Odhiambo <i>et al</i> (2013)	Keynesian	Causality	positive relationship between budget deficit and economic growth
Bose <i>et al</i> (2007)	Keynesian	Panel data	If the budget deficit is because of productive spending its impact on growth is positive.

This study did not differentiate the economic development levels of a country to see the differences between countries. However in the literature studies which applied cross-country analysis found out that there is a difference between developing and developed countries. Developing countries vote for expansionary fiscal policies which distorts the economic output and results with nonproductive spending of governments. However developing countries vote for lower inflation which means stability (Brender, 2008).

Methodology

In this study our main aim is to see the impact of budget deficit on economic growth in North Cyprus. As it is explained before the economic realities makes the role of government expenditure crucial in development for North Cyprus. Because of isolations economic expectations for investors are not attractive and government has a key role on investment. Based on Keynesian theory we prefer to support the idea that North Cyprus growth policy is related with productive spending of government which means the government uses budget spending for economic growth purposes and this could result with budget deficit. But we have to make it clear that Keynes promoted this theory for developed countries to overcome economic crisis. As a developing country budget deficit in North Cyprus could not result with economic growth. However as a limited capital government has a role of supporting or doing investment in the economy. This study will try to test the hypothesis that government budget deficit has a positive impact on economic growth in the long run.

North Cyprus budget deficit, productive expenditures and non-productive expenditures are taken as an independent variables and economic growth is the dependent variables of the study. We used investment as a productive expenditure and personnel payments as a non-productive expenditure.

The employed annual time series secondary data covers the period of 1983-2010 (28 years). The study will use causality analysis to understand the relationship between budget deficits on economic growth. Be able to estimate causality of the variables we have to use stationary data. The analysis has started with the unit root stationarity tests. Unit Root Tests are the most known methods which includes variety of methods. In this study we tested the stationarity with ADF (Augmented Dickey- Fuller) and PP (Phillips Perron) tests. We applied co-integration test to see if the variables are co-integrated which is essential for the causality test. For co-integration the study used ARDL (Autoregressive Distributed Lag) approach introduced by Pesaran *et al.* (2001). F test results are important to test the hypothesis and if the F-test results of the model falls between the critical values according to 1%, 5% and 10% critical values then we reject the null hypothesis which means there is co-integration. After testing the co-integration between variables we employed Granger Causality Test for the variables with co-integration to see if there is a causal relationship between budget deficit and economic growth. If variables are co-integrated there is a co-integration at least in one direction

$$\Delta Y_t = \alpha_0 + \Sigma \beta_1 \Delta \text{DEFC}_{t-1} + \Sigma \beta_2 \Delta \text{PROD}_{t-1} + \Sigma \beta_3 \Delta \text{NPROD}_{t-1} + \delta_1 Y_{t-1} + \delta_2 \text{DEFC}_{t-1} + \delta_3 \text{PROD}_{t-1} + \delta_4 \text{NPROD}_{t-1} + \mu_t$$

Y = GNP (we used gross national product as economic output)

DEFC = Budget Deficit

PROD = Productive spending

NPROD = Non-productive spending

Findings of the Study

In this study we tested the stationarity with ADF (Augmented Dickey- Fuller) (Dickey and Fuller, 1981) and PP (Phillips Perron) unit root tests. H_0 : There is a unit root H_1 : there is no unit root We tested the hypothesis for the all variables and we found out that all the variables are non-stationary at levels. This shows that there is need of taking the first difference of the variables and by taking the first difference we obtained a stationarity for all the variables. After taking the difference we rejected null hypothesis and we accepted the alternative hypothesis; there is no unit root and variables are stationary.

Table 2: ADF and PP Tests for Unit Root

Statistics (Level)	ln y	Lag	ln PROD	Lag	ln NPROD	Lag	ln DEFC	lag
τ_T (ADF)	-3.03	(1)	-3.77**	(0)	-2.89	(0)	-3.63**	(3)
τ_u (ADF)	-0.84	(1)	-2.17	(0)	-0.95	(0)	-1.94	(0)
τ (ADF)	2.25	(3)	-0.17	(0)	3.75	(0)	0.39	(0)
τ_T (PP)	-2.15	(2)	-3.73**	(2)	-2.63	(6)	-3.24***	(3)
τ_u (PP)	-0.86	(1)	-2.06	(1)	-1.47	(10)	-1.83	(4)
τ (PP)	3.37	(1)	0.76	(12)	4.30	(9)	1.86	(26)
Statistics	$\Delta \ln y$	Lag	$\Delta \ln P$	Lag	$\Delta \ln NP$	Lag	$\Delta \ln def$	lag

(First Difference)								
τ_T (ADF)	-6.70*	(3)	-6.34*	(3)	-6.34*	(0)	-5.39*	(0)
τ_μ (ADF)	-3.44**	(3)	-6.84*	(0)	-6.43*	(0)	-5.5*	(0)
τ (ADF)	-2.44**	(0)	-6.95*	(0)	-4.29*	(0)	-5.55*	(0)
τ_T (PP)	-3.15	(2)	-8.87*	(6)	-7.04*	(6)	-9.68*	(17)
τ_μ (PP)	-3.2**	(2)	-9.15*	(6)	-7.24*	(6)	-9.64*	(16)
τ (PP)	-2.4**	(2)	-8.68*	(6)	-4.30*	(2)	-6.60*	(13)

Note: τ_T represents the most general model with a drift and trend; τ_μ is the model with a drift and without trend; τ is the most restricted model without a drift and trend. Numbers in brackets are lag lengths used in ADF test to remove serial correlation in the residuals. When using PP test, numbers in brackets represent Newey-West Bandwidth (as determined by Bartlett-Kernel). Both in ADF and PP tests, unit root tests were performed from the most general to the least specific model by eliminating trend and intercept across the models (See Enders, 1995: 254-255). * and ** denote rejection of the null hypothesis at the 1% and 10% levels respectively. Tests for unit roots have been carried out in E-VIEWS 5.1.

Co-Integration test results

The study applied Bounds co-integration test to see if the variables are co-integrated or not. If there is no co-integration between variables there is no need to go further and apply a causality test. H_0 there is no co-integration and H_1 there is co-integration. We tested the relation of the variables by using Autoregressive Distributed Lag (ARDL) approach. We tested all the series as it is summarized at table 3 and we concluded with the rejection of the null hypothesis for all variables. It means that there is co-integration between all the variables. The Akaike Information Criteria (AIC) used for lag selection and maximum lag taken as 3 for the long run relationship. We used F-test to decide if the results are significant and shows relationship between variables. We used F-test to see if F statistics is higher than the upper critical values. According to Table 3 we rejected null hypothesis for all series. It is proven that there is a long run relationship between all variables.

Table 3: Bounds Test for Co-integration

Variables	With Deterministic Trends F_{IV}	Conclusion
(1) y and deficit		H_0
F_Y (Y / DEFC)	3.04 ^b	Rejected
F_{DEFC} (DEFC / Y)	4.36 ^c	Rejected
(2) Y and PROD		
F_Y (Y/PROD)	3.74 ^b	Rejected
F_{PROD} (PROD / Y)	7.17 ^c	Rejected
(3) Y and NPROD		
F_Y (Y / NPROD)	3.69 ^b	Rejected
F_{NP} (NPROD / Y)	3.44 ^b	Rejected

Note: ^a indicates that the statistic lies below the lower bound, ^b that it falls within the lower and upper bounds, and ^c that it lies above the upper bound.

Table 4: Granger Causality Test Results

Lag Level	1		2		3		Results
	F – Stat	t _{ECTt-1}	F – Stat	t _{ECTt-1}	F – Stat	t _{ECTt-1}	
(1) Y and DEFC							
DEFC does not Granger cause Y	4.05	-5.43*	1.91	-4.18*	2.81	-6.73*	Y ↔DEFC
Y does not Granger cause DEFC	2.95	-4.63*	2.58	-3.69	1.86	-6.18*	
(2) Y and PROD							
PROD does not Granger cause Y	5.33***	-9.15*	1.57	-9.50*	1.11	-8.20*	Y ↔ PROD
Y does not Granger cause PROD	7.79***	-7.95*	5.33***	-8.86*	3.23***	-7.62*	
(3) Y and NPROD							
NPROD does not Granger cause Y	6.41	-13.74*	3.36***	-10.7*	3.27***	-15.37*	Y ↔ NPROD
Y does not Granger cause NPROD	0.89	-14.42*	0.78	-10.84*	0.80	-15.57*	

Note: *, ** and *** significance at 1%, 5% and 10% levels respectively.

The results of the table 4 shows that we reject null hypothesis for all causal relations tested above and we accept bivariate causal relationship. However strong bivariate causal relationship is not significant in the case of Y ↔DEFC. The bivariate causality is very strong and significant for the second hypothesis Y ↔PROD. However Y ↔ NPROD is also significant.

Conclusion

Government budget spending has a big share as a % GNP. The size of the government in North Cyprus, makes both productive and non-productive expenditures and budget deficit an important instruments of economic growth. Budget deficits and all kinds of government expenditures are related with economic growth. The relation is on both direction and bivariate causality. The share of non-productive expenditures is also causes economic growth and this contradicts with the theory. But this shows that North Cyprus economy is dependent to government spending. And today's, nonproductive expenditure and productive expenditure has an impact on the next year economic growth rates. As there is a significant long run relationship. However we cannot say that today's budget deficit have an impact on the future economic growth.

We can conclude that our findings are similar to most of the Keynesian approach literature except the significant causal relationship between non-productive expenditure and economic growth. But as it is explained before NC has a different characteristic compare to other small economies. Isolations have a negative impact on private investment and this makes government investment and other spending important revenue source for the economy.

As foreign aid has an important share in the budget revenues of NC it would be beneficial to analyze and see the impact of financial aid on growth.

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