The Impact of Government Debt and Debt Servicing on Economic Growth
An empirical approach for Albania

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Abstract: *As the government spending around the world have extremely increased, many economies are concerned about the negative effects that high levels of debt have on the economic growth. Many empirical studies show a non-linear relationship between debt and economic growth. This paper uses linear regression model to study the impact of government debt and external debt service on economic growth in Albania. By using historical data from 1991 to 2010 it shows the existence of a positive effect of internal debt and external debt on economic growth of Albania. In contrast if finds a negative relationship between external debt service and economic growth. Higher levels of external debt are accompanied with higher amounts of money flowing out of the country as a service to the debt. This negative impact of external debt service on economic growth derived from higher levels of external debt fosters the government to reduce the level of external debt through more consolidated monetary and fiscal policies.*

Key words: *Economic growth, Albania, government debt, debt service*.

1. Introduction

Debt is considered as an important element of the economic development which, when used effectively gives a positive effect on economic growth and if not, it may be a real concern which in turn may put the economy into crises. This study will give a picture of Albania`s debt history in terms of both internal and external debt over a period starting from 1991 up to 2010. By looking at its actual position it can be concluded whether this level of debt and its trend is optimal and whether it is a concern for Albanian economic growth or not.

Taci (2002) explains that developing countries such as Albania have used external debt in order to fulfil the gap between internal savings and the required level of investments and also to finance the trade deficit. This debt is added to the economy`s overall financial resources for a certain amount of time and enables a higher level of investments compared to what would be financed only by internal financial resources. If these investments are not allocated efficiently, the cost of external debt may cause problems in macroeconomic situation of the country and the debt service may become problematic. Authorities must be careful when deciding for the level of external debt. Literature suggests that a country can engage in external debt up to a level where the rate of return on the investments is greater than the cost of the debt which enabled these investments.

In theory it is easy to decide for the optimal level of debt whereas in practice it is very difficult. There are different indicators such as: the ratio of debt to exports, the ratio of debt service to exports and the ratio of debt to GDP. Although it is difficult to determine an optimal level of these ratios, mostly they serve as first signals when the debt stock becomes higher. If the higher levels of debt, increases the burden of debt servicing in any country, this country`s level of exports should increase in order to generate income for the repayment of the debt. If this is impossible for that country, the level of debt will increase quickly exceeding its capacity to repay it.

By looking at Albania`s external debt history, it shows an increasing trend which is continuous. Considering the total debt of Albania in 2010 it almost reached the criterion set by the Maastricht treaty which is equal to 60 per cent of GDP. In a period where many countries (developing, developed) suffer the consequences of high levels of debt, Albania should take some measures in order to keep the debt under control before being too late. Higher levels of debt may negatively affect the economic growth and prevent the integrity of the country. This study uses regression analysis to find the impact that internal debt, external debt and external debt service have on economic growth in Albania for a 20 year timeline. The analysis results show that there is a positive relationship between government debt and economic growth whereas external debt servicing negatively effects the GDP growth of Albania. These results suggest that the level of external debt

should be decreased. A higher level of external debt needs a higher amount of service making the money to flow out of the country instead of being invested within the country and therefore increasing the GDP level.

2. Literature Review

Most of the studies are focused on the relationship between external debt and economic growth while studies of total debt and economic growth are lacking. Debt is a source of finance and it is crucial for increasing the level of investment thus enhancing economic growth, but when the level of debt becomes higher it gives negative effects on economic growth thus putting the economy into pressure.

Reinhart and Rogoff (2010) explain that across both advanced and emerging markets, high debt to GDP levels which go above 90 percent are associated with lower growth levels. In addition they state that for emerging countries, there are more strict rules for the threshold for total external debt to GDP ratio not exceeding that of 60 percent otherwise there may be adverse outcomes for economic growth. They also argue that countries that chose to rely excessively on short term borrowing to fund growing debt levels are particularly vulnerable to financial crises.

Seetanah *et al.* (2007) investigate the link between the external debt and economic performance for the Mauritius over a time horizon from 1960 to 2004. By using a Vector Error Correction (VECM) Framework they explain the short and long variations of the country's output level. The results show that external debt has been negatively associated with the output level of the economy in the long run as well as in the short run. Further, they also find bi-causality between public debt and economic development. A good explanation of why a large level of accumulated debt leads to lower economic growth is given by Krugman (1998) who also states the channels through which this is likely to occur. The well known explanation comes from "debt overhang" theories, which show that if there is likelihood that in the future debt levels will be larger than the country's repayment ability and expected debt-service costs will discourage further domestic and foreign investment leading the economic growth to decrease. The potential investors will fear that the more is produced, the more will be "taxed" by creditors to service the external debt. As a result investors will not be willing to bear these investment costs today for an increased output in the future.

Checherita and Rother (2010) analyze the relationship between government debt-to-GDP ratio and per capita GDP growth rate in a sample of 12 euro area countries. This analysis finds evidence for a non-linear impact of public debt on per-capita GDP growth rate across twelve euro area countries over a long period of time starting in 1970. It shows that a higher public debt-to-GDP ratio is associated with lower long-term growth rates at debt levels above the range of 90-100% of GDP. The channels through which public debt is likely to have an impact on economic growth rate are private saving, public investment, total factor productivity, and sovereign long-term nominal and real interest rates.

Qureshi (2010) investigates the relationship between high public debt burden on economic growth in Pakistan using data from 1981 to 2008. The findings show that debt burden in terms of debt servicing has negatively affected the economy of Pakistan. Debt servicing has increased the budget deficit creating the need of more borrowing. He finds a negative impact on increased debt on the economic growth which is quiet significant. Murad and Aziz (2011) make a more inclusive study of the impact of external debt and debt servicing in economic growth of Pakistan considering some other explanatory variables such as gross capital formation, inflation rate and terms of trade using data from 1970 to 2010. The analysis results show that external debt and debt service to GDP ratio have negative impact on economic growth of Pakistan while gross capital formation and inflation have positive impact on economic growth.

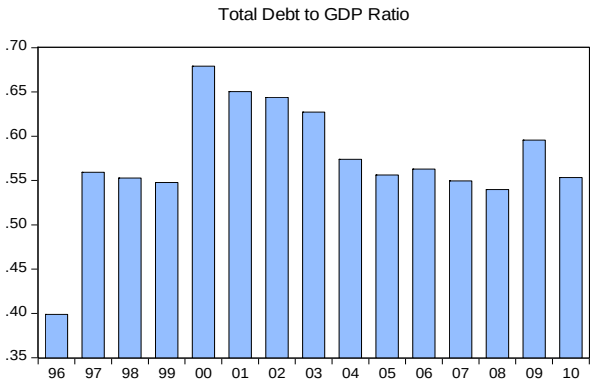
Patillo *et al.* (2002) study the effect of debt on economic growth analyzing a large number of countries for a time period starting from 1968 to 1998. The analysis results suggest that high levels of debt negatively affect the economic growth not because of its large volume but mostly due to the decline in the efficiency of investments.

Briefly the conclusions coming from these studies suggest that high levels of debt and debt servicing have a negative effect on the economic growth.

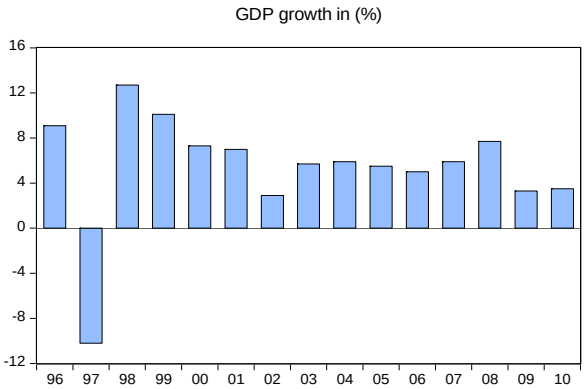
3. Government Debt and Economic Growth of Albania

The two graphs[1] below represent the GDP growth and total debt to GDP ratio of Albania for the timeline 1996-2010.

[1] The graphs are generated by the author. The data used in graph 1 and graph 2 starts from 1996 to 2010 as the data of internal debt for the period 1991-1995 are missing.

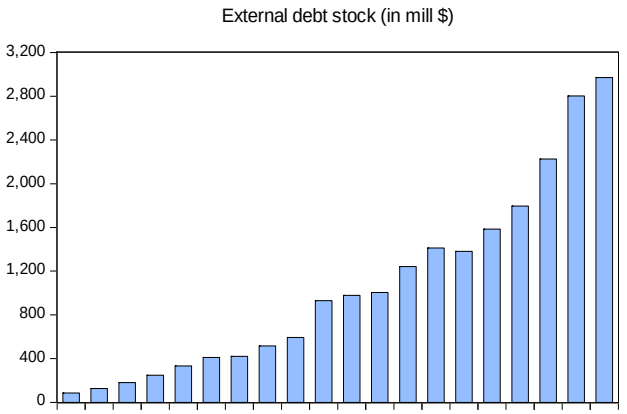


Graph 2

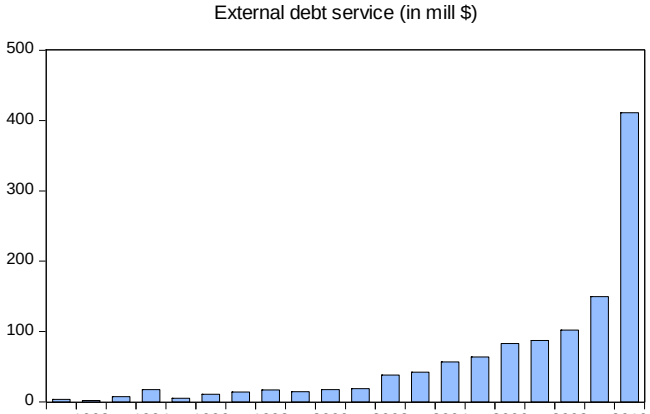


Graph 1

The literature suggests that when the debt to GDP ratio in the developing countries exceeds the level of 60 percent, it starts to give negative effects to the economic growth. The total debt level has been increasing during the period of 1997-2010 reaching a pick of 66 percent in year 2000. It is noticed that whenever the debt level increases, the GDP growth level is lower. For the period of 1997 the economic growth has been negative. In that time the informal loan market (pyramid schemes) nourished due to weaknesses of the banking sector and also lack of legal framework. This situation helped the pyramid crises and caused the economy of Albania to shrink.



Graph 3



Graph 4

Graph 3 and 4 represent the external debt of Albania and the debt service for the timeline 1991-2010 expressed in million dollars. As it is shown in the graphs the external debt level in Albania have been increasing steadily from 1991 to 2010. The increase in external debt has caused the debt service to increase in the same trend. As mentioned in the introduction part and also during literature review, external debt is an important source of finance and it helps the economy to grow. It also helps to increase the level of investment. What is important in that firstly the government should decide for an optimal level of external debt as higher levels of debt are accompanied by higher debt servicing levels. Secondly the debt should be allocated efficiently within good alternative investments and therefore leading to an increase in the country`s GDP level.

4. Data and Methodology

This study is explanatory seeking to identify the relations between the economic growth and internal debt, external debt and external debt service. It uses (E Views 7) statistical package with econometric analysis. The econometric analysis served primarily to operations and regression analysis results, which were very important for our findings. By using linear regression model we take the nominal GDP as a dependent variable and internal debt, external debt and debt servicing as independent variables and therefore analyze how changes in GDP are explained by the changes in debt and debt servicing.

The data used in the analyses are shown in table 1 in the appendix part. They are expressed in millions of dollars except GDP growth which is expressed in percentage, while when used in the analysis the data are standardized[2]. The data consist of 20 observations over the period of 1991 to 2010. The internal debt series (1996-2010) are taken from the Ministry of Finance where the data of 1991-1995 were missing and therefore are replaced by the mean of the group. This is also reflected in the total debt of 1991-1995 which is found by adding together the internal and external debt. The other data are taken from the World Bank.

5. Model Specifications

The key indicators used in our model are nominal GDP, internal debt; external debt and external debt service therefore the linear regression equation is specified as follows:

$NGDP = \alpha + \beta_1 * ID + \beta_2 * EDSTPPG + \beta_3 * EDSPPG + \varepsilon$

Where the nominal GDP is expressed as a function of (α) which is the intercept, (β_1, β_2, β_3) are the values of slope coefficients, (ID) stands for Internal Debt (EDSTPPG) stands for External Debt Stock Public and Publicly Guaranteed, (EDSPPG) stands for External Debt Service Public and Publicly Guaranteed and (ε) is the standard error.

From the coefficients table (shown in the appendix part) we can obtain the constant, beta values for each component and also the standard error. After substituting the coefficient values (see appendix, table 2) our equation becomes as follows:

NGDP = -3.0379 + 0.2227*ID + 0.9872*EDSTPPG - 0.1986*EDSPPG + 0.22487

According to this analysis internal debt and external debt positively affect the economic growth of Albania, while external debt service has a negative effect on the economic growth.

6. Analysis Results

This section will present the statistical analysis for nominal GDP, internal debt, external debt and debt service of Albania for 20 observations. The analysis results show that the coefficient of determination in this model is $R^2 = 0.957419$ (see appendix, table2), meaning that 95% of the variation in nominal GDP is explained by changes in internal debt, external debt and external debt servicing.

Similarly, the analysis of variance helps us explain and test the entire model. The observed F-statistic value equals 119.918 (see appendix, table2). The critical F-value is found from the F-statistics table for $p<0.05$, with df1=3 and df2=16 which is 3.24. Specifically, the F-statistic is used to test the hypothesis that the variation in the independent variables explains a significant portion of the variation in the dependent variable. Since the observed F statistic of 119.918 exceeds the F-critical value of 3.24, we accept the alternative hypothesis that there is a significant relationship between nominal GDP and internal debt, external debt and external debt service.

From the coefficient results (see appendix, table 2) the value of β for internal debt is 0.223 showing a positive relationship between nominal GDP and internal debt. This means that, one unit increase in internal debt increases the nominal GDP by 0.223 units. The value of β for external debt is 0.987 showing a positive relationship between nominal GDP and external debt. This means that, one unit increase in external debt increases the nominal GDP by 0.987 units. The value of β for external debt service is -0.199 showing a negative relationship between nominal GDP and external debt service. This means that, one unit increase in external debt service decreases the nominal GDP by 0.199 units.

7. Conclusion

This study tries to evaluate how government debt affects the economic growth of Albania for a timeline starting from 1991 to 2010. It uses linear regression model taking the nominal GDP as dependent variable and internal debt, external debt and external debt service as independent variables. The overall significance of the model, as measured by R squared, shows that about 97.74 percent of changes in the dependent variable (NGDP) are explained by the dependent variables. The findings show that internal debt and external debt positively affects the economic growth of Albania. It is a good sign showing that the debt obtained from inside or outside the country is invested into Albanian economy. In contrast the economic growth of Albania is negatively affected by external debt service. It is obvious that the higher the external debt

[2] The data are standardized by subtracting the group mean from each observation and dividing it by the standard deviation of the group.

the higher the external debt service making the money to flow out of the country instead of being invested in Albania. In this context it is important to keep an optimal level of external debt that would not harm the Albanian economy.

During this timeline used in the study the government debt level of Albania has been within the criterion of Mastricht treaty wich for the developing countries predicts a debt threshold equal to 60 percent of GDP. In this regard the debt level has not creating serious problems in economic growth. Some problems have been noticed durint the last two years where the debt level has beel a little higher compared to other years, almost reaching the threshold. As a result it is very important for the Albanian government to take measures, monetary or fiscal, in order to keep the debt level under control because if it exceeds the optimal levels it will have a negative effect on the economic growth of Albania.

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Appendix

Data series used in Linear Regression analysis (1991-2010)

Year	In million USD					In (%)
	GDP in current USD	Internal Debt stock	External Debt stock	Total Debt stock	External Debt service	GDP growth
1991	1139.17	2519.18	86.20	2605.38	3.57	-29.59
1992	709.45	2519.18	126.85	2646.03	1.92	-7.20
1993	1228.07	2519.18	178.99	2698.16	7.13	9.60
1994	1985.67	2519.18	247.58	2766.75	17.20	8.30
1995	2424.50	2519.18	332.01	2851.18	4.95	13.30
1996	3013.22	792.20	409.98	1202.18	10.76	9.10
1997	2196.22	809.29	419.31	1228.60	13.75	-10.20
1998	2727.75	992.03	515.83	1507.85	16.84	12.70
1999	3434.40	1289.06	592.50	1881.56	14.32	10.10
2000	3686.65	1573.09	930.18	2503.27	17.27	7.30
2001	4091.02	1680.80	979.48	2660.28	18.76	7.00
2002	4449.37	1860.52	1003.63	2864.15	38.11	2.90
2003	5652.33	2304.01	1240.92	3544.93	41.97	5.70

2004	7464.45	2872.15	1411.81	4283.96	56.89	5.90
2005	8376.48	3277.46	1381.44	4658.90	63.79	5.50
2006	9132.56	3556.93	1584.50	5141.43	82.77	5.00
2007	10704.66	4086.43	1795.63	5882.06	87.19	5.90
2008	12968.65	4773.58	2225.36	6998.95	102.01	7.70
2009	12044.88	4369.64	2803.00	7172.64	149.54	3.30
2010	11786.10	3550.45	2971.63	6522.08	411.02	3.50

Table 1

Data Source: World Bank, Ministry of Finance

Dependent Variable: NGDP
Method: Least Squares
Date: 03/21/12 Time: 11:18
Sample: 1991 2010
Included observations: 20

Table 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.04E-17	0.050282	-6.04E-16	1.0000
ID	0.222712	0.087262	2.552222	0.0213
EDSTPPG	0.987212	0.112687	8.760681	0.0000
EDSPPG	-0.198597	0.092510	-2.146767	0.0475

R-squared	0.957419	Mean dependent var	8.88E-17
Adjusted R-squared	0.949435	S.D. dependent var	1.000000
S.E. of regression	0.224867	Akaike info criterion	0.030239
Sum squared resid	0.809041	Schwarz criterion	0.229385
Log likelihood	3.697615	Hannan-Quinn criter.	0.069114
F-statistic	119.9179	Durbin-Watson stat	1.431954
Prob(F-statistic)	0.000000		