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THE EMPIRICAL ANALYSIS OF THE PUBLIC DEBT STRUCTURE IN ALBANIA

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Abstract:
This study aims to determine whether foreign or domestic borrowing is the best alternative for Albania. A small country with an underdeveloped economy, Albania consistently had problems with debt management, especially external debt, so it's expected the domestic borrowing to be a better alternative. Referred on data for 1996 to 2018, the method used is OLS and is analyzed through multiple regressions the factors that affect public debt as of external and domestic debt. Based on empirical results, the public debt is affected by Lending interest rate and Monetary Base for Domestic Debt and Exchange Rate for External Debt. The monetary base and the exchange rate have a significant positive effect on public debt, while the lending interest rate has a significant negative effect. The trend of Public debt does not reflect the same trend with Long-Term Government Bond Yields for Euro Area, because of ineffective management of external borrowing. This study will be a concrete argument on policy orientation and public debt management.

JEL: H63; H81

Keywords: public debt, external debt, domestic debt, empirical analysis

1. Introduction

In developed countries, the structure of public debt is not of much importance, as there are not many differences between the domestic and foreign public debt, because the financial markets and businesses are well developed and the cash flows "flies" through

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the countries. The high development of financial markets does not leave much room for differences between secured funds.

But in the developing countries, when the capital markets are less developed this sub-section is very clear and with a significant effect, so the debt structure plays an important role. Internal and external debt seems to be separated and poses a very different risk. For developing countries, like Albania, even the big businesses have not accessed to the international markets, so their possibility to attract foreign funds is almost impossible, so the only way to withdraw inflows from abroad is through the government foreign debt. The government than injects these funds in the economy.

Countries with not very well developed capital markets pose problems for issuing domestic debt, meanwhile, Albania with a stock exchange that almost doesn't function, faces much more problems and this brings it difficult to coordinate the management of international trade fluctuations with external borrowing needs.

The systemic risk depends significantly on the structure of public debt. A considerable weight of domestic debt would be an important factor in minimizing this risk, as this type of debt is more stable and controllable as it is directly linked to a market where the government has a key role. The problem of the domestic debt is that the governments of small countries enter into relationships with a limited number of actors, thereby reducing risk diversification opportunities. This is very obvious for our country, where one of the major problems with the bad loans was that they were concentrated in very large values, in a very small number of businesses.

While referring to the external debt it is better diversified, but it depends on many international factors, which are almost completely out of our government's control, which explains an increased risk for them. This is the reason that is the external debt which mainly leads to debt settlement incapacity of a country. The domestic debt is a transfer of resources from individuals or financial intermediaries (meaning individual savings) towards debt as a financial instrument. Meanwhile the foreign debt is a flow that enters in the country.

After the crisis of 2008, it is evident a considerable increase in public debt all over the world. Albania suffered the same situation referring to this debt, especially during the period 2010-2013, with a rapid increase in its public debt.

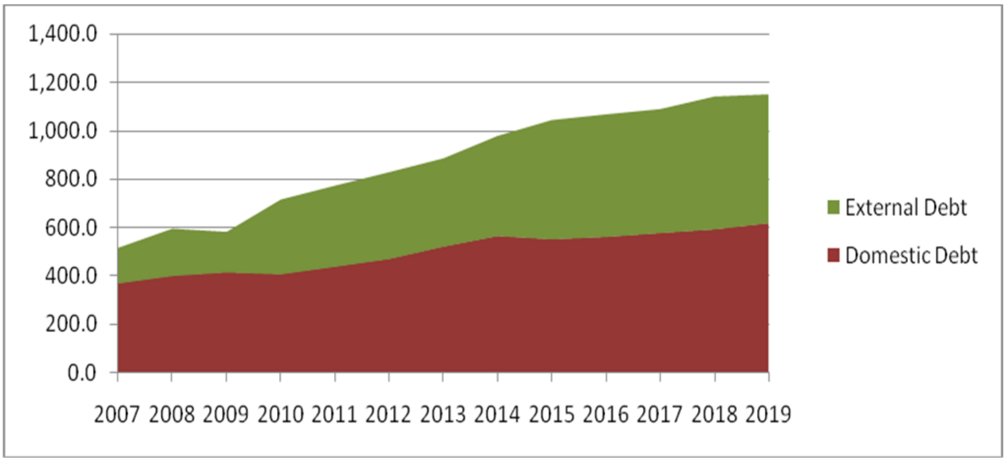
Table 1: Public Debt in Albania (mln Albanian Lek)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total debt	517	595.8	682.5	715.5	772.7	828.2	885	977.9	1043.2	1066.5	1088	1,139	1,148

Source: Ministry of Finance

In Albania, the domestic and external debt still corresponds to both jurisdiction and currency So far, the government has turned to citizens and financial institutions in the country to borrow domestic debt in Lek (more than 97% of domestic debt is in Lek-Albanian currency, with an average weighted maturity increased from the previous periods in 2.2 years (IMF country report no 19/29, January 2019), while external debt is borrowed in foreign currencies (mainly in euro).

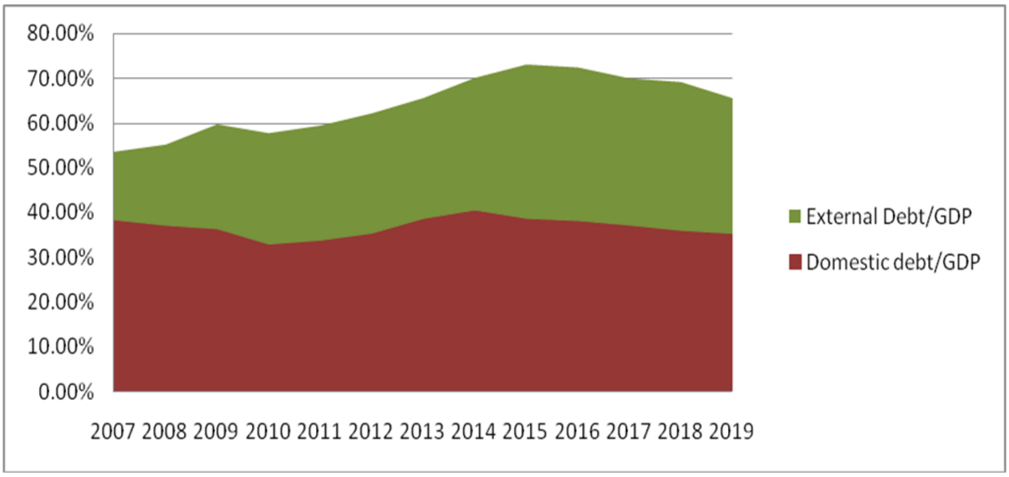
Figure 1: Domestic and External Debt Trend



(**Source**: Ministry of Finance)

The total debt for 2018 is 65.5% of GDP, with a structure of 53.8% as domestic debt and 46.2% as external debt. The 35% the debt is short term, accompanying with the risk of high inflows and the default risk. In October 2018 the government issued 500 million Eurobond with 7-year maturity. A considerable part of it was used for retire of 200 million from the 450 million Eurobond of 2015.

Figure 2: Domestic/GDP and External Debt/GDP Trend



(**Source**: Ministry of Finance)

Increasing public debt affects government spending cuts or future tax increases. Having a high public debt for many years now, the negative effects on both fiscal policy instruments have been present. However, because the country is developing and in urgent need of investment, so also for government spending, the focus goes towards taxes and alternative investments. The Public-Private Partnership has been widely implemented in our country, especially these 2-3 years.

2. Literature Review

An important indicator to measure and analyze the public debt is the ratio between the total debt of a country with its GDP because it expresses the economic potential of a country. This means that the analyses and results can be comparative to the other countries.

The internal debt has an indisputable impact on the level of public debt. However, if the domestic borrowing would be used efficiently, it is understood that the negative effect of increasing this debt on total public debt would be minimized. Moreover, when it comes to the effect on the following years, as the income generated by fruitful investments will serve to repay not only interest but also a portion of public debt.

The same logic applies to the role of external borrowing in public debt.

One of the biggest dilemmas for any government is the structure of this debt, the weight that each of them must take. Domestic debt is mainly obtained through the issuance of treasury bonds and government bonds, which are mainly purchased by banks and other financial institutions. So, the state is in direct competition with the business to use the funds that are deposited near these institutions. Regardless that this is economically correct, this argument doesn't fit well for Albania. Citizens' deposits are at a high level, especially considering our saving money culture, thus not causing competition for business funds. Moreover, since the crisis of 2008, banks have tightened the criteria for lending to individuals, but especially for business, so there are much more free funds. The weight of credit after 2010 has changed from business to households crediting. What is important in this study is how the increase in the weight of domestic and foreign debt affects the level of public debt. Depending on the impact they have on public debt, we judge also on the structure that this debt should have.

Borrowing domestic debt would put the government at risk for interest rates. Logically, an increase in interest rates would affect the increase in the debt cost, which would also affect the increase of this debt too.

Increasing costs would increase the payments the government has to make to repay debt interest, leading to higher spending; increasing the latter's inability to repay debt.

However, when analyzing interest rates, it is important to compare these interest rates with a country's economic growth. As long as interest rates are lower than GDP growth, the effect on public debt would be positive, affecting the latter's decline. So the economic growth generated by the operation of money secured by domestic (or external) debt is greater than the cost of this debt, leading to a positive added value. This would increase the potential for loan repayment and thus lower the overall level of this debt. At the same time, there would be a reduction in the overall level of risk in the country.

Actually, our risk country is categorized as B1 by Moody and B+ by Standard & Poor's. On the other hand, economic growth would affect the interest rate rise, but also would increase business profit rates, which would increase government revenues and their ability to repay loans. So, the debt will be more expensive, but as the potential for loan repayment increases, this negative effect will be minimized.

In order of minimizing the risk that public debt may rise as a result of rising interest rates National Bank of Albania has kept the rate of interest low levels of 1%-1.5% for several years (actually the base interest rate is 1%). However, the work of the National Bank has become easier by the fact that although interest rates are relatively low, the level of deposits is still high and has experienced an increase, as we mentioned because of a "saving" culture.

Also, an element that has helped to keep interest rates low is keeping inflation under control. Relatively low inflation at 2% thresholds has not pressured for higher interest rates.

The presence of large debts, while perhaps not inviting extreme inflation, may seriously hamper the exercise of sound monetary policy. The higher the interest rate, the more debt is in a snowballing mode as interest adds to the debt, and so on. Monetary restraint, therefore, while appropriate in other ways has a difficult side effect and hence may not be pursued with the requisite vigor (Dornbusch, 1996).

The literature review is not very clear about the positive or negative effect that the interest rates has on the level of debt. Both types of connections are noted. Barro (1979) argument that an increase in interest rates should reduce the growth rate of public debt. Ogawa et al. (2016 found that in high-debt countries an increase in the long-term real interest rate leads to a further increase in the public debt to GDP ratio. Reinhart et al. (2012) argue that the high level of public debt leads to higher interest rates which impact negatively to the country GDP growth.

Guex and Guex (2018) in a study for Switzerland for the period 1894-2014 found that an increase in the interest rates leads to an increase of debt to GDP rate of 2 years later. Another factor affecting the domestic debt is the monetary supply. This money supply will serve as a feeder of domestic debt. This factor is taken into consideration for our country as monetary policy is one of the most important instruments, which has in its focus the public debt management, besides fiscal policy. A dysfunctional capital market adds the importance of monetary policy in maintaining the country's financial stability.

An increase of the money supply means much more money in the bank system, increasing the possibility for crediting the government through the domestic debt. The banks are the key buyer of treasury bonds and government obligations. The money supply has a great impact on the inflation rate, which will impact the rate of interests as well.

The money supply is affected by GDP growth. As the economy is more productive, more money will be available. Kwon, G. et al. in 2009 found that money supply increased approximately at the same pace as nominal GDP.

Regarding the external debt, borrowing in foreign currency means that this debt is exposed to the exchange rate risk. A valuation of the local currency would lead not only to a reduction in the total value of public debt (and therefore to the Debt to GDP ratio) but also to a reduction in payments for the repayment of such debt. This would enable the government to further reduce this debt by paying off part of it. This is quite clear if we look at debt to GDP ratio data for Albania which has declined in recent years, among others from the exchange rate appreciation.

Albania needs to be careful, as having a significant share of foreign currency debt, the total value of debt to GDP depends heavily on the exchange rate as the debt is converted into local currency.

Meanwhile, the strengthening of the local currency against the euro makes our country less competitive and decreases exports. This negative effect on income affects the increase in public debt.

The effect of this exchange rate puts the country at high risk, so it should be taken into account in the policies pursued by the National Bank for exchange rate management. (Pienkowski, 2017) in his study for low-income countries found that Moving towards full local currency-denominated debt raises the debt limits of all country groups. He suggests that focus may be best directed at reducing exchange rate risk through local currency debt issuance (and building institutions that can raise the maximum sustainable primary balance).

2. Materials and Methods

This study is based on regressions models and OLS methods (Ordinary least squares) and explains the importance and impact of the public debt structure and other factors on public debt. Numerous empirical studies analyze the factors and the models that affect the change in a country's public debt, and link with macroeconomic indicators.

According to (Pirtea et al., 2013) the change in public debt can be explained by the budget deficit, external and internal debt, and monetary base in a general model[ii]:

$$Bt = (Gt - Tt) + (1 + it)' \, Bt\text{-}1 + (1 + it)' \, Bt\text{-}1' \, S_t + \mathrm{DBM}_{t,} \qquad (1)$$

The above model can also be used to analyze public debt in Albania, but the fluctuations of domestic and external debt have a link between them according to the literature. For this reason, in this paper will be used multivariate regression divided for domestic and external of public debt to study their relevance and impact on total debt and its structure and the other factors that can influence.

The analysis of this study uses a time series from 1996 to 2018 and will be conducted with Eviews 10. The variables in the model, their description and the source of information are shown in the table below:

[ii] An Empirical Study on Public Debt's Determinants: Evidence from Romania", Marilen Gabriel Pirtea, Ana-Cristina Nicolescu, Paulo R. Mota

Table 2: The variables of regressions

	Variable	Description	Source of information
Dependent variables	PD_GDP	Public Debt /GDP	Ministry of Finance and Economy
Regression I			
1.	DD_GDP	Domestic Debt/GDP	Ministry of Finance and Economy
2.	LIR	Lending interest rate (%)	World Bank
3.	MB	Monetary Base	Bank of Albania
Regression II			
1.	ED_GDP	External Debt/GDP	Ministry of Finance and Economy
2.	LYIELD	Long-Term Government Bond Yields for Euro Area: 10-year	Federal Reserve Bank
3.	ExR	Exchange Rate of lek/euro	Bank of Albania

Source: Authors' presentation.

4. Results and Discussion

To analysis the effects of domestic debt in total debt we have considered also lending interest rate and monetary base as the independent's variables. While to analyse the effects of external debt in total debt we have considered also Long-Term Government Bond Yields for Euro Area and Exchange Rate of euro/lek as the independent's variables. The general forms of equations are:

$$PD/GDP = ß_1\ DD\_GDP + ß_2\ LIR + ß_3\ MB \quad (2)$$

$$PD/GDP = ß_1 ED\_GDP + ß_2 LYIELD + ß_3 EXR \quad (3)$$

where $ß_1$, $ß_2$ and $ß_3$ are respective regression coefficients.

Because we use the OLS method and to meet the conditions of this method without having problems of multicollinearity, heteroskedasticity and autocorrelation and a normal distribution, we performed the respective tests and found that the model residuals and residuals with one time lag correlate. For this reason, the final models that meet the requirements of the OLS method are:

$$PD/GDP = 0.9717\ DD\_GDP - 0.0075\ LIR + 0.0105\ MB + AR(1) \quad (4)$$

$$PD/GDP = 1.3587\ ED\_GDP + 0.0341\ LYIELD + 43.8458\ ExR + AR(1) \quad (5)$$

The results about the coefficients and probabilities are in table two, for each regression and all variables.

Table 3: The results of regressions

	Variable	ßI	P
Regresion I - R=53.78%			
1.	DD_GDP	0.9716	0.0006
2.	LIR	-0.007565	0.0977
3.	MB	0.010527	0.000
Regresion II - R=64.22%			
1.	ED_GDP	1.3586	0.000
2.	LYIELD	0.03	0.11
3.	ExR	43.84	0.00

Source*:* Authors' calculation in Eviews 10.

At first regression, with 5% error allowed domestic debt and the monetary base are significant and lending interest rate is significant for 10% error tolerance. At the second regression, external debt and exchange rate are significant impacts at the total public debt but long term yield has not an important influence. The first regression and variables explain 53.78 % of the public debt volatility under unchanged conditions of other factors not considered in the study. At the second regression, external debt and exchange rate are significant impacts at the total public debt but long term yield has not an important influence. And the second in the same conditions explain 64.22% of the public debt volatility.

4.1 Domestic Debt

The change in domestic debt is statistically significant (with p <5%) and it has a positive effect on total debt. For one unit increase of domestic debt, total debt by GDP increases by 0.97 unit. This is an expected result because it has a linear correlation between those two indicators, referring the economic literature. The positive aspect is that this coefficient is less than 1, which means that the total debt increases less than the increase of domestic debt. If the funds collected internally will be used more efficient the impact in the total debt will be lower.

4.1.1 Lending Interest Rate

Between lending interest rate that is published periodically at the World Bank data and Public Debt/ GDP has a negative significant link with 10% error accepted not 5%. If this rate increases by 1%, public debt decreases by 0.007%. This is a normal link because if interest rate increases, borrowing costs increase to the market and so the debt decrease. The government is obligated to lower the level of domestic debt, because this becomes more expensive. The effect seems to be very moderate, because the interest rate has been in low level after the crisis of 2007. One of the instruments used by the National Bank for minimizing the effects of global crisis was through the interest rate.

4.1.2 Monetary Base

This variable represents the total amount of a currency that is either in general circulation in the hands of the public or the commercial bank deposits held in the central bank's reserves. This indicator of monetary policy has a significant impact on public debt from the regression results. If the monetary base changes by one unit, the report public debt/ GDP change by 0.011 in the same direction. The more money in the market, the more the government will tend to borrow internally to control the money market and finance its needs. Meanwhile the government borrowing affects the increase of money supply as well.

4.2 External Debt

The debt that is taken in foreign markets and institutions for sure has a significant impact at public debt, and if this indicator increases by 1 unit the report public debt/GDP increases with 1.36 units. The main issue here is that the coefficient is higher than 1, which increases the negative effect of taking external debt. This is expected because our government has no possibility to affect in the macroeconomic and financial indicator of foreign countries. The only thing that it can do is to invest the money borrowed in fruitful investments. As this coefficient is higher than 1, compared with the coefficient less than 1 for the impact that the internal debt has on the total debt, it's better for our government to increase the weight of the internal debt. As the capital market is not developed, these possibilities are limited. This fact can explain the coefficient for the internal debt as 0.97. A coefficient 0.97 is better than a coefficient over 1, but it is not essentially lower than 1, which justifies the systemic risk.

4.2.1 Long-Term Government Bond Yields for Euro Area

External debt for Albania in the international market it's mostly taken in long term bonds in euro (Eurobond), and based on the nature of the external debt we expect a significant impact of Long Term Yields. From the model result, this is not true for the data that for the period 1996-2018 ($p < 5$ % and 10%). The results show that Albania didn't manage with a strategy the borrowing in foreign markets, and didn't study and followed the fluctuations of important indicators.

4.2.2 Exchange Rate of Lek/Euro

Exchange rate changes affect positively public debt with a statistical implication. If the "lek" will cost 1 euro more it will have a significant and positive impact on public debt with 43.84 units.

A valuation of local currency lek, will decrease value of the public debt, because the foreign debt in euro will be converted in less lek. Knowing that approximately half of this debt is in foreign currencies, when the figures are converted in lek, they convert in lower digits. Meantime, this foreign debt converted in lower digits in lek, means less liquidities, which will lead to the necessity to borrow much more. Government will be obligated to extend its debt for fulfilling their responsibilities. This is the key scenario in Albania.

The strengthening of the lek against the euro makes our country less competitive and decreases exports. This negative effect on income affects the increase in public debt.

The effect would be even more significant if Albania was not mainly an importing country.

A valuation of lek would lead to a decrease of interest payments, as well as repayment of a part of this debt. So, this positive effect will led to a decrease of debt, but our capacity for debt repayment is very low, leading to an advantage just in the interest payments.

5. Conclusions and Recommendation

In developing countries, the public debt structure plays an important role. As the financial markets are not well developed, the opportunity to borrow in these markets is reduced, making the governments of these countries considerably dependent on external debt. Albania as a developing country, with a stock exchange that almost doesn't function faces the same situation. This is the main reason we decided to do this research on the structure of our public debt. How this debt has to be separated between the external and domestic debt? In Albania, the external debt refers to the debt from outside the Albanian territory; meanwhile the domestic debt refers to the debt from Albanian citizens directly or through the financial institutions.

The literature review and empirical analysis, as well, shows that for developing countries the weight of foreign and domestic debt has a significant impact on public debt. Domestic debt and external debt have a direct impact on the growth of public debt. In addition, other factors related to the debt structure that has an important impact on public debt which explains that the policies and management of public debt should focus on domestic borrowing.

Lending interest rate and Monetary base are the key factors that determine the impact of our domestic debt, in the total debt. There is a negative significant connection between the lending interest rate and the total debt, meanwhile there is a positive significant connection between the monetary base and the total debt. This means that the National Bank, especially, has to take care about these two instruments.

The most significant impact on total debt has the Exchange Rate (ALL/EUR). Exchange rate changes affect positively public debt significantly. Our government can do a little to manage the external debt, interest rates in these markets (besides getting a cheaper debt at certain times to repay some of the more expensive external debt. Eurobond issue in 2019 also repaid part of the 2015 Eurobond, which was relatively more expensive).

However, it can be intervened in the market to manage the exchange rate, which actually proved to be the most influential factor. The management of this course takes into account both its positive and negative effects on public debt.

Relevant borrowing costs at different destinations within or outside the country, the monetary policy orientation and also the inability to manage borrowing against the fluctuations of international markets, make domestic borrowing a better and more manageable alternative in cost and risk.

The trend of Public debt does not reflect the same trend with Long-Term Government Bond Yields for Euro Area because of ineffective management of external borrowing.

The decision whether to borrow internally or externally depends greatly on the development of the capital market in the country. If the capital market in our country were more developed, then surely the weight of the domestic debt would considerable increased.

Considering the fact that internal debt is more manageable its weight really should have been higher. Meanwhile opportunities to raise funds internally, in the capital markets (which are almost non-existent) make us significantly dependent on external debt.

Conflict of Interest Statement

The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter or materials discussed in this manuscript.

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