CAUSALITY BETWEEN PUBLIC REVENUES AND EXPENDITURES: COMPARATIVE ANALYSIS OF MACEDONIA AND ALBANIA

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Abstract: The main objective of this paper is to analyze causality between government revenues and expenditures of two countries, Macedonia and Albania to interpret their comparative Granger causality results. In addition, this empirical analysis is conducted through quarterly time series data for Macedonia and Albania for public revenues and expenditures, for time period 2004-2016. Moreover, empirical results of this study did not found a consensus regarding the causal link between public revenues and expenditures. Moreover, Granger causality was employed in order to analyze the causal relationship between public revenues and expenditures in these countries.
Further, our results suggest existence of unidirectional causality between public expenditures and revenues in both countries, suggesting the existence of tax – spend hypothesis, thus causality running from revenues to expenditures.
In addition, this paper tries to add a solid contribution to the empirical debate of the causal link between public revenues and public expenditures by using data from western Balkan countries such as Albania and Macedonia, to be used as further recommendation regarding their future budget deficit planning policy.
Keywords: government revenues, government expenditures, Granger Causality.

INTRODUCTION

The existing debate regarding the causal link between public revenues and public expenditures as well as the significant impact of budget deficit for stimulating economic growth, it has become an issue analyzed from many scholars among years globally.
Causal relationship between public expenditures and revenues has shown to be an important public policy implication due to the fact that budget deficits and controls of size of government are emphasized as dependent on this relationship (Baghestani and McNown, 1994; Ross and Payne, 1998). Moreover, this relationship is vital for establishing appropriate fiscal policy crucial for appreciating the consequences of unsustainable fiscal deficits and as a result in addressing such imbalances (Eita and Mbazima, 2008).
Before analyzing causality among public revenues and expenditures in Macedonia and Albania we shall focus on the fiscal sustainability and the need for a fiscal deficit to be financed, i.e. on the concept of inter-temporal budget constraint, which requires that the current market value of debt be equal to the discounted sum of expected future primary surpluses.
Nowadays, fiscal sustainability is an approach widely debated due to redistributive nature of fiscal policies that can influence sustainable development, at economic, social, political and environmental level. Moreover, policy-makers in the transition economies face a combination of historic expenditure commitments, uncertainty about new revenue sources, and uncertainty about the economy in general. Under these circumstances, if fiscal policy is not "consistent and far-sighted", there is a substantial and continuing risk that budget deficits can mushroom out of control and become unsustainable.
Further, it is important to support the idea that governments to borrow to fund infrastructure, such as roads, schools and hospitals. This spreads the costs of these long-lived assets across the different generations expected to benefit from these assets. However, if a government needs to borrow to pay for day-to-day expenses - other than those associated with a short-term economic downturn or long-lived assets - it is living beyond its means and such example is the case of Republic of Macedonia and lately the role of the project “Skopje 2014”. Thus, public debt is used to finance unproductive expenditures, which in a way won’t have positive and significant effects on economic growth. Moreover, the achieved level of public debt has consumed fiscal space, not only in terms of debt volume but also in terms of generating low economic growth and inability to serve such debt. Indeed, the relevance of this problem will increase even more with the dynamics of increased fragility of social funds, with an emphasis on pensions.

On the other side, comparing to Albania, there is evidence for significant investments in infrastructure, thus financing productive expenditures that will cause a positive impact on its economic activity. Another approach is devoted to the (non) optimality of public revenues structure and at the same time to the economic and social impact. Incidence or fiscal burden and distribution of this burden in the economic sector is not optimal – the size has always been held accountable in fiscal effect (filling budget funds) and not on economic impact (growth). Moreover, partial and overall equilibrium sets the optimality of a fiscal system that is specific to each national economy.

Another important approach is the dilemma between the tax-spend hypothesis and fiscal illusion hypothesis. If current findings reveal the presence of tax-spend hypothesis and taking into consideration the above issues, it is discussible whether tax-spend or fiscal illusion hypothesis is supported in Macedonia and Albania.

Despite the significance of a proper understanding of relationship between public expenditure and revenue in formulating fiscal policy, there is scanty empirical study for comparing the case of Macedonia and Albania. Theory implies existence of three main hypotheses regarding the relationship of public revenues and expenditures: first theory that is argued by Friedman in 1978, is for "tax and spend" hypothesis. Based on this theory there is present unidirectional causality that runs from revenue to expenditure implying an increase in revenue will increase public expenditures. (Chang, 2009; Al-Zeaud; 2014). Second hypothesis is "spend and tax" hypothesis that suggests public expenditures to lead public revenues (Barro, 1990; Baghestani and McNown, 1994). The last but not the least hypothesis is "fiscal synchronization" suggested by Musgrave (1966) that is arguing that decisions regarding public revenues and public expenditures are determined jointly, thus there is bidirectional causality between them. Moreover, for obtaining appropriate financial policy, it is necessary to define and analyze the relationship between public revenues and expenditures.

LITERATURE REVIEW

Although plenty of empirical research is available on revenue and expenditure relationship yet there is no consensus about the causal link between these variables. Indeed, it is noted unidirectional causal evidences from revenue to expenditure and from expenditure to revenue available in the literature and on the other side there exist some studies that claim bidirectional link between these variables.

Al-Zeaud (2014) examines the causal relationship between government revenues and expenditures in Jordan for the period 1990 to 2011 using Granger causality and VECM tests methodology and he discovered that there is a stable long-run equilibrium relationship between government revenues and expenditures, although, they may be in disequilibrium in the short run. He also concluded that there exists bidirectional causality between public revenues and expenditure during this period.

Mehrara and Rezaei (2014) investigated the nexus between public revenues and public expenditures in IRAN by using annual data and Toda - Yamamoto Granger causality test for the period 1978-2011. Their conducted analysis found results consistent with the revenue-spend hypothesis thus unidirectional causality from public revenue to public expenditure. The relationship of public revenues and expenditures was also investigated by Rafaqet and Mahmood (2012) through using annual data for Pakistan for time period 1976 – 2009 and applying Granger Causality and Johansen co-integration methodology and concluded that there is no evidence for causal relationship of public revenues and expenditures in the short run in Pakistan. Moreover, Saeed and Somaye (2012) analyzed the long term and causality relationship between public revenues and expenditures in oil exporting countries for time period 2000-2009 through using P-VAR techniques and results showed positive and unidirectional nexus between oil revenues and public expenditures. In their study, Nyamongo et al. (2007) analyze public revenue and expenditure nexus in South Africa by using monthly data and unit root test and Vector Error Correction Model (VECM) and found that public revenue and expenditure are co-integrated where it is evidenced a long-run relationship between them. Moreover, through applying Granger causality, they founded a bidirectional Granger causality that supports fiscal synchronization hypothesis. On the other side, Tsen and Kian-Ping (2005) examined this nexus for Malaysia during period 1965 – 2002 and applied Augmented Dickey-Fuller and Phillips Perron Unit root tests, as well as Johansen co-integration and Error Correction Models was applied to their research. Finally results supported tax-spend hypothesis, thus public revenues Granger cause expenditures in Malaysia during analyzed period.

In their studies, Alesina and Perrotin (1995; 1996) suggested both the institutional and political factors for budget deficit and fiscal policy. Although economies of the OECD countries are relatively similar; they vary according to their institutions as electoral laws; party structures; budget; degree of centralization; political stability and social polarization. In this regard, governments of coalitions are unable to maintain a strong fiscal position due to conflicts

between members of the coalition. Moreover, appropriate fiscal consolidation it is need along a time period expressed by relative high growth without raising taxes but abbreviating transfer programs and government employee wages, implying crucial importance for politicians to stop thinking that everything on expenditure side of a budget is untouchable. In this regard, Bexheti (2010), suggested that in Republic of Macedonia the late reaction due to the political opportunity will harm political structures, evidenced also in 2009. Moreover, he states that economic cycles need cyclical "regulated fiscal balance" explicitly based on the fiscal possibilities of the country and mega unproductive investments (expenditures) to be avoided.

DATA AND METHODOLOGY / ANALYSIS

The main purpose of this section is to investigate the presence and direction of the causality between public expenditures and revenues in the case of Macedonia and Albania. Moreover, we emphasize the time period for this investigation to be 2004 – 2016, quarterly time series are utilized in this analysis. So far, existing empirical papers for finding the direction of the causality relationship between public revenues and expenditures have also use the Granger causality test applied to this empirical research as well. Indeed, for finding the relationship between public expenditures and revenues in Republic of Macedonia, we have adopted a two-step procedure for this analysis. The first step is regarding the evaluation of the existence of a unit root between variables public expenditures and revenues through Augmented Dickey Fuller and Philips-Perron test. On the other hand, the second step refers to the investigation of the causal relationship between public expenditures and revenues through Granger causality Wald test.

Firstly, regarding the quarterly data for Total Public Revenues (TR) and Total Public Expenditures (TE) in Macedonia and in Albania, summary descriptive statistics is available in the following table.

Table1: Descriptive statistics

Variables	Mean	Max	Min	Std. Dev.	Skewness	Kurtosis
TR-MK	26532.69	43762	12786	9593.719	-.1634575	1.517048
TE-MK	28404.06	49318	10476	11551.71	-.011455	1.604494
TR-AL	64927.14	101401	35263	20273.71	.01131	1.581739
TE-AL	76884.98	141549	38961	26602.3	.406078	2.251425

Source: author's calculations.

From the Table 1, we can see the mean, Max, Min, Standard Deviation, Skewness and Kurtosis regarding the public expenditures and revenues in Macedonia and Albania. The following section continues with the testing of unit root, thus the implementation of ADF and PP test.

2.1. Unit Root Test

In order to model the variable in a manner that captures the inherent characteristics of its time-series, we determine the lag structure level of the series through using the FPE, AIC, SBIC and HQIC criteria.

Moreover, lag with the smallest value is the order selected by that certain criterion. An '*' indicates the optimal lag. Strictly speaking, FPE is not an information criterion that's why we did not include in this discussion. The AIC measures the discrepancy between the given model and the true model, which, of course, we want to minimize. Amemiya (1985) provides an intuitive discussion of the arguments in Akaike (1973). The SBIC and the HQIC can be interpreted similarly to the AIC, though the SBIC and HQIC have a theoretical advantage over AIC and FPE. As Lutkepohl (2005) demonstrates, choosing p to minimize the SBIC or the HQIC provides consistent estimates of the true lag order.

Furthermore, the results of the lag level in our analysis for both countries are presented in the following table:

Table2. Determination of lag structure

	ALBANIA			MACEDONIA		
lag	AIC	HQIC	SBIC	AIC	HQIC	SBIC
0	44.26	44.28	44.32	40.30	40.33	40.37

		73	98	44	17	42
1	41.49 89	41.58 09	41.70 84	37.92 29	38.00 49*	38.13 24*
2	41.46 07	41.59 72	41.80 97	37.89 18	38.02 84	38.24 09
3	41.30 19	41.49 3	41.79 05	38.00 16	38.19 27	38.49 03
4	40.51 16*	40.75 74*	41.13 99*	37.76 14*	38.00 72	38.38 97

Source: authors calculations.

As can be seen from the Table 2, the lag optimal value for the case of Albania is set to be four; while in the case of Macedonia is preferred to be two lags.

The next step is to determine the degree of integration of both variables. The main objective of a Unit root test is to examine whether a series contains a unit root and since many macroeconomic series are non – stationary (Nelson & Plosser, 1982), then Unit Root test are expressed as very useful in determining the order of integration of the variables, by which they can provide the properties of time- series data. For implementing a rigorous examination for the presence of the Unit root in the series of public revenues and expenditures, we have adopted the Augmented Dickey Fuller (ADF) test and Phillips – Perron (PP) test.

The results of ADF and PP test are reported in the table 6 and 7 for the level as well as for the first difference of each of variable. The result shows that the null hypothesis that the series contain unit root cannot be rejected in both cases at zero order levels. But the hypothesis of a unit root is strongly rejected for the differenced series of both variables.

Given the consistency and ambiguity of the results from this testing approach, we conclude that the series under investigation are I (1). This reveals that both, public revenues and expenditures are non-stationary in its levels and stationary in first difference.

Table3. Results of Augmented Dickey Fuller test

SI. No.	Variable	Macedonia	Albania
Levels	**TR**	-0.482 [2] (-2.921)	-0.053 [4] (-3.438)
	TE	-0.775 [2] (-2.921)	-0.662 [4] (-2.923)
First difference	**ΔTR**	-6.237 [2] (-2.922)	-3.106 [4] (-2.924)
	ΔTE	-8.147 [2] (-2.922)	-4.689 [4] (-2.924)
Notes: *† numbers in brackets represent lag length in ADF test.* *‡ Numbers in parentheses represent critical values at 5% level of significance.*			

Source: Authors calculations.

Table 4. Phillips – Perron test results

SI. No.	Variable	Macedonia	Albania
Levels	**TR**	-0.729 [2] (-2.920)	-0.340 [4] (-2.920)
	TE	-1.186 [2] (-2.920)	-2.820 [4] (-2.920)

First difference	**ΔTR**	-11.859 [2] (-2.920)	-21.656 [4] (-2.920)
	ΔTE	-15.267 [2] (-2.920)	-26.909 [4] (-2.920)
Notes: *† numbers in brackets represent lag length in PP test.* *‡ Numbers in parentheses represent critical values at 5% level of significance.*			

Source: Author's calculations.

Considering such results from Augmented Dickey Fuller and Phillips-Perron test for Unit root, we suggest that public revenues and expenditures to be non-stationary in their level and stationary in their first difference, therefore the following section is dedicated to the examination of the co-integration order by using Johansen – Juselius test.

2.2. Granger Causality Test

The above analysis suggests that there exists a long-run relationship between government revenue and expenditure in both countries. But in order to determine which variable causes the other, Granger causality Wald test is used. The Granger causality test results are presented in the following table.

Table 6. Granger Causality Wald tests results.

[1] HYPOTHESIS	[2] chi2	[3] Prob> chi2
[4] TR-MK [5] TE-MK	[6] .62731	[7] 0.428
[8] TE-MK [9] TR-MK	[10] 21.976	[11] 0.000
[12] TR-AL [13] TE-AL	[14] .00646	[15] 0.936
[16] TE-AL [17] TR-AL	[18] 9.8947	[19] 0.002

Source: author's calculations.

As shown in table 6, TR-MK on TE-MK and TR_AL on TE-AL are statistically significant at the 5% level ($p < 0.05$), implying that there is causality running from public revenues to public expenditures and in Macedonia and in Albania in the short run. Moreover, these results imply that the null hypothesis TR does not granger cause TE can be rejected at the 5% significance level. On the other hand, since TE on TR is not statistically significant at 5% level and F statistics imply that the null hypothesis that TR does not granger cause TE can be rejected at the 5% significance level for both countries. Therefore, the study reveals unidirectional causation between public revenue and expenditure in Macedonia and Albania in the short run, which is running from public revenue to public expenditure.

Above findings lend support to the tax-spend hypothesis, implying that government of Macedonia and Albania need to reconsider the budget deficit policy applied recently.

3. CONCLUSIONS AND RECOMMENDATIONS

The paper investigated causal relationship between public expenditures and public revenues in the case of Macedonia and Albania, conducted through quarterly data for the time period from 2004 to 2016, by using Granger causality test. Data properties were analyzed to determine their stationary by using Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) test for unit root, showing that both variables are non stationary at their level and stationary at first difference in both countries. Moreover, for modeling variables in a manner that conquest in severable characteristics of its time series, we use AIC, SIC and HQIC to properly define lag structure of the series, resulting the optimal lag order to be two for the case of Macedonia and four lags for Albania. The next step implemented the Granger Causality test, implying the existence of unidirectional causality running from public revenues to

expenditures in short run in both countries. Moreover, unidirectional causality is also seen during short run, thus findings are in line with tax-spent hypothesis. However, does tax-spend or fiscal illusion is present in these countries? In Republic of Macedonia, lately there have been present budget deficit with an increasing trend over the past years, after the change of progressive tax has been implied in 2007. However, since tax-spend hypothesis indicate that increasing revenues will increase public expenditures as well, which is used as argument for maintaining high fiscal deficit, in this case, tax-cut in Republic of Macedonia and the presence of high budget deficit and public dept are suggesting evidence for fiscal illusion hypothesis.

However, findings from the causality of public revenues and expenditures in the case of Macedonia and Albania would not fit the perfect picture unless we do not take into the consideration the level of their public debt. Indeed, this level in both countries has reached to a point where is left no fiscal space for an optimal boundary which can enable increasing or enhancing as well as a better utilization of national economy potential and ensuring the designated distribution. Thus, such recommendations suggest that every additional unit of optimal boundary will generate at least one additional unit of economic growth, which is not the case of our empirical analysis. As a result, it should be stated that any increase in public revenue and expenditure relationship in the existing structure, does not produce positive economic effects.

Moreover, the impact of political coalitions needed for surviving the governments, without doubt significantly affect the unproductive growth of public revenues/expenditures, referring also difficulties to explain the large differences of deficit levels among countries only through the usage of economic arguments. In addition, institutional and political factors are also crucial to understanding partially the budget deficit and fiscal policy in general. While the economies of the Balkan countries are relatively similar; their institutions as electoral laws; party structures; budget; degree of centralization; political stability and social polarization are quite different. Thus governments of coalitions tend to make unsuccessful adaptation efforts, being unable to maintain a strong fiscal position due to conflicts between members of the coalition. Moreover, appropriate fiscal consolidation it is need along a time period expressed by relative high growth without raising taxes but abbreviating transfer programs and government employee wages. Therefore, it is crucial for politicians and their advisers to must stop thinking that everything on expenditure side of a budget is untouchable.

Finally, this paper should be viewed as a starting point for reconsideration of the importance of the fiscal illusion hypothesis. This reconsideration comes at an important time. The current decade in Macedonia has been characterized by long appearance of budget deficits, tax cuts and high public debt, coming to a point of diminishing the fiscal space.

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