Tax and Tax Regime Change Effects on The Economic Growth in the Republic of North Macedonia

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ABSTRACT

Taxation plays a crucial role in the economic growth of both developed and developing countries and is seen as an important tool through which the government achieves important goals and finances its public expenditures. The main aim of this paper is to investigate the effects of taxation and tax regime change in the case of the Republic of North Macedonia for the time period 2000 - 2017, by incorporating quarterly time series of real GDP growth rate, Personal Income Tax, Corporate Income Tax, Labor force participation rate and Gross fixed capital formation, as well as a dummy variable regarding the time period of the tax regime change, has been employed. One of the main justifications for changing the tax regime from progressive to flat tax rate was to achieve an improvement of employment, by reducing the unemployment rate. Thus, having into consideration the main objective of this paper, firstly the effects of taxes on economic growth areanalyzed through the co-integration methodology, and later we investigate how the tax regime change has affected the economic growth in the Republic of Macedonia by analyzing two different time periods.First when was applicable progressive tax rate from 2000 – 2006, and then the second time period 2007-2017, when was applicable flat tax regime was insignificant and inefficient for the case of the Republic of North Macedonia.

KEYWORDS: taxation, progressive, economic growth, co-integration, VAR.

JEL classification: C32, E62, E64.

INTRODUCTION

Awareness of evidence for controversial empirical findings regarding the impact of tax policy on the economic growth in transition countries represents the main aim of this paper trying to address the impact of tax policy and its regime changes on the economic growth of the Republic of North Macedonia, meanwhile addressing such results as a further recommendation for eventually government improvements in the near future.

The structure and finance of tax changes are important in achieving economic growth goals. It is true that tax rate cuts may encourage individuals to work, save, and invest, yet if they are not financed by an immediate expenditure cut, they will likely result in an increased budget deficit, in the long runcausing reduced savings interest rates rise. Further, also it is suggested that net impact on growth is uncertain, recent evidence suggests that it is either small or negative. Even though broader measures can eliminate the effect of tax rate cuts on

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budget deficits, on the other hand, they will also reduce the impact on labor supply, savings, and investment and therefore will also reduce the direct impact on output. Further, it will reallocate resources across sectors that have the highest economic usage, by resulting in increased efficiency and a rise in the size of the economy. Finally, the effects of tax changes on the size of the economy are an empirical question, although most tax changes alter many features of the code simultaneously. Indeed, the difficulty to isolate the effects of tax changes relative to other changes in policy and the economy is quite obvious.

Having into consideration the role and the current debate regarding the effects of direct taxes and the tax regime, the main objective of this paper is to emphasize the evidence of the effects of taxes and its change regime in the Macedonian economy for the last two decades.

LITERATURE REVIEW

Recently there has been going a debate among scholars emphasizing also the difficulties of interpreting the evidence, reaching strongly different conclusions and interpretations of the literature (McBride 2012; Huang and Frentz 2014). Since evidence presented in those studies are found as relatively unconvincing of the view that tax cuts promote or not growth, in this case, the problem indicates that during the absence of clearly exogenous shifts in tax policy, it becomes very difficult to estimate clear conclusions. Moreover, this section examined the analysis of historical trends and studies of specific tax policy changes.

In a recent study for the US, Romer and Romer (2010) have used a narrative record from speeches, documents and reports to identify the size, timing and principal motivation for all major tax policy actions after the Second World War in the United States. Their study was focused on investigating whether the tax changes were made to promote long-run growth or to reduce an inherited budget deficit, rather than tax changes made for other reasons. Finally, findings indicate that tax changes have large and persistent effects, a 1 percent tax increase will lower real GDP by 2 to 3 percent. Moreover, they claimed that these effects are rapid enough, thus effects taking place over the first few quarters, therefore can suggest an aggregate demand response, but on the other side they seem to be also long-lived enough, thus the effects were lasting through 20 quarters so that it can suggest that supply-side responses are also acceptable. But, recently available evidence from recent papers has questioned the robustness of such results.

Further, in their study, Altig et al. (2001) used a similar model in order to enhance a more extreme policy reform—a revenue-neutral switch to a flat income tax—but with no personal deductions or exemptions, where in this case they found that an immediate rise of output by 4.5 percent, and by another one percent over the next coming 15 years, but hurting poor income groups. Moreover, their study indicated two interesting results: firstly, one-time effect tax reform can increase the size of the economy but it does not affect the long-run growth rate, thus the one-time effect of tax reform on the size of the economy dominates the effect on the overall growth rate. Secondly, the presence of a trade-off between growth and progress in the model is seen very often.

Moreover, the findings of Mendoza et al. (1997); Garrison and Lee (1992) suggest no tax effects on growth in developed countries. Further, Padovano and Galli (2001) suggest that a 10 percentage point reduction in marginal tax rates will rise the growth rate by 0.11 percentage points in OECD countries. On the other hand, Engen and Skinner (1992) paper findings indicate significant effects of taxes on growth in a sample of 107 countries, underlying that the tax effects are tiny and insignificant when estimated only on developed countries. Further, Piketty, Saez, and Stantcheva (2011) investigated 18 OECD countries regarding the effects of tax rates and economic growth regarding the 1960-2010 time period. Indeed, findings indicate no evidence of a nexus between growth in real GDP per capita and reduction of marginal rate for the analyzed time period 1960-2010.

However, the lack of robust results showing a positive impact of tax rates and growth in a cross-section country analysis quite surprising, since it is very hard to determine one-time impacts of tax changes using cross-country data.

It is important to mention that changes in revenues level and changes in tax system structure, both can influence the economic activity, however not all tax changes have equivalent, or even positive, effects on long-run economic growth. Moreover, very often it is mentioned that income tax cuts raise growth. On the contrary, theory evidence and study findings tell a completely different and complicated story. Indeed, tax cuts can raise economic growth by improving incentives to work, save and invest, but on the other hand create income effects that reduce the need to engage in productive economic activity. Further, tax cuts as a stand-alone policy thus, in the case when are not accompanied by expenditure cuts, will increase the government budget deficit. Such an increase in the budget deficit will reduce saving and will raise interest rates, which on the other side will cause negative effects on investment. Therefore, it is crucial to know that the net effect of the tax cuts on economic growth is uncertain and depends on the structure of the tax cut itself as well as on the timing and structure of its financing.

In their study, authors Tosun and Abizadeh (2005) claimed that the share of personal income tax responded positively to economic growth while McCarten (2005) suggested that the ratio of direct tax to GDP and the ratio of direct tax to total tax have stimulated positive effects on real growth in Pakistan. Moreover, Lee and Gordon (2005) by using cross-country data indicated that corporate tax rates have a negative and significant correlation with cross-sectional differences in average economic growth rates. In this direction, Djankor et al (2009) suggested a strong negative effect of personal income tax on the growth of output while Scarlett (2011) findings indicated that an increase in the share of taxes from personal taxable income will harm GDP per capita in the long-run. Moreover, Arnold et at (2011) study findings claim that personal income taxes are progressive with marginal tax rates that are higher than their average rate, by discouraging savings and labor supply on the other side. Authors, Arisoy and Unlukaplan (2010) have investigated the effect of direct-indirect tax composition on economic growth in Turkey, where findings indicate that direct taxes have no significant effect on economic growth.

In its study, Widmalm (2001) suggest that personal income tax is negatively correlated with growth, and corporate income tax does not correlate with growth at all. Moreover, study assumptions are that tax structures have not been changed during the entire analyzed period and the structure of tax revenue in all countries cover in the empirical analysis is the same.

Duncan and Peter (2008) in their study they developed a measurement of income tax progressivity, especially in the Personal Income Tax (PIT) rate by employing data for 35 countries over the period 1981-2005, where findings suggested that PIT rate could promote more equal distribution of income via its progressive characteristics.

EMPIRICAL FINDINGS

This analysis of the dissertation emphasizes the effects of direct taxation and the impact of the change of taxation regime in the Republic of Macedonia, where from being a progressive tax rate until 2006, from 2007 until now this norm became a flat tax. In order to analyze such effects on the economic growth of the Republic of Macedonia for the time period 2000 – 2017, I have employed quarterly time series of real GDP growth rate, Direct tax divided into Personal Income Tax and Corporate Income Tax, Labor Force participation rate and Gross Fixed Capital Formation as % of GDP. Moreover, the quarterly data are obtained from the published reports of the Ministry of Finance, which are then transformed into log data. Moreover, the data has been divided into two time periods, where the first period covers 2000 – 2006 and the second period covers 2007 – 2017. One of the main justifications for changing the tax regime from progressive to flat was that this change

will reflect in the improvement of employment, thus will reduce the unemployment rate. In order to check also this effect, it is applied the Impulse Response Function, which enables us to notice whether a shock in the Personal Income Tax will affect in the long-run and short-run employment. Moreover, the main objective is to investigate how the tax regime change will affect the economic growth in the Republic of Macedonia, where one part of the analysis is also regarding the two different time periods, first, from 2000 – 2006 when progressive tax ratewas applicable, and then the second time period 2007-2017 when was applicable flat tax rate, by applying the dummy model. The analysis starts with the step of checking the stationarity of the variables included in the model. Then it is continued with the Johansen test for co-integration, and since the results indicate that variables have unit root in their level, thus are non-stationary at their level, but they become stationary in their first difference, and due to the one order integration, the Vector Error Correction Model has been used for checking the effects of the variables in the long-run and the short run.

Moreover, the following equation implicit the model of the regression:

 $\log GDPR = \beta_0 + \beta_1 L1 \log GDPR + \beta_2 \log PIT + \beta_3 \log CT + \beta_2 \log GFCF + \beta_2 \log LF + \epsilon$ (1) In order to start testing the effects of the independent variables at the dependent variable in this model, the first step that is applied is to check the unit root of the variables, by using Augmented Dickey-Fuller and Phillips-Perron test.

Moreover, the following table firstly focuses on the results of the optimal lag length based on the following AIC, SBIC, HQIC and FEC criterion.

Lag	LR	FPE	AIC	HQIC	SBIC
0		3.3e+13	36.8168	36.8308	36.8512
1	268.3	8.4e+12	35.4322	35.4741	35.5355
2	51.466	6.8e+12	35.201	35.2708	35.3732
3	48.329	5.4e+12	34.9865	35.0842	35.2275*
4	16.847*	5.1e+12*	<mark>34.9395*</mark>	35.065*	35.2493

 Table1. Determination of the lag structure

Source: author's calculations.

As can be seen in the table1, the optimal lag length according to the AIC and HQIC is four lags, which imply the selection of this lag length. Moreover, the SBIC imply the lag length to be three, but since literature evidence implies AIC as better criteria for using in the model of monthly time series, therefore, lag length on this model is set to be as four.

The next step employs the results of the Augmented Dickey-Fuller and Phillips-Perron test for Unit Root, which are presented in the table2. Besides these tests, also are taken into consideration the trend graphs of Real GDP growth rate, Personal Income tax, Corporate Income Tax, Gross Fixed Capital Formation as % of GDP and Labor Force participation rate.

	Variable	Augmented Dickey Fuller	Phillips-Perron	Comment
Levels		-1.299	-1.268	
	logGDPR	(-2.928)	(-2.920)	\mathbf{H}_{0} accepted
		MacKinnon approximate p-value for $Z(t) = 0.6297$	MacKinnon approximate p- value for $Z(t) = 0.6436$	
		-0.313	-4.606	
	logPIT	(-2.928)	(-2.920)	H0 accepted
		MacKinnon approximate p-value for $Z(t) = 0.9779$	MacKinnon approximate p- value for $Z(t) = 0.0001$	
		-1.716	-5.262	
	logCT	(-2.928)	(-2.920)	H0 accepted
		MacKinnon approximate p-value for $Z(t) = 0.4220$	MacKinnon approximate p-	
		101 Z(t) = 0.4229	2.127	
	logGFCF	-1.333 (-2.928)	(-2.920)	\mathbf{H}_{0} accepted
		MacKinnon approximate p-value for $Z(t) = 0.6138$	MacKinnon approximate p- value for $Z(t) = 0.2338$	
		-1.162	-2.481	
	logLF	(-2.928)	(-2.920)	H0 accepted
		MacKinnon approximate p-value for $Z(t) = 0.6898$	MacKinnon approximate p- value for $Z(t) = 0.0093$	
First		-2.049	-22.549	l
difference	∆logGDPR	(-2.928)	(-2.920)	H _{1 accepted}
		MacKinnon approximate p-value for $Z(t) = 0.2657$	MacKinnon approximate p- value for $Z(t) = 0.0000$	

Table2. Results of Augmented Dickey-Fuller and Phillips-Perron test

		-2.828	-17.049	
	∆logPIT	(-2.928)	(-2.920)	H1 accepted
		MacKinnon approximate p-value	MacKinnon approximate p-	
		for $Z(t) = 0.0544$	value for $Z(t) = 0.0000$	
		-2.141	-20.511	
	∆logCT	(-2.928)	(-2.920)	H ₁ accepted
		MacKinnon approximate p-value	MacKinnon approximate p-	
		for $Z(t) = 0.2285$	value for $Z(t) = 0.0000$	
		-2.579	-3.784	
	∆logGFCF	(-2.928)	(-2.920)	H1 accepted
		MacKinnon approximate p-value	MacKinnon approximate p-	
		for $Z(t) = 0.0973$	value for $Z(t) = 0.0031$	
		-2.091	-3.452	
	∆logLF	(-2.928)	(-2.884)	H _{1 accepted}
		MacKinnon approximate p-value for $Z(t) = 0.2480$	MacKinnon approximate p- value for $Z(t) = 0.0093$	
		101 2(0) 0.2 100		
Notes:				
† numbers represent lag length in ADF and PP test				
‡ Numbers in parentheses represent critical values at the 5% level of significance.				

Source: author's calculations.

Evidence from the overall results from the conducted Augmented Dickey-Fuller and Phillips-Perron test for all the included variables in the model, as well as taking into consideration their trends, it is suggested that all the variables are non-stationary at their level and stationarity at their first difference, thus they have unit root when in their level, and they do not have unit root in their first difference. These results also should imply that they have one co-integrated order, but for having accurate results, in this case, Johansen test for co-integrationwas employed.

Table 3presents the result of the trace test (λ -trace) and maximum eigenvalues test (λ - max) statistics for the existence of long-run equilibrium. The null hypothesis of no co-integration (r=0) based on both the trace test and the maximum eigenvalues test between logGDP, logPIT, logCT, logGFCF and logLF is rejected at (5%) level of significance.

Null hypothesis	λ trace	λ_{max}
	44.4434	44.0913
$\mathbf{r} = 0$	[15.41]	[14.07]
. 1	0.3520	0.3520
$r \leq 1$	[3.76]	[3.76]

Source: Authors calculations.

In the estimation of this model, this study adopts Vector Error Correction Model framework. A VECM is a restricted VAR designed for use with non-stationary series that are known to be co-integrated. Following Barro (1990) and Worlu and Emeka (2012), the paper expressed VECM as thus:

$$\Delta logGDPR = \beta_0 + \sum_{k=1}^r \alpha_k \phi_{k,t-1} + \sum_{k=1}^r \alpha_{1i} \Delta logGDPR_{t-1} + \sum_{k=1}^r \alpha_{2i} \Delta logPIT_{t-1} + \sum_{k=1}^r \alpha_{3i} \Delta logCT_{t-1} + \sum_{k=1}^r \alpha_{4i} \Delta logGFCF_{t-1} + \sum_{k=1}^r \alpha_{5i} \Delta logLF_{t-1} + \varepsilon_t$$
(2)

Taking into consideration the variables included into the above equation, table4 represent the results of VECM regarding the long run effects of independent variables logPIT, logCT, logGFCF, logLF and dummy at dependent variable logGDPR, thus a summary of the long run parameters in the model is reported in the table below.

VARIABLE (one co -	β	α	
integration)			
∆lnGDPR	1.000	0	
∆lnPIT	2067758	2.117317	
	(0.004)		
ΔlnCT	.0005663	4.617566	
	(0.980)		
∆lnGFCF	.0781016	4128974	
	(0.580)	2022021	
AINLF	-2.459538 (0.000)	.5057971	
Note: β - cointegrating vector and α - adjustment parameter vector; 1.000 - cointegrating vector is normalized with respect to			
the variable. () represent the probability value; z - test statistic for alpha parameter and p values - probabilities for alpha .			

Table4. Estimated co-integrating vector resulting from Johansen procedure

Source: Author's calculations.

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The co-integrating vector is normalized with respect to the real GDP (GDPR). The co-integrating coefficients of the lnGFCF and lnCT are statistically insignificant. The long-run impact of the explanatory variables on real GDP as shown by table 4 is illustrated using following equation:

logGDPR = -0.2067758 lnPIT + 0.0005663 lnCT + 0.0781016 lnGFCF - 2.459538 lnLF(3) (0.004) (0.980) (0.580) (0.000)

Results of VECM denote that the variables lnCT and lnLF have a positive long-run relationship with lnGDPR, while lnPIT and lnLF have a negative long-run relationship. However, from the explanatory variables except for lnPIT and lnLF, the others are not statistically significant. Therefore results of beta coefficients indicate the long-run relationship only between lnGDPR, lnPIT and lnLF, while the others are found to be statistically insignificant.

These results reveal that the long-run determinants of real GDP are Personal Income Tax and Labor Force participation, both indicating a negative long-run relationship and since only these variables are statistically significant in the long run. Corporate tax and Gross Fixed Capital formation are found to be statistically insignificant, while based on the alpha parameters InCT does not explain the short-run variations on the real GDP, meaning that this variable is weakly exogenous. Also, it is not affected by the long term co-integration relationship.

Furthermore, the second part of the analysis represents the effect of the change regime of the tax system from progressive to a flat rate, where it is employed a VAR analysis in order to see the impact of Personal Income tax and Corporate tax how was before and after 2007, when it happened this change. Moreover, we are going to measure these by creating a dummy variable indicating the period t > 2007q1, thus we try to analyze whether this rate change was effective and significant.

Moreover, the following table represents the results of VAR:

Variables	Coefficient	P> z
∧ (InGDPR)		
L1. Δ (lnGDPR)	7234185	0.000
L2. (InGDPR)	6828052	0.000
L3. Δ (lnGDPR)	5853651	0.000
L4.Δ(lnGDPR)	.1892458	0.187

Table 5. Empirical results of VAR model

L1. Δ (lnPIT)	.0867105	0.023
L2.Δ(lnPIT)	.0957253	0.012
L3.Δ(lnPIT)	.0663089	0.063
L4.Δ(lnPIT)	.0263951	0.425
L1. Δ (lnCT)	0041898	0.762
L2.Δ(lnCT)	0053241	0.697
L3. Δ (lnCT)	.0147334	0.301
L4.Δ(lnCT)	0102096	0.425
L1.Δ(d)	.0302321	0.407
L2.Δ(d)	.0441357	0.388
L3.Δ(d)	0190223	0.708
L4.Δ(d)	0565615	0.127

Source: author's calculations.

In the specification of the model, InGDPR (real GDP) is considered as a dependent variable and the results show that statistically significant are the changes in the first, second and third time lag of real GDP, InPIT(personal income tax) shows positive and significant for the first, second and third lag and positive and insignificant during the fourth lag. The sign of a relationship with the InCT (corporate tax) is negative during the first, second and fourth lag, however not statistically significant while the dummy variable (d) has positive and insignificant during the first two lags and negative and insignificant during the third and fourth lag.

Such results imply that the change of tax regime did not have significant results on real GDP in Macedonia, even taking into consideration the results for the four lags.

CONCLUSION AND RECOMMENDATIONS

This paper analyses the effect of the direct taxation through the co-integration and VECM methodology and the change regime of the tax system from progressive to a flat rate, where it is employed a VAR analysis in order to see the impact of the Personal Income tax and Corporate tax how was before and after 2007, when this change

happened. Moreover, we have measured such effect by creating a dummy variable indicating the period t > 2007q1, thus will try to analyze whether this rate change was effective and significant.

The results of VECM denote that corporate tax and gross fixed capital formation have a positive but statistically insignificant effect on the real GDP growth rate, while personal income tax and labor force participation rate have a negative long-run relationship with the real GDP growth rate.

These results reveal that the long-run determinants of real GDP are Personal Income Tax and Labor Force participation, both indicating a negative long-run relationship and since only these variables are statistically significant in the long run. Corporate tax and Gross Fixed Capital formation are found to be statistically insignificant, while based on the alpha parameters InCT does not explain the short-run variations on the real GDP, meaning that this variable is weakly exogenous. Also, it is not affected by the long-term co-integration relationship.

The results of the VAR model show that the dummy variable (d) has positive and insignificant during the first two lags and negative and insignificant during the third and fourth lag. Such results imply that the change of tax regime did not have significant results on real GDP in Macedonia. Based on such results, several conclusions are mentioned below:

- First, companies that "save" from lower taxes do not have intense activities based on the local accumulation, also based on limitations of the market (as a main economic factor) but above all also because of non-economic factors group (political-legal) from the dysfunctional judiciary, high corruption, lack of institutional capacity for guaranteed capital and property, all these causing the discharge or transfer of local accumulation in foreign markets.

-Second, "savings" from lower taxes do not open new jobs, because the labor market is not functional enough to allocate properly the potential and resources and it is facing yet a high-cost workforce as a result of high contributions payments (compared with Kosovo, Albania, Montenegro or Serbia).

-Third, foreign investors do not calculate the lowest taxes also due to the 10-year exemption from them, in a case when investments can be done in free economic zones.

- Fourth, tax rates are only one element of tax bars (tax incidence), while the tax base is another element, equally important to the first one, that increased as well.

- Five, "pre-fiscal costs" are a significant burden for companies, from the execution of transactions until various taxes.

Similar analysis and findings of other studies also have claimed that lowering taxes is not giving actual effects on economic growth. One of them is the MACRO-CEA (Center for Economic Analysis) including measurements for the period 2007-2013, where findings revealed that the impact was less than 0.3% on the annual economic growth rate.

A similar analysis for Eastern Europe was committed by World Bank (see Bank release No.2007 / 463 / ECA), indicating approximate findings with the findings of this analysis, underlying the high economic informality factor with an emphasis on tax evasion.

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