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ИЗБОРЪТ НА ДАНЪЧНА СИСТЕМА И ВРЪЗКАТА С ИКОНОМИЧЕСКИЯ РАСТЕЖ (ПАНЕЛНО ИЗСЛЕДВАНЕ НА СТРАНИТЕ ОТ ЕС)

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THE CHOICE OF TAX SYSTEM AND RELATIONSHIP WITH ECONOMIC GROWTH (PANEL DATA ANALYSIS OF A EU COUNTRIES)

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Abstract

The study analyzes the tax systems of Bulgaria, Greece, Hungary, Spain, Portugal, Germany, France, Belgium, the Netherlands and Austria in terms of consumption and hybrid tax system for the period 2003 - 2014.

The results show that in countries with consumption and hybrid tax system where economic growth is registered, taxes form up the necessary fiscal revenue in the budget. In times of crisis tax revenue are insufficient and a budget deficit is established. There are prerequisites for increasing the national debt due to the decreased revenue. In terms of crisis, in countries with a consumption tax system, the government debt is part of the expenditure policy of the parties. In countries with a hybrid tax system, debt has no such effect. The results establish a positive relationship between economic growth and government expenditure and negative between growth and tax revenues in both types of tax systems. For the analysis we have used econometric methods of multifactorial linear regression, including dummy variable (OLS with dummy variable) and Two-Stage Least Squares method (TSLS).

Keywords: *Direct taxes, Government expenditure, Government debt, Economic growth;*
JEL codes: H24; H25; H63

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1. Introduction

The types of taxes and their derivative tax system, are periodically at the center of the discussion in the shaping tax policy. J. Stiglitz (1994, pp. 540) states that there is a hard task standing before the modern distorting taxes, namely- how to approach the collection of fiscal revenues in terms of the economic cycle. R. Barro, X. Martin (1995, pp. 5) suggest that taxes imposed on consumption are non-deformable (VAT, excise and customs duties), while taxes on income and capital have distortionary effect on budget revenues and economic growth. Thus distorting taxes lead to lower incentives for investment in human capital and lower the process of economic growth. In models of endogenous growth, it is implied that the increase in expenditure, financed by non-distorting taxes, increases growth R. Barro (1990, pp.103).

As a choice between non-distorting taxes being imposed on con39sumption and distorting taxes being imposed on income and capital, many countries apply the income tax system (US, Japan, Denmark), others rely heavily on Hybrid System (France, Germany, Austria), others adhere to consumption tax system (Bulgaria, Hungary, Portugal, Greece).

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The aim of this paper is to analyze the budget revenue generated from distorting direct and indirect taxes during growth and crisis. And then to show the relationship between economic growth and government expenditure in terms of consumption and hybrid tax system. Table 1 shows the two types of taxes which form the revenue of surveyed EU countries.

Table no. 1

Distorting (direct) taxes	Non-distorting (indirect) taxes
Tax on Income	**VAT**
Tax on Capital	**Excise**
Tax on Dividends	**Customs Duties**

The study consists of two parts:

The first part analyses the tax systems of Bulgaria, Greece, Hungary, Spain and Portugal in terms of consumption tax system;

The second part analyses the tax systems of Germany, France, Belgium, Netherlands and Austria in terms of hybrid tax system.

2. Literature review

In the economic literature there are many studies that explain the relationship between the different types of taxes, government expenditure and economic growth. In a panel survey of more than a hundred countries for the period 1970-1988, W. Easterly and S. Rabelo (1993, pp. 417-458) found a positive relationship between government expenditure and economic growth. They have confirmed that if government expenditure is designated for the development of transport, communications and education, there is a directly proportional relationship with growth.

P. Cashin (1995, pp. 237-269) proves the relationship between economic growth and government expenditure panel survey of twenty-three countries for the period 1971-1988. They have found a positive relationship between government transfers, public investment and growth. The results confirm the presence of a negative relationship between distorting taxes and growth.

L. Berasovenu and Lillian Berasovenu (2009, pp. 19-26) analyze the tax, non-tax revenue and the link with economic growth in Romania for the period 1990-2007 with correlation and regression analysis and they have found that lowering the amount of direct taxes is inversely related to economic growth.

The link between government expenditure and economic growth for South Africa was investigated by M. Orkan (2009, pp. 22-24) for the period 1990 - 2004 with vector autoregressive model. He has published the results that government expenditure for consumption, gross capital formation are in positive correlation with economic growth.

In a panel survey of N. Benos (2009, pp. 1-32), comprising fourteen EU countries for the period 1990-2006, with a least squares model, it was found that distorting taxes recorded negative correlation with economic growth. There is a positive relationship between productive government expenditure and growth and negative between unproductive government spending (social spending) and growth. Similar results of empirical studies are published by B. O'Connor (2013, pp. 511-540), G. Bacarreza, M., Vazquez and V. Vulovic (2013, pp. 1-48).

V. Gaspar and et al. (2016, pp. 1-40) examined the relationship between economic growth and tax rates. They have found that the threshold of taxation is 12.88% of GDP per capita. It is assumed that if you adopt this tax amount in a period of ten years, GDP per capita will grow by 7.5%.

In a study, Blagoeva (2012, pp. 28-35) proves that there is a relation between economic growth and budget expenditure. She analyzes data for the period 1996-2011 for the EU27 countries and Bulgaria.She shows that in Bulgaria state intervention is limited,

which affects economic growth. In another survey about Bulgaria I. Todorov (2011, pp. 23-27) shows that under the terms of a currency board economic growth depends on the flexibility of domestic markets, from rapid improvement Competitiveness of national economy and from adapting it to the new one international conjuncture.

3. Methodology and empirical results

The type of the used regression method depends on the trend fluctuations in the variables. The presence or absence of non-stationary process (unit root) is the basis of linear and nonlinear regression methods. The summary test for the establishment of a unit root has been applied (see Appendix A1, A3 and B1, B3) in panel data at a level of probability of error of 5%. The results show stationarity and reject the existence of a unit root in the time series data in countries with consumption tax system (see Appendix A1). In countries with a hybrid tax system (see Appendix B2) there was evidence of non-stationary process in the variables of tax revenue, VAT, excise, income tax, tax on capital and dividends. In variables of countries with consumption tax system (see Appendix A3) a unit root was established in variables of budget revenues, government spending and debt. In countries with a hybrid tax system there is also a unit root in variables of budget revenue government spending and debt.

Within the variables where non-stationary process are registered, the first differences have been calculated.

The Correlations (see Appendix A2 and B2) are based on multi co-linear processes. According to Ramanathan (1995, p. 450), however, the presence of multi co-linear processes lowers the reliability of the calculation procedure and has no significant impact on the results of the study. The results form a positive correlation between all studied variables. In countries with a consumption system, the relationship between tax revenues and revenues from non-distorting indirect taxes is much stronger. Relatively, a weaker correlation has been established between dividends and tax revenues. In countries with a hybrid tax system there is a strong correlation between distorting direct taxes and tax revenues.

I. Revenue Analysis of distorting (direct) and non-distorting (indirect) taxes in general government budget for the period 2003 - 2014 for the countries: Bulgaria, Greece, Hungary, Spain and Portugal in terms of consumption tax system.

We have used standard linear regression included dummy variable for calculating the parameters. Dummy variable sets the strength and direction of the connections in times of economic growth and in times of crisis. The regression equation is as it follows.

(1)

$$Y_t = C + X_{it} + EXPT(0,0/1,0) + \varepsilon_t$$

Where:

Y_t - share of tax revenue in the budget of Bulgaria, Greece, Hungary, Spain and Portugal;

X_{it} - Share of revenues from direct and indirect taxes (VAT, excises, duty, income, corporate, dividends) of Bulgaria, Greece, Hungary, Spain and Portugal;

EXPT (0,0/1,0) – with included dummy variable where the value (1,0) is in terms of growth (2003-2008) and the value (0,0) is in terms of crisis (2009-2014) ;

ε_t - Vector of residues;

Table no. 2. DEPENDENT VARIABLE: TAX REVENUE

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	6.474394	6.328895	3.022990	0.0215
VAT	0.340426	0.627346	2.614864	0.0188
Excises	0.228858	3.742556	2.194749	0.0480
Duty	0.001664	0.098783	2.375389	0.0123
Corporate tax	0.164188	0.741349	2.649478	0.0175
Income tax	0.209890	0.464631	8.242869	0.0000
Dividends	-6.422950	5.131124	-1.251763	0.2286
EXPT=1	0.060646	2.057890	2.719022	0.0425

R-squared	0.900911	Mean dependent var	39.11667
Adjusted R-squared	0.857559	S.D. dependent var	4.027694
S.E. of regression	1.520106	Akaike info criterion	3.936639
Sum squared resid	36.97155	Schwarz criterion	4.329323
Log likelihood	-39.23966	Hannan-Quinn criter.	4.040818
F-statistic	20.78149	Durbin-Watson stat	1.701395
Prob(F-statistic)	0.000000		

The results show that the most important tax revenue (see Table 2) of Bulgaria, Greece, Hungary, Spain and Portugal have the VAT revenues. This is confirmed by the coefficients of the variable (0.340426). Comparing it to the coefficients of tax revenues (6.474394) show as that for a unit formed tax revenue, the average amount of 34% are formed by VAT. The coefficients of other taxes show that excises are the second most important revenue source for the budget with registered coefficient (0.228858). Therefore, the taxation of consumption (non-distorting taxes) is essential to tax revenues in the budgets of these countries. Duties provide income lower than one percent. Revenues from taxes on consumption, confirm the existence of consumption tax system.

Taxation on income and capital (distorting taxes) establishes a minor significance on the budget revenues. Revenues from income taxes are about 20% of all tax revenues with registered coefficient (0.209890) and corporate taxation provides revenue budget of approximately 16% with coefficient (0.164188). Revenue growth during the crisis and growth depends on the sign, standing before the coefficient EXPT. Therefore, during growth, it can be assumed that the tax system that primarily relies on income on consumption is able to collect the necessary fiscal resources. This result is established by the positive sign (0.060646) before the coefficient of dummy variable EXPT = 1. Comparing the result of EXPT = 1 to the coefficient of tax revenues (6.474394) a conclusion can be drawn that tax systems of consumption type , the revenues during growth, which are mainly formed by consumption taxes tend to increase.

Table no. 3. DEPENDENT VARIABLE: TAX REVENUE

Variable	***Coefficient***	***Std. Error***	***t-Statistic***	***Probability***
Constant	6.474394	6.328895	3.022990	0.0215
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Log likelihood	-39.23966	Hannan-Quinn criter.	4.040818
F-statistic	20.78149	Durbin-Watson stat	1.701395
Prob(F-statistic)	0.000001		

The results in terms of crisis (see Table 3) show an inversely proportional relationship. Revenues from consumption taxes tend to decrease. This trend is established by the existence of a negative sign (-0.060646) before the coefficient EXPT = 0. It is assumed that during crisis, countries which rely mostly on income on consumption, are not able to provide the necessary fiscal resources in the budget. This conclusion is confirmed by the inversely proportional relationship between EXPT = 0 and the coefficient of tax revenues (6.474394). Under these conditions, it can be assumed that the negative coefficient EXPT = 0 leads to decreasing the tax revenues.

J. Keynes (1936, p. 125) believed that saving money would no stimulate the economy. If people did not spend a good amount of their money, there would be no distribution of money anywhere. Therefore, if in terms of crisis, the society is not ready to spend, and is more likely to save, the income tax being imposed on the consumption, decrease. This conclusion suggests that consumption taxes have a distortionary impact on revenues. In those circumstances, if you seek to achieve a balance in times of crisis, when indirect taxes prevail, between income and expenditure it is necessary either to limit the government spending, or to stimulate demand with higher deficit spending and subsequent increase in government debt. In a period of lower collection at prevailing consumption taxes, we can draw the conclusion that requires a further study of government debt as a determinant of government spending. Enclosed is a multifactor linear regression in the form of least squares method.

The equation has the following expression:

(2)

$$Y_t(GS) = \beta_0 + \beta_1(TR) + \beta_2(GD) + \varepsilon_t$$

Where:

$Y_t -$ government spending as a share of GDP (period 2010-2014) of Bulgaria, Greece, Hungary, Spain and Portugal;

$\beta_1 -$ tax revenue as a share of GDP (period 2010-2014) of Bulgaria, Greece, Hungary, Spain and Portugal;

$\beta_2 -$ government debt as a share of GDP (period 2010-2014) of Bulgaria, Greece, Hungary, Spain and Portugal;

$\varepsilon_t -$ vector of residues;

Table no. 4. DEPENDENT VARIABLE: GOVERNMENT EXPENDITURE

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	21.49267	5.343712	4.022048	0.0004
Tax revenue	0.672282	0.150686	3.134205	0.0041
Government debt	0.075413	0.014747	5.113811	0.0000

R-squared	0.811513	Mean dependent var	47.53333
Adjusted R-squared	0.797551	S.D. dependent var	6.216626
S.E. of regression	2.797128	Akaike info criterion	4.989703
Sum squared resid	211.2460	Schwarz criterion	5.129823
Log likelihood	-71.84555	Hannan-Quinn criter.	5.034529
F-statistic	58.12302	Durbin-Watson stat	1.160615
Prob(F-statistic)	0.000000		

The results (see Table 4) show that between tax revenues and government expenditure there is a directly proportional relationship. Therefore, taxes are a major fiscal factor in securing expenditure policy in the surveyed countries and provide more than 2/3 of all the revenue collected in the government budget. The correlation is confirmed by the coefficient of tax revenues (0.672282) compared to government expenditure coefficient (21.49267). The Government Debt registers a coefficient (0.075413) and is also in a directly proportional relationship with the dynamics of government expenditure. Therefore, in times of crisis, it can be assumed that relying primarily on consumption taxes, total tax revenues provide about 67% of all budget revenues. There is a need for additional financial resources, as regarding the expenditure policy, the government debt provides approximately 7%.

Assuming that the tax system is the ratio between the types of tax revenues and government expenditure, the taxes are nothing more than a redistribution in the budget. This case requires the necessity, in regard to the studied countries to clarify the impact of government expenditure on the dynamics of economic growth. The results (see Table 5) of the correlation "government spending – economic growth" in prevailing consumption tax system. For the calculations we have used a two-step linear regression. The methodology itself is reasonable, as it eliminates all other variations that have an impact on the dependent variable with included instrumental variables. In the regression equation dependent and independent variables are represented in logarithms values. The dependent variable is the dynamics of economic growth represented by the GDP growth. Independent variables are budget revenues and expenditure expressed as shares of the GDP. Instrumental variables are lagged values in period t-1 of budget revenues, expenditures and debt.

The regression equation is represented by the following standard form:

(3)

$$log\ GDP = C + \log Rev + logExp + \varepsilon$$

For instrumental variables:

$$C = logDebt - 1\ logRev - 1\ logExp - 1$$

Where:

$GDP -$ growth rate of the GDP for the period 2003-2014;

$Rev -$ growth rate of government revenues for the period 2003-2014;

$Exp -$ growth rate of government expenditure for the period 2003-2014;

$\varepsilon_t -$ vector of residues.

The results (see Table 5) indicate an inversely proportional relationship between economic growth and government revenues. This relation is established by the negative sign of Revenue (-0.419717) compared to the growth dynamics with registered coefficient (6.738195). Under these conditions, it may indicate that the imposition of taxes on income and consumption leads to contraction of growth. By means of redistribution through the budget, the government expenditure is a mechanism to promote

economic growth. Barro, R. (1990, pp. 103) proves that there is a positive relationship between government spending and economic growth and negative between tax revenue and growth. The theory is empirically tested for OECD countries from Kneller et al. (1999,pp. 171-190) , who has confirmed that the government expenditure have a positive impact on growth, while taxation and economic growth are in an inversely proportional relationship. Similar results are established in this analysis. A positive relationship between government expenditure with coefficient (0.147886) has been registered, compared to the growth dynamics (6.738195). Resulting from the so formed directly proportional relationship, it is established that government expenditure creates conditions for increasing economic growth. Therefore the redistribution through the budget of the studied countries is approximately 42% and approximately 14% of the total economic growth is caused by government expenditure.

Table no. 5. DEPENDET VARIABLE: ECONOMIC GROWTHINSTRUMENTAL LIST: log(debt-1) log(rev-1) log(exp-1)

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	6.738195	0.366772	18.37164	0.0000
Log(REV)	-0.419717	0.145023	-2.894141	0.0054
Log(EXP)	0.147886	0.199209	3.490649	0.0016

R-squared	0.388450	Mean dependent var	4.622858
Adjusted R-squared	0.366992	S.D. dependent var	0.088656
S.E. of regression	0.070536	Sum squared resid	0.283596
F-statistic	18.08382	Durbin-Watson stat	0.337585
Prob(F-statistic)	0.000001	Second-Stage SSR	0.283712
Instrument rank	4		

The Granger causality test of the existence of causal relations has been applied in this part of the analysis. Using Granger's relations suggests that the reason precedes the investigation. The null hypothesis rejects the existence of causation, and the alternative sets the opposite. The calculations (see Appendixes C1 and C2) were considered significant at the level of probability of error of 5%.

The results show that in countries with prevailing consumption tax systems (see Appendix C1), government expenditure have a leading position in the development of the economy. The expenditure determines the dynamics of economic growth, which demonstrates the approach of Keynes. On the other hand government revenues do not affect the dynamics of government expenditure and government expenditures determine the dynamics of government revenue revenues. This result shows why these countries are using debt during crisis as part of their expenditure policy.

II. Analysis of revenues from distorting (direct) and non-distorting (indirect) taxes in the general government budget for the period 2003 - 2014 for the countries Germany, France, Belgium, the Netherlands and Austria in terms of hybrid tax system.

For calculation of coefficients econometric methodology has been used once again, in the form of linear regression, which includes a dummy variable.

The regression equation is as follows:

(4)

$$Y_t = C + X_{it} + EXPT(0,0/1,0) + \varepsilon_t$$

Where:

Y_t - share of tax revenue in the budget of Germany, France, Belgium, the Netherlands and Austria;

X_{it} - share of revenues from direct and indirect taxes (VAT, excise, duties, income, capital, dividends) of Germany, France, Belgium, the Netherlands and Austria;

EXPT (0,0/1,0) – included a dummy variable where the value (1,0) is in times of growth (2003-2008) and value (0,0) is in times of crisis (2009-2014);

ε_t - Vector of residues;

Table no. 6. DEPENDENT VARIABLE: TAX REVENUE

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	48.61007	4.317489	11.25888	0.0000
VAT	-0.256989	0.211650	-5.782673	0.0084
Excises	-0.236044	0.267450	-6.491093	0.0000
Duty	-0.131950	1.465430	-2.341941	0.0242
Corporate tax	0.286602	0.149376	2.316154	0.0456
Income tax	0.212366	0.404688	3.588859	0.0009
Dividends	0.152033	0.874347	3.376270	0.0016
EXPT=1	1.635416	0.280064	5.839431	0.0000

R-squared	0.958212	Mean dependent var	47.97083
Adjusted R-squared	0.950900	S.D. dependent var	3.226351
S.E. of regression	0.714915	Akaike info criterion	2.317704
Sum squared resid	20.44411	Schwarz criterion	2.629571
Log likelihood	-47.62490	Hannan-Quinn criter.	2.435559
F-statistic	131.0318	Durbin-Watson stat	1.463659
Prob(F-statistic)	0.000000		

Table no. 7. DEPENDENT VARIABLE: TAX REVENUE

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	46.97466	4.377583	10.73073	0.0000
VAT	-0.256989	0.211650	5.782673	0.0084
Excises	-0.236044	0.267450	6.491093	0.0000
Duty	-0.131950	1.465430	2.341941	0.0242
Corporate tax	0.286602	0.149376	2.316154	0.0456
Income tax	0.212366	0.404688	3.588859	0.0009
Dividends	0.152033	0.874347	3.376270	0.0016
EXPT=0	-1.635416	0.280064	-5.839431	0.0000

R-squared	0.958212	Mean dependent var	47.97083
Adjusted R-squared	0.950900	S.D. dependent var	3.226351
S.E. of regression	0.714915	Akaike info criterion	2.317704
Sum squared resid	20.44411	Schwarz criterion	2.629571
Log likelihood	-47.62490	Hannan-Quinn criter.	2.435559
F-statistic	131.0318	Durbin-Watson stat	1.463659
Prob(F-statistic)	0.000000		

There are some interesting conclusions regarding the results during growth and crisis (see Tables 6 and 7) in terms of hybrid tax system. During the economic growth, it has been established that revenues from distorting (direct) and non-distorting (indirect) taxes are able to form the planned government revenues. This relationship is established by the existence of a directly proportional relationship between the coefficient of dummy variable EXPT = 1 (1.635416) and the dynamics of tax revenues (48.61007). The proportion of the two coefficients shows that in the period of economic growth (see Table 6) the positive value of EXPT = 1 forms an upward trend in tax revenues. In times of economic crisis, see (Table 7) an inverse correlation is formed. Revenues from direct and indirect taxes have not been able to form the necessary revenues to the budget. This result establishes the presence of the inversely proportional relationship between the constant tax revenues and dummy variable during the crisis. The registered factor EXPT = 0 is (-1.635416) which leads to decreasing the rates of tax revenues with a registered coefficient (46.97466). The coefficient of the dummy variable during growth creates conditions, ceteris paribus, to be assumed that tax revenues increase. In times of crisis the negative sign in front of dummy variable, forms a conclusion that revenues from direct and indirect taxes rather tend to decrease. It was found that during growth, the tax revenue coefficient (48.61007) is higher than the constant coefficient (46.97466) during crisis. In the condition of a hybrid tax system the general revenues from direct distorting and

indirect non-distorting taxes are aligned. As with consumption tax system it is established once again that in times of crisis revenues are insufficient. Therefore, in both types of tax systems, tax revenues are insufficient in view of public expenditure policy. Under these conditions it is necessary to trace the effects of tax revenue and debt on government expenditure.

The equation has the following form:

(5)

$$Y_t(GS) = \beta_0 + \beta_1(TR) + \beta_2(GD) + \varepsilon_t$$

Where:

$Y_t -$ government expenditure as a share of GDP (2010-2014) of Germany, France, Belgium, the Netherlands and Austria;

$\beta_1 -$ tax revenues as a share of GDP (2010-2014) of Germany, France, Belgium, the Netherlands and Austria;

$\beta_2 -$ government debt as a share of GDP (2010-2014) of Germany, France, Belgium, the Netherlands and Austria;

$\varepsilon_t -$ vector of residues;

The results are presented in Table 8.

Table no. 8. DEPENDENT VARIABLE: GOVERNMENT EXPENDITURE

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	-8.140493	0.207445	-2.563241	0.0096
Tax revenue	0.710679	0.161317	8.496817	0.0000
Government debt	-0.073023	0.002523	-2.717270	0.0500

R-squared	0.855314	Mean dependent var	51.23000
Adjusted R-squared	0.844597	S.D. dependent var	4.498134
S.E. of regression	1.773219	Akaike info criterion	4.078110
Sum squared resid	84.89628	Schwarz criterion	4.218230
Log likelihood	-58.17165	Hannan-Quinn criter.	4.122936
F-statistic	79.80562	Durbin-Watson stat	0.571589
Prob(F-statistic)	0.000000		

The results (see Table 8) show that tax revenues generate approximately 71% of the funds invested in the spending policy of the surveyed countries. There is a directly proportional relationship between the dynamics of tax revenues and government expenditure. This result is established by the coefficient of revenues (0.710679) compared to the coefficient of government expenditure (-8.140493). Another important specificity

in the regression equation is the presence of a negative sign registered by the national debt by a coefficient of (-0.073023). The basic rule is that if there is a deficit during crisis, the government debt has a compensating effect and is aimed at stimulating the consumption demand. The result shows that the attraction of new debt does not lead to the preservation of expenditure policy, but rather to refinancing old debts in the country.

As mentioned above, the specifics of the tax system is a combination of various types of tax revenues and subsequent costs to the presence of redistributive effect on the economy. The relationship (see equation 6) between economic growth, government revenues and government expenditure in terms of hybrid tax system has been analyzed. The regression equation is represented by the following standard form:

(6)

$$log\ GDP = C + \log Rev + logExp + \varepsilon$$

For instrumental variables:

$$C = logDebt - 1\ logRev - 1\ logExp - 1$$

Where:

$GDP -$ growth rate of GDP for the period 2003-2014;

$Rev -$ growth rate of budget revenues for the period 2003-2014;

$Exp -$ growth rate of government expenditure for the period 2003-2014;

$\varepsilon_t -$ vector of residues;

Table no. 9. DEPENDET VARIABLE: ECONOMIC GROWTHINSTRUMENTAL LIST: log(debt-1) log(rev-1) log(exp-1)

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	80.48703	12.21670	6.588282	0.0000
Log(REV)	-0.471110	0.137773	2.715334	0.0422
Log(EXP)	0.186410	0.125320	-2.064062	0.0492

R-squared	0.109057	Mean dependent var	107.1545
Adjusted R-squared	0.074790	S.D. dependent var	6.233981
S.E. of regression	5.996333	Sum squared resid	1869.713
F-statistic	2.384510	Durbin-Watson stat	0.226451
Prob(F-statistic)	0.102139	Second-Stage SSR	1922.280
Instrument rank	4		

The results (see Table 9) show that government revenues (-0.471110) lead to decreasing the economic growth (80.48703). This result is logical in view of the economic justification as revenues led to the seizure of liquid assets from the economy. Government expenditure, however, has registered a positive coefficient (0.186410) that leads to increasing the economic growth while the redistribution through the budget

forms about 47%. Comparing these results with the results of the consumption tax system, it can be summarized that redistribution through the budget here is higher. Government expenditure, which financial means mainly depend on government revenues, provides about 19% of the total economic growth.

By applying Granger's test (see Appendix C2) there are some results which are contrary to the results observed in the countries with consumption tax system. Government expenditure here is not essential for economic development. In countries with a hybrid tax systems government expenditure mainly depend on government revenues. Economic growth determines the dynamics of government expenditure, which proves a completely different approach (Wagner's Law) in the selection of state policy. I.e. if the economy registers higher growth, it leads to higher income and therefore higher spending.

4. Conclusions

I. Given the empirical and statistically backed attempt to analyze the revenues from non-distorting indirect and distorting direct taxes in the state budgets of Bulgaria, Greece, Hungary, Spain and Portugal, in terms of consumption tax system, and based on the econometric models, we can make some generalizations.

During economic growth, it is establishes that consumption tax system which mainly relies on revenue from consumption taxes (non-distorting taxes) is able to collect the necessary fiscal resources. Tax revenues in the budget provide about 2/3 or 67% of all the collected revenue.

During economic crisis, the opposite dependence is observed. Revenues, depending on consumption taxes, tend to decrease. Countries, which mainly rely on revenue from consumption taxes, may not be able to provide the necessary fiscal resources in the budget.

During economic crisis, public debt is in a directly proportional relation to the dynamics of government expenditure. Therefore, relying primarily on consumption taxes, arises the need for additional financial resources, as for the expenditure policy the government debt provides approximately 7% of the financial resources. Government expenditure, on the other hand, determines the dynamics of economic growth.

government revenues, as the redistribution through the budget is approximately 42 % of GDP. A directly proportional relationship between government expenditure and economic growth has been established. About 14% of the total economic growth is caused by the role of the state and the government expenditure.

II. In tax system of a hybrid type, where the revenues of Germany, France, Belgium, the Netherlands and Austria have been analyzed, we find that the necessary fiscal resources in the budget are formed in terms of economic growth. Tax revenues provide in the budget over 2/3 or 71% of the total collected revenues.

During crisis, we observe the inverse correlation. The budget revenues, depending by the consumption taxes and the income taxes, tend to decreased.

During economic crisis, the government debt is inversely related to government expenditure. Therefore, the debt is not part of government expenditure policy. There is a inversely proportional relationship between economic growth and government revenues, as the redistribution through the budget amounts to 47% of the GDP. A directly proportional relationship has been found between the government expenditure and economic growth. About 18% of the total economic growth is caused by the role of the state and of government expenditure. The role of economic growth has a high importance to the dynamics of government expenditure.

It is important to note that in countries with higher taxes and higher redistributive share, as a percentage of GDP, the government expenditure has higher efficiencies than countries with lower tax rates and a lower percentage of redistribution.

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Appendixes A (Bulgaria, Greece, Hungary, Spain and Portugal)

Appendix A1 Panel Data, Unit Root test (2003 – 2014)

Test critical values: 5% level	*Levin, Lin & Chu t**	*Prob.***	*Cross-sections*	*Obs.*
Tax Revenue	-4.52345	0.0014	3	33
VAT	-7.35267	0.0002	3	33
Excise	-37.6707	0.0000	3	33
Duties	-16.5592	0.0000	3	33
Corporate Tax	-2.81068	0.0025	3	33
Income Tax	-6.32495	0.0001	3	33
Dividends	-2.91790	0.0018	3	33

Appendix A2
Correlations Panel Data (2003 – 2014)

	GR	VAT	EXC	M	CT	IT	DIV
GR	1.000000						
VAT	0.386511	1.000000					
Excise	0.198984	0.592012	1.000000				
Duties	0.072824	0.611154	0.993755	1.000000			
CT	0.147568	0.029295	0.122223	0.081818	1.000000		

IT	0.106472	0.769792	0.486509	0.458143	0.243675	1.000000	
DIV	0.230677	0.691296	0.316989	0.363099	0.425812	0.395736	1.000000

Appendix A3
Panel Data, Unit Root test (2003 – 2014)

Test critical values: 5% level	*Levin, Lin & Chu t**	*Prob.***	*Cross-sections*	*Obs.*
GDP	-3.37041	0.0004	5	50
BR	-1.15055	0.1250	5	50
(D)GR	-3.73680	0.0001	5	45
GEXP	-1.22562	0.1102	5	50
(D)GEXP	-3.24851	0.0006	5	45
GDEBT	-0.68720	0.2460	5	50
(D)GDEBT	-1.58475	0.0465	5	45

Appendix B (Germany, France, Belgium, Netherlands and Austria)

Appendix B1 Panel Data, Unit Root test (2003 – 2014)

Test critical values: 5% level	*Levin, Lin & Chu t**	*Prob.***	*Cross-sections*	*Obs.*
Tax Revenue	1.76802	0.9615	5	55
(D)Tax Revenue	-6.44583	0.0000	5	50
VAT	-1.93552	0.0265	5	55
(D)VAT	-4.85356	0.0000	5	50
Excise	-1.33403	0.0911	2	22
(D)Excise	-4.59441	0.0000	3	30
Duties	-2.09360	0.0181	4	44
Corporate Tax	-1.53962	0.0618	4	44
(D)Corporate Tax	-4.94314	0.0000	4	40
Income Tax	-0.30624	0.3797	5	55
(D)Income Tax	-3.86763	0.0001	5	50
Dividends	-1.13974	0.1272	4	44
(D)Dividends	-7.21535	0.0000	4	40

Appendix B2
Correlations Panel Data (2003 – 2014)

	GR	VAT	EXC	M	CT	IT	DIV
GR	1.000000						
VAT	0.285713	1.000000					
Excise	0.224662	-0.521422	1.000000				
Duties	0.134718	-0.669584	0.633932	1.000000			
IT	0.472745	0.174761	-0.475014	0.263557	1.000000		
CT	0.354815	-0.350561	0.275169	0.521622	0.292688	1.000000	
DIV	0.220870	-0.538043	-0.103500	0.461310	0.519468	0.555290	1.000000

Appendix B3
Panel Data, Unit Root test (2003 – 2014)

Test critical values: 5% level	*Levin, Lin & Chu t**	*Prob.***	*Cross-sections*	*Obs.*
GDP	-3.48681	0.0002	5	50
BR	1.65155	0.9507	5	50
(D)GR	-2.36546	0.0090	5	45
GEXP	-2.22837	0.0529	5	50
(D)GEXP	-4.81227	0.0000	5	45
GDEBT	0.20670	0.5819	5	50
(D)GDEBT	-3.87555	0.0001	5	45

Appendix C1
Pairwise Granger Causality Tests (2003 – 2014)

Null Hypothesis:	Obs	F-Statistic	Prob.
GR does not Granger Cause GDP	50	1.69160	0.1957
GDP does not Granger Cause GR		2.77125	0.0733
EXP does not Granger Cause GDP	50	9.46203	0.0004
GDP does not Granger Cause EXP		1.30833	0.2804
EXP does not Granger Cause GR	50	6.56361	0.0032
GR does not Granger Cause EXP		0.09809	0.9068

Appendix C2
Pairwise Granger Causality Tests (2003 – 2014)

Null Hypothesis:	Obs	F-Statistic	Prob.
GR does not Granger Cause GDP	50	1.22217	0.3042
GDP does not Granger Cause GR		1.40582	0.2557
EXP does not Granger Cause GDP	50	0.48190	0.6208
GDP does not Granger Cause EXP		3.21094	0.0497
EXP does not Granger Cause GR	50	2.05210	0.1403
GR does not Granger Cause EXP		8.45645	0.0008