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ASSESSMENT OF THE IMPACT OF SPECIFIC TAXES ON ECONOMIC GROWTH*

It is clear that, as a result of consistent and accurate management of each individual type of tax, a good basis is formed for implementing an effective revenue policy of the state, which will contribute to ensuring stable economic growth.

This article is dedicated to identifying the impact of state taxes, namely value added tax, income tax, profit tax, excise and sales taxes, on real GDP growth. As well

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as for each type of tax, the optimal level of the tax burden has been estimated, after which the impact of the tax burden changes from positive to negative. A number of statistical and econometric methods have been used to determine the size of the impact, and the Laffer curve, modified by Balatsky, has been the basis for the model evaluation.

The results of the model evaluation have shown that in case of almost all tax types, the tax burden of individual tax types has a positive effect on the GDP in the period under consideration. In particular, according to the obtained results, a 1% change in income tax contributes to an average change of 0.5 percentage points in GDP, and a 1% change in profit tax contributes to an average change in GDP by 0.23 percentage points. The impact of the excise tax is also positive and a 1% change in the latter leads to a 0.42 percentage point change in GDP.

Keywords: *economic growth, tax burden, optimal level, Laffer curve, state taxes*
JEL: H20, H71, O40
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INTRODUCTION. One of the foremost determinants within the structure of state revenue policy directed towards fostering economic growth is related to the formulation of effective tax policy specifically customized to individual tax categories. Consequently, the examination of the interactions between specific taxes and the increase of Gross Domestic Product (GDP) is of basic importance. The latter allows the formation of a policy directed towards fostering economic growth, at the same time fostering the growth of both demand and productivity. The issue has greater significance for small developing economies, such as Armenia. The influence of taxes on the economic behavior of households and enterprises should not be neglected. In this context, income policy, in particular, becomes a determinant factor for governing the behavior of participants in economic relations.

Within the confines of this research, the objective was to analyze the correlation between distinct taxes and economic growth by using different econometric models. Additionally, the analysis led to determining the impact of each tax category on the GDP, while concurrently assessing the optimal threshold of specific taxes for achieving maximum economic growth.

Moreover, the primary attention has been focused on state taxes more than municipal ones (real estate tax and property tax on vehicle). The latter is connected with the fixed tax rates and tax baselines of municipal taxes, which make the assessment of models ineffective. Additionally, state taxes make up the greatest part of GDP (exceeding 80%).

LITERATURE REVIEW. In the scientific literature, the interactions between taxes and economic growth open a wide field of scientific discussion. The tax structure has a special role in ensuring stable economic growth, depending on the weight of individual tax types in the total tax burden, as well as the type of taxes in general.

In OECD, Research on Taxes and Economic Growth is being considered in the development of a tax structure conducive to economic growth. The article classifies taxes according to their degree of contribution to economic growth, based on the economic literature, which allows for a more detailed classification of taxes. The most damaging to the growth are corporate taxes, followed by personal income taxes and then consumption taxes. Property taxes have the least impact on the economic growth. The research provides new foundations using industrial sectors and data from individual companies to show how tax redesign within each broad tax category can, in some cases, provide significant efficiency gains (Johansson, Heady, Arnold, Brys & Vartia, 2008).

Another research conducted by the International Monetary Fund, authored by K. Abdel-Kadel and R. Modi, discusses the impact of taxes in terms of achieving inclusive growth. Subsequently, it delves deeper into more specific tax policy, going over important decisions on the composition of the wealth-tax, corporate income tax, personal income tax, and consumption taxes. The conclusion in the paper highlights the political, economic aspects of the problems and offers specific recommendations how tax reform could be put into practice (Abdel-Kadel, Modi, 2020).

In the research carried out by J. Arnold et al., the main claim is that economic growth can be increased by gradually shifting the tax base toward consumption and real estate (especially residential property). The authors argue that economic growth can also be enhanced through individual taxes. The reduction of corporate taxes and the maximum rate of personal income tax have little stimulating effect and do not significantly contribute to the recovery of the economy. According to the authors, reducing sales taxes and property taxes have little effect on accelerating recovery. The most impactful tax reform is the reduction in income taxes (including social security payments) for low-income earners. According to the researchers, this will stimulate demand, increase labor productivity and reduce income inequality (Arnold, Brys, Heady, Johansson, Schwellnus & Vartia, 2011).

The research authored by A. Halim and M. Rahman conducted on BRIC and CIVETS countries can be distinguished among the investigations carried out on developing economies. The study finds that the corporate tax rate is positively and significantly related to the Sustainable Development Goals (SDGs). The result suggests that a higher corporate tax rate plays a vital role in achieving sustainable development goals in developing economies (Abdul Halim, Md. Mominur Rahman, 2022).

In their studies, Armenian researchers have also addressed the issues of interaction between individual types of taxes and economic growth. In particular, in A. Margaryan's work, which refers to the study of the economic effects of the tax system on the economic growth of the Republic of Armenia, the interaction between the types of taxes that are the basis of the tax system of

the Republic of Armenia and the gross added value was analyzed. Within the framework of the research, the main trends and most typical aspects of the interaction processes of personal income tax, value added tax, excise tax and GDP growth were revealed (Margaryan, 2023).

RESEARCH METHODOLOGY. To assess the relationship between individual taxes and GDP we have used various statistical and econometric methods. The model evaluation is based on Laffer's curve, a version modified by Balatsky.

Within the framework of the research, 5 different models have been evaluated, in which the dependent variable is the real GDP growth rate. The ratio of value added tax, income tax, profit tax, excise tax and sales tax to GDP act as independent variables.

The model is presented as follows:

$$GDP_{GR_t} = \beta_0 + \beta_1 * TAX_{BURDEN_t} + \beta_2 * TAX_{BURDEN_t}^2 + \beta_3 * X_t + \\ + \varepsilon_t, \text{ t = 2008Q1, 2022Q4}$$

Where: GDP_GR_t is the indicator of the economic growth of the RA,

TAX_BURDEN_t is the indicator of the RA tax burden. In particular, the latter is the quarterly indicators of VAT/GDP(VALUE_ADDED), profit tax/GDP(INCOME), excise tax/GDP(EXCISE_TAX), income tax/GDP(PROFIT), sales tax/GDP(SALES) for 5 different models.

$TAX\_BURDEN_t^2$ is the squares of tax burdens calculated for individual tax types, which reflect the possibility of a non-linear relationship between the latter and the economic growth.

Some external factors with the highest impact on GDP have also been included in the models, in addition to the data of individual tax types. The purpose of including these factors in the model is not to study their behavior at all. They have been included in the models to ensure their representativeness and stability. The basis for the selection of external factors are the most important variables extracted through the models developed in the framework of the research "ASSESSMENT OF THE EXCHANGE RELATIONSHIP BETWEEN ECONOMIC GROWTH AND STATE INCOME POLICY IN THE RA" carried out by the AMBERD research center.

We should also add that within the framework of this study, the main attention has been focused on state taxes, not local taxes, considering that, first of all, they have a small weight in state revenues. In addition, both the tax base and rates of local taxes are often historically unchanged, which is an important prerequisite for modeling. In order to determine the optimal threshold for each tax type, based on the model estimates, the turning points for the constructed models, which show the optimal level of tax burden for each type of tax, have been calculated by the following formula:

$$\frac{\vartheta GDP\_GR}{\vartheta TAX\_BURDEN} = \beta_1 + 2 * \beta_2 TAX\_BURDEN :$$

Quarterly data of specific taxes and economic growth are employed in the construction of the models. Taking into consideration the data availability and the prerequisite of comparability, the analysis includes data from 2008 to 2022. The foundation for the dataset has been the official information on tax revenues published by State Revenue Committee of the RA, and for the data on the economic growth, information from National Statistical Committee of the RA. The ensuing variables are included in the analysis:

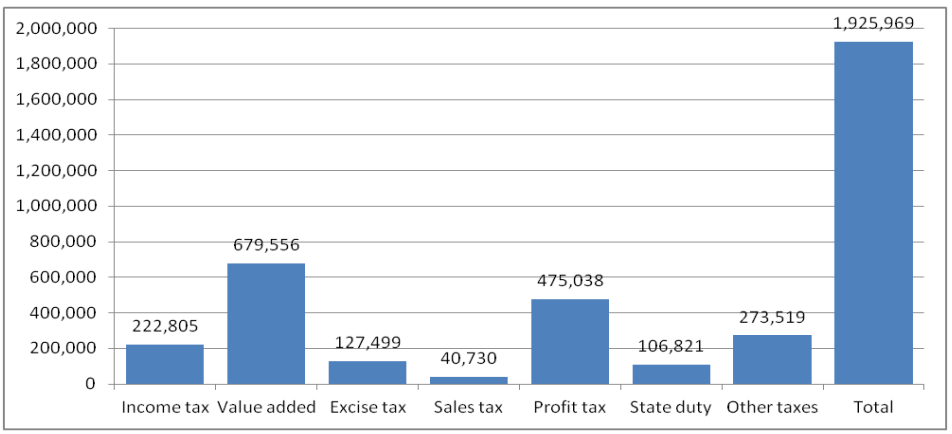
Table 1

Included variables

The name of variable in the model	*Description*	*Measurement*	*Source*
GDP growth	GDP real growth rate (dependent variable)	Growth index	RA NSC
PROFIT	Profit tax/GDP	in GDP, %	RA SRC
VALUE_ADDED	VAT/GDP	Growth index	RA SRC
EXCISE_TAX	Excise tax/GDP	in GDP, %	RA SRC
SALES	Turnover tax/GDP	in GDP, %	RA SRC
INCOME	Income tax/GDP	in GDP, %	RA SRC

ANALYSIS. As the 2022 data show, the state revenues in Armenia reached nearly 2 trillion drams, with the dominant portion derived from Value Added Tax (VAT), contributing over one-third of the total state tax revenue. Subsequently, Income Tax comprises 25% of the state revenue, while Profit Tax constitutes 12%. The following bar graph provides a more detailed presentation of the participation of specific taxes on the overall tax revenue.

The tax categories included in the research constitute over 80% of state revenues, thereby indicating the representativeness of the constructed models.

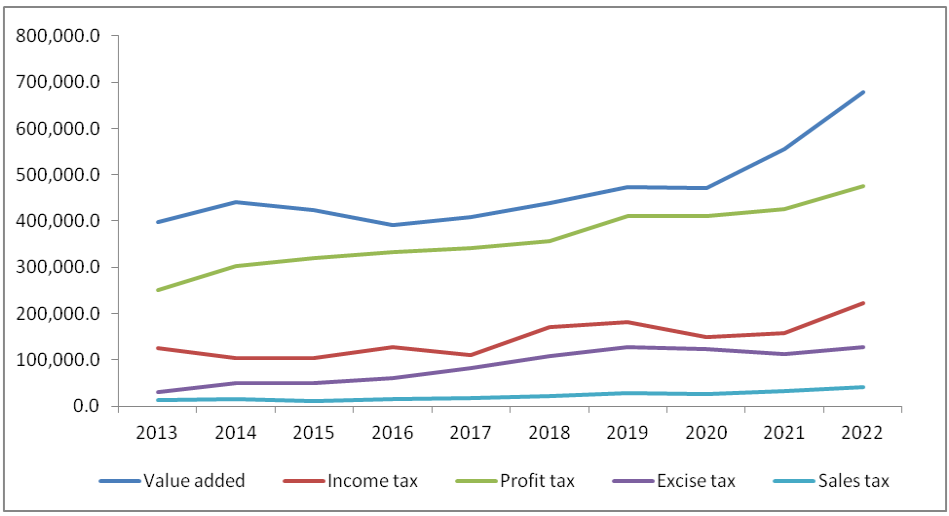


Source: State Revenue Committee of the Republic of Armenia

Figure 1. ***The revenues collected by the State Revenue Committee of the Republic of Armenia in the fiscal year of 2022, according to specific taxes (in Billion Armenian Drams)***

In recent years, the acceleration in the growth of tax revenues has been noted across all five selected tax categories. The average growth rates by individual taxes are as follows: for value added tax it is about 6.6%, for income tax - 9.2%, for profit tax - 7.5%, for excise tax - 18.9%, and for sales tax - 14.8%. The excise tax exhibits significant growth rates, especially when comparing the amount in 2013 (31.033 million AMD) to the data of 2022, where it has more than quadrupled, reaching 127.499 million AMD. There is an apparent increase in added value and profit tax, wyhich is likely attributed to a sharp rise in foreign trade turnover.

The below line graph represents the dynamics of the tax types under consideration in this part of the research over the preceding decade. It is relevant to consider the shares of individual tax types in total tax revenues. Analyzing the dynamics, we observe that the share of the value-added tax decreased from 49% in 2013 to 44% in 2022. Conversely, the share of the excise tax doubled, reaching 8% from the initial 4%.



Source: State Revenue Committee of the Republic of Armenia

Figure 2. ***The revenues collected by the State Revenue Committee of the Republic of Armenia for the years 2013 to 2022, according to specific taxes***

The conducted tests demonstrate the representativeness of the models. Specifically, before the import of variables into the models, the stationarity of these variables was checked through Dickey-Fuller test. All incorporated variables exhibited stationarity, except for the turnover tax/GDP ratio. Consequently, the latter was integrated into the model by the first order difference.

The Breusch-Godfrey serial correlation test has been used to check the presence of autocorrelation in the residuals of the model. The findings indicate, that there is no autocorrelation within the model residuals.

Normal distribution is also a pivotal assumption for regression analysis; therefore, the normality of model residuals has been checked through the Jarque-Bera test. According to the test outcomes, the residuals of the model have a normal distribution.

Table 2

The outcome indicators of the model

	INCOME	*VALUE_ADDED*	*EXCISE_TAX*	*SALES*	*PROFIT*
Tax burden	0.226*** (3.767)	0.110*** (5.159)	0.428*** (3.929)	-0.207** (-1.722)	0.537 (2.770)
Exports	0.101** (3.868)	0.114** (4.713)	0.10** (3.416)	0.001 (2.492)	-
Remittances	-	-	0.17 (0.135)	-	0.0005 (1.772)
Constant	-	-	-	0.330 (2.875)	-0.968 (-1.762)
Obs.	60	60	60	40	40
Turning Point	2.7	9.2	1.5	-0.1	5.7

Based on the above-described methodology, the principal outcomes of the constructed econometric models on the accessible datasets, are presented in the table below.

In the analysis of the results, it is significant to compare the actual tax burden concerning distinct tax categories. The latter is graphically represented in the following table.

Table 3

Tax burden in terms of specific taxes

	Profit tax/GDP	*VAT/GDP*	*Excise tax/GDP*	*Turnover tax/GDP*	*Income tax/GDP*
2022q1	7,58	9,55	1,61	0,66	2.54
2022q2	6,03	7,66	1,34	0,44	6,57
2022q3	5,10	7,58	1,51	0.45	1,26
2022q4	4,62	7,74	1,55	0,43	1,11

Statistical descriptions of the models that are under the obtained results are presented in greater detail within the appendix.

The constructed models show that, nearly among all taxes, the tax burden for individual taxes has a positive influence on GDP over the examined period.

The constructed models additionally indicate that among direct taxes, profit tax has the greatest positive impact on the GDP growth, with a 1% change, on average, leading to a 0.5 percentage point change in GDP. The estimated impact of the income tax is 0.23 percentage. The pronounced influence of changes in the profit tax burden can be elucidated by the substantial prevalence of tax underreporting within the realm of enterprises in contrast to those on the individual level. Consequently, the repercussions of

profit tax on the Gross Domestic Product (GDP) exhibit a heightened significance compared to the income tax, the latter failing to adequately mirror the contemporaneous condition of the economy.

The great impact of the excise tax is also noteworthy. The latter may be connected to the dominance of large enterprises among the subjects of excise tax (for example beverages, tobacco and so on). This type of significance of excise taxes for GDP can be explained by the fact that large enterprises have higher levels of productivity. As a result of conducted research, the objective was to assess the optimal threshold of the tax burden for specific taxes, in a word, our perspective is to find the point from which positive impact of taxes on GDP changed to negative. For nearly all the tax categories, the current level of the tax burden surpasses the optimal threshold, which is consonant with the similar analysis of the overall tax burden and is implemented in another part of this study. Only in the context of Excise tax, the tax burden is approximately close to the optimal rate. An exception to this trend is the profit tax, wherein the current level of burden (2.9%) is nearly twice less than the optimal level, indicating that an increase of profit tax burden may positively contribute to the economic growth. For other tax categories, the actual level surpasses the optimal level, in other words, the actual level is situated at a point where the impact is adverse. Specifically, the deviation is nearly twofold for income tax, and for Value Added Tax (VAT) is comparatively lower, approximately 15%. Concerning the turnover tax, both the impact and the inflection point are negative. The proportion of this tax in the gross tax revenues is less, approximately 2%.

CONCLUSION. The conducted research allows us to draw a number of conclusions.

- First, the analysis shows that among different taxes, the tax burden generally has a positive impact on GDP during the observed period.
- Among direct taxes, profit tax has the greatest positive impact on the GDP growth. On average, a 1% change in this type of tax is associated with a 0.5 percentage point change in GDP.
- Compared to income tax, profit tax has a more significant impact on the GDP growth. It is more than twice as high, which may be due to substantial prevalence of tax under reporting within the realm of enterprises.
- The results of the study highlight the significant impact of the excise tax on GDP, which may be due to the dominance of large enterprises among the subjects of the excise tax. Large enterprises are characterized by higher productivity.
- For almost all types of taxes, the level of the current tax burden exceeds the optimal threshold, with the exception of excise tax, which is close to

the optimal rate. The corporate tax burden, as well as value added tax burden, is rather below the optimal level, suggesting that increasing the corporate tax burden can positively contribute to the economic growth.

- For turnover tax, both the impact and the tipping point are negative. The share of this tax in gross tax revenues is small, about 2%, which indicates a negative impact on GDP.

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Appendix 1

Dependent Variable: GDPGR
Method: Least Squares
Date: 10/26/23 Time: 20:17
Sample (adjusted): 2008Q2 2022Q4
Included observations: 59 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	0.694050	0.078165	8.879264	0.0000
INCOME_GDP_SA	0.225867	0.059951	3.767545	0.0004
INCOME_GDP_SA^2	-0.041653	0.011654	-3.574254	0.0007
EXPORTS_AMD	0.101112	0.026142	3.867736	0.0003

R-squared	0.494219	Mean dependent var	1.033864
Adjusted R-squared	0.466631	S.D. dependent var	0.071979
S.E. of regression	0.052567	Akaike info criterion	-2.988049
Sum squared residual	0.151984	Schwarz criterion	-2.847199
Log likelihood	92.14745	Hannan-Quinn criterion.	-2.933067
Durbin-Watson stat	2.118424		

Dependent Variable: GDPGR
Method: Least Squares
Date: 10/26/23 Time: 19:49
Sample (adjusted): 2008Q2 2022Q4
Included observations: 59 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	0.547146	0.086023	6.360461	0.0000
VALUE_ADDED_GDP_SA	0.110380	0.021397	5.158651	0.0000
VALUE_ADDED_GDP_SA^2	-0.006705	0.001403	-4.778072	0.0000
EXPORTS_AMD	0.114348	0.024261	4.713203	0.0000

R-squared	0.572553	Mean dependent var	1.033864
Adjusted R-squared	0.549238	S.D. dependent var	0.071979
S.E. of regression	0.048326	Akaike info criterion	-3.156323
Sum squared residual	0.128445	Schwarz criterion	-3.015473
Log likelihood	97.11152	Hannan-Quinn criterion.	-3.101341
Durbin-Watson stat	1.965165		

Dependent Variable: GDPGR
Method: Least Squares
Date: 10/26/23 Time: 19:50
Sample (adjusted): 2008Q2 2022Q4
Included observations: 59 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	0.694017	0.075947	9.138239	0.0000
EXCISE_TAX_GDP_SA	0.428376	0.109029	3.929008	0.0002
EXCISE_TAX_GDP_SA^2	-0.144807	0.037298	-3.882405	0.0003
EXPORTS_AMD	0.088431	0.025890	3.415607	0.0012

R-squared	0.502469	Mean dependent var	1.033864
Adjusted R-squared	0.475331	S.D. dependent var	0.071979
S.E. of regression	0.052137	Akaike info criterion	-3.004496
Sum squared residual	0.149505	Schwarz criterion	-2.863646
Log likelihood	92.63263	Hannan-Quinn criterion.	-2.949514
Durbin-Watson stat	2.044173		

Dependent Variable: GGDPGR
Method: Least Squares
Date: 10/26/23 Time: 19:09
Sample: 2013Q2 2022Q4
Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GGDPGR(-1)	0.684850	0.109458	6.256731	0.0000
DSALES_GDP	-0.207013	0.120173	-1.722627	0.0943
DSALES_GDP^2	-1.320425	1.160679	-1.137632	0.2635
REMM	0.000590	0.000343	1.717127	0.0953
DEXPORT	0.000990	0.000397	2.492231	0.0179
C	0.330158	0.114823	2.875379	0.0070

R-squared	0.685520	Mean dependent var	1.042846
Adjusted R-squared	0.637872	S.D. dependent var	0.057302
S.E. of regression	0.034483	Akaike info criterion	-3.756070
Sum squared residual	0.039239	Schwarz criterion	-3.500138
Log likelihood	79.24337	Hannan-Quinn criterion.	-3.664244
F-statistic	14.38704	Durbin-Watson stat	2.139011
Prob(F-statistic)	0.000000		

Dependent Variable: GGDPGR
Method: Least Squares
Date: 10/26/23 Time: 19:52
Sample (adjusted): 2013Q2 2022Q4
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GGDPGR(-1)	0.473730	0.111374	4.253506	0.0002
PROFIT_GDP_SA	0.537026	0.193902	2.769583	0.0090
PROFIT_GDP_SA^2	-0.046734	0.016218	-2.881631	0.0068
REMM	0.000545	0.000308	1.772049	0.0853
C	-0.968129	0.549571	-1.761610	0.0871

R-squared	0.672746	Mean dependent var	1.042846
Adjusted R-squared	0.634246	S.D. dependent var	0.057302
S.E. of regression	0.034655	Akaike info criterion	-3.767536
Sum squared residual	0.040833	Schwarz criterion	-3.554259
Log likelihood	78.46696	Hannan-Quinn criterion.	-3.691014
F-statistic	17.47373	Durbin-Watson stat	1.554315
Prob(F-statistic)	0.000000		