



ECONOMIC ANNALS-XXI
ISSN 1728-6239 (Online)
ISSN 1728-6220 (Print)
<https://doi.org/10.21003/ea>
<http://www.soskin.info/ea/>

Volume 181 Issue (1-2)'2020

Citation information: Krysovaty, A., Fedosov, V., Tymchenko, O., & Silchenko, M. (2020). Taxation, economic growth and welfare in a low-income country. *Economic Annals-XXI*, 181(1-2), 44-56.
doi: <https://doi.org/10.21003/ea.V181-04>

UDC 336.22



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Taxation, economic growth and welfare in a low-income country

Abstract. Tax policy should promote not only economic growth but also the well-being of citizens. Otherwise, the problem of economic growth will arise again. This issue is relevant for many low-income countries. The governments of such countries can achieve some GDP growth and stabilize public finances. However, if such growth is accompanied by impoverishment of the population that is unable to meet the corresponding consumer demand, it leads to GDP fall and lack of financial resources.

We seek to find out how the tax burden and tax structure affect economic growth and welfare in Ukraine taking into account international experience. For this purpose, we analyze the correlation between the tax burden and GDP and based on the method of chain substitutions reveal the impact of the compensation of employees (salaries), taxes and gross surplus on GDP growth and confirm our main hypothesis that the tax burden increase does not lead to GDP reduction in Ukraine. There is a direct connection between the tax burden and GDP in Ukraine. The GDP decreases with a lowering in the tax burden and, accordingly, grows with its increase.

Such correlation complicates the decision-making on further improvement of the tax system of Ukraine to realize the purpose of sustainable economic grows. On the one hand, in comparison with other countries the tax burden in Ukraine is not much higher, but it is criticized by the business. On the other hand, the Ukrainian Government has a permanent problem which is a lack of necessary resources for funding public expenditures. Therefore, when making decisions, the impact of certain types of taxes and changes in the tax structure should be taken into account.

The study showed that the corporate income tax rates reduction had a positive effect on investment dynamics, and excise taxes increase has led to the reduction of legal production and increase of shadow sector. VAT (20%) has a neutral effect on GDP growth in Ukraine, while the introduction of 7% VAT on medicines has led to an increase in prices and changed the structure of consumption towards the low-priced goods. The changes (increase) in personal income taxation have reduced consumer demand and hampered GDP growth and welfare.

The authors give the recommendations regarding changes in the tax policy of Ukraine based at own empirical findings and with regard to the current institutional peculiarities of Ukraine.

Keywords: Tax; Tax Policy; Tax Burden; Economic Growth; Well-Being; VAT; VAT on Medicines; Ukraine; Low-Income Country

JEL Classification: G28; H20; H24

Acknowledgements and Funding: The authors received no direct funding for this research.

Contribution: The authors contributed equally to this work.

DOI: <https://doi.org/10.21003/ea.V181-04>

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Оподаткування, економічне зростання та добробут у країні з низькими доходами

Анотація. У дослідженні проаналізовано вплив податкового навантаження на економічне зростання та добробут громадян в Україні. Існує прямий зв'язок між податковим навантаженням і ВВП в Україні. Підтверджено гіпотезу, що збільшення податкового тягаря не призводить до зниження ВВП. ВВП зменшується зі зниженням податкового навантаження й, відповідно, зростає з його збільшенням. Частково це пояснюється тим, що податки є складовою ВВП, тому їх зростання призводить і до збільшення номінального ВВП.

Доведено, що зниження ставок податку на прибуток позитивно впливає на динаміку інвестицій, а збільшення акцизних податків призводить до скорочення легального виробництва та збільшення тінювого сектора. ПДВ (20%) нейтрально впливає на зростання ВВП України, тоді як запровадження 7% ПДВ на ліки призвело до зростання цін і змінило структуру споживання в бік товарів низької цінової категорії. Зміни в оподаткуванні доходів фізичних осіб знизили споживчий попит і перешкодили зростанню ВВП та добробуту громадян.

Зроблено висновок, що, зважаючи на брак бюджетних коштів, зниження загального рівня податкового навантаження є недоцільним. Проте воно має бути перерозподілене через прогресивне оподаткування доходів і майна.

Ключові слова: податок; податкова політика; податкове навантаження економічне зростання; добробут; ПДВ; ПДВ на ліки; Україна; країна з низьким рівнем доходів.

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Налогообложение, экономический рост и благосостояние в стране с низкими доходами

Аннотация. В исследовании проанализировано влияние налоговой нагрузки на экономический рост и благосостояние граждан в Украине. Существует прямая связь между налоговой нагрузкой и ВВП в Украине. Подтверждена гипотеза, что увеличение налогового бремени не влечет снижение ВВП. ВВП уменьшается со снижением налоговой нагрузки и, соответственно, возрастает с его увеличением. Частично это объясняется тем, что налоги являются составляющей ВВП, поэтому их рост приводит и к увеличению номинального ВВП. Доказано, что снижение ставок налога на прибыль положительно влияет на динамику инвестиций, а увеличение акцизных налогов приводит к сокращению легального производства и увеличению теневого сектора. НДС (20%) нейтрально влияет на рост ВВП Украины, тогда как введение 7% НДС на лекарства привело к росту цен и изменило структуру потребления в сторону товаров низкой ценовой категории. Изменения в налогообложении доходов физических лиц снизили потребительский спрос и препятствовали росту ВВП и благосостояния граждан.

Сделан вывод о том, что, несмотря на нехватку бюджетных средств, снижение общего уровня налоговой нагрузки является нецелесообразным. Однако она должна быть перераспределена через прогрессивное налогообложение доходов и имущества.

Ключевые слова: налог; налоговая политика; налоговая нагрузка; экономический рост; благосостояние; НДС; НДС на лекарства; Украина; страна с низким уровнем доходов.

1. Introduction

The results of tax policy are usually analyzed in the context of GDP, investment and employment growth. However, an economic growth cannot always lead to an increase in the well-being of citizens. We mean that with the growth of GDP there may take place a decrease of incomes in most household and an increase in poverty. Especially it is actual issue for low-income countries. The governments of such countries, using taxes, want to achieve economic growth and increase their revenue to consolidate public finances. However, if both problems are resolved without a corresponding improvement in people's well-being (in particular, the increase in their income) the problem of slowing economic growth will arise again, moreover in the short terms. Thus, it is important the changes in taxation not to lower the households' income especially those one which have average and less than average income because it reduces their purchasing capacity and demand on goods and services. Introducing any novelties in tax policy and analyzing their effects it is necessary to assess how they impact not only on GDP growth as well as well-being of households.

Ukraine is one of the low-income countries. Almost 30 years the tax reforms are an integral part of the Ukrainian government economic policy. Nevertheless, despite the constant changes in taxation aimed at macro-financial stabilization and economic growth it has not been possible to achieve sustainable economic development and well-being in Ukraine. The volume of production in the physical dimension did not reach the level of 1991, when Ukraine became an independent state. So, it is relevant to analyse the relationship between the taxation and economic growth as well as taxation and income of households in Ukraine, reveal the inconsistent of the tax policy to regularities of sustainable development and welfare growth.

2. Brief Literature Review

There is a lot of studies deal with tax impact on economic growth. The scientists analyse how the changes in tax burden and its structure influence on macroeconomic indicators. Most findings evidence that an increase in tax burden leads to GDP lowering. Hayo & Uhl (2014), Gil et al. (2018), Wielen (2019) determine how the increase in tax burdens (the share tax revenue in GDP) by 1% impact on GDP. They get similar results - reduction GDP by 2.4, 1.3 and 1.83%, respectively. The small difference in the indicators is explained by the fact that their studies were carried out in different countries for various periods of time. It should be mentioned that indicator 1.83 takes place if tax reforms are unexpected (the research was carried out on the EU countries based on the data for 2000-2016). In the case of the expected changes in taxation, the GDP decrease makes 2.26%. This indicator becomes a bit better (-2.15%) when the countries benefiting from financial assistance programs, namely Cyprus, Greece, Hungary, Ireland, Latvia, Portugal, Romania and Spain are not taken into account. In addition if tax reforms are expected then since the moment of their announcement to the moment of their implementation a business activity increases temporary because economic agents are starting to consume more, expecting another tax increase. We agree with this statement because such a situation is typical for Ukraine. When the government announces the increase in the excise tax rates the consumers actively buy excisable goods, thus stimulating their production. When the increased rates are put into effect, causing prices to rise, the demand for products falls, and production is reduced.

The level of the tax burden in Central Europe was studied by Balcerzak (2016). The objective of his research was to assess the global financial crisis impact on the tax burden and economic situation. He concluded that EU-15 increased the tax burden but their economic situation after the crisis was improving at a lower rate, than in EU-13.

Sidorova & Tikhonova (2017) based on Russia Federation tax reform experience, also confirm the negative effect of increase in taxes. To their opinion the tax novelties reduce consumption and it will lead to fiscal losses.

Some scholars investigate how the reduction (rather than growth) of taxes affects the economy. Their conclusions are different. Cloyne (2013) found that tax burden cut on GDP, consumption, investment, and imports leads to output increase by around 0.6 percent and to 2.5 percent over three years. His research was based on the U.K. experience. Jones et al. (2015) on the contrary concluded that in the U.K. the tax cuts have no significant effect while the increase in taxes substantially reduces output. The other conclusion the authors made about USA. They found the increase in tax does not affect output in this country while the tax cut has positive ef-

fects. As known in 2017 the law «The Tax Cuts and Jobs Acts» (TCJA) was adopted in USA. It provides for a significant reduction in tax rates. There are different assessments of the law consequences. Barro & Furman (2018) predict an increase in GDP from the 2017 tax reform in the United States. According to their calculations the changes in rates will increase the annual GDP growth rate by 0.9 percentage point per year. In other source (Mathur, 2019) we found the real gross domestic product grew by 2.9 percent in 2018 and it is projected to grow by 2.3 percent in 2019. This prediction is really confirmed. However, the pessimistic forecasts of TCJA consequences should not be discounted. The main conclusions are follows. TCJA will 1) have minimal impact on long-term growth; 2) increase the income gap after tax by providing the largest relative and absolute tax cuts to high-income households; 3) worsen the financial situation of most households after taking into account tax rebates; 4) exacerbate existing problematic government financial situation; 5) make the tax system more complex and uncertain; 6) complicate the development of policies aimed at combating future recessions; 7) reduce health insurance coverage, increase health insurance prices; 8) reduce charitable. Most of these issues are important for our study, because we want to substantiate our recommendations on tax changes for at least the medium term, given the imbalance in government revenues and expenditures and the inequality in the distribution of incomes.

An economic growth and well-being depend not only on tax burden. The tax structure also influences them. Stoilova (2017) consider that a lot of factors influence tax system design. At the same time she finds that there are some taxes which are less harmful to provide economic growth. Taxes on products and imports, personal income tax and social security contributions positively effect on economic growth, property taxes are neutral and value added tax is negative for the economy of the EU-28. McNabb & LeMay-Boucher (2014) received other results. To their conclusion, a reduction of consumption taxes and an increase of personal income tax have negative impact on economic growth. Moreover, the researchers emphasise «that an increase in income taxes on individuals that is not dependent on income is especially harmful in middle and low income countries». Later McNabb (2018) concretised and confirmed some previous conclusions: 1) a reduction in trade taxes offset by an increase in domestic consumption taxes seems favorable for growth, but this conclusion is wrong for low-income countries. It additionally emphasised that low-income countries have potentially complex macroeconomic problems associated with trade liberalization; 2) a personal income tax and social security contributions are the most harmful for long-term GDP growth, and no evidence has been found to support the theory according to which the increase in a corporate income tax is harmful to growth; 3) an increase in property taxes to ensure economic growth is called into question. This effect may be the case for high-income countries, but increased property taxes in low or middle-income countries can have limited or even detrimental effects on long-term GDP growth.

Grđinić et al. (2017) also found that income taxes from individuals have the most negative impact on economic growth. Corporate income taxes and property taxes followed by them. They have the least negative impact. Consumption taxes turned out to be statistically insignificant. These results are valuable for us because the study is based on data from 20 selected countries (EU-13 and some countries of the former Soviet Union and Albania). Some of them are low-income countries like Ukraine.

GDP growth depends on investment. Therefore, we are of interest in works in which the effect of taxes on investments is studied. In Alves (2019) we find that social security contributions are detrimental to growth in both the short and long term, while tax revenues from firms and consumption are detrimental only in the short term. Some optimal values of taxes as a percentage of GDP maximize investment decisions were found in the result of the research: 10.65% - for taxes on individual income, 6.27% - for corporate income tax, 9.19% - for consumption taxes and 11.35% - for social security contributions.

A new approach to investigation of tax impact on economic growth and well-being demonstrate Vatavu et al. (2019). Some valuable conclusions for us should be mentioned: 1) the increase in taxes affect in the long term and should be supported by the well-being of citizens; 2) welfare states charge higher taxes, at the same time they demonstrate higher values of economic growth and human development; 3) wealth-related taxes, especially on real estate, are harmful the least regardless of the studied countries; 4) personal income tax reduction may be one of the measures against a potential reduction in per capita GDP, reflecting both economic growth and the well-being of citizens. It should be noted that in relation to social contributions,

the scientists suppose that in the Eastern Europe countries these payments increase the value of the HDI, because social security and economic stability are important factors in the quality of life. It contradicts the above findings of other scientists on the impact of the social security contributions on economic growth.

3. Purpose

Taking into account the various results of studies showing the effect of taxes on economic growth and welfare in rich and poor countries, as well as the assertion that «there is no single tax system that promotes inclusive growth», we believe it is reasonable to study the impact of taxes on economic growth and welfare in a particular low-income country. Therefore, the purpose of the article is to identify how the tax burden and tax structure affect economic growth and welfare in Ukraine, and based on the results of the analysis, propose the ways to reform tax policy.

4. Methodology and Data

We hypothesize the increase in the tax burden does not lead to the GDP decrease in Ukraine. To test the hypothesis and identify the relationship between these indicators, we used correlation and regression analysis. Study period is 2001-2019. But considering that since 2010 the data exclude the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol, and since 2014 - a part of the temporarily occupied territories in Donetsk and Lugansk regions, we separately have analyzed the effect of the tax burden on GDP in 2010-2018. It is for this period that there is data on GDP in 2010 prices. We used them for analysis to exclude the effect of inflation. We also have defined the connection between the tax burden and GDP volume indices in 2010-2018 to compare results and make our conclusion more exact.

Given the components of GDP by income categories we analyzed the impact of three factors on GDP growth: 1) compensation of employees; 2) gross operating surplus, mixed income; and 3) taxes excluding subsidies on production and import. We used the method of chain substitutions, according to which:

$$\Delta GDP_{CE} = CE_n + T_{n-1} + GS_{n-1} + GDP_{n-1}$$

$$\Delta GDP_T = CE_n + T_n + GS_{n-1} - (CE_n + T_{n-1} + GS_{n-1})$$

$$\Delta GDP_{GS} = CE_n + T_n + GS_n - (CE_n + T_n + GS_{n-1}),$$

where:

ΔGDP_{CE} is change in GDP due to compensation of employees;

ΔGDP_T is change in GDP due to taxes less subsidies on production and import;

ΔGDP_{GS} is change in GDP due to gross operating surplus, mixed income;

CE is compensation of employees;

T is taxes excluding subsidies on production and import;

GS is gross operating surplus, mixed income.

To assess the impact of the changes in the tax burden structure in Ukraine, in particular the introduction of 7% VAT and increase of excise tax rates, we used the result of the expert estimations of the pharmaceutical market development and market of excisable goods respectively.

To assess the impact of changes in taxation of profit, we also applied a correlation analysis and, finally, to confirm the inappropriateness of increasing the tax on personal income in Ukraine, we analysed how the per capita income changed in comparison with GDP per capita.

5. Results

The dynamics of GDP and tax ratio in Ukraine are represented in Figure 1.

We can see a various configuration of graphs that reflect the trends of the tax burden and GDP, respectively. This means that there are different tendencies in the dynamics of these indicators in the study period. Nominal GDP is constantly growing, except 2009 - the crisis year. The tax burden is changing in waves. It grows then decreases. At the same time, there is some cyclicity in the change of the tax ratio (TR). The tax burden curve including social security contribution (SSC) differs from the tax burden curve without SSC, which cause differences in correlation of these indicators with GDP (Figure 2).

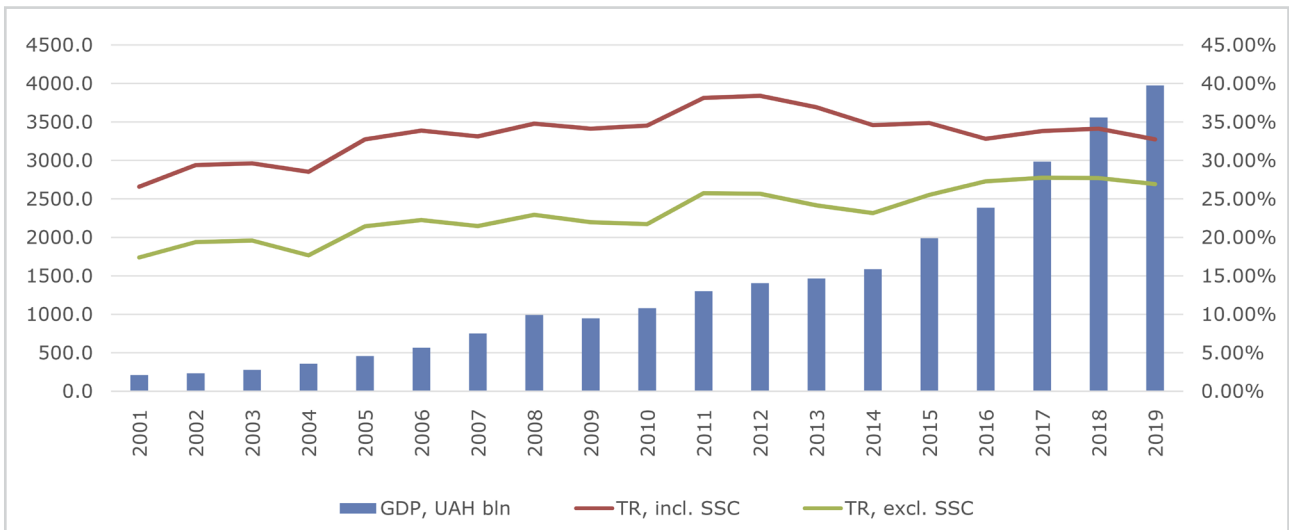


Figure 1:
Tax burden on economy and nominal GDP growth in Ukraine, 2001-2019
Source: Compiled by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

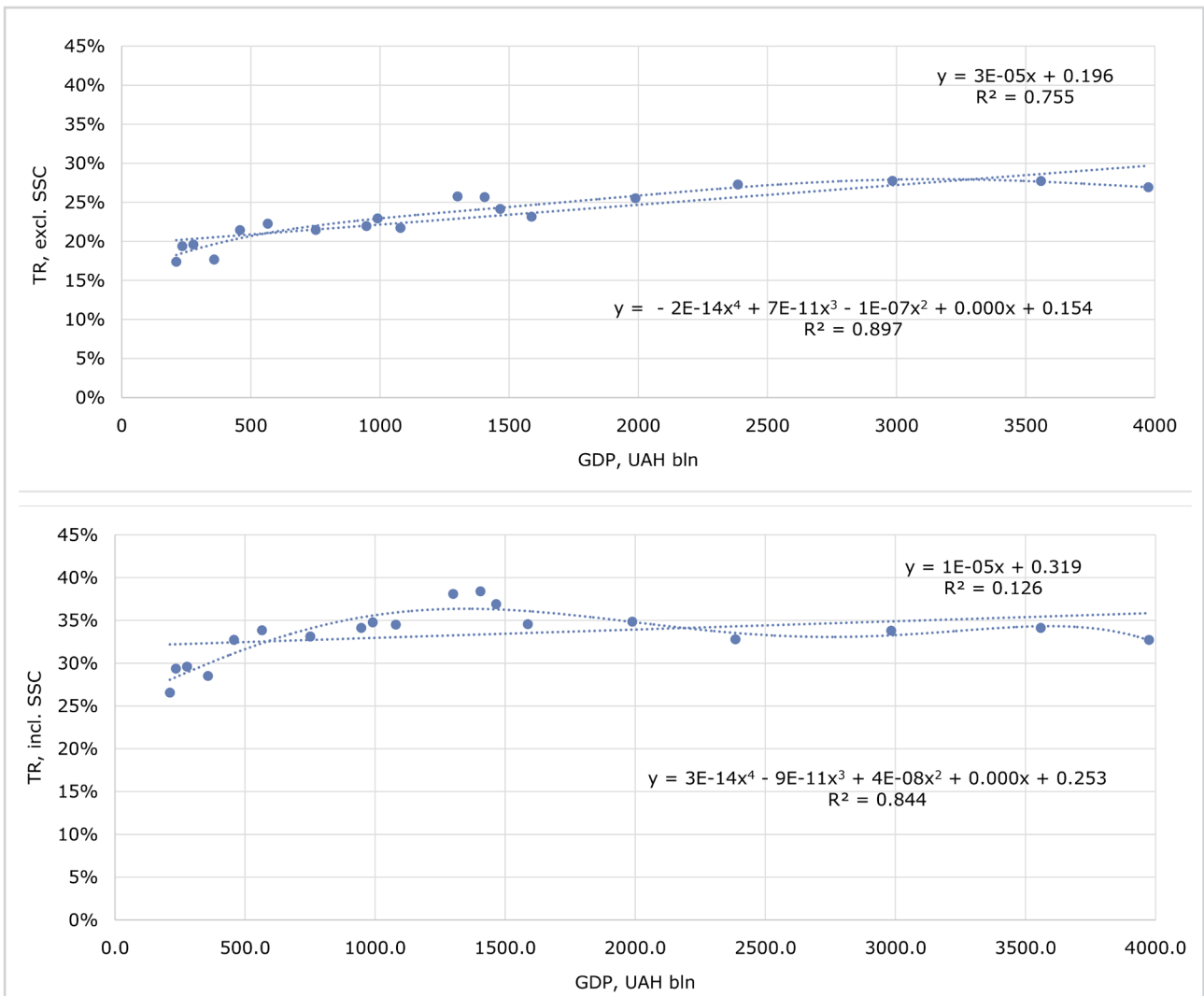


Figure 2:
The regression of the tax burden and nominal GDP in Ukraine, 2001-2019 (excluding and including SSC, respectively)
Source: Calculated by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

The correlation coefficient of the tax ratio excluding SSC and GDP for 2001-2019 is 0.869085806. It means the connection is close and direct, that is, as the tax burden increases, so does GDP. This contradicts the mentioned above research, according to which the increase in the tax burden, on the contrary, should slow down economic development and lead to a fall in GDP. We also analyzed the connection of the studied indicators for shorter periods of time. We calculated the correlation coefficient for every 4 years within the study period. The results of the calculations are given in Table 1.

Analyzing the above data, it should pay attention to the following points:

- only in three four-year periods do we have an inverse correlation, which means GDP growth due to a reduction in the tax burden. In two periods, this relationship is very weak, which does not give grounds for such a conclusion, and in one period - from 2011 to 2014 - the relationship is very close, which means that the reduction of the tax burden has led to GDP growth;
- in six four-year periods, we can see a moderate and significant direct connection, and in seven more - a strong and very strong direct one, which means that GDP growth comes with the growth of taxes.

The connection between tax ratio including SSC and GDP is characterized with other coefficient. It makes 0.35529527. Thus, the relationship is moderately direct, but differs in terms of four-year periods (Table 2).

According to the data, the strong and very strong direct connection we observe until 2014 changes to a strong inverse, which gradually weakens, and in the period from 2016 to 2019, we do not actually see a connection between the tax burden and GDP.

We assume that this situation is due to the multiplier effect, i.e. an increase in taxes on products, as well as excise tax leads to an increase in the base for VAT, and hence VAT itself. In addition, there is an inflationary component, which leads to an increase in wages, and hence an increase in personal income tax. Thus, nominal GDP grows mainly not due to an increase in its physical volume, but due to increased taxes, which are taken into account in its composition. To test our assumptions, we examined the relationship between the tax burden and GDP in actual (fixed) 2010 prices.

The dynamics of the tax burden (including and excluding SSC) and GDP in 2010 prices are represented in Figure 3. As the configuration of the GDP curve has changed compared to Figure 1 the relationship between the indicators will be different. The correlation is shown in Figure 4.

Table 1:
The correlation coefficient between tax ratio excluding SSC and nominal GDP for quadrennial in the study period

Quadrennial	The correlation coefficient	Quadrennial	The correlation coefficient
2001-2004	-0.14246605	2009-2012	0.927503417
2002-2005	0.446294035	2010-2013	0.717851298
2003-2006	0.773119337	2011-2014	-0.935223424
2004-2007	0.665648847	2012-2015	0.243331642
2005-2008	0.690918266	2013-2016	0.939241606
2006-2009	0.364898207	2014-2017	0.931557709
2007-2010	0.407406459	2015-2018	0.821071914
2008-2011	0.861134333	2016-2019	-0.28784489

Source: Calculated by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

Table 2:
The correlation coefficient between tax ratio including SSC and nominal GDP for quadrennial in the study period

Quadrennial	The correlation coefficient	Quadrennial	The correlation coefficient
2001-2004	0.34237137	2009-2012	0.968802434
2002-2005	0.71200359	2010-2013	0.754863176
2003-2006	0.88691209	2011-2014	-0.901836225
2004-2007	0.70728621	2012-2015	-0.718442516
2005-2008	0.78089127	2013-2016	-0.859442479
2006-2009	0.60346471	2014-2017	-0.550386257
2007-2010	0.91875398	2015-2018	-0.100222057
2008-2011	0.94944080	2016-2019	0.093240488

Source: Calculated by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

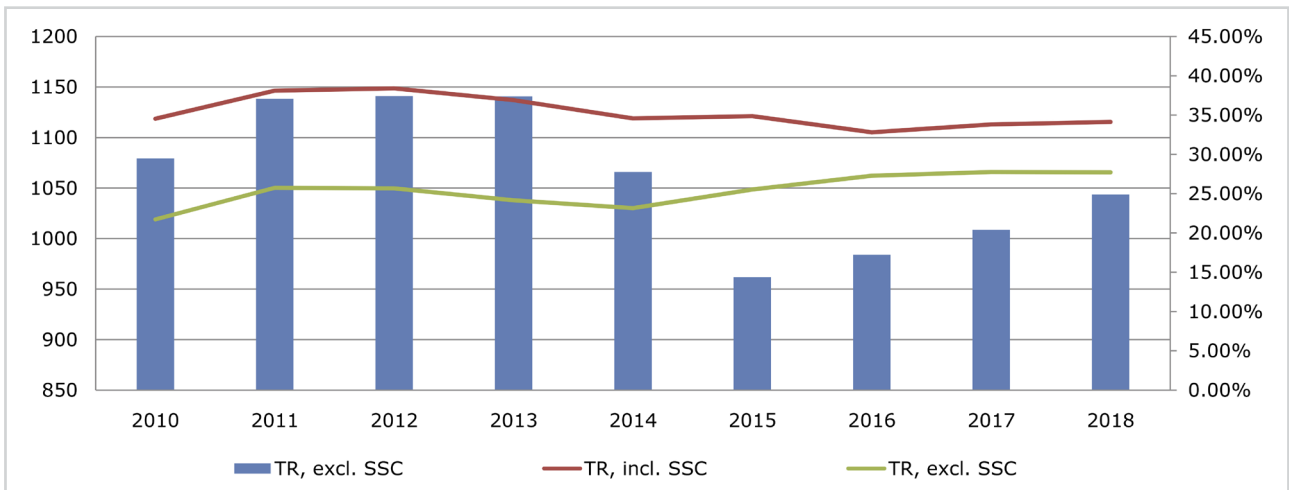


Figure 3:
The dynamics of the tax burden (including and excluding SSC) and GDP in 2010 prices, 2010-2018
Source: Compiled by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

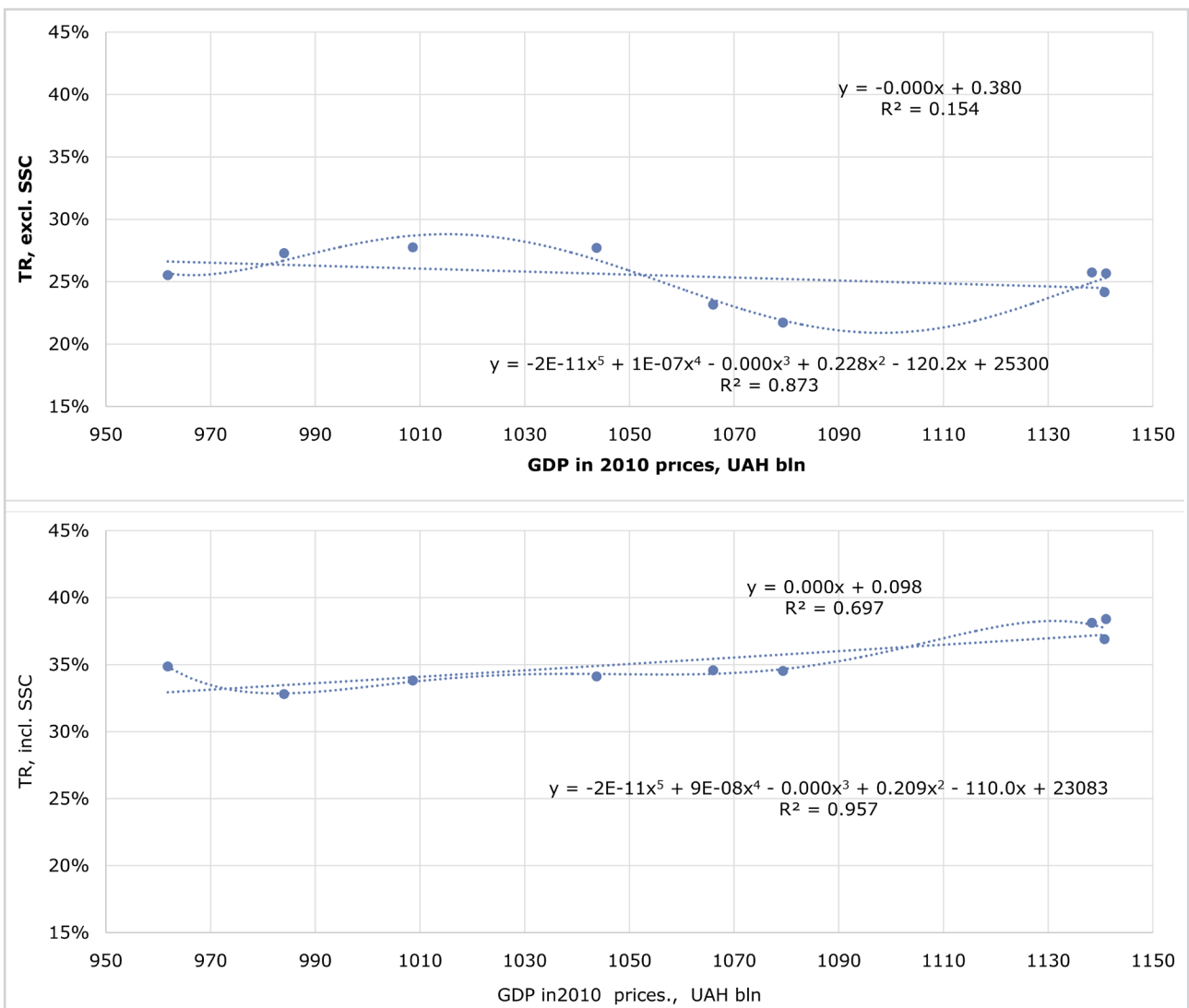


Figure 4:
The regression of the tax burden and GDP in 2010 prices, 2010-2018 (including and excluding SSC)
Source: Calculated by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

In the first case, the correlation coefficient for 2010-2018 is -0.392643606. Thus, we observe a moderate inverse relationship, which shows that the reduction of the tax burden to some extent (though not significantly) affects GDP growth. In the second case the connection is direct and close. At the same time, in both cases the connection is ambiguous if it is considered in four-year periods (Table 3).

In the first case, the inverse correlation is more pronounced, which shows the dependence of GDP growth on the reduction of the tax burden. In the second one, the direct close connection dominates. This means that tax growth causes GDP growth. Thus, we can conclude that the SSC change the nature of the correlation between tax ratio and GDP.

We obtained the similar results by examining the relationship between the tax burden and indices of the physical volume of GDP in Ukraine.

The results of the factor analysis by the method of chain substitutions are represented in Figure 5.

We can see the influence of the factors selected for analysis does not have a single tendency. In some segments, taxes rise and fall along with the growth (fall) of income in the form of compensation of employees and gross operating surplus, mixed income. This is quite logical situation, because the latter are the tax base. At the same time, there are segments where taxes decrease with the increase of other categories of income and increase with their decrease. Moreover, if we consider the indices of each factor in the dynamics separately, the change varies in a fairly significant range (Figure 6).

According to our calculations, there are very significant fluctuations in the dynamics of influencing factors when the fluctuations in GDP growth are small. In fact, it can be concluded that a decrease in the influence of one factor is offset by an increase in the influence of others. In general, it can be argued that the impact of the overall tax burden on the Ukrainian economy is fairly neutral. So, the question rises of whether something should be changed in taxation to ensure sustainable GDP growth, the development of all sectors of the economy and the well-being of citizens. To do this, it is necessary to analyse the structure of the tax burden in connection with industries' performance and individuals' income growth.

Table 3:
The correlation coefficient between tax ratio and GDP for quadrennial in 2010-2018

Quadrennial	The correlation coefficient	Quadrennial	The correlation coefficient
excluding SSC		including SSC	
2010-2013	0.91387004	2010-2013	0.92597643
2011-2014	0.802787877	2011-2014	0.924973016
2012-2015	-0.167229936	2012-2015	0.779301758
2013-2016	-0.687677233	2013-2016	0.758763506
2014-2017	-0.619111229	2014-2017	0.176831252
2015-2018	0.810362902	2015-2018	-0.115577039

Source: Calculated by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

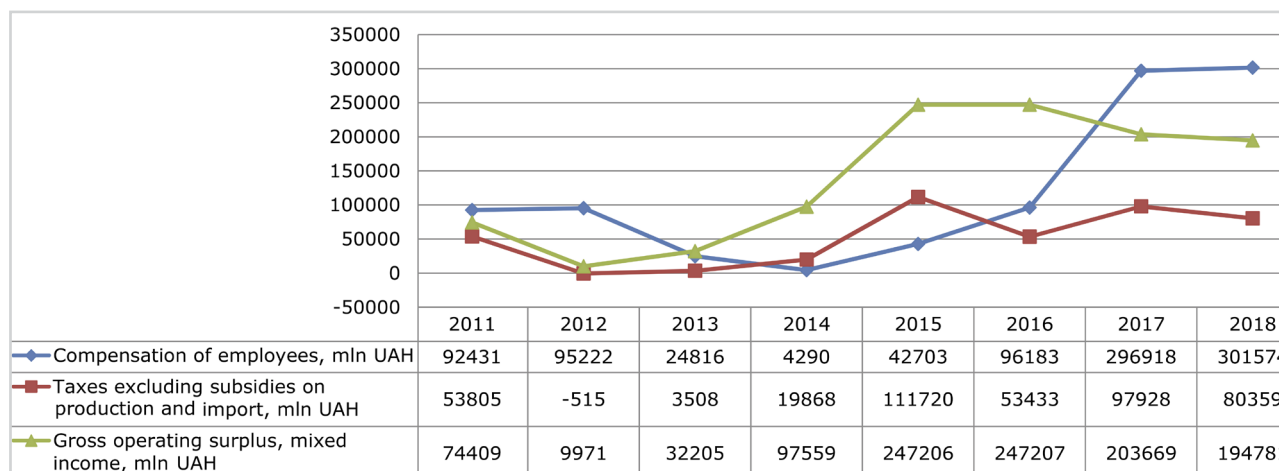


Figure 5:
The influence of income categories on GDP growth (fall), 2010-2018
Source: Compiled by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

The tax burden structure as a percent of nominal GDP is given in Figure 7.

According to the above data, the changes in the structure took place throughout the study period. The share of VAT in GDP more than doubled, while the basic rate of 20% remained unchanged. Thus, the increase in the share of VAT in GDP was caused by other factors: 1) the changes in the composition of exempt transactions; 2) the destruction of illegal reimbursement schemes; 3) the increase of excise tax rates and taxes included in production costs, which increased the VAT base. In 2015, a rate of 7% was introduced for medicines. We tried to assess the impact of 7% VAT on the pharmaceutical market in Ukraine (Fedosov et al., 2019). It will be recalled that together with the inflation component, the introduction of VAT on medicines caused prices to rise. As a result, the industry has shown growth. However, consumption in the physical dimension has decreased. According to experts, the current situation in the pharmaceutical market of Ukraine is characterized as a phase of moderate growth. However, growth in physical terms of 1.2% is expected in 2020 (Dmytryk, 2019).

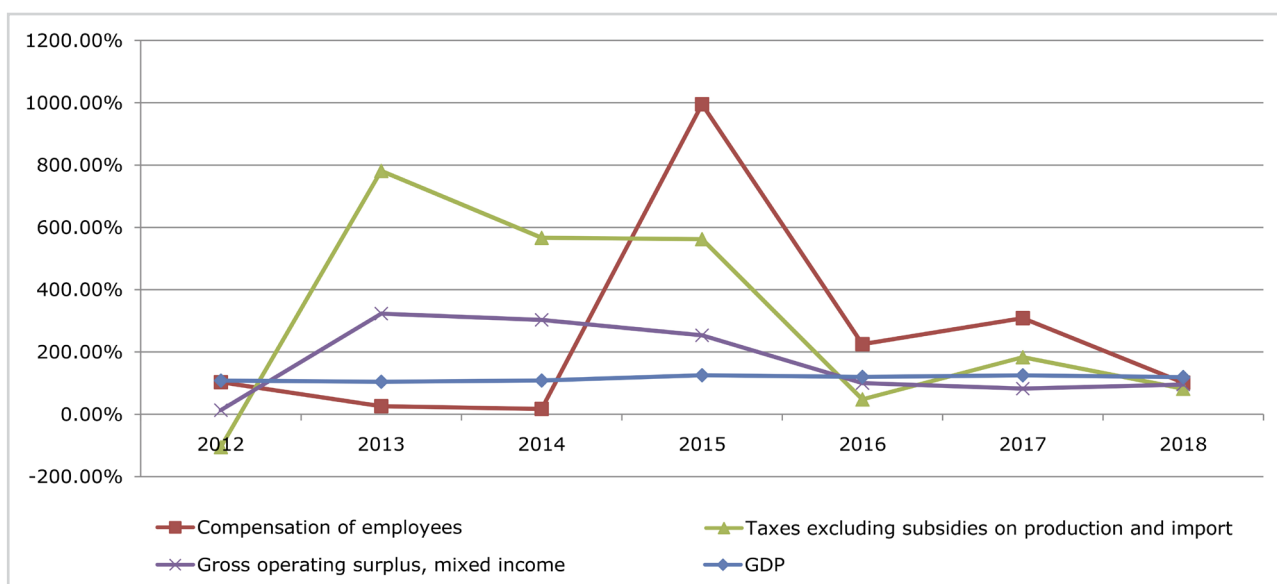


Figure 6:

Factors' impact indexes, 2010-2018, in % to the previous year

Source: Compiled by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

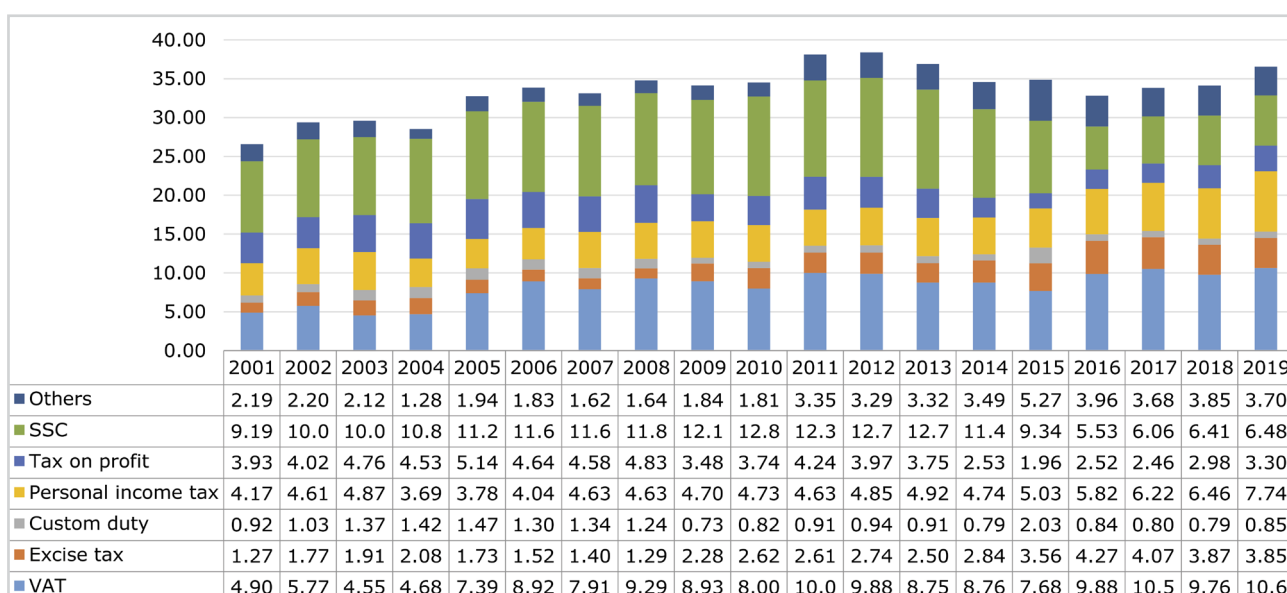


Figure 7:

The tax burden structure in Ukraine, 2001-2019 (% of GDP)

Source: Compiled by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

The share of excise tax in GDP has more than tripled. Significant growth was observed in 2009 and 2015-2019. The main reason is an increase in excise tax rates on alcohol and tobacco products. As a result, the production of alcohol and tobacco products decreased significantly. On the one hand, such an impact can be assessed positively if the goal is to reduce the consumption of harmful products. However, we doubt the consumption of such goods has really decreased, as the share of alcohol and tobacco losses in total household expenditures has remained the same. According to the report of the Accounting Chamber, Ukraine leads in Europe in the share of strong alcohol consumption - 51.5% (Subochev & Kiyani, 2019). According to experts, half of the alcohol market in Ukraine is in the «shadow», and the government loses up to 10 billion USD (Vinokurov, 2019). A similar situation is observed in the fuel market. In 2 years, the volume of the «shadow market» of gasoline and diesel fuel is estimated at about 4.6 million tons, and the government has not received excise tax in the amount of UAH 25 billion» (Ukrinform, 2020).

The changes in the tax policy related to profit taxation have positive consequences. The profit tax rate was reduced from 25% to 18%. As a result, net income and capital investment increased.

The correlation coefficient between the tax burden on profit and net profit is -0.8, between tax burden on profit and capital investments is -0.54 and between net profit and capital investments is 0.93 (Figure 8). The correlation is strong and very strong. In addition, according to our calculations, the implicit tax on profit rate decreased from 21.3% in 2010 to 14.48% in 2018. Hence, we can conclude that the lowering of the tax burden on profit led to the increase of net profit and capital investment. This result correlates with the findings of Lee & Gordon (2005) according to which 10 percent reduction in corporate tax rate increases annual growth by one or two percentage points.

The share of personal income tax in GDP significantly increased, from 4.1% in 2001 to 7.74% in 2019. One of the reasons for the growth is the increase in the tax burden on personal income. As a result of the tax reform 2014-2015, the personal income tax began to be levied at a flat rate of 18% and an additional military tax was introduced, while before the reform the tax was levied at rates of 15 and 17% (later 15 and 20%). At the same time, the vast majority of citizens (according to Shvabiy, 99%) paid tax at a rate of 15% (UNIAN, 2011). Thus, the tax burden on the poor

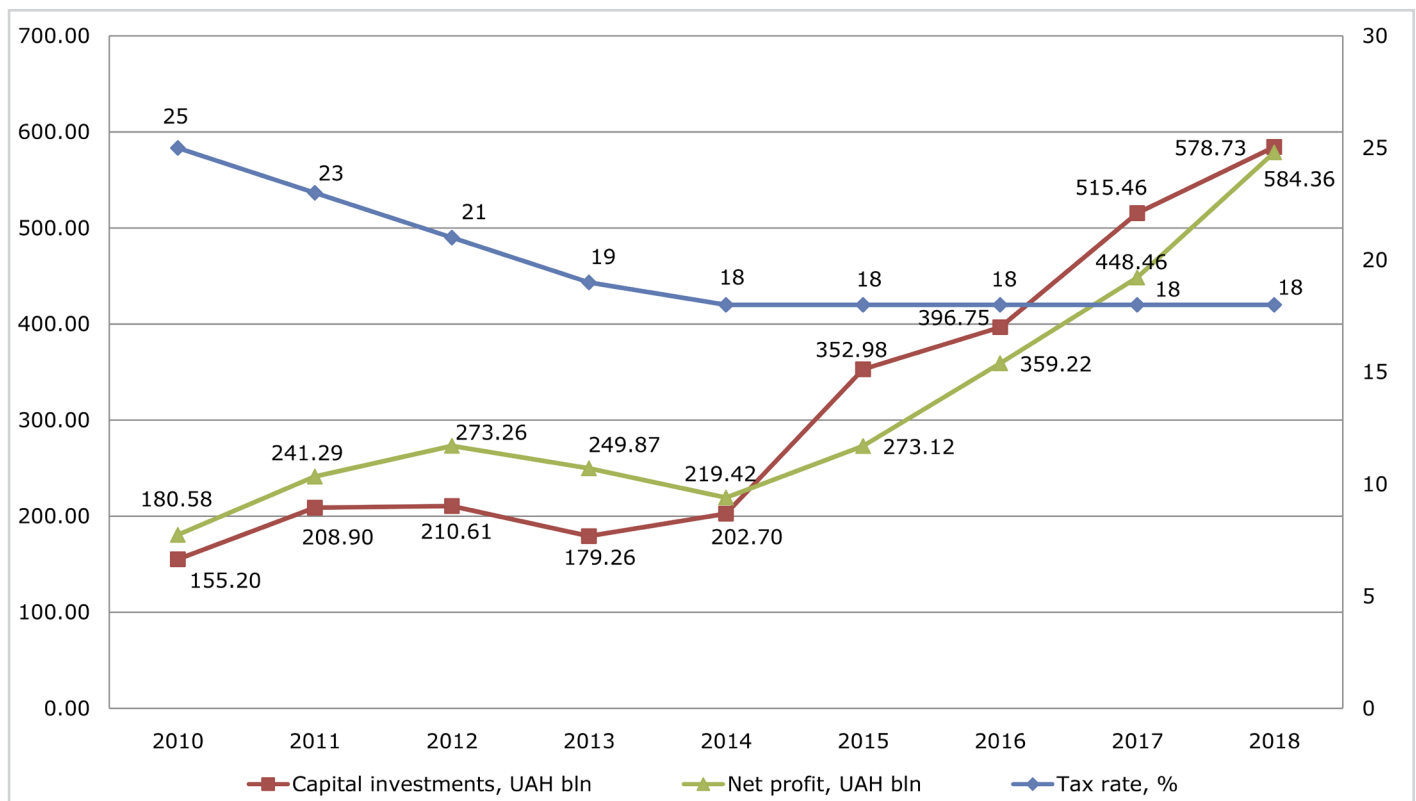


Figure 8:
The dynamic of tax on profit rate, net profit and capital investment in Ukraine, 2010-2018
Source: Compiled by the authors based on data by State Statistics Service of Ukraine and State Treasure Service of Ukraine

population increased. It should be added that during this period there was an impoverishment of the population. This is evidenced by data on individuals' income. In 2015-2016 the share of the population receiving income less than the actual subsistence level increased significantly - from 16.7% in 2014 to over 50% (State Statistics Service of Ukraine). In addition, according to our estimates in 2015-2017 the share of the population, per capita income of which decreased relative to GDP per capita has increased. Thus, we conclude that the changes in the taxation of individuals' incomes, together with a decrease in the income of a significant part of the population, contributed to a decrease in demand, which slowed down economic growth and worsened the welfare of citizens.

6. Conclusions

The theses that the increase of tax burden leads to GDP lowering is not confirmed in Ukraine. There is a direct connection between the tax burden and GDP in Ukraine. The GDP decreases with a lowering in the tax burden and accordingly grows with its increase.

The value added tax at the rate 20% influences on GDP grows neutrally. The introduction of 7% VAT on medicines that were previously exempt from taxation has led to higher prices and changes in the structure of consumption in favor of goods in the cheaper segment.

The increase in excise tax rates has led to a reduction in legal production, the growth of the shadow sector of excisable goods and the loss of budget revenues.

The reduction of tax on profit positively impacted on capital investments.

The changes in personal income taxation have reduced consumer demand and hampered GDP growth and welfare. Thanks to tax reforms, the government in Ukraine has managed to support the growth of budget revenues. However, sustainable economic growth is not ensured.

To ensure sustainable economic growth and improve the welfare of citizens, it is necessary to stimulate consumer demand. It is impossible to do only with taxes. First of all, it is necessary to ensure the growth of individuals' incomes through the distribution of GDP. And taxation should help increase consumer demand by reducing the tax burden on middle-income and low-income individuals and shifting it on rich people through progressive taxation their income and property. We consider it inexpedient to reduce the general level of tax burden. The VAT and tax on profit rates should be remained without changes. It is not reasonable to increase the excise tax rates again. Attention should be paid to improving measures to control the circulation of excisable goods.

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Received 14.11.2019

Received in revised form 21.12.2019

Accepted 12.01.2020

Available online 10.02.2020

Updated version of the paper as of 20.04.2020