

HIGHLIGHTS

Highlight 1. Shadow Economy Trends In Serbia: 2012-2017

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Introduction: Research Motivation and Objective

More efficient collection of tax revenue and the fight against the shadow economy are the most important elements of successfully implemented fiscal consolidation in the period 2015-2017. Recognising its economic and social importance, the Government of Serbia in 2015 adopted the National Programme for the Suppression of the Shadow economy, which stipulates that the volume of the shadow economy, which was estimated to be one of the largest in Europe in 2012, is reduced to the level of the average of the Central and Eastern Europe (CEE) by 2020. A recent NALED study (2018), using comparable company surveys from 2012 and 2017, estimated that in this five-year period, the shadow economy in Serbia has been reduced by more than a quarter (i.e. by 27%), which would mean that the goal of the National Programme was reached before time, and that the level of shadow economy in Serbia was already lower than the CEE average in 2017.

However, it is well known that subjective perceptions of citizens and businesspersons do not necessarily reflect the economic trends in a realistic way. Thus, there are numerous examples of contradictions and lack of logics in the international ranking of business conditions in different countries based on the subjective perceptions of entrepreneurs. Hence, the aim of this research is to use objective macro-fiscal statistics to assess the dynamics of the shadow economy in Serbia from 2012 to 2017 and compare them with results based on the perception of entrepreneurs.

Analyses based on macro-fiscal data indicate that in the period from 2012 to 2017, there was no significant reduction in the shadow economy in Serbia. Actually, the movement of tax aggregates suggests an increase in the shadow economy during 2013-2014. Only with the start of fiscal consolidation in 2015 has the shadow economy started to decline. Although the reduction of the shadow economy in the period 2016-2017 was considerable, in some segments (such as VAT collection) even impressive, it is estimated that this reduction has only managed to neutralise the increase in the shadow economy during

2013 and 2014. Thus, the size of the shadow economy in 2017 is estimated to be at approximately the same level as in 2012, where the shadow economy in trade of goods and services (that is VAT-taxable) and in earnings and employment has stagnated, while in trade of oil derivatives, the shadow economy has been reduced, while increasing in tobacco products. Such cumulative developments are the result of the strong growth of the shadow economy in all segments in 2013 and 2014, and its reduction as of 2015. These results show that the shadow economy in Serbia is still high and that additional tax administration improvements, as well as other institutional reforms, are needed in order to achieve the CEE average. Also, our findings point to the weakness of the monitoring of the shadow economy (exclusively) through surveys and subjective perceptions of citizens and favour macro-fiscal aggregates analyses.

Methodological Framework

Assessing shadow economy is a challenging task, because it is necessary to identify cases of tax evasion whose actors, logically, are not willing to provide information that could incriminate them. Therefore, shadow economy was most often assessed on the basis of indirect methods, the advantage of which is a uniform methodological framework, which can easily be applied in different countries and serve as the basis for international comparisons. This advantage of the indirect methods is at the same time their weakness, because it is not possible to determine to what extent the generic methodological framework for assessment is appropriate to concrete social conditions in a given country, and to what extent it is able to cover all forms of shadow economy. The most common model used in the international practice for the indirect assessment of shadow economy is MIMIC - Multiple Indicator Multiple Causes, which, based on typical structural equations, attempts to identify the connection between the causes and consequences of shadow economy, and indirectly assess the participation of shadow economy in GDP. According to an internationally comparable estimate based on the 2012 MIMIC model, the shadow economy in Serbia was around 30% of GDP, which was 1/6 higher than the average of the CEE countries and almost 50% higher than the European average (Krstic and Schneider, 2015).

In an attempt to eliminate the shortcomings of indirect methods for assessing shadow economy, researchers began to develop direct assessment methods, primarily ba-

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sed on household and business surveys. Thus, a group of authors in the monograph Krstic and Schneider (2015), in addition to assessing the MIMIC model, also made estimates of the shadow economy based on the household and business surveys. Therefore, using the HTC (household tax compliance) method, based on macroeconomic data on household income and consumption, it is estimated that the shadow economy is 23.6% of GDP, while according to the Survey on Conditions of Doing Business for Companies and Entrepreneurs, the shadow economy is 21% of GDP. In interpreting the above estimates, it is necessary to bear in mind that only the MIMIC method covers all forms of shadow economy and all institutional sectors, while the HTC method includes only the shadow economy that is related to the household sector, while the Survey includes only the shadow economy that is realised by companies and entrepreneurs, but not the households. Hence, these three different estimates of the shadow economy do not necessarily have to be contradictory, but differences can arise due to the different scope of different methods.

Although all the listed methods have their advantages and disadvantages, the NALED study (2018) identifies the Survey of Entrepreneurs as an important framework for measuring and monitoring the informal economy. Hence, the same survey was repeated in 2017 on a representative sample of businesspersons, and the size of the shadow economy in the registered companies was monitored in the two most important forms of tax evasion - unregistered employee salaries and unregistered turnover. A comparative analysis of NALED studies (2018) and Krstic and Schneider (2015) suggests that the shadow economy in this segment has been reduced from 21% of GDP in 2012 to 15.4% of GDP in 2017, which means that the shadow economy decreased by 27%. This big reduction in shadow economy and the conversion of 5.6% of GDP from the grey zone into legal flows should be accompanied by a correspondingly large increase in tax revenues. In particular, if we look only at the segment of registered companies followed by the Survey, the reduction of the shadow economy from 21% to 15.4% of GDP would mean additional tax revenues of 2.1% of GDP. If we look broader and assume that the equivalent reduction in shadow economy also occurred in other sectors assessed by the MIMIC model, then additional tax revenues should amount to 3% of GDP.⁴ In this research, we will limit ourselves to the

⁴ Monography authors Krstić and Schneider (2015) estimate the tax gap in 2012 to be at 11% of GDP, using the estimate of the grey economy based on the MIMIC method. Therefore, the 27% reduction in the grey economy should imply a reduction in tax gap as well, by 3% of GDP. However, if we use as a starting point the estimate of the grey economy based on the Survey, which has a more narrow scope than the MIMIC method, then the tax gap in 2012 was 7.7% of GDP. In that case, the 27% reduction in grey economy would imply a 2.1% of GDP reduction of the tax gap.

most conservative assumption and analyse whether in the period 2012-2017 there was an increase in tax revenues of 2.1% of GDP due to the reduction of shadow economy.

The high level of shadow economy has very negative effects on the sustainability of public finances and the conditions of doing business, which negatively affects economic growth. However, from mid-2012 and almost until the beginning of 2015, there has been a significant decline in tax collection efficiency in Serbia. Shadow economy increased, primarily due to reasons related to the political economy. After that, starting from 2015, several reforms have been implemented aimed at improving the efficiency of tax collection. Naturally, a question arises as to how much progress has been made, cumulatively, in the previous period in suppressing the shadow economy.

The aim of this research is to assess and analyse the movement of the shadow economy in Serbia from 2012 to 2017 based on macroeconomic and fiscal data. Monitoring the relative trends of the shadow economy is less demanding than estimating the absolute volume of the shadow economy, because we can rely on the basic methodological assumption that the change in tax revenue should reflect the change in the relevant macroeconomic tax bases and tax rates, and that any deviation in the movement of these variables may be the consequence of changing the level of the shadow economy. In addition, it is important to identify adequate macroeconomic statistics for monitoring trends in tax bases and to bear in mind that the suppression of the shadow economy in addition to tax revenue can also be reflected in certain official macroeconomic statistics (GDP, consumption, employment, etc.). Thus, the suppression of the shadow economy in the area of excise goods or the labour market can lead to the increase in registered consumption of excise goods or the increase in registered employment. This problem is less pronounced in monitoring the efficiency of VAT collection, which is based on aggregate macroeconomic data, such as personal consumption.

Aggregate Assessment of the Shadow Economy Dynamic

The share of tax revenue in GDP from 2012 to 2017 increased by 2.4 percentage points (pp). During that period, the rates of a large number of tax forms, including VAT, excises and income tax have significantly increased. Growth in tax revenue was realised from revenue growth from excises, income tax, and slightly less VAT and contributions. Observed by sub-periods, it is noticeable that growth of tax revenues in the relative amount almost stagnated from 2012 to 2015 (growth of 0.1%

Table 1. Tax Revenue Dynamic 2012-2017 (% of GDP)

	Tax revenues	VAT	Excise duties	Wage tax and social contributions	Corporate income tax
2012	36.1	10.3	5.1	15.9	1.5
2013	35.3	9.8	5.3	15.6	1.6
2014	36.8	10.5	5.4	15.8	1.9
2015	36.2	10.3	5.8	15.2	1.5
2016	37.2	10.6	6.2	15.0	1.9
2017	38.5	10.7	6.3	15.5	2.5
Δ2012-2015	0.1	0.0	0.8	-0.7	0.0
Δ2016-2017	2.3	0.4	0.4	0.3	1.0
Δ2012-2017	2.4	0.5	1.2	-0.5	1.0

Source: Authors' calculations based on Ministry of Finance data

Table 2. Tax Revenue Real Growth Rates (%)

	Tax revenues	VAT	Excise duties	Wage tax and social contributions	Corporate income tax
2012-2015	1.6	1.6	16.8	-3.5	2.6
2016-2017	12.5	10.5	13.8	7.7	71.0
2012-2017	14.3	12.2	33.0	3.9	75.5

Source: Authors' calculations based on Ministry of Finance data

of GDP), although in that period a number of tax rates have increased; while from 2015 to 2017 there was a significant increase in tax revenues (by 2.3% of GDP), even though there was no significant increase in tax rates in that period.

In the period from 2012 to 2017, tax revenues rose by 14.3% in real terms, and in the period 2012-2015, this growth was very slow and amounted to only 1.6%, followed by an acceleration, so that in 2016 and 2017, real growth was cumulatively 12.5%.

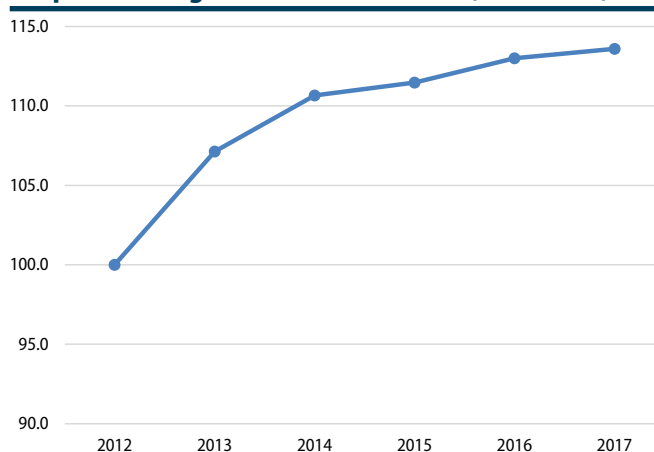
The dynamic of tax revenues has been influenced by the increase in tax rates, the real growth of tax bases, and the suppression of the shadow economy. In the period from 2012 to 2017, a higher number of tax rates has increased, with most of these increases being made from 2012 to 2015:

- Increase of general VAT rate from 18% to 20% in Q4 2012;
- Increase of lower VAT rate from 8% to 10% as of 2014;
- Increase in profit tax rate as of 2013 from 10% to 15%;
- Abolition of the investment tax credit in the corporate income tax as of 2014 (the annual tax spending amounted to around 20 billion dinars), which is equivalent to increasing the tax rate by an additional 4 percentage points, in phases;
- Introduction of excise on electricity at a rate of 7.5% as of August 2015;

- Gradual increase in excise taxes on cigarettes according to an agreed calendar. Thus, in October 2012, the specific excise duty rate on cigarettes was increased from 26 to 43 dinars per box (20 pcs.), while the ad valorem rate was slightly reduced (from 35% to 33%). After that, the ad valorem rate was not changed, while the specific rate increased every year, so in 2017 it was 65.5 RSD per box. In the same period, the excise rates on fuel were increased, especially diesel fuel, so the excise on diesel increased from 37.1 dinars per litre in 2012 to 54.9 dinars per litre in 2017. The excise on unleaded petrol was mainly increased for the rate of inflation.

Growth rates in most of the basic tax forms also affected the growth of the overall average weighted tax rate and, therefore, of potential tax revenues. The dynamics of the average weighted tax rate were estimated as the weighted average growth rate of basic tax forms, whereby their share in total tax revenues was used as weight. For the purposes of this calculation, excise rates on gasoline and petroleum products are expressed in a specific form (dinar per litre), excluding the effect of inflation.

The average tax rate in the period from 2012 to 2017 increased by 13.6%, with the largest part of this growth being realised in 2013 and 2014, while afterwards the growth of tax rates was slower and related primarily to a slight increase in excise rates.

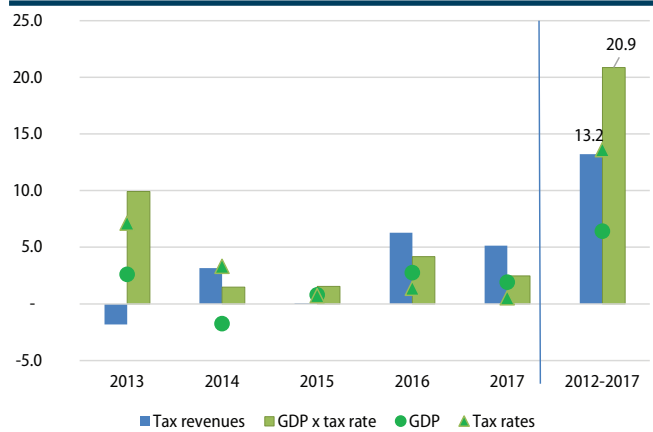
Graph 1. Average Tax Rate Base Index (2012=100)


Source: Authors' calculations

It can be observed that growth in tax revenues in 2013, 2014 and 2015 was significantly lower than the cumulative growth rate of GDP and the average tax rate, which means that during this period there was a significant expansion of the shadow economy compared to 2012. In 2016 and 2017, tax revenue growth was faster than the aggregate growth of GDP and tax rates, which may indicate that during this period the shadow economy was suppressed.

At the level of the entire period (2012-2017), tax revenues increased by 13.2%⁵ in real terms, while the overall growth rate of GDP and the average tax rate was around 20.9%. This means that the real growth of tax revenues in this period was 6.4% slower than cumulative GDP growth and average tax rates. If the shadow economy was estimated at 21% of GDP according to the Survey in 2012, then based on this result, it would be estimated at about 22.4% of GDP in 2017.

Graph 2. Growth Rates of Tax Revenue, GDP and Average Tax Rates (in %)



Source: Authors' calculations

Part of the effects of the suppression of shadow economy could have been reflected in the dynamics of the tax base, i.e. GDP. If we were to assume that half of the GDP growth was due to the suppression of the shadow economy, this would mean that tax revenue growth of 3.4% was actually lower than the cumulative growth of the base and rates, i.e. that the shadow economy grew by 3.4% and amounted to 21.7% of GDP in 2017, measured by the Survey of Entrepreneurs. Given that it is not possible to accurately assess which part of the effects of the shadow economy is contained in the dynamics of GDP, and that analyses by individual taxes indicate that the shadow economy has stagnated in the trade of non-excise goods and earnings/employment, while decreasing in the trade of petroleum products, and increasing in the trade of cigarettes (see Chapter 4), the general conclusion would be that the shadow economy in 2017 remained unchanged compared to 2012, as a result of primarily the big growth of shadow economy in 2013, 2014, and in some segments in 2015, and then its decline in the period 2015-2017. Therefore, the data on the movement of tax bases, tax rates and tax revenues do not support estimates based on perceptions, according to which the

⁵ Total tax revenue increased in real terms by 14.3% in the period 2012-2017. Still, part of that growth was the result of introducing electricity excise duty in 2015. Therefore, as the basis for comparison, this analysis uses the rate of real growth of tax revenue, excluding the revenue from electricity excise, which was 13.2%. It is estimated that there is no grey economy in the electricity trade.

shadow economy declined by as much as 27%.

Significant growth of shadow economy, which occurred from 2012 to 2015, is due to a number of factors. Firstly, the degree of tolerance for non-payment of taxes by the new Government has increased, reflected in the tolerance of the non-settlement of tax debts, as well as the uncovered illegal traffic of excise goods to Kosovo and Metohija. In addition, the change in the governing structure in mid-2012 influenced the transition slowdown in the functioning of institutions. Thus, in some institutions, such as the Tax Administration, there has been a long delay in appointing managers of regional branches. In this sub-period, the tax collection strategy was primarily based on encouraging voluntary payment of taxes, rather than increasing the likelihood of disclosure and punishment of non-compliance with tax regulations, which also acted as encouraging to taxpayers. In addition, the continuation of the practice of occasional, all-inclusive or partial tax amnesties also acted as a disincentive to the observance of tax regulations. From mid-2012 to mid-2014, there were reports from the Government and the Tax Administration's management about the unwanted application of the then applicable repressive legal measures to combat the shadow economy. The possibility of political messages influencing the application of tax regulations is one of the many manifestations of the weaknesses of institutions in Serbia. Finally, the increase in tax rates, which occurred in the period 2012-2014, also increased the profitability of working in shadow economy.

The sharp decline in tax discipline and the expansion of the shadow economy contributed to the accelerated growth of fiscal deficit, which in 2013 reached 6.6% of GDP. Therefore, in mid-2014, the Government began implementing measures to combat the shadow economy. In addition, some of the reforms, which are not primarily motivated by fiscal motives, but rather the need to improve business conditions, have also contributed favourably to the suppression of the shadow economy. It is estimated that the shrinking of the shadow economy, which came about in the second half of 2014, is a result of several institutional reforms⁶. Thus, in 2014, a reform of the penalty system for not complying with tax regulations was implemented, which increased the penalties and made the system more transparent and consistent. By adopting the Law on Inspection, the coordination of inspection services was improved. Labour legislation reform in 2014 liberalised the labour market, thus reducing the costs of legal recruitment and dismissal of workers, which created favourable conditions for reducing informal employment and salary payments. A certain

⁶ For more details, see: Randelović (2017)

shift was also made in terms of tax collection efficiency. After moving to electronic filing of tax returns, part of the employees in the Tax Administration were transferred to the tasks of controlling the issuance of fiscal receipts, which increased the perception of the probability of getting caught. In addition, the suppression of the shadow economy was critically influenced by the change in the Government's political stance towards the shadow economy that came after parliamentary elections in mid-2014. Instead of the previous, high tolerance towards the shadow economy, a series of actions to suppress it were launched, accompanied by strong media support.

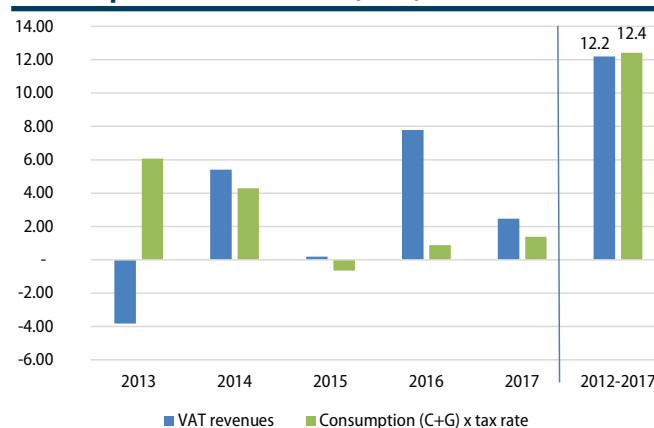
Although a shift in shadow economy has been made in the last three years, it is estimated that the shadow economy is still at the level of 2012, which was very high. This indicates that there is a considerable space for further suppression of the shadow economy, which implies the implementation of a number of institutional reforms. Firstly, for a more sensible shift, a fundamental reform of the Tax Administration needs to be carried out, which would involve an increase in the number of employees and the budget, reforming the system of recruiting, promoting and rewarding employees, strengthening the systemic risk assessment and transitioning to risk-based controls. In addition, the government needs to commit to no more tax amnesties (for example, by introducing an appropriate provision into the Budget System Law), as well as more decisive action of state institutions (Tax Administration, judiciary, etc.) in the collection of existing tax debts. It is also necessary to strengthen the autonomy of the Tax Administration in order to protect it from the political influences that put the tax collection policy into the service of political interests of the ruling parties. Strengthening the independence of the Tax Administration is a condition of protecting the Tax Administration from various types of informal interventions, which cause selective application of tax regulations. Along with the strengthening of the Tax Administration's autonomy, it is necessary to develop mechanisms for controlling the legality of its work in order to combat corruption. In this regard, a reform of Administrative Courts is also necessary, with the aim of having a more efficient processing of tax cases. Also, in order to reduce the shadow economy, it is necessary to make a step forward in terms of improving tax morality, that is, the willingness of taxpayers to pay taxes, which is crucial for the improvement of the quality of goods and services that are financed from taxes, and systematic informing of citizens about the significance and value of these goods (for example, through the education system).

Assessment of Efficiency in Collecting Individual Tax Forms

Value Added Tax

Value added tax represents one of the most significant tax forms, since its revenues account for more than a quarter of tax revenues (more precisely 28%). In the period from 2012 to 2017, VAT revenues increased in real terms by 12.2%. The dynamics of VAT revenues have affected the movement of consumption, tax rates, and the dynamics of the shadow economy. Thus, in the past five years, personal and government consumption fell by 1.6% in real terms due to the implementation of fiscal consolidation, but the average tax rate increased by 2 pp, i.e. by about 14.3%. Therefore, in this period, the combined effect of consumption growth and the increase in the tax rate amounts to 12.4%, which is approximately equal to the increase in VAT revenues, which indicates that the efficiency of collecting this tax in 2017 was approximately at the level of 2012. A major reduction in VAT collection efficiency came particularly in 2013, when tax revenues declined in real terms, although tax rates were significantly increased. In the following years, VAT revenues grew faster than the aggregate growth of the base and rates, but only after the 2017 neutralised

Graph 3. Real Growth Rates from Revenue from VAT, Consumption and Tax Rates (in %)

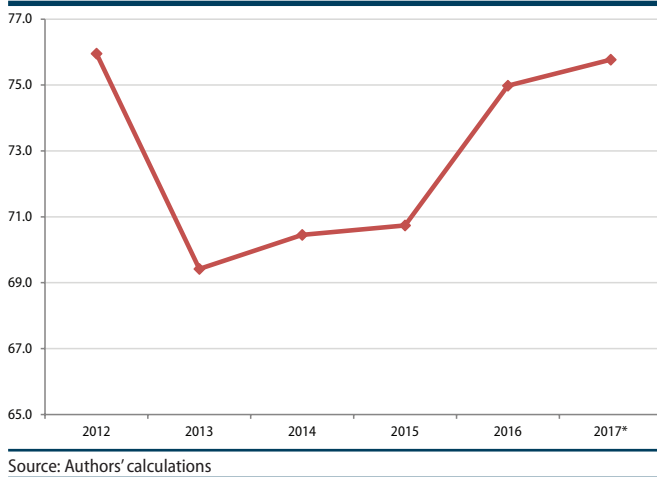


Source: Authors' calculations

deterioration created in 2013.

Analysis of C-efficiency⁷ in VAT collection points to a similar conclusion – collection efficiency has significantly fallen in 2013, while it stagnated in 2014 and part of 2015, only to start growing again from the second half of 2015. Still, at the end of 2017, C-efficiency was approximately at the same level it was in mid-2012.

⁷ In calculating C-efficiency, effects of increase in standard and lower VAT rate were excluded.

Graph 4. C-efficiency in VAT Collection in Serbia

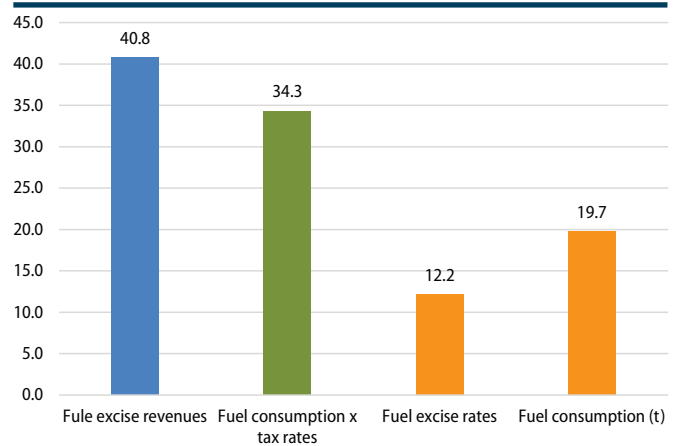
Excise

Excises in Serbia are paid on the sale of oil derivatives, tobacco products, alcoholic beverages, coffee, and as of the second half of 2015 on electricity. Nevertheless, the ones that stand out as the most significant are the excise duties on oil derivatives and cigarettes, which account for almost 90% of total revenues from excise duties.

Excise on Oil Derivatives

In the period from 2012 to 2016⁸, revenue from excise duties on fuel have increased in real terms by 40.8%, while the average weighted real excise rate per litre of fuel increased by 12.2%. In the same period, the final consumption of oil derivatives that are subject to excise duty (according to RS Energy Balance, published by SORS) increased by 19.2%. Cross-referencing of this data shows that the collection of excise duties on oil derivatives grew faster (40.8% growth) than the growth of potential tax due to the increase in the consumption of oil derivatives and the increase of excises (33.7%), from which it follows that the shadow economy in the trade of excise in the period 2012-2016 decreased by about 5%. However, independent monitoring of the final consumption of oil derivatives is a challenging task, as it is not certain whether the increase in registered consumption of oil derivatives in the energy balance is the result of a real increase in consumption or the suppression of the shadow economy. Therefore, in order to estimate the real dynamic of consumption of oil derivatives, two instrumental variables⁹ were used - the traffic dynamics

(number of vehicles) on Corridor 10, according to Serbia Roads, and the dynamic of the number of registered vehicles, according to the SORS data. The dynamic of oil derivatives consumption is estimated as the weighted average traffic dynamics on Corridor 10 and the number of registered motor vehicles, where weights for both variables are equal, which partially offsets the deficiencies of each of these variables. Starting from the abovementioned methodological approach, it is estimated that the consumption of petroleum products increased by 19.7% from 2012 to 2017, which is close to the estimate of the increase in the final consumption of oil derivatives based on the SORS Energy Balance (19.2%). Therefore, using independent consumption data, it was confirmed that the shadow economy in the field of oil derivatives decreased by around 5%. Reducing the shadow economy in oil derivatives is the result of the general anti-evasion measures applied since 2014, but also of several important and decisive measures that were directly focused on combating smuggling of oil derivatives. Therefore, after 2012, a fuel marking system was introduced, and the control of the oil derivatives trade with Kosovo and Metohija was strengthened, which contributed to the stabilisation of the legal market for oil derivatives. Since excises on oil derivatives make up the biggest part of total excise revenues, the reduction in the shadow economy in this domain has also contributed positively to the overall efficiency of charging excise duties. Similarly, the growth of revenues from excises on oil derivatives on the cumulative growth of excise rates and consumption of oil derivatives also shows a much faster conclusion (Chart 5).

Graph 5. Real growth rates from revenue from excise on fuel, excise rates and fuel consumption (in %)

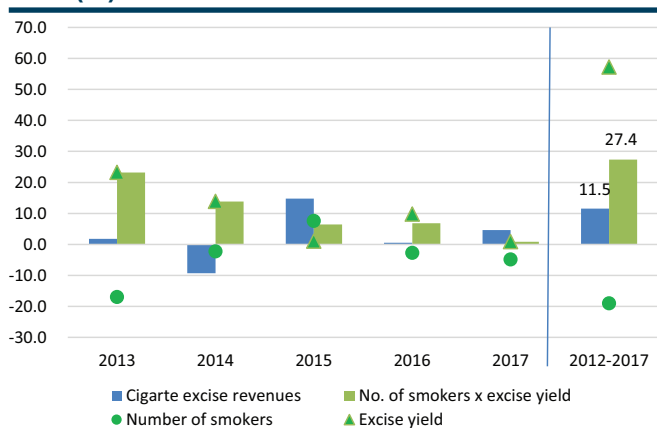
⁸ Data on the consumption of oil derivatives for 2017 have not yet been published, which is why the analysis relates to the period until 2016. However, there are no indications that there were any significant changes in 2017 in the grey economy in the trade of oil derivatives.

⁹ These instrument variables are very suitable for estimating the grey economy, because they are highly correlated with real consumption, while they are unaffected by the grey economy.

4.2.2 Excise on Cigarettes

In the period from 2012 to 2017, revenues from excise duties on cigarettes increased by 11.5% in real terms. Based on the data from the Household Budget Survey on the dynamics of monetized consumption of tobacco products and data on the movement of the average weighted price of cigarettes, the dynamic of cigarette consumption was carried out. It is estimated that in the period from 2012 to 2017, cigarette consumption decreased by 19%.¹⁰ However, the real value of excise duties per cigarette pack in this period increased by as much as 57.2%, from which it follows that the growth of potential tax revenues, which is the result of an increase in excise duties and a decrease in cigarette consumption, was 27.4%. By comparing the growth of excise taxes with the growth of potential revenues from excise taxes on cigarettes, it follows that in the period 2012–2017, the shadow economy in cigarette traffic increased by around 12.5%. Similar to other taxes, the shadow economy in cigarette trade grew in the period 2012–2014, since positive trends have been noticed since 2015 due to the application of anti-evasion measures. However, the improvement achieved over the last three years was not sufficient to eliminate the growth of the shadow economy that had occurred before that.

Graph 6. Real growth rates of revenue from excise on cigarettes, cigarette consumption and real excise rates (%)



Source: Authors' calculations

¹⁰ The data from the Batut Institute (Batut, 2017) indicate that from 2012 to 2017, the number of smokers in Serbia increased by 2%, which is unexpected given the ever-firmer policy of smoking ban, as well as the significant rise in cigarette prices (by 63% nominally) in this period. Various researches in the world show that 10% increase in cigarette prices affects the reduction of cigarette consumption by 3–4%, which implies that the increase in the price of cigarettes affects their consumption by about 19–25%. Real incomes of citizens in this period did not increase significantly, so there was no significant income impact on the consumption of cigarettes.

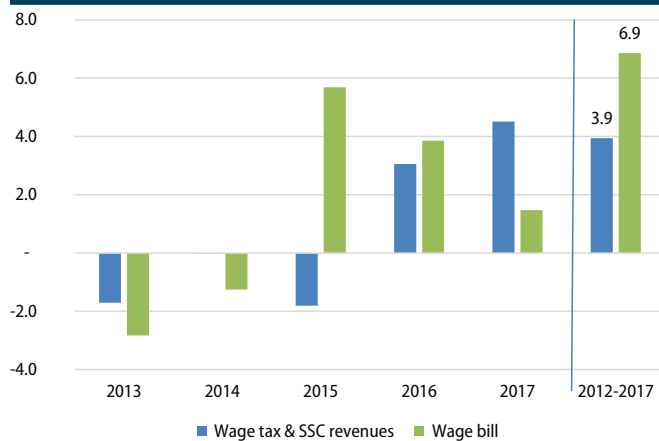
Wage Tax and Social Security Contributions

In the period 2012–2017, revenue from taxes on salaries and social contributions recorded real cumulative growth of 3.9%. In the same period, there was no change in the aggregate tax rate and contribution on wages - the rate of wage tax was reduced from 12% to 10%, but the aggregate contribution rate increased by the same amount. The tax rates have also been reallocated from health contributions to contributions on pension and disability insurance, but without changing the overall fiscal burden. In the mentioned period, the mass of salaries, as a measure of potential tax base and contribution growth, rose by 10% in real terms, due to formal employment growth of 10.3% and stagnation of real wages (marginal decline of 0.3%). Hence, by simply cross-referencing data on growth of tax revenues (3.9%) and data on the growth of potential tax revenues (10%), it could be concluded that there was an increase in the shadow economy in the labour market by over 5%. However, Petrovic et al. (2018) disputes the validity of high employment growth, which was registered in the Labour Force Survey (LFS) in this period. Also, based on the available data, it is not possible to determine which part of formal employment growth is the result of real employment growth, and which part is the result of the formalisation of work, i.e. transition from informal employment, to legal formal employment. Unlike trade in oil derivatives, identifying appropriate instrumental variable is a more challenging task in the case of employment trends, especially in the scarce environment of credible data in Serbia. However, the movement of employment can be approximated to some extent by using elasticity in relation to economic growth. Since the empirical data from the region suggests an average elasticity of employment of 0.3 in relation to GDP growth, we can assume that the employment growth in Serbia in the period 2012–2017 was about 1.9 percent. Since the average wage remained unchanged in real terms during this period, and since there was no change in tax rates, it is estimated that the real growth of potential revenue from taxes on wages and contributions in this period should amount to about 2%, while the actual growth of public revenues on this basis was approximately 3.9%. We can, therefore, conclude that at the level of the observed five-year period, there has been a certain decline of the shadow economy in the field of employment and payment of earnings¹¹. Observed by years, it can be noted that in 2013 there was an increase in shadow economy in this domain, and that

¹¹ However, we should take this estimate with a certain reservation, because it depends crucially on the coefficient of elasticity of employment in relation to GDP. If we assume that the coefficient of elasticity is at the lower limit achieved in the CEI countries (0.1), then we get that the suppression of the grey economy in the field of labour is greater than 2%. However, if we assume that it is at the upper limit (0.9) then we get that the grey economy in the field of employment slightly increased.

since 2014 this trend has been reversed, which coincides with the implementation of labour market reforms, which reduced the costs of legal employment.

Graph 7. Real Growth Rate of Revenue from Taxes and Contributions on Wages and Wage Bill (%)



Source: Authors' calculations

Corporate Income Tax

Revenue from corporate income tax increased by 76% between 2012 and 2017, reaching 2.5% of GDP in 2017. In the same period, the nominal tax rate increased by 50%, from 10% to 15%. In addition, the investment tax credit has been abolished as of 2014, reducing the tax spending by an amount equivalent to the increase in the tax rate by 3-4 pp. Since it is allowed to use a previously obtained tax credit, we assumed, for the purpose of this analysis, that this abolition will be gradual, over a period of 4 years, starting from 2014. It is therefore estimated that in the period 2012-2017, the effective tax rate increased by 83% (50% tax rate and about 30% tax investment loan).

Data from the Business Registry Agency on pre-tax profits of companies, banks and insurance companies show that this gain increased by 49% in real terms in the period 2012-2017.¹² Since the cumulative growth of tax revenues is slower than the aggregate growth of profit and tax rate, such developments could indicate an increase in the shadow economy in this domain. However, due to the lack of reliable data on the results of the economy for 2012, as well as the fact that data on taxable profit, movement of tax incentives and facilities are not available¹³, and that the change in the profit structure before taxation can significantly affect taxable profit, it

¹² There is no consolidated report of the Business Registry Agency for 2012 on the financial performance of the Serbian economy, so pre-tax profit data are not available. Data on net profit were taken from other BRA publications, they were then increased for profit tax, and thus the pre-tax profit for 2012 was approximated.

¹³ It is possible that a significant part of profit has been achieved in companies that are exempt from paying taxes on profits due to large investments, etc.

is not possible to estimate more precisely which part of the difference between the growth rate of revenue from profit tax and cumulative growth of the rate and the base is the result of the shadow economy.

Conclusion

According to the results of the MIMIC-based research, in 2012, the shadow economy in Serbia was estimated at 30.1% of GDP, which is about one-sixth above the CEE average. According to the results of the Survey among employers, which does not include shadow economy of natural persons, the shadow economy was estimated at 21% of GDP, while according to the Survey among Employers (NALED, 2018), the shadow economy rate was estimated at 15.4% of GDP, which is 27% less than five years ago. This paper assesses the dynamics of the shadow economy in Serbia in the period from 2012 to 2017, based on the comparison of the real change in tax revenues, relevant tax bases and tax rates. The results of the research based on macroeconomic and fiscal data show that in the period from 2012 to 2017, the level of shadow economy in Serbia remained approximately unchanged. The movement of shadow economy in the period 2012-2017 was the result of the strong growth of shadow economy in 2013 and 2014, followed by a slight decline as of 2015, which nevertheless was sufficient to neutralise the deterioration that had previously occurred. The mild growth of shadow economy is the net result of the growth of the shadow economy in tobacco products trade, the suppression of the shadow economy in the oil derivatives market, the stagnation or moderate growth of the shadow economy in the field of earnings and employment, and the stagnation of the shadow economy in the trade of goods and services taxed with VAT. These results, based on objective, macro-fiscal data, indicate that the shadow economy in 2012-2017 was not reduced, as suggested by the trends in the perceived shadow economy based on the Survey (NALED, 2018). Accordingly, we conclude that the shadow economy in Serbia is significantly higher than the CEE average, as well as the European average, and that for its more considerable reduction it is necessary to implement a series of institutional reforms that will reduce the relative profitability of working in shadow economy and increase the willingness of the taxpayers to comply with tax regulations. These reforms include, above all, improving the efficiency of the Tax Administration, as well as the judicial system, commitment to terminate the practice of granting tax amnesties, and continuous work on improving the quality and accessibility of public goods and services.

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Highlight 2. Financial Performance Analysis of the Serbian Economy

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Financial performance of the Serbian economy has improved in 2017. Part of the improvement was the result of more efficient performance of the core business, while the rest was due to changes in external factors, such as the strengthening of the dinar, the reduction of interest rates, the change in prices on global markets, the rise in real estate prices in Serbia. Some of the external changes, such as interest rate reductions, were the result of improving macroeconomic stability and the business environment, and will benefit the economy in the longer term. Other exogenous changes that have affected the improvement of the economy (fluctuations of the exchange rate, changes in prices on global markets) are cyclical in nature and their impact on the operations of the economy in the future is uncertain. If we observe three basic dimensions of financial performance, the most successful sectors in 2017 were the information and communications sector and the mining sector. The least successful sector in 2017 was the agriculture sector, primarily due to the large drought that hit Serbia in the observed year. If we compare the financial performance of companies according to their size, the most successful group of companies in 2017 were small enterprises, while the least successful were micro-enterprises.

Financial Performance Analysis of the Entire Economy

Dynamics of financial performance of the economy is analysed on the basis of indicators of liquidity, solvency and profitability. The paper analyses only the performance of the real sector of the economy, using the Business Registers Agency data.

Liquidity Analysis

If we assess the liquidity of the economy on the basis of a current ratio², we can conclude that we can conclude that the short-term financial security of the economy slightly improved in the observed period. However, it remains at a relatively low level, since the value of the indicator in all observed periods was less than 1. This means that enterprises on average were unable to cover their short-term liabilities with working assets. In the period 2013–2016, the value of this indicator did not significantly change considering that it was moving in a relatively narrow interval of 0.89 - 0.91. A more significant leap was recorded only in 2017 compared to 2016, when its value rose from 0.91 to 0.95. This somewhat more significant general liquidity jump was the result of a faster growth of working capital than the growth of short-term liabilities of the company. If we use a quick ratio³ for liquidity analysis, then the numerator, instead of the total working capital⁴, contains only one part of it, monetary assets. This is a more rigorous and more realistic liquidity indicator compared to the one previously used, since it removes inventories from the nominator as the least liquid form of working capital. Analysing the movement of this indicator, we conclude that the level of liquidity of the economy in 2017 (0.65) was at the almost identical level in which it was in 2013 (0.64). It should be pointed out that, although the value of this indicator remained unchanged in the analysed period, the structure of monetary capital in its nominator did not remain the same. Particular attention should be paid to the constant decrease in the share of short-term financial placements in the structure of monetary capi-

² Current ratio represents the ratio between the working capital and short-term liabilities, and it shows how many dinars of working capital cover each dinar of short-term liabilities.

³ Quick ratio is the ratio between the monetary capital and short-term liability and it shows how many dinars of monetary capital cover each dinar of short term liability.

⁴ Working capital, in addition to monetary capital includes inventory as well. We need to stress here that in addition to receivables, short-term financial placements and cash and cash equivalents, we also included in the monetary capital prepayments and deferred expenses.

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