

Review paper

PROPERTY TAX BURDEN AND PROGRESSIVITY IN THE CASE OF SERBIA

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Abstract. *Property taxation has been in the focus of economic considerations in Serbia only in the last few years. In the absence of the alternative revenue sources, the property tax is designated by the state authorities in Serbia as a potential source of additional revenue. Legislative changes, particularly Property Taxes Law amendments in 2010, made the formal conditions for the increase of the property tax burden and progressivity. As the motive for increasing the property tax burden, the government has appointed more appropriate property valuation, while for increasing the tax progressivity achieving greater vertical equity argument has been selected, along with higher tax revenues that remain available to local authorities. This paper considers whether there has been an increase in the tax burden and progressivity of the property tax in Serbia, via the empirical measurement of theoretically funded indicators. The results show that, in general, property tax in the future may generate a greater burden, particularly for taxpayers who own valuable properties, which may be followed by moderate increase in tax progressivity.*

Key Words: *property taxation; tax burden; tax progressivity, Serbia.*

INTRODUCTION

Property taxation in Serbia is passed to the local government with the adoption of the Local Government Finance Law in 2006. The local authorities are responsible for the assessment of the tax base, tax collection and establishing tax rates within the limits set in the state legislative provisions. This direction of local authorities funding is also supported by changes of the Property Taxes Law, which defines the basic elements of the taxation object, tax base, tax rates and tax credits. In recent years, a large number of studies have considered property tax as one of the taxes that could increase tax revenue, while simultaneously achieving a more equitable income redistribution. The scope of

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property tax can be widened, through more efficient defining of the taxpayer's responsibilities and property tax base. This is the aspect of the property tax that mostly draws the attention of economic experts in Serbia. However, recently the focus of considerations is on increasing the tax burden to be borne by taxpayers, accompanied by increase in the tax progressivity. As the main impulse for the tax burden increase the government authorities have selected more adequate valuation of the property, while as the key motivation for progressivity increase greater vertical equity is pointed out. Regarding this, the amendments to the Property Taxes Law from 2010 altered certain elements of the final tax liability calculation. The main objective of this study is to determine whether the legislative changes from 2010 increased the burden and/or the progressivity of the taxation of property owned by individuals, and whether the increase has affected only individuals that own valuable properties or if it has affected the owners of the low value properties as well.

The hypothesis tested in this paper is that, after the legislative changes from 2010, an increase in the property tax burden has occurred, as well as an increase in the property tax progressivity. To determine the characteristics of the property tax burden and progressivity, the range of real estate values is considered with the introduction of certain assumptions about real estate and taxpayer. By using legally prescribed parameters for tax liability calculation, tax is levied to pay for each of the real estate values within a defined value range, both before legislative changes in 2010 and after the legislative changes in 2010. Afterward, we introduce five fiscal indicators, of which the first three measure the tax burden, and the last two measure the tax progressivity. Comparing values before and after the legislative changes, conclusions are given regarding changes in the tax burden and progressivity.

The paper is arranged as follows. After the introduction, the second section provides the review of Property Taxes Law Amendment Act in 2010, which has introduced significant adjustments in all phases of tax liability calculation. The third part of the paper refers to the methodology of measuring the tax burden and progressivity. In the fourth part, the results of the analysis are given. The final part presents the conclusions.

1. PROPERTY TAXES LAW AMENDMENT ACT FROM 2010

Property taxation in Serbia is regulated by Property Taxes Law, which was changed in several occasions after the adoption in 2001. Over a number of years the property tax has been criticized, especially in terms of complexity and ambiguity in the tax base assessment. All rights on the property covered by the Property Taxes Law are subject to taxation. Property tax in Serbia is local tax - defined as a source of local governments revenue (Local Government Finance Law, article 6). However, the elements that constitute tax base and the maximum tax rate that local governments may apply are determined by the Property Taxes Law, while the tax rate decision is made by the local government within the limits established by the central government (Popović, D., p. 353).

Amendments to the Property Taxes Law were made repeatedly in Serbia, but in this paper we focus on the Property Taxes Law Amendment Act from 2010. This Law amendment introduced a number of changes in all phases of the tax liability calculation. At the real estate value assessment phase, value of real estate is accepted as a tax base. The value is calculated by applying the basic and corrective elements. The basic elements are usable area and the administrative average price per square meter of suitable real estate in

the territory of a municipality, while the corrective elements are location and the quality of real estate (Property Taxes Law, article 6). Finally, the value calculated in this way is modified by the annual depreciation factor. The Law amendment lowered the amount of annual depreciation from 1.5% to 0.8%, while the maximum amount of depreciation that could be applied has been reduced from 70 % to 40 % (Property Taxes Law, article 5).

As for tax rates and tax brackets, some changes have also been made. Before the amendments, the tax structure looked as follows:

	Tax base	Tax rates
1	Up to 6,000,000 dinars	up to 0.40%
2	6,000,001 – 15,000,000 dinars	tax (1) + up to 0.80% on the amount above 6,000,000 dinars
3	15,000,001 – 30,000,000 dinars	tax (2) + up to 1.50% on the amount above 15,000,000 dinars
4	Above 30,000,000 dinars	tax (3) + up to 3% on the amount above 30,000,000 dinars

Source: Property Taxes Law, Official Gazette of RS, No. 26/01, 45/02, 42/02, 80/02, 135/04, 61/07, 5/09

If only marginal tax rates are considered, it might be concluded that the property taxation in Serbia was very progressive because the tax rates rise from 0.4 % up to 3%. However, it should be noted that, according to the Tax Administration data, in 99.7% of tax returns, the tax base calculated for real estates owned by individuals amounted to less than 6 million dinars in 2006, i.e., taxed at a rate which stood at 0.4 % or below that percent. However, this figure was significantly reduced in 2009, especially in larger towns where the most valuable properties owned by individuals are located, primarily because local governments have increased the average price per square meter of real estate by 10% to 30% (Levitas, T. et al., 2010, p. 109). With adequate real estate valuation and the gradual introduction of market values as a tax base, it can be expected that the number of taxpayers in the higher tax brackets increases.

After the Law amendment, composition of tax rates and tax brackets looks as in the table:

	Tax base	Tax rates
1	Up to 10,000,000 dinars	up to 0,40%
2	10,000,001 – 25,000,000 dinars	tax (1) + up to 0,60% on the amount above 10,000,000 dinars
3	25,000,001 – 50,000,000 dinars	tax (2) + up to 1,00% on the amount above 25,000,000 dinars
4	above 50,000,000 dinars	tax (3) + up to 2% on the amount above 50,000,000 dinars

Source: Property Taxes Law, Official Gazette of RS, No. 26/01, 45/02, 42/02, 80/02, 135/04, 61/07, 5/09, 101/10

If only changes in the composition of tax rates and brackets are observed and other changes are neglected, a premature conclusion that a mitigation of progressivity occurred could be derived.

In the final phase of tax liability calculation, the total amount of the tax credit has been reduced. The tax credit, which amounted 40% of tax liability for the sole resident taxpayer and 10% for each household member (provided that the total amount of the tax

credit could not exceed 70% of the tax liability) is corrected. For the sole taxpayer, providing the condition of residency in the taxable real estate is fulfilled, the tax credit has been raised to 50% of the tax liability, but it can not exceed the amount of 20,000 dinars (Property Taxes Law, article 13). In this way, this tax incentive can be fully utilized only for taxpayers whose tax liability before the application of the tax credit is less than or equal to the amount of 40,000 dinars, which significantly increases the progressivity of the property tax at the higher tax bases.

2. THE METHODOLOGY OF MEASURING THE PROPERTY TAX BURDEN AND PROGRESSIVITY

Measures of tax burden are indicators of how well tax policy meets one of its primary goals, equitably raising the revenues needed to run government. Equity has two aspects. The first, vertical equity, concerns the way taxes are distributed among taxpayers with different abilities to pay. The second, horizontal equity, concerns the way taxes are distributed among taxpayers with the same ability to pay. Tax burden measures thus answer broad economic and social questions about the effect of tax policy on the distribution of income and wealth (Atrostic, B.K. and Nunns, J.R., 1991, p. 343).

Over time, a number of different indicators of tax burden have appeared, which can be classified into four broad categories: 1) Tax rates (nominal, statutory), 2) Tax/GDP ratios, 3) Implicit/effective tax rates on consumption, labour or capital and 4) The effective ex-ante tax rates (Wolff, G., 2005, p. 2). Nominal rates and the tax/GDP ratios were originally used as indicators of tax burden, mainly because of the simplicity and accessibility of the necessary data. With the growing complexity of national tax systems, the methodology of calculating the tax burden has become more complicated. Effective tax rates eliminate some of the disadvantages of using nominal tax rates, and are used in many papers to measure the consumption, capital or labour tax burden. In the past, most of the papers were focused on the profit tax burden, and its impact on the investment process. As a reaction to this trend, methodologies of average effective (AETR) and marginal effective (METR) tax rates were developed. In recent years, an emphasis has been placed on the tax burden on labour as a factor of production, where the effective tax rates have been used to show the labour tax burden at different income levels for the representative individual with strictly defined characteristics.

There are only few papers that analytically approach the problem of determining the property tax burden. Papers dealing with the property taxation mainly studied other aspects of the property tax, while the tax burden has been ignored. In the United States, the property tax burden has always attracted the attention of economists, since it is the most important revenue to local authorities and the differences in the tax burden in various states are significant. The two most popular indicators of the property tax burden that American economists have used are the property taxes per capita and property taxes per \$1,000 of total income. These indicators are the perfect tools for comparative analysis because they can show the differences in the tax burden in individual states, local communities and cities. In addition, the effective tax rate as the ratio of tax paid and the market value of the real estate is also a popular measure, because it indicates differences in the tax burden borne by taxpayers in different tax jurisdictions for real estate with the same characteristics. A large number of studies in the United States use just these indicators of the tax burden, while in European countries, there is hardly any significant research that deals with this aspect of property tax.

As far as progressivity, generally speaking, tax can be proportional, progressive or regressive. The tax is considered progressive if the average tax rate increases with income before tax, that is, if the marginal tax rate is higher than average tax rate along the entire income scale. The rate of progressivity is a term often used by economists and politicians, but with no clear meaning (Jakobson, U., 1976, p. 161). Generally, tax theory distinguishes local and global progressivity. Local (point, interval) progressivity measures the change of the average tax rate in one point or between two selected points in the income scale and it is closely linked to effective taxation. The outcomes of its analysis can help to specify the income intervals where the tax progressivity is the highest or the lowest, in what income intervals there are eventual turning points in tax progressivity, i.e. when tax changes from one form of progressivity (e.g. progressive) to the other form (proportional or regressive) (Široky, J., and Makova, K., 2007, p. 4). While local tax progressivity measures progressivity in a certain range of taxpayer's income, and can be used to determine the effects of partial tax legislation changes to the specific group of taxpayers, the macroeconomic analysis is necessary to determine the index that measures the progressivity along the entire income range. Musgrave and Thin (1948), in a very influential paper "Income Tax Progression from 1929 to 1948", introduced four local progressivity measures:

- 1) Progression of average tax rate;
- 2) Progression of marginal tax rate;
- 3) Progression of tax liabilities;
- 4) Progression of residual income.

Also, in order to arrive at a single measure of progression, Musgrave and Thin (1948) compared the inequality of the before-tax and after-tax income distributions. A progressive tax system is associated with a decrease in income inequality, while regressive tax rates will be reflected by an increase in income inequality (Kakwani M., 1977, p. 72). Available literature regarding the tax progressivity can be divided into studies that focus either on the local or global measures of tax progressivity. The largest number of early researches has focused on two of the aforementioned four indicators of local progressivity, i.e. progressivity of the tax liabilities and progressivity of residual income. The former measures the elasticity of the tax liability compared to change in pre-tax income, while the latter measures the elasticity of after-tax income compared to change in pre-tax income (at a certain point of the income scale).

Very few papers deal with the calculation of property tax progressivity. Even researches that consider the progressivity focus more on the aspect of vertical in(equality) as an element of importance. A vertically inequitable tax system can be classified as "regressive" if higher value properties are taxed more favorably than lower value properties and "progressive" if higher value properties are taxed less favorably than lower value properties (Allen, M., and Dare, W., 2009, p. 82). On the other hand, in a number of works, global progressivity of national tax systems is measured with the inclusion of property tax in the observed taxes, so global indices of progressivity of different taxes are calculated (Suits's index, Kakwani index and others). These indices are mainly relying on Lorentz distribution of income and the Gini coefficient of inequality as tools to measure progressivity (Kakinaka, M., and Pereira, M., 2006, p. 1).

To assess the effects of property taxation in Serbia, a range of real estate value from 2.5 million dinars to 50 million dinars is established, with a fixed increase in the value of real estate of 2.5 million dinars, which gives 20 levels of real estate value. In order to determine the tax liability, it is necessary to introduce some assumptions:

1. real estate subject to taxation falls within the category of buildings and is located in the municipality of Kragujevac;
2. age of the building is 10 years;
3. location coefficient is 0.6 (the real estate in the suburban area);
4. quality coefficient of property is 560/695 (0.86);
5. taxpayer is an individual who resides in the taxable property with three household members.

These assumptions allow us to calculate the tax base, on which the tax rates are imposed in the municipality of Kragujevac, before and after the Property Taxes Law amendment from 2010 (Table 1). In this way tax liability is calculated, but it must be adjusted by applying the tax credit. The remaining amount represents the final tax liability. As it can be seen, only the taxation of real estate owned by individuals is considered, while taxation of enterprises is not the subject of this paper.

Table 1 Property tax structure in the municipality of Kragujevac (before and after the Property Taxes Law amendment in 2010)

Before amendment		After amendment	
Tax base	Tax rates	Tax base	Tax rates
Up to 6 million dinars	0.30%	Up to 10 million dinars	0.20%
6 – 15 million dinars	18 thousand dinars + 0.80% on the amount above 6 mil. dinars	10 – 25 million dinars	20 thousand dinars + 0.60% on the amount above 10 mil. dinars
15 – 30 million dinars	90 thousand dinars + 1.50% on the amount above 15 mil. dinars	25 – 50 million RSD	110 thousand dinars + 1% on the amount above 25 mil. dinars
Above 30 million dinars	315 thousand dinars + 3% on the amount above 30 mil. dinars	Above 50 million RSD	360 thousand dinars + 2% on the amount above 50 mil. dinars

Source: Property Taxes Law, Kragujevac Local Government Decision on the Property Tax Rate for 2009 and 2010

To analyze the property tax burden and progressivity five measures are used:

- 1) The total amount of tax liability;
- 2) Tax rate T_1 , calculated as a ratio of the total tax paid and the tax base;
- 3) Tax rate T_2 , calculated as a ratio of tax before the tax credit and the property value;
- 4) local index of progressivity of tax liability, which is obtained using the formula

$$v_1 = \frac{(T_1 - T_0)/T_0}{(Y_1 - Y_0)/Y_0}, \text{ i.e., } v_1 = \frac{\Delta T / T_0}{\Delta Y / Y_0}, \text{ where } T \text{ is the amount of tax due, and } Y \text{ is the}$$

value of property on which the tax is levied.

- 5) Local index of residual progressivity, obtained using the formula $v_2 = \frac{\Delta X / \Delta Y}{X / Y}$,

where X is the value of the property after tax ($Y - T$), T is the amount of tax and Y is the pre-tax property value.

The first three indicators measure the burden that property tax creates for property owners. While the tax burden just shows what part of taxpayer's income is transferred in the form of taxes, the extent of progressivity shows changes in the tax burden of taxpayers in accordance with income changes. Local measure of progressivity of the tax liability shows that, if its value is greater than 1, a progressive tax is in place, while if value is smaller than 1, tax is considered to be regressive. Its value can show in what real estate value range an increase in the tax progressivity occurs. Also, if the value of the residual progressivity measure is smaller than 1 tax is considered progressive, otherwise, if its value is greater than 1, tax is regressive.

The analysis is carried out with respect to the previously defined assumptions concerning the characteristics of taxpayer and property. Respecting different sets of assumptions, we could get quite different results. Also, local tax progressivity measures are used, which do not provide a comprehensive measure of tax progressivity. Calculating a global index of progressivity, which requires a large set of specialized data on the income distribution and the tax burden, would generate more useful information about the nature of the property tax progressivity in Serbia.

3. THE RESULTS

After identifying all important elements, all the above mentioned tax indicators can be calculated. The values are shown in Table 2 and the graphs that follow. Table 2 shows the increase in tax liability that occurred after legislative changes for the real estate value up to

Table 2 Property tax burden and progressivity, before and after the Property Taxes Law amendment in 2010

Value	1) Tax liability		2) Tax rate T_1		3) Tax rate T_2		4) Indicator v_1		5) Indicator v_2	
	Before	After	Before	After	Before	After	Before	After	Before	After
2.5 mil.	986,9	1186,8	0,090	0,100	0,132	0,095	-	-	-	-
5 mil.	1973,7	2373,6	0,090	0,100	0,132	0,095	1	1	1,00000	1,00000
7.5 mil.	2960,6	3560,4	0,090	0,100	0,132	0,095	1	1	1,00000	1,00000
10 mil.	3947,4	4747,2	0,090	0,100	0,132	0,095	1	1	1,00000	1,00000
12.5 mil.	4934,3	5934,0	0,090	0,100	0,132	0,095	1	1	1,00000	1,00000
15 mil.	6789,6	7120,8	0,103	0,100	0,151	0,095	1,88	1	0,99971	1,00000
17.5 mil.	9421,2	8307,6	0,123	0,100	0,179	0,095	2,32	1	0,99949	1,00000
20 mil.	12052,8	9494,4	0,137	0,100	0,201	0,095	1,95	1	0,99955	1,00000
22.5 mil.	14684,4	12043,6	0,149	0,113	0,218	0,107	1,75	2,15	0,99960	0,99952
25 mil.	17316,0	15604,0	0,158	0,131	0,231	0,125	1,61	2,66	0,99964	0,99920
27.5 mil.	19947,6	19164,4	0,165	0,147	0,242	0,139	1,52	2,28	0,99967	0,99927
30 mil.	22579,2	25449,6	0,172	0,179	0,251	0,151	1,45	3,61	0,99970	0,99833
32.5 mil.	25210,8	32570,4	0,177	0,211	0,259	0,162	1,39	3,36	0,99972	0,99815
35 mil.	28579,5	39691,2	0,186	0,239	0,272	0,171	1,74	2,84	0,99947	0,99828
37.5 mil.	33513,8	46812,0	0,204	0,263	0,298	0,178	2,42	2,51	0,99892	0,99840
40 mil.	38448,0	53932,8	0,219	0,284	0,320	0,185	2,21	2,28	0,99899	0,99850
42.5 mil.	43382,3	61053,6	0,233	0,303	0,340	0,191	2,05	2,11	0,99905	0,99859
45 mil.	48316,5	68174,4	0,245	0,319	0,358	0,196	1,93	1,98	0,99910	0,99866
47.5 mil.	53250,8	75295,2	0,256	0,334	0,374	0,201	1,84	1,88	0,99915	0,99873
50 mil.	58185,0	82416,0	0,265	0,347	0,388	0,205	1,76	1,79	0,99919	0,99880

Source: Author's calculations

15 million dinars, and a decline in the range from 17.5 to 27.5 million dinars. For the higher values there is a continuous increase in the tax liability, that can be seen in the Chart 1A. This trend can be confirmed by observing tax rate T_1 , which keeps the pace with changes in tax liability. In the graph 1B three distinctive zones can be discerned. In the first zone, (real estate value ranging from 2.5 to 15 million dinars) tax rates before and after Property Taxes Law amendment are approximately equal. In the second zone, ranging from 17.5 to 27.5 million dinars, tax rate before is higher than the tax rate after the Law amendment.

Only in the third zone, ranging from 30 to 50 mil. dinars, tax rate after the legislative changes becomes greater than the tax rate before the changes, and the difference rises with the increase in real estate value. As it will be shown later, the main factor influencing this behaviour of tax liability and indicator T_1 is tax credit.

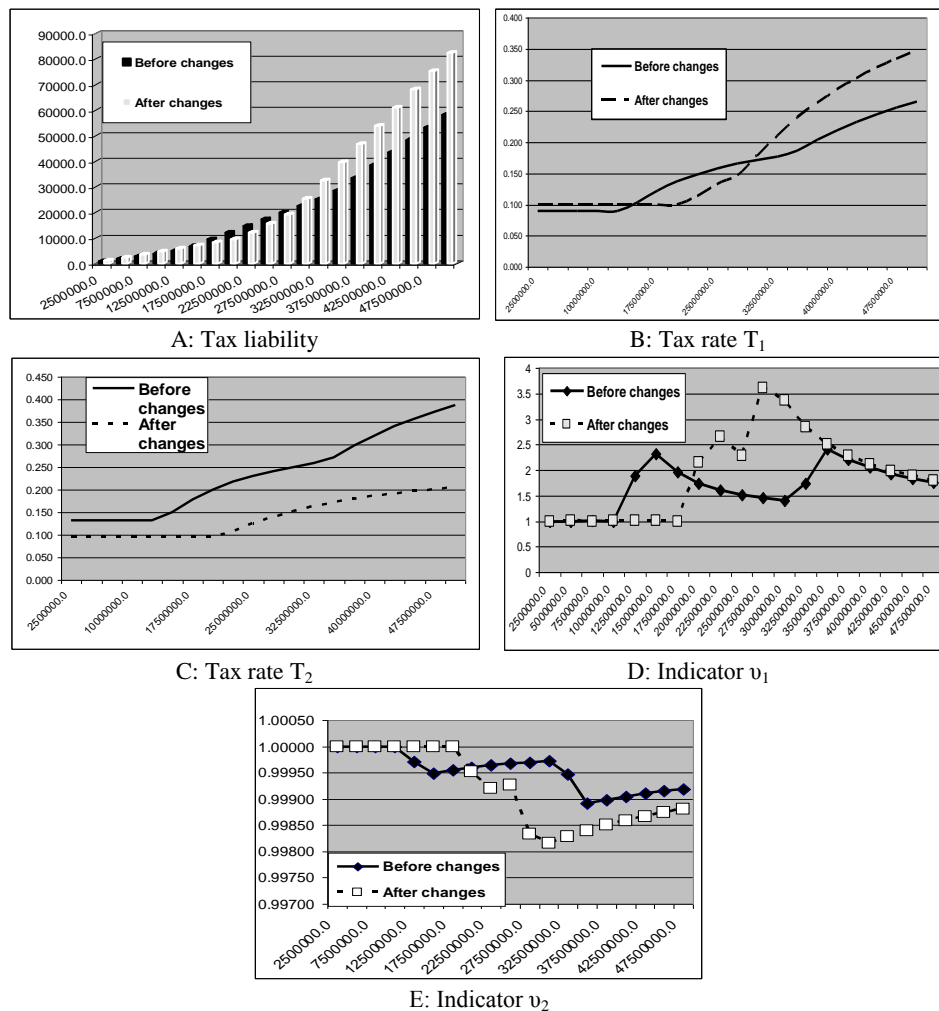


Fig. 1 The amount of tax liability, tax rate T_1 , tax rate T_2 and indicators of local progressivity v_1 and v_2 , before and after the legislative changes

Unlike T_1 , indicator T_2 displays continuous increase compared to the values after the legislative changes. This can be explained by the fact that T_2 is the ratio of tax liability before applying tax credit, so tax credit change does not affect the T_2 value (Figure 1C).

Local progressivity of the tax liability is higher after legislative changes in the real estate value range from 22.5 to 50 million dinars (Figure 1D). However, this indicator shows that progressivity rises for the real estate values ranging from 22.5 to 35 million dinars, while the progressivity before and after tax changes are very close for values ranging from 37.5 to 50 million dinars. This trend is confirmed by the indicator of the residual progressivity (Figure 1E), whose value after legislative changes is continuously lower than the value before the legislative changes for the real estate values in the 22.5-50 million dinars range.

Having established the above mentioned indicators, the remainder of the paper deals with the question which of the taxation elements that were subject to legislative changes contribute to increase in the tax burden and/or progressivity, and which are acting in the opposite direction. The elements which were altered are the amount of depreciation, tax rates, tax brackets and the tax credit. To determine which elements have increased the tax burden and progressivity, it is necessary to recalculate the previously observed indicators, but in a way that only one of the elements changes, while keeping the other elements unchanged (*ceteris paribus*). In this way, only the element that is modified affects the tax burden and progressivity, so the direction of its isolated effect can be observed. This procedure is implemented for each of the elements.

3.1. The effects of tax credit change

Observing the isolated effect of change in the tax credit, we can notice that it is a factor that dramatically increases the value of the tax rate T_1 , especially at higher real estate values, because starting from real estate value 17.5 mil. dinars, the tax credit "freezes" at 20,000 dinars, and just after this level there is a significant increase of difference between the tax rate before and after the legislative changes. The tax rate T_2 measures the ratio of tax liability before the tax credit and the value of the property, and since it is not affected by the value of tax credit, the tax rate before and after the legislative changes remains the same. We conclude that the tax credit is a factor that leads to a significant increase in the tax burden, especially for taxpayers with valuable real estates.

As for local progressivity of the tax liability, for the real estate value up to 20.0 mil. dinars, progressivity before and after legislative changes are approximately equal. For higher real estate values, progressivity after the legislative changes is constantly higher than the progressivity before the changes. Due to the occurrence of significant differences in the amount of tax credit before and after the legislative changes, at the level of real estate value of 22.5 million dinars a swift rise of v_1 occurs, which at that point reaches its maximum. Indicator of residual progressivity v_2 tracks changes of the progressivity of tax liability, because its values before and after the legislative changes up to the real estate value of 17.5 million RSD are approximately equal, but after that point a significant difference is noticeable. For easier interpretation, the indicators are graphically shown (Figure 2), where we can see all the above trends.

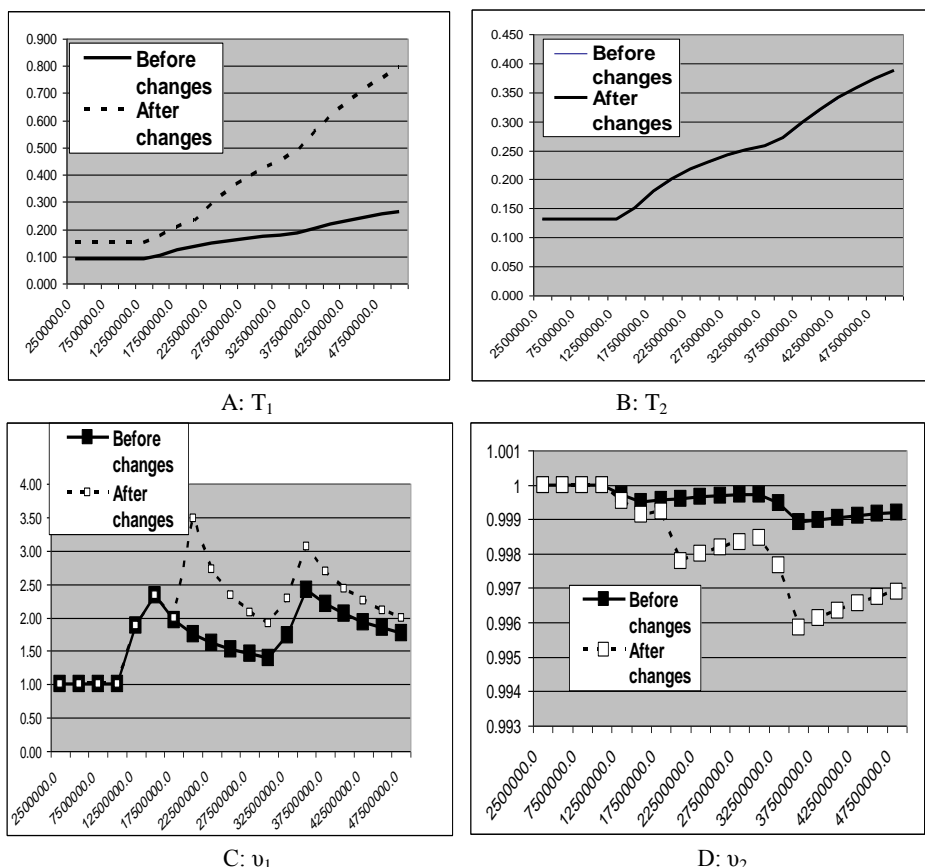


Fig. 2 Isolated effect of change in tax credit
Tax rates T_1 , T_2 and local indicators of progressivity v_1 and v_2

3.2. The effects of tax rates and tax brackets changes

Regarding changes in tax rates and tax brackets, in Fig. 3 a decrease in the value of tax rates T_1 and T_2 for all real estate values after legislative changes is apparent. The tax rate T_1 , after legislative changes, remains continuously lower than the tax rate before the changes. With the increase in real estate value, the difference between tax rates increases. A similar trend can be observed for the tax rate T_2 . Looking at these two indicators, we can state that the isolated changes in tax rates and brackets caused the reduction of the tax burden, which is intensifying as the real estate value rises.

Considering the progressivity of the tax liability, there is no single trend. The reason for this lies in the fact that the progressivity of the tax liability represents the ratio of two relative values, the relative change of tax liability and the relative change in real estate value. Given that the relative change in real estate value is fixed before and after the legislative changes, the difference in the value of the indicator before and after legislative changes is only affected by the relative change in tax liability. Prior to legislative changes, indicator of progressivity of the tax liability had two peaks (one peak for the real

estate value of 17.5 mil. dinars, and the other for the real estate value of 37.5 mil. dinars). This can be explained by transitions to higher tax brackets, because for a given range of the tax base, before the legislative changes three tax brackets were established, and the jump in the indicator value happens immediately after the point where the marginal tax rate rises. In the first case, for the real estate value of 15 million dinars the marginal tax rates rises from 0.3 % to 0.8 %, and in that point progressivity increases and reaches the first peak at the next real estate value. In the second case, for the real estate value of 35 mil. dinars, marginal tax rates rises from 0.8 % to 1.5 %, and in that point progressivity increases and reaches the second peak at the next real estate value. On the other hand, after legislative changes, tax brackets are set in a way that only one transition to the next bracket exists, at the real estate value of 25 mil. dinars, where progressivity indicator reaches its maximum (Fig. 3C). Similar jumps can be observed with indicator of residual progressivity (Fig. 3D), which also reports the existence of two points at which a decline in indicator value happens before legislative changes, while after changes there is only one point where a sharp decline occurs.

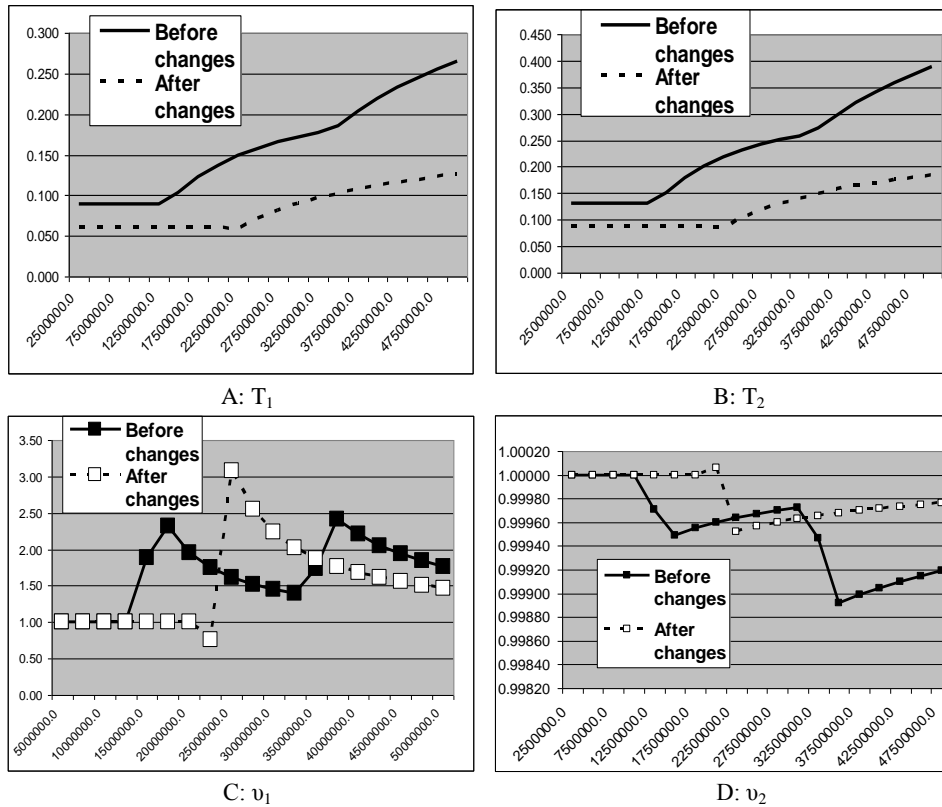


Fig. 3 Isolated effect of changes in the composition of tax rates and tax brackets
Tax rates T_1 , T_2 and local indicators of progressivity v_1 and v_2

Based on all the foregoing, we conclude that the isolated change in the tax structure has led to a reduction in the progressivity of taxation, that is, a new tax structure is less

progressive compared to the previous tax structure in the range of real estate value from 2.5 to 22.5 million dinars., but, for a range of values from 25 to 35 million dinars it becomes more progressive. Finally, for the range of values from 37.5 to 50 mil. dinars, again it is less progressive compared to the previous tax structure.

3.3. The effects of depreciation changes

Thanks to the reduction in depreciation percentage, after the legislative changes the amount of tax to pay is higher for all levels of real estate values. The increase in the tax burden can be seen both in the amount of tax payments, as well as with indicators T_1 and T_2 , which are higher after legislative changes for all levels of real estate value (Fig. 4A and 4B).

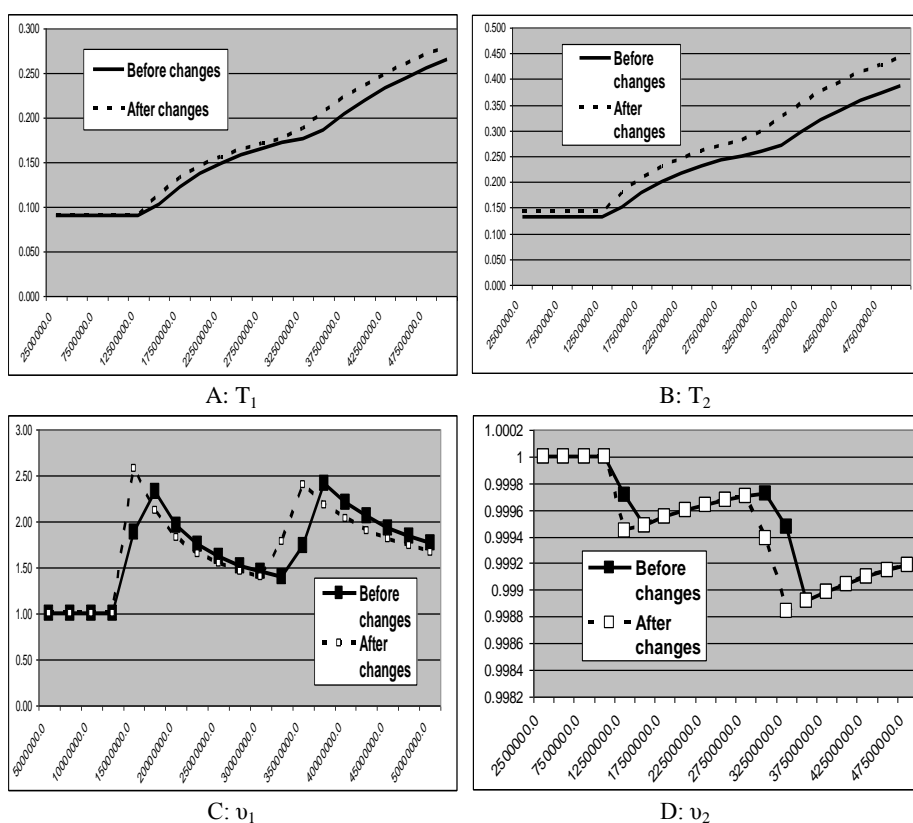


Fig. 4 Isolated effect of change in depreciation

Tax rates T_1 , T_2 and local indicators of progressivity v_1 and v_2

Regarding isolated effect of the depreciation reduction on progressivity, it is a change that affects all taxpayers across the entire range of real estate values in the same way. Accordingly, changes in the progressivity (Fig. 4C and 4D) can be attributed to transitions from one tax bracket to another tax bracket, but not to the reduction in depreciation rates. Depreciation decrease is a change that has led to the tax burden increase, but does not affect the progressivity.

FINAL REMARKS

Based on all the above, we can see that the changes of parameters in tax payment calculation introduced by 2010 Law amendment produced an increase of tax burden to be borne by taxpayers. Factors that have led to an increase in the tax burden are reduction of real estate depreciation, to a lesser extent, and, to a much greater extent, tax credit reduction, especially at higher levels of real estate value. On the other hand, isolated changes made in the composition of tax brackets and tax rates have generated the reduction in the tax burden at all real estate value levels, but this reduction is not enough to offset the impact of tax credit change. In the hypothetical example presented here, tax liability becomes constantly higher after legislative changes, but only at higher values that exceed 30 million dinars. For lower real estate values, the tax liability in the real estate value range from 2.5 to 15 million dinars becomes higher after legislative changes, but in the range from 17.5 to 27.5 mil. dinars it becomes lower. In this range the tax rate applied is lower after the Law amendments, but the tax credit percent also becomes lower along with the lower depreciation rate. The combined impact of the tax credit and depreciation prevails so tax liability increases. However, in the range from 17.5 to 27.5 million dinars, the tax liability after the legislative changes is lower, suggesting that the combined impact of tax rates and tax brackets is stronger than the combined impact of tax credit and depreciation. For the 30-50 million dinars range, a significant decrease of tax credit occurs, which increases the amount of tax liability, i.e., the impact of tax credit and depreciation prevails over the influence of tax rates/brackets changes.

Values of local tax progressivity indicators before and after legislative changes inform us that an increase in tax progressivity occurred, but not along the entire scale of real estate values. For a real estate value range from 2.5 to 10 million dinars, both progressivity indicators have a value of 1, which means that there is no progressivity in taxation (this is a proportional tax). Progressivity is more pronounced before the legislative changes in the 12.5-17.5 million dinars range, while at higher values, in the 20-50 million dinars range, property tax progressivity is more pronounced after the legislative changes. Using more detailed analysis, we have found that the tax credit change led to an increase in progressivity at higher real estate values, that is, the effect of changes in tax credit in the direction of increasing progressivity is more pronounced than the tax rates/brackets change in the direction of reducing progressivity. On the other hand, the impact of changes in the composition of tax rates and tax brackets led to reduction in the progressivity at lower real estate values.

State authorities in Serbia are oriented toward increasing property tax revenue. First of all, this will be achieved by introducing market values of the real estate as tax base. Currently, due to the tax base undervaluation, the analysis conducted in this paper has a theoretical character, because the share of taxpayers in the higher tax brackets is low. Also, the authorities for two years in a row limit the full implementation of the legal provisions through prevention of interannual rise of tax liabilities reported in the annual tax returns. With the introduction of market-valued tax base, it can be expected that the degree of undervaluation of the base will be significantly reduced. In this case, the burden of paying taxes will be higher, especially for taxpayers who own valuable properties, which will lead to an increase in property tax revenue. As far as progressivity, legislative changes have resulted in greater tax progressivity for valuable real estates, which, accompanied by an increase in average tax rates can lead to achieving greater redistributive effects and more equitable income redistribution. However, given the low property tax revenue, it can hardly be expected that this effect will be overly significant.

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PORESKI TERET I PROGRESIVNOST POREZA NA IMOVINU U SRBIJI

Oporezivanje imovine u Srbiji je tek u poslednjih nekoliko godina u fokusu javnofinansijskih rasprava. U nedostatku drugih načina za ubiranje nedostajućih budžetskih sredstava, porez na imovinu je poreski oblik koji su državni organi u Srbiji odredili kao potencijalan izvor dodatnih prihoda. Zakonskim izmenama, a naročito izmenom Zakona o porezima na imovinu iz 2010. godine, stvoreni su formalni uslovi za povećanje poreskog opterećenja i progresivnosti u oporezivanju. Kao osnovni motiv za povećanje izdašnosti poreza na imovinu državni organi navode adekvatnije vrednovanje imovine, dok se kao osnovni motiv za povećanje progresivnosti navodi postizanje veće vertikalne pravičnosti, uz istovremeno povećanje poreskih prihoda koji ostaju na raspolaganju lokalnim vlastima. U ovom radu utvrđuje se da li je došlo do povećanja poreskog opterećenja i progresivnosti u oporezivanju imovine u Srbiji, empirijskim utvrđivanjem vrednosti teorijski definisanih pokazatelja. Rezultati analize pokazuju da će, generalno, porez na imovinu u budućnosti stvoriti veće opterećenje, i to naročito za poreske obveznike koji poseduju vrednije nepokretnosti, što će biti praćeno skromnim rastom progresivnosti u oporezivanju.

Ključne reči: *oporezivanje imovine; poreski teret; progresivnost u oporezivanju, Srbija.*