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Research Article

Personal Income Tax Progression in Kosovo

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Abstract

The purpose of this paper is to examine the degree of personal income tax progression. The measurement of personal income tax progression over a period of time that is characterized with changes of tax rates, indicates how is distributed the tax burden with respect to taxpayers' income, and how this burden is displaced by changing tax rates, from one to another group of taxpayers. To measure the degree of personal income tax progression, the paper use a method that provides a stable indicator of progressivity, and evidently shows the impact of non-taxable personal income (tax allowances) in the degree of progression across all income levels. Also, this method is consistent with general definition of progressivity, and fulfils criterions for evolving alternative measure of tax progression. The paper also presents a linear equation model of after-tax personal income as well as tax liability, in the case study of Kosovo.

Keywords: measuring personal income tax progression, personal income tax, tax progression, tax liability, function of after-tax personal income, function of tax liability

1. Introduction

Tax progression is a very debatable issue among the numerous authors that address this matter. This issue is treated from the view of structural progression and effective progression. According to the structural progression, tax progressivity is determined by comparing marginal rates (m) and average rates (a) within the structure of the income tax system. Effective progression is determined by comparing the effects of structural progression in the distribution of income.

The aim of this paper is to show the impact that the personal income tax changes have on the distribution of tax burden and the relocation of it from one to another group. In order to capture this impact, the paper is focused on the measurement of personal income tax progression, and the estimation of the after-tax income function as well as the tax liability function.

The applied model for measurement of personal income tax progressivity used in the paper is simple, understandable, and appropriate for use when there is lack of data available. Using this indicator, we avoided focusing only on the measurement of changes in the marginal and average rate, leaving aside the change of tax liability and the change of income in different income levels.

Resulted index of progressivity enable us to identify the weaknesses related to the unfair distribution of tax burden among different groups of taxpayers, and could serve as useful indicator for amendment to be made in this regard.

In the case study of Kosovo, the measurements of structural progression regarding to the personal income tax are made for the period 2002 – present, as a very specific period of economic,

social and political development in Kosovo.[1] The indicator of progressivity shows for greater degree of tax progression during the period of 2003-2009 compared with period 2009-present. The same indications also are shown by the function of after-tax personal income and the function of tax liability.

2. Literature Review

Tax progression is addressed and debated by researchers as well as policymakers. Given that the tax progression directly affects redistribution that is linked to changes in the income inequality, researchers with interests on this field have proposed various methods for measuring the tax progression.

Indicators which express the relationship between income and tax, belong to the group of structural progressivity indicators. According to Musgrave and Thin (1948), marginal rate progression (MRP), average rate progression (ARP), liability progression (LP) and residual progression (RP), belong to the same group. Marginal rate progression is defined as the ratio of change in the marginal tax rate to the change in income, and average rate progression measures the rate of change of the average tax rate (Pigou 1960). Liability progression measures the ratio of percentage change in tax liability to the percentage change in income (Musgrave and Thin 1948). Residual income progression measures the ratio of the percentage change in income after tax, to the percentage change in income before tax (Musgrave and Thin 1948). Although these measures are different mathematical expressions of the relationship between income and tax, they measure the degree of the income tax progression at a specific point of income scale. For a given tax system, tax progression appears different when comparing indexes of marginal rate progression, average rate progression and liability progression. Another model as an alternative measuring method for income tax progression shows the difference between proportion of tax liability changes and proportion of income changes, which actually indicate the percentage of tax liability that a group with higher income pays more for an income to the previous (lower income) bracket, than tax liability that a group falling into that previous bracket has to pay (Govori 2015).

All these measures will result in a proportionate coefficient in the whole tax structure, only if the proportions of marginal (m) and average (a) rate change and proportions of income and tax change are equal and constant in all brackets.[2] However, we must distinguish between systems

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[1] *With the end of war and the entry of NATO troops in Kosovo in 1999, the issue of establishing the system of the national economy was a task of great importance, which was adducted as a priority for Kosovo society and international staff within the Interim Administration of United Nations. Legal regulation of the economic system was made through special regulations. Like any other economic segment, the tax system was built from the beginning. Personal income tax began to be implemented in 2002 by Regulation no. 2002/4 On Personal Income Taxes in Kosovo (Tax on wages, Regulation no. 2000 / XX "On the Establishment of a wage tax" was scheduled to be applied since January 2001, but the IMF experts recommended not applying because household budgets should be consolidated for some time. In order to increase tax progressivity in the structure of personal income, in 2003 was added a bracket more by Regulation no. 2003/3 amending UNMIK regulation no.2002/4 On Personal Income Taxes in Kosovo). In a country with specific political, economic and social circumstances such as Kosovo, where every segment of life was built from the beginning, with the economy in transition and in the absence of mechanisms for combating informality, tax evasion became a very serious problem. In these conditions, it was necessary to establish mechanisms for fighting this phenomenon harmful to the treasury. Moreover, after a two-year budget surplus 2004- 2005, donations from abroad destined for public spending were reduced significantly. This situation has posed as a new challenge for policymakers. The question was how to maintain fiscal sustainability in these conditions. While the effects of the global crisis already have affected the country's economy, the solutions for overcoming this situation were packaged in: Law No. 03/L-161 On Personal Income Tax.2008 and Law No. 03/L-114 On Value Added Tax, 2008. With these changes, the rates of tax on personal income were reduced and the value added tax (VAT) was increased.*

[2] *Note that this rule is valid for all indicators mentioned above only when there are no allowances (non-taxable income). In case there are allowances, the rule will be valid for marginal rate progression, average rate progression and liability progression if the proportions of marginal (m) and average (a) rate change are equal and constant in all brackets. Non-taxable income (in the first bracket) will deteriorate equality and constancy of proportions in income and tax change even if proportion of marginal and average rate change remains equal and constant in each brackets (excluding the first bracket).*

where marginal rate in the first bracket is greater than zero ($m_0 > 0$), and where marginal rate in the first bracket is equal to zero ($m_0 = 0$). If marginal rate in the first bracket is greater than zero ($m_0 > 0$), it indicates that the tax system has no allowances. If marginal rate in the first bracket is equal to zero ($m_0 = 0$), it indicates that the tax system has allowances. These distinctions, as well as the ratio of change in incomes and taxes, are the main determinants of structural progression.

Effective progressivity indicators take into account not only the rate structure but also the distribution of income. Regarding measuring the effective progression, various measures are proposed. Kakwani (1977) suggested the concentration index that shows the deviation of tax system from proportionality. At the same time, Suits (1977) developed the index of progressivity which measures the degree of progression of various taxes. Hayes, Lambert and Slottje (1995) have proposed an algorithm to compute effective progression when taxes are a function of money income and non-income characteristics. The index proposed by Stroup (2005) relates tax burden distribution to income distribution across all levels of income for a comprehensive indicator of tax policy progressivity. Kakinaka and Pereira (2006) have proposed a new measure of tax progressivity which is the relative proportional standard deviation of tax revenue vis-a-vis the proportional standard deviation of income, while Mirrlees (1971), Sheshinski (1972) and Stern (1976) have contributed to the theory of optimal income taxation.

For the measurement of personal income tax progression, depending on the purpose of the research and the availability of data, the researchers apply indicators that are more suitable for their research.[3]

3. Methodology

3.1 Personal income tax progression measurement

For measurement of personal income tax progression this paper applies the indicator that is defined as:[4]

Tax progression = [change in income *(marginal rate – average rate)] / tax liability   (1)

By applying this model, we consider not only the proportion of marginal and average rates change, but also the proportion in income and tax change.

Resulted coefficient shows the percentage of tax liability that a group with higher income pays more for an income to the previous (lower income) bracket, than tax liability that a group falling into that previous (lower income) bracket has to pay. The coefficient calculated in this way also signifies how much the tax liability proportion exceeds the income proportion at a given level of income. The amplitude of the coefficient does not exceed ± 1.[5]

For $m_0 > 0$, the condition for proportionality is equally proportionate increase of incomes and taxes (m = a) in each bracket. When marginal rate is greater than average rate, the tax is progressive. And vice versa, when average rate exceeds marginal rate, the tax is regressive. For disproportionate increase in incomes and taxes, the coefficient will be proportionally progressive for the entire tax structure, if the margin between proportion of income and proportion of tax is equal everywhere. For $m_0 = 0$, equally proportionate increase of incomes and taxes (m ≠ a) results with equal coefficient in each bracket. When the increase in incomes and taxes are disproportionate, the coefficient will be proportionally progressive for the entire tax structure, only if the margin between proportion of income and proportion of tax is equal everywhere. If the coefficient decreases moving towards higher levels of income, this indicates for regressive tax progression. And conversely, if the coefficient increases

[3] *For instance, Attinasi, Westphal and Rieth, (2011) following Arnold (2008), use the index of PIT progressivity which is based on the concept of residual progressivity, while Paturot, Mellbye and Brys (2013) in their research for measurement of the tax progressivity use the average-rate progression indicator.*
[4] *This indicator fulfils the criterions for evolving the alternative measures of tax progression. About the criteria for the evolving alternative measures see Kakwani, Nanak C. (1986). Analyzing redistribution policies: A study using Australian data. Cambridge University.*
[5] *Govori, Florije (2015). A Different Approach of Tax Progressivity Measurement. MPRA, Paper No. 62846.*

moving toward higher income levels, this indicates for progressive tax progression.

The degree of progressivity remains unchanged if the share of tax liability of every individual remains the same. If the total tax liabilities share of a person with higher income is increased (decreased) and that of a person with a lower income is decreased (increased), then progressivity increase (decrease).

3.2 After-tax personal income and tax liability functions

After-tax personal income may be expressed through linear equation of the form **y = ax + b**. The after-tax personal income will be raised by increasing **a** and **b**, and vice versa, after-tax personal income will fall through decreasing **a** and **b**.

The function of tax liability may be expressed as: **t = ax - b.** The tax liability will be higher by increasing **a** and decreasing **b**, and vice versa, the tax liability will be reduced by decreasing **a** whilst increasing **b**.

The gross personal income represents income before deduction of non-taxable personal income, contributions to the individual savings pension system and taxes. Taxable personal income represents income after deducting non-taxable personal income and contributions to the individual savings pension system, and net income represents after tax income. So, we can write as following:

After-tax personal income (y) = taxable personal income (TPI) – [amount of tax in the first bracket (T_1) + amount of tax in the second bracket (T_2) + amount of tax in the third bracket (T_3)]   (2)
Where:

Taxable personal income (TPI) = gross personal income (x) – [gross personal income(x) * percentage of contributions to the individual savings pension system (Psp)]   (3)

Thus, the tax liability will be:

Tax liability (T) = gross personal income(x) – [after tax personal income(y) + contributions to the individual savings pension system (Csp)]   (4)

4.   Findings and discussion

The model applied for the measurement of tax progression on personal income for each period separately (Table 2), indicates that tax was more progressive in the second period (Figure 1). In the period of 2003-2009 the basis in the non-taxable personal income has been widened whilst the basis in the taxable income in the second bracket has been reduced (Table 1). Furthermore, for taxable personal income over three thousand (3.000) euro up to five thousand four hundred (5.400) euro was applied the rate of twenty percent (20%). Changes of non-taxable personal income basis have resulted in higher progression to the first group of taxpayers and lower to the second group of taxpayers. Whereas, applied rate of twenty percent (20%) for taxable personal income over three thousand (3.000) euro up to five thousand four hundred (5.400) resulted with increased progression for taxpayers who belong to this group. Going to the higher taxable personal income levels, the degree of tax progression gradually decreases.

Changes of tax rates in 2009 have reduced progression compared with the two previous periods. Tax progression's curve at different levels of income for this period coincides with the curve of the period 2003-2009 to the level of up to five thousand four hundred (5400) euro. Above this level, this curve lies below the curve of the prior period, which means lower degree of progression compared with that period, because at this level of income tax rates are reduced in disproportion with previous levels. The distance between the two curves narrows by moving toward higher levels of income.

The after-tax income function for the period 2002-2003 for income over three thousand (3.000) euro, resulted as following: [6]

$y = (x – x*Psp) - \{(TPI_1*m_1) + [(x – x*Psp)-TPI_2]*m_2\}$

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[6] *For lower income brackets, the functions of after-tax personal income and tax liability are presented in Table 3. Calculations are made on monthly basis.*

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y = 0.855x + 15
Given that:
Personal income tax + pension contribution = gross income – after tax personal income
By applying five percent (5%), which is the minimal percentage required for contributions to the individual savings pension system, the tax function will be:
$T_{(x)} + x*Psp = x - y$
$T_{(x)} = 0.095x - 15$
For the period 2003-2009, for income over five thousand four hundred (5400) euro, the after-tax income function is:
$y = (x - x*Psp) - \{(TPI_1*m_1) + (TPI_2*m_2) + [(x - x*Psp)-TPI_3]*m_3\}$
y = 0.76x + 61.5
and the tax function is:
$T_{(x)} + x*Psp = x - y$
$T_{(x)} = 0.19x - 61.5$
After- tax income for the period 2009-present for income over five thousand four hundred (5400) euro, is equally to:
$y = (x - x*Psp) - \{(TPI_1*m_1) + (TPI_2*m_2) + [(x - x*Psp)-TPI_3]*m_3\}$
y = 0.855x + 22.2
so the tax function is:
$T_{(x)} + x*Psp = x - y$
$T_{(x)} = 0.095x - 22.2$
Through functions presented above, we found that tax was more progressive in the period 2003-2009 (Figure 4). This period is characterized by a fairer distribution of tax liability, which favours individuals with low-income and charges those with the ability to pay. The tax liability was less for low-income but greater for high-income compared to the previous period (Figure 3). Although the contributions to the individual savings pension system remains unchanged, changes in after tax income function and tax liability function are as a result of the change in the zero-taxable personal income basis, decrease of proportion at income in the second bracket and addition of the bracket taxed at twenty percent (20%).

On the contrary, the after tax income function for the period 2009-present indicates lower degree of tax progression compared with other periods (Figure 5). Unlike the first period, the tax liability is reduced about 7.2 euros in the taxable income. In comparison with the second period, the function show that tax progression is decreased much more compared to the first period because of disproportionate personal income tax rates reduction (Figure 2). The tax liability for taxpayers that fall into the second and the third bracket was reduced by twenty percent (20%), whereas for taxpayers falling into the fourth bracket, tax liability is reduced by fifty percent (50%). So, the decline of tax liability is more apparent at higher levels of income. As a result, in 2009 the revenues from personal income tax were reduced by 12.6% mainly due to the reduction of tax rates while value added tax collected within the country had increased about 36.6% compared with the previous period. [7]

5. Conclusion

Measuring tax progression is of great importance in determining the fair distribution of tax liability. An unfair distribution of tax liability will result in deterioration of the economic and social conditions of taxpayers with low-incomes and low ability to pay, favouring those with higher incomes and with more ability to pay. Depending on the purpose of the research and the availability of data, for measurement of tax progressivity researchers apply the model that is more appropriate for their study.

The personal income tax structure in Kosovo over the period 2002-present has undergone several changes depending in circumstances characterizing this period. The taxable personal incomes have been grouped mainly at low-income levels and were no substantially changes in

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[7] *Central Bank of Republik of Kosovo (2010). Annual Report 2009.*

bases. The marginal tax rates were low, so the average rate remained between three percent (3%) and twenty percent (20%).

Considering the results obtained above, the PIT was more progressive over the years 2003-2009. This progression was caused by extending basis in non-taxable income which resulted in the narrowing the income basis in the second group making taxation more progressive for this group, and the addition of a group that are taxed at the marginal rate twice as high than the previous group. This increase in tax progression was demonstrated also through linear function of taxation, which shows that the tax burden was shifted from taxpayers with low ability to pay to those with high ability to pay.

In contrary, changes made in 2009 caused decrease of tax progressivity resulting in regressive progression. Marginal tax rates for the group with high-incomes were reduced substantially compared to the previous period (2003-2009). Thus, the changes made in this period favoured those with higher income whilst worsening those with low-income. On the one hand, the reduction of tax rates on personal income led to increase of purchasing power of taxpayers with low-income much less than increase in the purchasing power of those with high-income. On the other hand, this small increase in purchasing power of low-income individuals has been absorbed by increase in value added tax from 15% to 16%. This influenced position of taxpayers with low-incomes to worsen even further, whilst position of taxpayers with high-incomes has improved significantly. As taxpayers with low and mid-income are the main contributors to revenue from these taxes, in 2009 the revenues from personal income tax were reduced compared with the previous period mainly due to the reduction of tax rates, while value added tax collected within the country increased. Therefore, in this period, the tax burden mostly weighted on taxpayer with low-income without ability to pay and mid-income with low ability to pay.

Considering the exacerbated position of taxpayers with low-income and the strengthened position of taxpayers with high-income, amending of the personal income tax structure is crucial to prevent further deepening of the gap between these groups which lead to the extinction of the middle class.

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Appendix: Tables and figures

Table 1: Tax brackets (source: https://mf.rks-gov.net/en-us/Legislation)

Income (euro)		Personal income tax (%)
Brackets	*2002-2003*	Marginal tax rate (m)
I	up to 600	$m_0 = $ 0%
II	601 - 3000	$m_1 = $ 5%
III	over 3000	$m_2 = 10\%$
	2003-2009	
I	up to 960	$m_0 = 0\%$
II	961-3000	$m_1 = 5\%$
III	3001 - 5400	$m_2 = 10\%$
IV	over 5400	$m_3 = 20\%$
	2009-Present	
I	up to 960	$m_0 = 0\%$
II	961-3000	$m_1 = 4\%$
III	3001 - 5400	$m_2 = 8\%$
IV	over 5400	$m_3 = 10\%$

Table 2: PIT progression

Income	Period		
	2002-2003	*2003-2009*	*2009 - present*
960	0,00	0,00	0,00
3000	0,20	0,32	0,32
5400	0,22	0,26	0,26
10000	0,10	0,27	0,17
20000	0,05	0,11	0,08
40000	0,02	0,05	0,04
80000	0,01	0,02	0,02

Table 3: Functions of tax liability and after-tax personal income

Income (euro)	After-tax personal income	Personal income tax liability
For the period 2002-2003		
up to 600	-	-
601 - 3000	y = 0.9025x + 2.5	$T_{(x)} = 0.0475x - 2.5$
over 3000	y = 0.855x + 15	$T_{(x)} = 0.095x - 15$
For the period 2003-2009		
up to 960	-	-
961-3000	y = 0.9025x + 4	$T_{(x)} = 0.0475x - 4$
3001 - 5400	y = 0.855x + 16.5	$T_{(x)} = 0.095x - 16.5$
over 5400	y = 0.76x + 61.5	$T_{(x)} = 0.19x - 61.5$
For the period 2009-Present		
up to 960	-	-
961-3000	y = 0.912x + 3.2	$T_{(x)} = 0.038x - 3.2$
3001 - 5400	y = 0.874x + 13.2	$T_{(x)} = 0.076x - 13.2$
over 5400	y = 0.855x + 22.2	$T_{(x)} = 0.095x - 22.2$
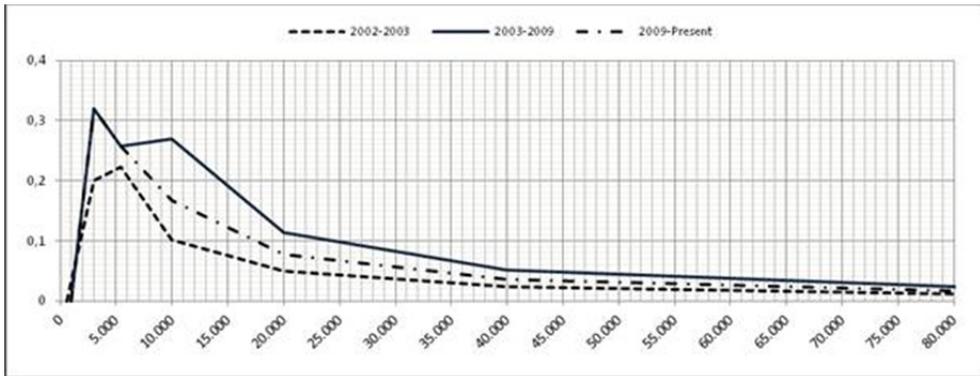
Figure 1: Tax progression at different income levels (tax brackets)
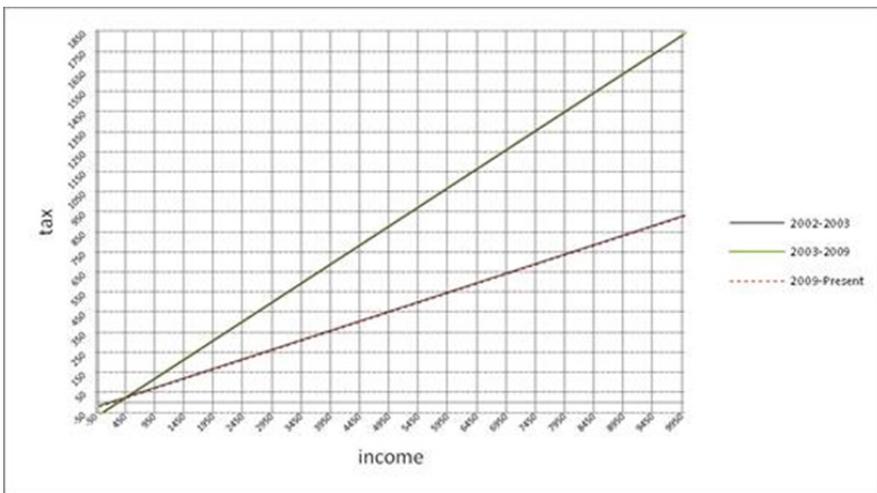
Figure 2: Tax liabilities at different income level
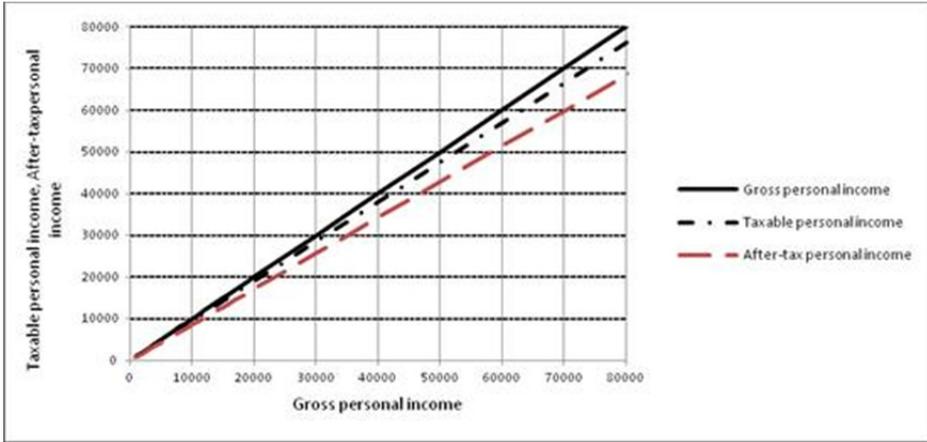
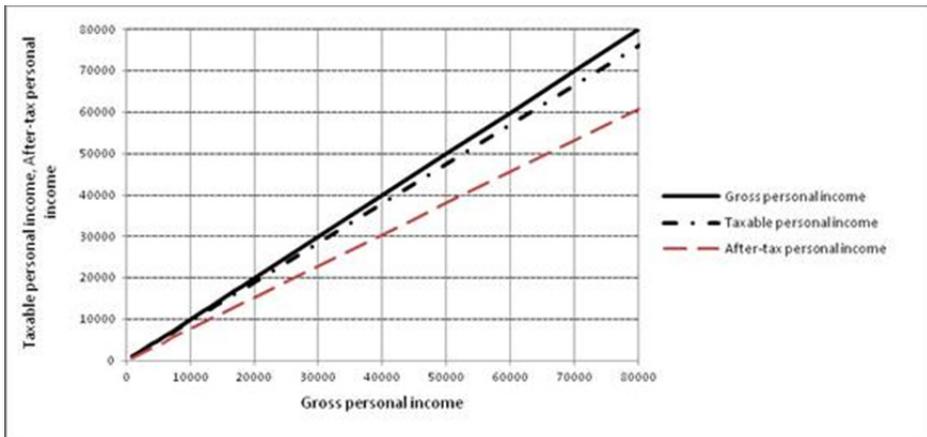**Figure 3:** Pre-tax and after-tax personal income 2002-2003

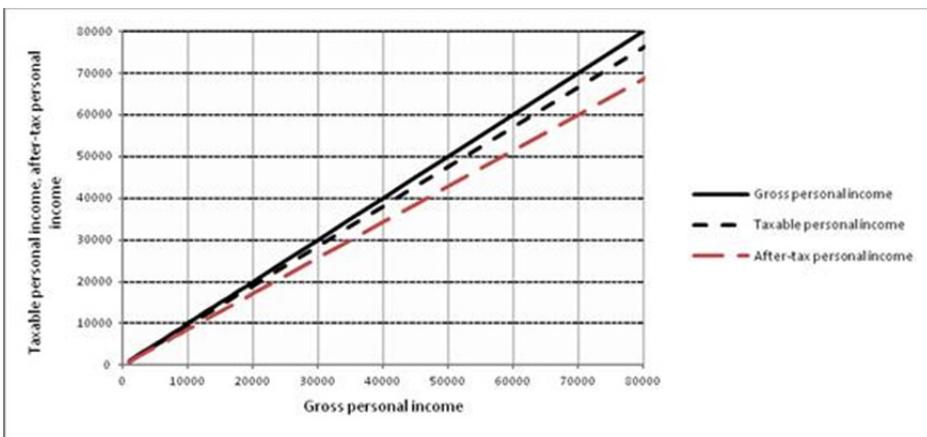**Figure 4:** Pre-tax and after-tax personal income 2003-2009

Figure 5: Pre-tax and after-tax personal income 2009-present

The personal income tax in Kosovo with regard to marginal rate is generally not characterized by high rate. But, the bases on which these rates are applied have a very small margin, so in high income the tax rate becomes flat. The change in marginal rates was most notable over the period 2003-2009 (Figure 6).
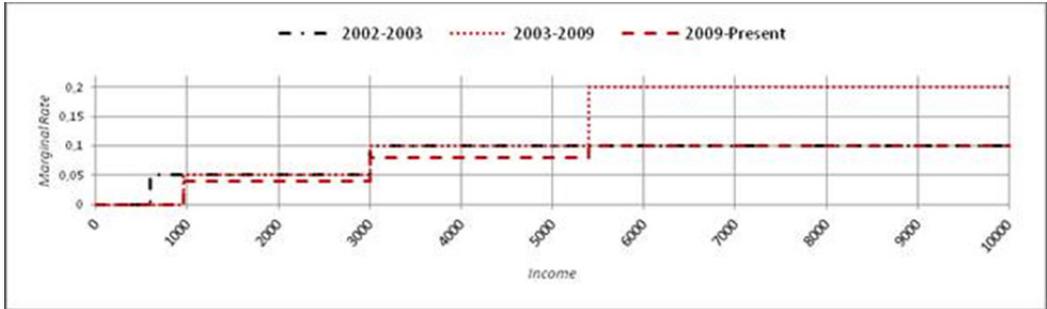

Figure 6: Marginal rate

This can be seen from the line of incremental marginal rate of 2009, which lies under the line that represents the period from 2002 to 2003, up to the five thousand four hundred euro (5.400€) where the two lines are joined, and under the line for the period 2003-2009 in all income brackets (Figure 7).
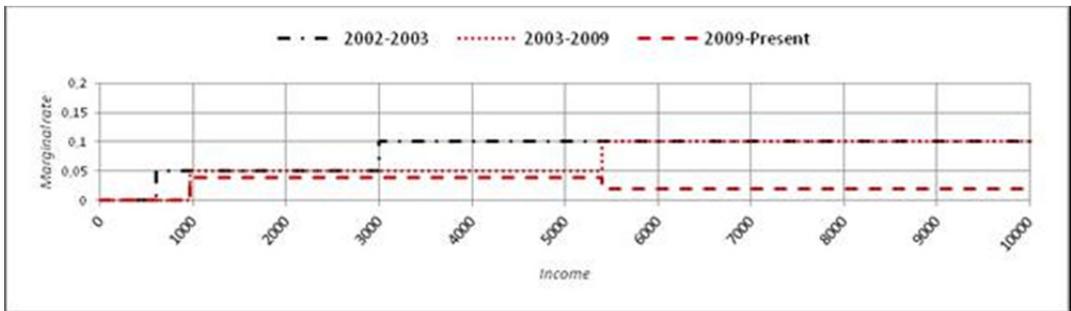

Figure 7: Incremental marginal rate

The slope of the curve of the average rate is more pronounced at lower incomes and it becomes flat going to the higher level of incomes. At any given level of income, this curve lies under the prior period's curves (Figure 8).

During the period 2003-2009, the increase of average rate is more pronounced for taxpayers falling into the first income bracket, then decreases for the second group, and again increases in incomes above five thousand four hundred (5400) euro. Regarding the periods 2002-2003 and 2009-present, the incremental average rate is greater on income up to three thousand (3000) euro.
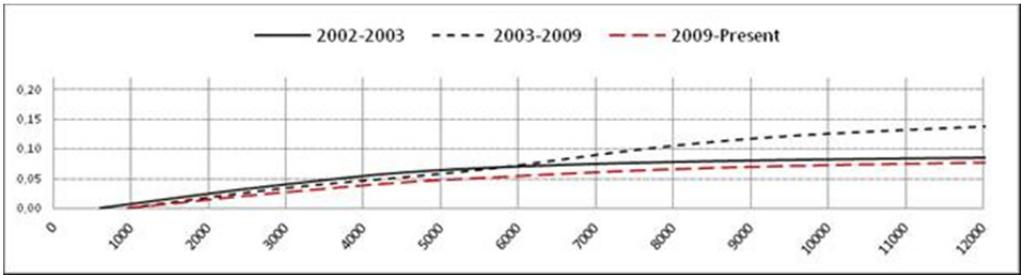
Figure 8: Average rate

Going to higher levels of income, the incremental average rate gradually decreases (Figure 9). The curve of the incremental average rate for period 2002-2003 intersects the curve of the incremental average rate for period 2009-present in incomes from six thousand to seven thousand (6000-7000) euro. Up to this intersection point, the incremental average rate for the period 2009-present increased less compared with the incremental average rate for the period 2002-2003.
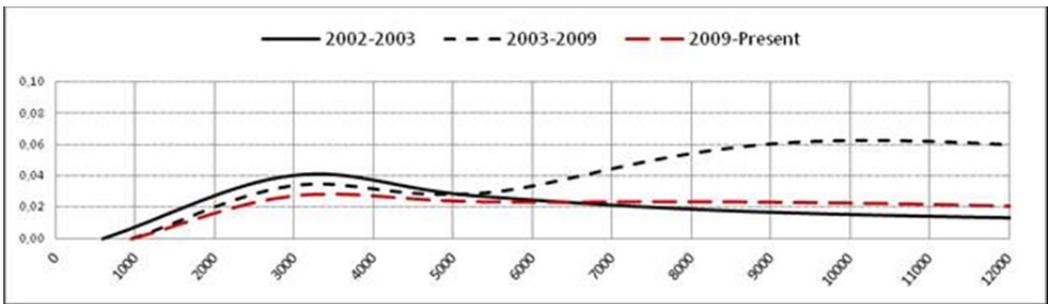

Figure 9: Incremental average rate