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Urban, Ivica

*Source / Izvornik:* **Newsletter : an occasional publication of the Institute of Public Finance, 2006, 8, 1 - 3**

**Journal article, Published version**

**Rad u časopisu, Objavljena verzija rada (izdavačev PDF)**

*Permanent link / Trajna poveznica:* <https://um.nsk.hr/um:nbn:hr:242:102236>

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*Download date / Datum preuzimanja:* **2025-03-13**



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# NEWSLETTER



Institute of Public Finance, HR-10000 Zagreb, Katančićeva 5 Croatia  
P.O.Box 320, Phone: (385 1) 4819 363; Fax: 4819 365; e-mail: office@ijf.hr; www.ijf.hr

No. 23, May 2006.

Ivica Urban

## What makes the personal income tax in Croatia progressive?

The Institute of Public Finance recently carried out an investigation that was aimed at measuring the level of progressivity and the redistributive effect of personal income tax (PIT) in Croatia in the period from 1997 to 2004. A progressive tax falls relatively more heavily on persons with higher incomes and reduces inequality in the distribution of income. The main results of the research show that the progressivity of PIT in Croatia is high as compared with other countries and that, furthermore, it rose during the period under review.

Various elements of the PIT system, such as the rate structure, the personal allowance and other allowances and the tax credits, determine its progressivity. Greater or lesser use of these elements will have different effects on the simplicity, transparency, the collection costs of taxes, and on economic efficiency. For the set level of revenue and the desired distribution of the tax burden, it is necessary to select the combination of elements at which the collateral costs to society will be the least. In the context of the recent debate about tax reform it turned out to be useful and interest-

ing to determine how the individual elements of PIT in Croatia contribute to its progressivity. Here we show the main results of this analysis.

### The progressivity of Croatian personal income tax

Personal income tax in its current form has existed since 1994, and since then numerous changes have taken place – from the point of view of the scope of taxable income, the amount of the personal allowance, the rate structure, the number of reliefs and the manner of taxing various sources of income. The amount of the personal allowance rose faster than average income, and this relief as a percentage of total income rose from 46% in 1997 to 55% in 2004, as is shown by Table 1. As for other reliefs, until 2001, there was only one such until 2001, while in 2003 we had a number of them, which resulted in a further reduction of the tax base. In 1997, there were just two tax rates, 20 and 35%. In 2001 we had three rates, 15, 25 and 35%, while in 2003 a fourth was introduced, at 45%. All these changes were reflected in the average tax rate, the progressivity and

The Institute of Public Finance deals with economic research and analysis related to various forms of public finances such as the budget, taxation and customs duties. Its orientation is thus to the various economic, legal and institutional topics that are important for the sound long-term economic development of the Republic of Croatia. So that the public should be able to have a better insight into certain issues, the Institute of Public Finance is launching its Newsletter, in which it will from time to time publish informed and independent analysis of economic questions. The views expressed in the articles published in the Newsletter will reflect the opinions of the authors, which do not necessarily coincide with those of the Institute as institution. Full text of Newsletter is also available on Institute's Web site: <http://www.ijf.hr/newsletter>.

Table 1. Reliefs in the income tax system (percentage of before-tax income)

	1997.	2004.
<b>Personal allowance</b>	46.2	54.5
1. Basic personal allowance	39.5	45.4
2. Additional allowance for dependents	6.7	9.1
<b>Other allowances</b>	0.4	5.0
1. Additional personal allowance for those who live in ASNC*, hill and mountain areas	x	1.9
2. Life insurance characterised as savings, supplementary and private health insurance, and voluntary pension insurance	x	0.7
3. Standardized costs for property income	0.4	0.6
4. Standardized costs for income from part-time and contractual work	x	0.6
5. Costs incurred to meet housing needs	x	0.5
6. Augmented depreciation costs	x	0.3
7. Reduction of income for self-employed who live in the ASNC and in the city of Vukovar	x	0.2
8. Expenditures for health services	x	0.1
9. Wages of newly hired persons and awards to pupils doing practical work	x	0.1
10. The untaxed portion of an artistic royalty	x	0.0
11. Costs for education and further training of workers	x	0.0
12. Donations for cultural, artistic and similar purposes	x	0.0
13. Allowed entertainment costs	x	0.0
14. Research and development expenditures	x	0.0
15. Paid contributions for inland health insurance	x	0.0
16. Untaxed receipts of artists	x	0.0
<b>Tax credits</b>	x	0.0
1. Tax credit for Disabled Croatian War Veterans	x	0.0

Source: author's calculations on the basis of Tax Administration data

\* ASNC – the Areas of Special National Concern

the income redistribution effect, as well as the complexity and costs of administration.

The research made use of data of the Tax Administration concerning income, reliefs and the tax of individual taxpayers on a sample of 5% of the population. The samples were formed in order to cover the whole population of income tax payers and to cover all kinds of income. We looked only at income tax, and not at surtax on personal income tax or contributions for social insurance. Table 2 shows that progressivity rose from 0.277 in 1997 to 0.335 in 2004. At the same time, though, the average tax rate fell from 12.3 to 8.2%, and, in spite of the growth of progressivity, the redistributive effect fell from 0.038 to 0.029. The progressivity of income tax in Croatia as compared with other countries is high. The average progressivity in 15 countries of the OECD amounts to 0.182, the most progressive countries being France, with the redistributive effect of 0.320 and Holland, with 0.263 (Wagstaff and van Doorslaer, 2001).

## Progressivity inducing elements

To achieve progressivity in the income tax system, a government has at its disposal several elements in the

tax system. The most prominent is the rate structure effect, while the effect of personal allowances and other allowances, and the tax credits, are less intuitive.

A study on the income tax systems of 15 OECD countries showed that the countries were fairly different with respect to the impact of given elements in attaining overall progressivity. Some countries mainly rely on a single element – the personal allowance, the rate structure or the tax credits. In other countries, however, progressivity is the result of equal influences from different elements.

In Croatia it is the personal allowance effect that has a crucial importance for progressivity of PIT. It is responsible for between 87% of the progressivity of the entire system in 1997, and 93% in 2004, as can be seen in Table 3. The rate effect is the second most important, and it was used to achieve between 8.6% of the progressivity effect in 1999, and 15% in 2001. The other allowances effect is negative and its impact is growing; in 2003 to 2004 it accounted to almost minus 7% of the total progressivity effect. This negative sign means that the other allowances are reducing potential progressivity. The tax credit effect is also negative, but of a negligible magnitude.

**Table 2. Basic indicators in inequality and redistribution of income**

Year	Income inequality before PIT ( $G_x$ )	Average tax rate (%)	Progressivity effect (K)	Redistribution effect (RE)	Income inequality after PIT ( $G_N$ )
1.	2.	3.	4.	5.	6.
1997.	0.441	12.3	0.277	0.038	0.403
1999.	0.462	10.5	0.293	0.033	0.429
2001.	0.460	8.4	0.329	0.029	0.431
2002.	0.460	8.7	0.329	0.031	0.429
2003.	0.465	7.7	0.329	0.027	0.438
2004.	0.456	8.2	0.335	0.029	0.427

## Conclusion

The progressivity of income tax in Croatia is high as compared with other countries, and it rose during the period under review. At the same time the average tax rate fell from 12.3% in 1997 to 8.2% in 2004. The personal allowance effect plays a crucial role in the achievement of the progressivity – in the period it is responsible for an average of 91% of overall progressivity – while the rate structure effect accounted for 13% of

progressivity. The effect of other allowances amounted to an average minus 4%, which means that they actually reduced potential progressivity.

Knowing the importance of each individual element can be useful in the framing of tax reform. For example, if progressivity is mainly achieved with the personal allowance, as in Croatia, we can conclude that the introduction of just a single tax rate on the tax base would retain a large amount of the current progressivity.

**Table 3. Effects of individual elements on the progressivity of income tax (percentage of total progressivity)**

	1997.	1999.	2001.	2002.	2003.	2004.	Average 1997-2004.
Total progressivity (K)	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal allowance effect	87.1	91.6	89.5	91.0	95.4	93.2	91.3
Rate structure effect	13.2	8.6	15.0	14.3	11.7	13.9	12.8
Other allowances effect	-0.4	-0.2	-4.3	-5.2	-6.9	-6.9	-4.0
Tax credit effect	0.0	0.0	-0.2	-0.2	-0.2	-0.2	-0.1

## Progressivity and redistribution of income

An income tax system is said to be progressive if the ratio of tax and income of the taxpayer rises with the rise in the income. Progressivity is measured with the Kakwani index (K), and income inequality with the Gini coefficient (G). If tax is progressive, income inequality after taxation ( $G_N$ ) will be less than before tax income inequality ( $G_x$ ). A change in income distribution inequality is known as the redistributive effect ( $RE=G_x-G_N$ ). Income redistribution will be greater the greater the progressivity of the system, and the higher the average tax rate. Of two systems, then, with an equal average tax rate, a system that is more progressive will have a greater redistribution effect. For quantification of poverty, inequality and income redistribution, see Duclos and Abdelkrim (2006).

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