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The tax burden on labour in Croatia

High social security contributions reduce workers' net wages and their motivation to work. As a result of an excessive tax burden, people may stop work and rely on support from the government, whereby the demand for additional taxation increases. The reduction in the supply of labour increases the costs of labour for enterprises, which leads to a reduction in production. In general, high taxation and government consumption, and various government limitations to the market, reduce the supply of labour and the prospect of increasing productive capital, whereby economic progress and the improvement of citizens' living standards are endangered.

At the beginning of August the so-called "crisis tax" was introduced, causing quite a hullabaloo amongst the public, who, along with a cut in wages, also have to bear an extra tax burden. Employers have already been appealing for many years for a reduction in the high levels of payments to the government, in order to increase employees' satisfaction and increase competitiveness (Popijač, 2009). A reduction in the tax burden on labour would significantly reduce the unemployment figures and the number of those employed in the unofficial economy (SEEbiz, 2009). The World Bank (2009) study shows that the long-term growth of living standards in Croatia is uncertain if vital reforms of the labour market and the public sector are not undertaken. The KPMG study (2009) placed us at the very top of the world in terms of the tax burden on relatively high wages, whereby our rating with foreign businessmen is also worsened.

The main findings of the following article are:

- **For an individual without children and a surtax of 10%, with a minimum gross wage of 2,814 HRK, the tax wedge in Croatia amounts to 34%; for an average gross wage of about 7,700 HRK it climbs to 42%, and for double the average gross wage it reaches 49%, after which it grows right up to 58% for a relatively high wage**. The personal allowance for children and other allowances may reduce the tax wedge by several percent.
- **Marginal tax rates are very high for almost all levels of income: with a wage twice the average, they reach almost 60%**. As a result of high marginal tax rates, people lose motivation to work since from the increased gross income they earn, they only receive a small part, and the major part goes to the government. Employers have to find other, more worthwhile ways to reward their employees for increased productivity.
- **The tax wedge in Croatia is at a similar level in the surrounding countries**. The tax wedge for workers without children and an average gross wage in production of 7,260 HRK in Croatia and a surtax rate of 10% is 41.2%, therefore it is higher than in Slovakia (38.9%), and Poland (39.7%), but lower than in Hungary (54.1%), Germany (54.1%), Austria (48.8%), Italy (46.5%) and the Czech Republic (43.4%). Thus, we are still not "world champions" in tax burdens on wages, at least not in "the discipline of the tax wedge on the average wage".
- **According to the KPMG study, which calculated the average tax rate for the relatively high annual gross wage of 100,000 USD, we are however "world vice-champions", second to Slovenia**. But this study does not include employers' social security contributions in its calculations. When they are included the result would probably be more favourable for Croatia, since some countries have much higher rates of employers' contributions.
- **When comparing with other countries we should be aware of the various limitations of the indicators used, and they should serve us more for reference only**. Depending on the indicator chosen, we may see that we are not significantly different from comparable countries, and that there are countries with an even greater tax burden. But neither of these conclusions should be of much comfort to us: **the tax burden in Croatia is very high, and our long-term development will depend on reducing it and on other vital reforms**.

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Introduction

The term income from work almost always refers to employees' wages. Thereby economists and fiscal experts do not consider that only employees work, but they want to differentiate the concept of what is in Croatia termed *non-independent work* done by employees for an employer, from other forms of work, such as work in an independent occupation as a private business or trade or in a free profession, or occasional work on the basis of a piece work contract. Tax and similar laws also differentiate between individuals according to type of activity and legal status, and their taxes, social security contributions and non-tax levies are established in a different way. The *aim* of this article is to acquaint readers with the structure and levels of tax burden for individuals who earn their income from employment. In other articles we will analyse the tax burden for individuals who earn their income in other ways and we will compare them with each other.

To start with we will show the detailed procedure of calculating the total amount of social security contributions and taxes on a wage. There follows an analysis in which the total tax burden is calculated for typical individuals and a wide range of wages. A study is made of how different taxes and social security contributions contribute to creating the total tax burden. We also show the average and marginal tax rates on income from work. After that we compare the average tax rate in Croatia with the results of the OECD research for neighbouring and other countries. We also refer to the recently published KPMG study, according to which Croatia is one of the countries with the highest tax burden on labour.

Calculation of the tax burden on labour

Citizens are not sufficiently aware which taxes they pay and how much. Part of the reason for this is the system of taxation of wages in which the *employers* are obliged on behalf of the employees to calculate contributions and taxes, and pay them into the government budget account. Only the net wage is paid into the employee's account. Of course, the employee, when receiving the wage, must be given a wage slip by the employer clearly showing the amount of *gross wage* and individual taxes and contributions. Everyone who receives a wage studies that slip at least occasionally, and tries to understand how the individual items on it are calculated. Here we describe in detail the procedure for calculation of social security contributions (SSC), personal income tax (PIT), surtax and the "crisis tax". In Framework 1 there is a Table 1 with calculations similar to those on a wages slip.

So, an employee receives income from his employer every month which is called the *gross wage* (*GW*). For every gross wage the employer is obliged to pay the government *employers' SSC* (*SSCER*). From the gross wage the employee pays *employees' SSC* (*SSCEM*), *personal income tax* (*PIT*) and *surtax on PIT* (*SURTAX*), and now a *special tax on wages, pensions and other income* (*STW*). The total tax burden on labour (*TTBL*), also known as *labour cost*, consists of all payments to the government by the employer and the employee – and is calculated as follows:

$$TTBL = SSCER + SSCEM + PIT + SURTAX + STW \quad (1)$$

Employers' SSC comprise three contributions: for *unemployment insurance* (*SSCU*), for *health insurance* (*SSCH*) and *health insurance for occupational health* (*SSCOH*). Employees' SSC are *contributions for pension insurance on the basis of generational solidarity* (*SSCPG*), and *contributions for pension insurance on the basis of individual capitalized savings* (*SSCPC*).[1] The base for payment of mandatory contributions is the gross wage[2], and the amount of the individual contributions is obtained by multiplying the base by the appropriate rate:

$$SSCU = 1.7\% * GW \quad (2)$$

$$SSCH = 15.0\% * GW \quad (3)$$

$$SSCOH = 0.5\% * GW \quad (4)$$

$$SSCPG = 15.0\% * GW \text{ or } 20.0\% * GW \text{ (see footnote 2)} \quad (5)$$

$$SSCPC = 5.0\% * GW \text{ or } 0 \text{ (see footnote 2)} \quad (6)$$

Employers are obliged to pay the following amount of contributions:

$$SSCER = SSCU + SSCH + SSCOH = 17.2\% * GW \quad (7)$$

The employee is obliged to pay contributions as follows:

$$SSCEM = SSCPG + SSCPC = 20\% * GW \quad (8)$$

The employer must pay for the worker the gross wage increased by the employers' SSC. The sum of these two amounts is equal to the labour costs already mentioned,

[1] Most employees are insurees with pension insurance on the basis of individual capitalized savings. They also pay *SSCPG* at the rate of 15% and *SSCPC* of 5% of the gross wage. Other employees pay only *SSCPG* at the rate of 20% of the gross wage.

[2] The lowest base for calculation of SSC is 2,611 kunas in 2009. For employees' SSC the highest monthly base is 44,760 kunas. This means that up to that amount the base is equal to the gross wage, but for gross wages higher than that amount it remains fixed at 44,760 kunas. For employers' SSC there is no such limitation. Source: Act on Contributions (OG 84/09 and 152/08), web site of the Croatian Institute for Pension Insurance (http://www.mirovinsko.hr/).

but instead of this expression we will use the term *gross-G wage* here (*GGW*), in order to differentiate it from the normal gross wage. Employers' SSC go to the government and the employee receives the gross wage, from which employees' SSC are paid, after which he is left with his income from wage (*INC*).

$$GGW = GW + SSCER \quad (9)$$

$$INC = GW - SSCEM \quad (10)$$

The variable income serves as a starting point in the further taxation of wages, primarily for PIT. The *tax base for PIT* (*PITB*) is equal to the income minus the various *personal allowances* (*PALL*). The base is then divided into four parts and each part is multiplied by a separate rate. The first 3,600 HRK a month of the base is multiplied by 15% and the next 5,400 is multiplied by 25%, the next 16,200 HRK are multiplied by 35%; and everything above that is multiplied by 45%. These products are then added together to find the total PIT obligation of the individual.

Surtax on PIT (*SURTAX*) is calculated by simply multiplying the amount of PIT by the rate of surtax, which depends on the place of residence, where the highest rate is 18% in the City of Zagreb.

$$PITB = INC - PALL \quad (11)$$

$$PIT = 15\% * PITB1 + 25\% * PITB2 + 35\% * PITB3 + 45\% * PITB4 \quad (12)$$

$$SURTAX = \text{surtax rate} * PIT \quad (13)$$

After PIT and surtax, the wage, which is known as the *net wage* (*NW*) is further reduced by the *special tax on wages, pensions and other revenue* (*STW*), also called the "crisis tax". If *NW* is greater than 3,000 HRK, and less than 6,000 HRK, the "crisis tax" is 2% of the *NW*, if it is greater than 6,000 HRK, the tax is 4% of the *NW*.

$$NW = INC - PIT - SURTAX \quad (14)$$

Framework 1 Example of calculation of tax and contributions

All the terms and formulas mentioned that we have used in the calculations for three employees are shown in Table 1, with monthly gross wages of 3,850, 7,700 and 23,100 HRK (calculated as 50%, 100% and 300% of 7,700 HRK, which was approximately the average gross wage in Croatia from January to July 2009; CBS 2009). For all three employees the personal allowance is 1,800 HRK as they do not use the allowance for children or other benefits, and the surtax rate is 10%. The first employee pays 1,643 HRK in tax and contributions, which accounts for 36% of his gross-G wage. The second employee pays 3,775 HRK in tax and contributions, which is about 42% of his gross-G wage. The burden on the third employee is 14,167 HRK, or 52% of his gross-G wage.

You can find calculations like this one for various forms of income and types of activity in the citizens' brochures, on the web site of the Tax Administration: http://www.pu.mfin.hr/.

Table 1 Example of calculation of tax and contributions for given gross wages

	Item	Variable and formula	1.	2.	3.
1	Gross wage	*GW*	3,850	7,700	23,100
2	Employers' SSC	*SSCER* = 17.2% * *BPL*	662	1,324	3,973
3	Employees' SSC	*SSCEM* = 20.0% * *BPL*	770	1,540	4,620
4	Total contributions	*SSCER* + *SSCEM* = 37.2 * *BP*	1,432	2,864	8,593
5	Income	*INC* = *GW* – *SSCEM*	3,080	6,160	18,480
6	Personal allowance	*PALL*	1,800	1,800	1,800
7	PIT base	*PITB* = *INC* – *PALL*	1,280	4,360	16,680
8	Part of PITB less than 3,600 kn	*PITB1*	1,280	3,600	3,600
9	Part of PITB from 3,600 to 9,000 kn	*PITB2*	0	760	5,400
10	Part of PITB from 9,000 to 25,200 kn	*PITB3*	0	0	7,680
11	Part of PITB above 25,200 kn	*PITB4*	0	0	0
12	PIT	*PIT* = 15% * *PITB1* + 25% * *PITB2* + 35% * *PITB3* + 45% * *PITB4*	192	730	4,578
13	Surtax at 10%	*SURTAX* = 10% * *PIT*	19	73	458
14	Net wage	*NW* = *INC* – *PIT* – *SURTAX*	2,869	5,357	13,444
15	"Crisis tax"	*STW* = 2% * *NW or* = 4% * *NW*	0	107	538
17	Total tax	= *PIT* + *SURTAX* + *STW*	211	910	5,574
18	Net income from wage	*NIW* = *NW* – *STW*	2,869	5,250	12,906
19	Gross-G wage or labour cost	*GGW* = *GW* + *SSCER*	4,512	9,024	27,073
20	Total taxes and contributions	*TTBL* = *SSCER* + *SSCEM* + *PIT* + *SURTAX* + *STW*	1,643	3,775	14,167
21	Average tax rate (%)	*ATR* = 100 * *TTBL* / *GGW*	36	42	52

Source: Author's calculation

$$STW = 2\% * NW, \text{ if } 3{,}000 < NW \leq 6.000 \text{ or}$$
$$STW = 4\% * NW, \text{ if } NW > 6.000 \quad (15)$$

Finally, after subtracting all contributions and taxes, the employee is left with the amount which we could call the *net income from the wage* (*NIW*).

$$NIW = NW - STW \quad (16)$$

Net income from the wage may also be expressed as the gross-G wage reduced by all contributions and taxes, which is the total tax burden on labour.

$$NIW = GGW - TTBL \quad (17)$$

What percentage of the wage earned by an employee goes to the government? This is shown by the *average tax rate* (*ATR*) which is also often known as the *effective tax rate*. In this article we will calculate the average tax rate for the total burden on wages in taxes and contributions. The average tax rate for employees is equal to the ratio of the total tax burden on labour (*TTBL*) and the gross-G wage (*GGW*). The average tax rate calculated in that way is also known in economic literature as the *tax wedge*, since this conjures up a picture of the relative difference between the total amount the employer pays for his employee and the amount which the employee may freely dispose of.

$$ATR = 100 * TTBL / GGW \quad (18)$$

Analysis of the tax burden

This analysis is not based on data about real individuals, but deals with typified, hypothetical individuals. The two such typical individuals considered are A and B: A has no children or other dependent family members, and B has two children. They only earn income from non-independent work (wage); they have no other tax allowances apart from the main ones; personal allowance of 1,800 HRK a month, and B also has personal allowance for two children of 2,160 HRK. Both pay surtax at the rate of 10%.

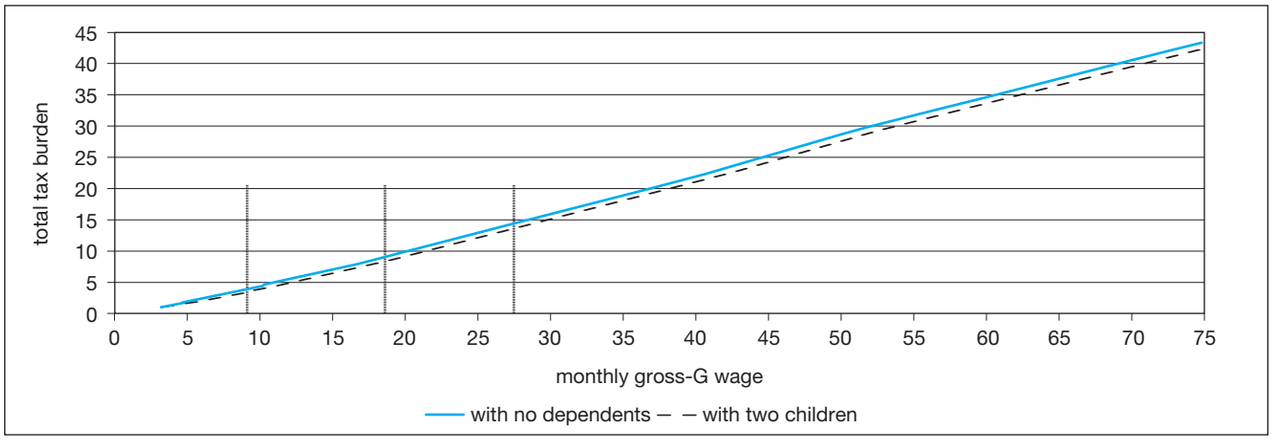
Let us mention at the outset the amount of the lowest and the average wage, because we will refer to them frequently in our analysis. Up to July 2008 the lowest gross wage in Croatia was equalized with the lowest base for calculation of SSC. But since the coming into force of the Act on the Minimum Wage (OG 67/08) on 1st July 2008 the lowest wage which can be paid for full time work has been regulated by that Act (Zuber, 2009). So for the period from 1st June 2009 to 31st May 2010, the minimum gross wage was 2,814 (OG 65/09). We should also mention that the average gross wage in Croatia for the period from January to July 2009 was 7,728 HRK (CBS, 2009).

In the analysis we will calculate how much A and B have to pay in SSC and taxes on different wages. As the variable "income", let us take the gross-G wage of B. Graph 1 shows the total tax burden for a wide range of gross-G wages. This wide range of wages was chosen in order to obtain as complete a picture as possible of the tax burden. However, we have to mention that the vast majority of employees do not receive wages greater than three times the average wage. For better orientation therefore, we have drawn three vertical lines, which approximately indicate the average, twice the average and three times the average gross-G wage in Croatia.

The total tax burden on wages

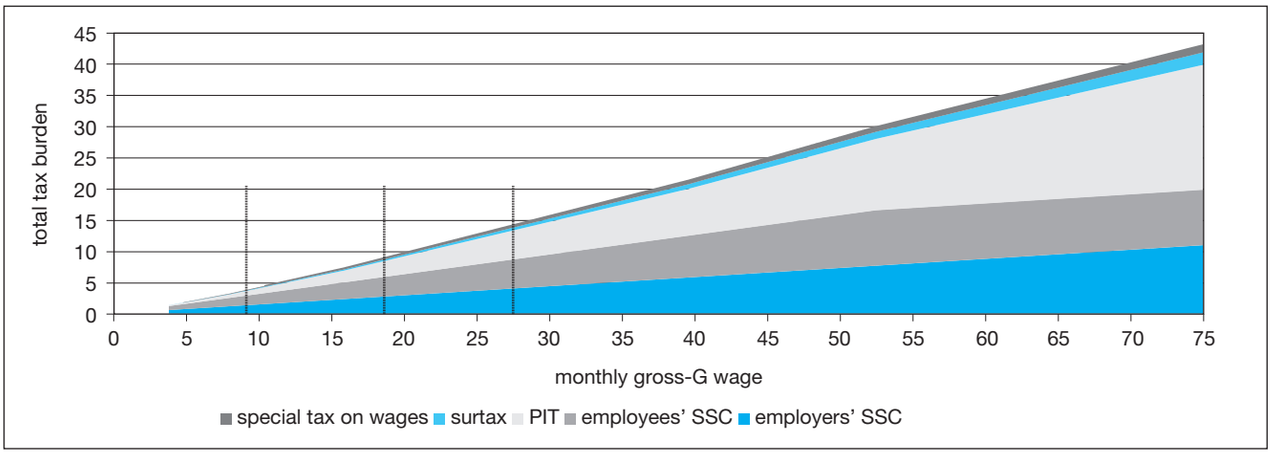
We can see that the tax burden grows almost linearly with the gross-G wage. The unbroken line describes the tax burden for A (without dependent family members) and lies above the dotted line which relates to B (with

Graph 1 The tax burden as a function of the gross-G wage (in thousands of HRK)



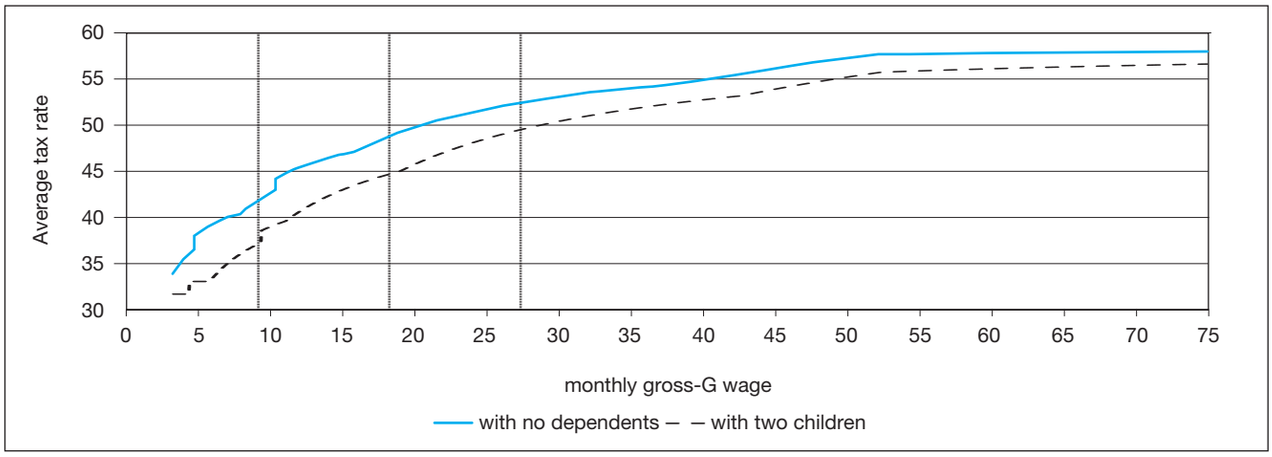
Source: Author's calculation

Graph 2 Structure of tax burden for an individual without children (A) (in thousands of HRK)



Source: Author's calculations

Graph 3 Average tax rate as a function of the gross-G wage (in thousands of HRK)



Source: Author's calculations

two children). The difference between the tax burden of these two people exists due to the personal allowance for two children awarded to B. As we have already described, this allowance further reduces the PIT base, but since the base, as the wage increases, is multiplied by higher rates (15, 25, 35, 45%), so the difference in the tax burden between A and B increases with income. For the highest gross-G income shown for A of 75,000 HRK, the tax burden is 43,500 HRK, which means that the employee is left with only about 31,500 HRK of disposable income. On the basis of Graph 1 we may conclude something about the relative burden, but we will mention that specifically later on.

Structure of the tax burden

For a moment we will focus on A and consider the structure of the tax burden. This is shown in Graph 2. At the "bottom" there are employers' SSC which grow linearly through the entire range of incomes, which however is not the case with employees' SSC. That is to say, pension fund contributions grow proportionally with the gross-G wage up to the amount of about 52,500 HRK, but after that they do not change: namely, for a gross wage higher than 44,760 HRK the base for pension contributions is no longer the gross wage but the fixed amount of 44,760 HRK.

PIT is low for small wages, but at the gross-G wage of 15,000 HRK its amount is equalized with the amount of employer's and employees' SSC. With a gross-G wage of about 62,500 HRK, where the pension contributions no longer rise, PIT takes their place and for relatively high wages takes on the most important role in creating the tax burden. Surtax on PIT is not an especially important factor in the tax burden (except for high incomes), but we recall that it is simulated at the rate of 10%; in the

City of Zagreb, with a surtax rate of 18%, it would have almost twice the impact. On the top of the hill, there is the "crisis tax" as the "soft soil" which the Government promises to remove after the "crisis" has passed.

Average tax rate

How much of the income earned by the worker goes to the government and how much is left for him to dispose of? We have already asked this question when explaining the concept, but we will now answer it with the help of Graph 3, which shows the average tax rate (ATR) or the "tax wedge" calculated as the share of all taxes and contributions in the gross-G wage.

We mentioned that the minimum gross wage is 2,814 HRK, which is equivalent to a gross-G wage of 3,298 HRK. Even with this minimum wage the *ATR* is relatively high at 34% for A (with no dependent family members) and about 2 percentage points less for B (with two children). Soon after those minimum wages, PIT, surtax and the "crisis tax" begin to take effect, which on a gross-G wage of about 7,000 HRK already bring the *ATR* of A to 40%. Half of the income goes to the government with a gross-G wage of 20,600 HRK for A, or with a gross-G wage of 28,900 HRK for B. After that the average tax rate continues to grow, a little more slowly, and for a high income moves towards 58% for A, and 56.6% for B.

SSC are proportional taxes, but nevertheless we notice that the taxation of labour is progressive – the average tax rate grows with income. This progressivity is attained through PIT and surtax. The *ATR* grows significantly right up to a gross wage of 52,500 HRK, where the amount of contributions from wages no longer grows. Despite this, the *ATR* does not fall, but merely stagnates - for high wages the tax burden does not become regressive, but approximately proportional.

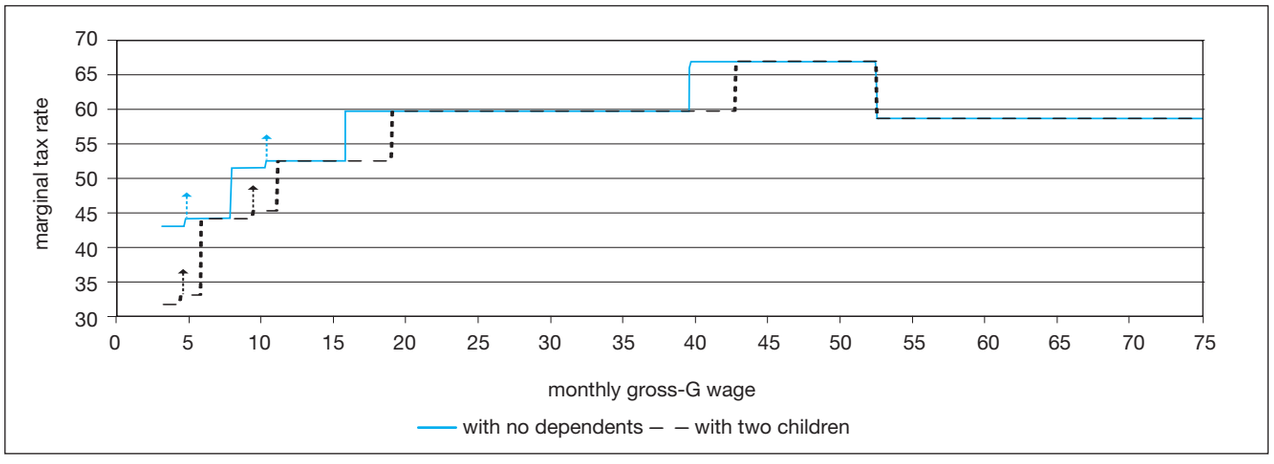
Marginal tax rate

In this detailed analysis of the tax burden we also refer to the *marginal tax rate* (*MTR*). It shows the percentage of additionally earned kuna "eaten up" by taxes and contributions, and is shown for a wide range of incomes in Graph 4.

As already mentioned, the lowest gross wage is 2,814 HRK, which is equivalent to the gross-G wage of 3,298 HRK. After payment of contributions from the wage of 563 HRK, the income (*INC*) of an employee with a minimum gross wage is 2,251 HRK. If the personal allowance is 1,800 HRK, as in the case of A, that means that the PIT base is 451 HRK and A pays PIT at the rate of 15%. On the other hand, B with a minimum wage does not pay PIT as the base is zero HRK for him. We have explained this in order to understand better what is on the left hand side of Graph 4. A, with a minimum wage, already has a *MTR* of 43%, of which mandatory contributions account for 32 and tax and surtax 11 percentage points. B, with a minimum wage, has a *MTR* of 32%, which completely consists of mandatory contributions.

With a gross-G wage of 4,745 HRK, income after PIT and surtax, or the net wage (*NW*), of A is 3,001 HRK and therefore A must pay 60 HRK "crisis tax" after which he is left with a net income from wage (*NIW*) of 2,941 HRK. If he had earned only 5 HRK less gross-G wage, the net wage (*NW*) would be 2,999 HRK and A would not have to pay the "crisis tax" and his net income

Graph 4 Marginal tax rate as a function of the gross-G wage (in thousands of HRK)



Source: Author's calculation

from wage (*NIW*) would be 2,999 HRK, which is 58 HRK more than with a gross-G wage of 4,745 HRK. This is an unusual feature of the "crisis tax": in two narrow income intervals the "crisis tax" causes the marginal tax rate to be higher than 100%, since the increase in income in those intervals leads to a reduction in net income.[3] An *MTR* greater than 100% on those intervals is symbolically shown by the small arrows in Graph 4.

The lines showing the *MTR* resemble a staircase: a jump to the next step comes either from a change in the rate of "crisis tax" (small stairs: rate of 0, 2 or 4%) or as the result of the transfer of the PIT base to a higher category (big stairs: rates 15, 25, 35 i 45%[4]).

For a large income interval the *MTR* is around 60%. What does that actually mean? If A has a gross-G wage of 20,000 HRK and the employer, due to increased productivity, decides to give him a pay rise of 1,000 HRK (he is willing to pay out that much more money because the value of employee A has increased), with the existing *MTR* at that income of 60%, A would have a higher tax bill by 600 HRK, and net wage by only 400 HRK. For a gross-G wage of A between 39,650 and 52,450 HRK, the *MTR* climbs to 67% which means that of that 1,000 HRK, the employee is left with only 330, and 670 goes to the government.

In the end we have to explain the meaning of the last step, which, in contrast to the one before, brings us down by 8 percentage points. We have already mentioned the reason: with a gross-G wage of 52,500 HRK, contributions from the wage no longer rise – their contribution to the MTR falls to zero. However, as we have seen in Graph 2, at that point PIT and surtax "take over", as their contribution to the marginal tax rate rises suddenly and compensates in part for the fall in MTR.

Comparison with countries in OECD

The OECD regularly monitors trends in the tax wedge in its members and publishes the results in "Taxing Wages" (OECD, 2008). The methodology used here is the same as we have described in this analysis, so we can easily compare the results for Croatia with those in the OECD countries. The publication also contains a calculation of the tax wedge for different types of individuals (in terms of marital status and number of children) and wages in an interval from 50% to 250% of the average wage. So, in these comparisons the emphasis is on employees with moderate incomes, and not on very high incomes such as in the KPMG study, which we will deal with a little later.

We will show the indicators of the tax wedge for the OECD and compare the results from different countries with Croatia. The tax wedge is calculated for an individual without children (A) who works in the broadly defined production sector and earns an average gross wage. We calculated the average wage of a production worker in Croatia in line with the OECD methodology, as the weighted average of average wages in sectors C to K, according to the National Classification of Econimic Activities, where the total number of employees in individual sectors served as the weight. We used figures on the average gross wages by sector for the period from January to July 2009, and for the weighting we calculated the average number of employees per sector in the same period (CBS 2009). We thereby gained the average gross wage of 7,260 HRK, which is about 470 HRK less than the average gross wage for all sectors (7,728 HRK).

We made two calculations of the tax wedge for Croatia, in Table 2 they are shown as Croatia-1 and Croatia-2. The first calculation includes surtax at the rate of 10% and the "crisis tax", whilst the second calculation does not include surtax or the "crisis tax".

Table 2 shows the tax wedge and its structure for all OECD countries and for Croatia. The OECD countries are in descending order in terms of tax wedge. The highest tax wedge is in Belgium (56%) and Hungary (54.1%) followed by Germany, France and Austria. Countries in continental Europe have a significantly higher tax wedge than the rest of the OECD group. The average for OECD countries, without EU countries, is 28.1% (row: OECD without EU) whilst the average for the 19 EU members is 42.8% (row: EU-19).

It is natural to compare Croatia with the new members of the EU, which on average have a wedge of as much as 44% (row: EU-4). Hungary and the Czech Republic have a larger wedge than Croatia, and the level of the wedge in Slovakia and Poland is around the level of the calcu-

[3] For more details on this see Urban (2009). Let us mention one more example, also in force from this year: the contribution for health insurance, which at the rate of 3% is paid by pensioners if their monthly gross pension exceeds 5,108 kunas. A pensioner with a (gross) pension of 5,109 kunas will have about 120 kunas less net pension (after PIT, surtax and "crisis tax") than if her pension were 5,107 kunas.

[4] When there is also surtax, these rates in fact should be increased by the rate of surtax, so in the City of Zagreb it amounts to 17.7%, 29.5%, 41.3% and 53.1%.

[5] Unfortunately in this table we do not have a calculation for the other neighbouring countries. However, in one study (Rutkowski, 2007) the tax wedge is calculated for a whole series of transition countries, in 2006. Not going into a more detailed comparison of the methodology and results, we can only mention some results: Slovenia 42.6%, Serbia 42.2%, FBH 34.9%, Macedonia 41.4%, Bulgaria 39%, Romania 44.1%, whilst for Croatia a wedge was calculated of 40.3%.

lation for Croatia when we exclude surtax and the "crisis tax" (39.3%, row: Croatia-2). If we consider the structure of the wedge (columns 2-4), we may notice that Croatia is very similar to Poland, which also has a relatively low share of PIT, and a larger share of employees' than employers' SSC.[5]

What are the limitations of an interpretation of these results? Firstly, Table 2 only shows wedges for the average gross wage – for wages higher or lower than the average we could obtain quite different results. In the same way, they would change if we took people with children as the subject of analysis. Secondly, the countries differ significantly in terms of other characteristics; the level of income per inhabitant, economic systems, and what is particularly important, the structure of fiscal revenues and expenditure. Thirdly, the tax wedge is only one of the

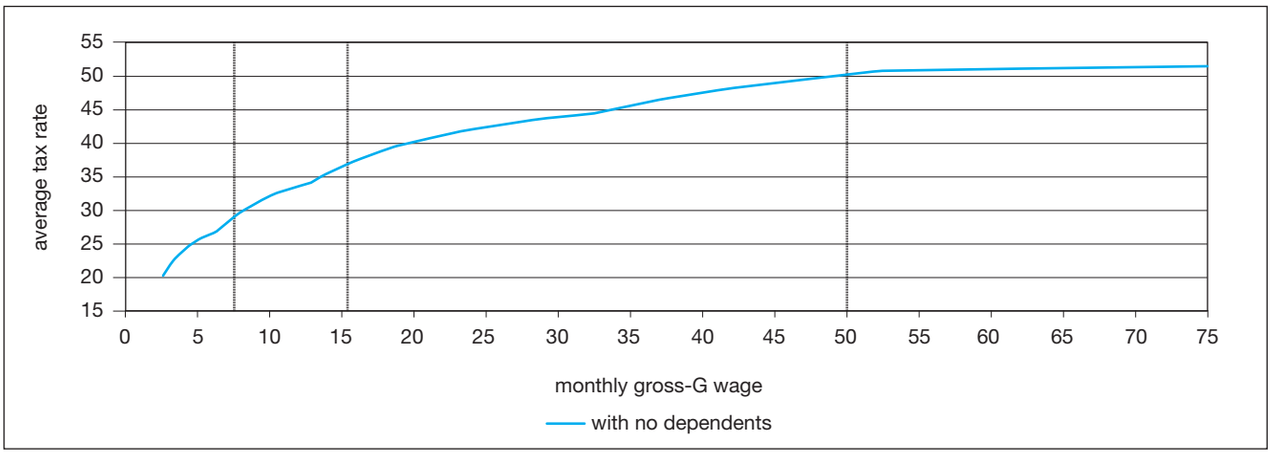
Table 2 The tax wedge for individuals without children and an average gross wage in 2008 (% of the total labour costs)

	Total taxes and contributions (tax wedge)	Personal income taxes	Employees' SSC	Employers' SSC	Total SSC
	1(=2+3+4)	2	3	4	5(=3+4)
Belgium	56.0	21.8	10.7	23.4	34.2
Hungary	54.1	15.8	12.6	25.7	38.3
Germany	52.0	18.6	17.2	16.2	33.4
France	49.3	9.9	9.6	29.7	39.4
Austria	48.8	12.3	14.0	22.5	36.5
Italy	46.5	15.0	7.2	24.3	31.5
Netherlands	45.0	13.7	17.4	13.8	31.2
Sweden	44.6	14.8	5.3	24.5	29.8
Finland	43.5	19.2	5.0	19.4	24.3
Czech Republic	43.4	8.2	9.3	25.9	35.2
Greece	42.4	8.0	12.5	21.9	34.4
Denmark	41.2	30.1	10.5	0.5	11.0
Turkey	39.7	10.4	12.5	16.8	29.3
Poland	39.7	6.0	18.1	15.6	33.7
Slovakia	38.9	7.5	10.6	20.8	31.4
Spain	37.8	9.7	4.9	23.2	28.0
Norway	37.7	19.4	6.9	11.3	18.3
Portugal	37.6	9.6	8.9	19.2	28.1
Luxemburg	35.9	13.3	10.6	11.9	22.5
United Kingdom	32.8	14.8	8.3	9.7	18.0
Canada	31.3	14.5	6.5	10.3	16.8
USA	30.1	15.8	7.1	7.2	14.3
Japan	29.5	7.2	10.8	11.6	22.4
Switzerland	29.5	9.5	10.0	10.0	19.9
Iceland	28.3	23.1	0.2	5.1	5.2
Australia	26.9	21.3	0.0	5.7	5.7
Ireland	22.9	8.5	4.7	9.7	14.4
New Zealand	21.2	21.2	0.0	0.0	0.0
Korea	20.3	4.4	6.9	8.9	15.8
Mexico	15.1	3.3	1.2	10.6	11.8
OECD	37.4	13.6	8.6	15.2	23.8
OECD without EU	28.1	13.7	5.6	8.9	14.5
EU-15	42.4	14.6	9.8	18.0	27.8
EU-4	44.0	9.4	12.7	22.0	34.6
EU-19	42.8	12.8	8.9	16.9	25.8
Croatia-1	41.2	9.5	17.1	14.7	31.7
Croatia-2	39.3	7.5	17.1	14.7	31.7

Note:
(a) OECD - average for all OECD countries; OECD without EU - average for all countries outside the EU; EU-15 - average for EU members before enlargement in 2004; EU-4 - average for 4 new members of EU (Hungary, Poland, Czech Republic, Slovakia); EU-19 - average for EU members.
(b) Calculations for Croatia were based on the gross wage of 7,260 HRK and the currently valid laws (October 2009). Croatia-1 is the calculation including surtax at 10% and the "crisis tax". Croatia-2 excludes surtax and the "crisis tax".
Source: OECD (2008)

[7] For example: using different variables and formulas or on the basis of empirical data from a survey base.

Graph 5 Average tax rate as a function of the gross wage (in thousands of HRK)



Source: Author's calculation

factors on the labour market. Furthermore, alternative calculations of the tax wedge are also possible, which would also result in different orders.[6]

Finally, this kind of scale should not be interpreted as a competition, but more for orientation in relation to other countries.

Still we can say that we are not the "world champions" or even vice-champions in the tax burden on labour – at least in the "the discipline of the tax wedge on the average wage". How we stand in relation to high wages, we will see in the next part.

Comment on the KPMG study

A great deal of discussion was caused recently by the findings of the KPMG (2009) study (hereinafter: the Study) conducted on 86 countries for several time periods. Croatia, for some of the results, was in very high second place, between neighbouring Slovenia and Hungary. The indicator we are talking about is the average tax rate calculated in a very similar way, but still with certain differences in relation to this article. We will try to repeat the calculations performed by KPMG for Croatia and compare those results with theirs, whereby we mean the analysis shown in a graph entitled "Effective Income Tax and Social Security Rates on 100,000 USD of Gross Income" on pp. 6-7 of the Study.

In analyses such as this one and the one by KPMG, it is especially important to explain in detail how the results were reached - which formulas were used, etc. In the Study there are not many details about the manner of calculation, but according to the description available we conclude as follows: the comparison on pages 6-7 of the Study takes into account employees' SSC, PIT and surtax, but excludes employers' SSC and the "crisis tax" which had not been introduced when those calculations were made.

Since employers' SSC are not taken into account (there are the subject of a separate analysis on pages 10-13 of the Study), the variable "income" used is the gross wage (*GW*) in contrast to the gross-G wage (*GGW*) which we used earlier. The calculations were made for a person without children, and we assume that they included surtax at the rate of 18% (see the brief description of the Croatia system of taxation of income and mandatory contributions on p. 33 of the Study). This hypothetical person is equivalent to our A, except for the surtax rate being 18% instead of 10%.

So the total tax burden on labour according to the Study (*TTBLKPMG*) is equal to the sum of employees' SSC (*SSCEM*), PIT (*PIT*) and surtax at the rate of 18% (*SURTAX*). The average tax rate (*ATRKPMG*) is the percentage share of the total tax and contributions (*TTKPMG*) in the gross wage (*GW*).

$$TTBLKPMG = SSCEM + PIT + SURTAX \quad (19)$$

$$ATRKPMG = 100 * TTKPMG / GW \quad (20)$$

The Study only calculates the effective tax rate for somewhat "exotic" levels of wages, of 100,000 and 300,000 USD, but it is aimed at its readership of high-level managers who are perhaps considering which country they would most like to go to work. However, we have to realize that this is not a scientific analysis. A professional and scientific comparison would take into account the gross wage at the level of the average, double the average or median. Also all taxes and contributions would be taken into account. We have already shown that kind of comparison in the earlier part of this article.

Graph 5 shows the calculation of the average tax rate (*ATRKPMG*) for a wide range of gross wages. It differs from Graph 3 in the both axes: on the horizontal axis there is not the gross-G wage, but the gross wage, and on the vertical axis there are not the tax rate calculated for all taxes and contributions, but only for pension contributions, PIT and surtax. The vertical lines are approximately above gross wages of 7,700, 15,400 and 50,000 HRK. For these incomes the ATR would be approximately 29, 36 and 50%. But what interests us first is this highest wage: on a yearly level it is about 600,000 HRK, even more than 100,000 USD, which is the reference value in the Study. The calculation in the Study says that the ATRKPMG for an annual income of 100,000 USD is equal to 53.5%, that is, at least 3 percentage points more than in our calculations. Unfortunately we cannot know how the KPMG came to these results, but with the *ATRKPMG* of 50% we would still be firmly in second position on their scale.

How is it that we are not doing so badly in terms of average incomes, as for the results for relatively high incomes? Unfortunately without a detailed analysis of the tax systems in various countries, we cannot reach an answer, but a possible reason is that the highest rate of 45% according to the law in our PIT system is one of the highest in the world, and moreover it comes into force at lower incomes than in other comparable countries (see the graph on p. 25 of the Study). However if the calculation had included *employers'* SSC as well, as in the case of the OECD methodology, we probably would not have been so high on the scale, since some countries have much higher rates of employers' SSC than Croatia, and also have a larger *total* of SSC rates (see the graph on pp. 10-11 of the Study).

Framework 2 Who pays employers' SSC and why is labour "expensive"?

We know that the ones who are obliged to pay employers' SSC are the employers, and those obliged to pay employees' SSC are the employees. The legal tendency therefore, is to impose part of the burden of social insurance on the employer, who should pay contributions from his earnings or profit. One of the unusual conclusions of economic theory and empirics, about which, however, there is wide agreement, is that employers shift the burden of contributions to the employees, while employees are not able to shift the burden to another market participant and have to bear the total burden of taxes and contributions themselves.

Higher employers' contributions result in lower net wages. However, after the introduction of new mandatory insurance or an increase in an existing one, and before a cut in the net wage, there is a process of adjustment which may be painful for both the employees and the employers. Higher employers' SSC immediately mean higher costs for the firm. According to one of the key economic laws, the marginal cost of labour for a firm is equal to the marginal productivity – the firm employs additional employees as long as the cost of marginal worker is lower than the value of what she produces.

If labour costs are increased by the introduction of or increase in mandatory contributions, the cost of marginal worker will become greater than her marginal productivity and the firm will as a result instantly begin to suffer losses. If the employees were to accept immediately a lower net wage, a higher number of working hours or a cut in indirect benefits, this would compensate for the increase in the marginal labour cost and there would be no need for redundancy and an increase in unemployment. Otherwise there will be redundancies, and a period will begin in which the net wages begin to adjust downwards.

The process and manner of adjustment will depend on the size of the increase in contributions and will not be the same for different industries. For example, in labour intensive industries the adjustment will be more difficult than in capital intensive industries. Furthermore, successful, growing enterprises will not have to lay off workers, and will only slow their expansion, whilst enterprises on the margins of profitability may be forced to go out of business. The process of adjustment will also be affected by other factors such as the unions and inflation. There is a more detailed analysis in Sennholz (1987).

So in the end, tax on labour results in lower wages for workers (but we should not forget the effect of other taxes which also reduce employees' standard of living, such as VAT and excise taxes). What if employees do not want to accept lower wages? They have several "escape routes": (a) to the unofficial economy and tax evasion – to accept payment of a small proportion of or the entire wage "on the black", (b) to inactivity – withdrawal from the labour force and the search for social benefits from the government, (c) abroad – this may relate to young people and educated and qualified workers. The flight of workers causes shortages on the labour market, reduces the supply and raises the price and cost of labour. High taxes are one of the reasons why it is said that labour in Croatia is "expensive" in comparison with other countries.[7]

[7] As we learn from the World Bank study (2009), the main reasons for the high cost of labour in Croatia are: (a) the great power of the unions in setting wages, especially in the public sector, (b) the non-competitive wage setting in the public sector, which also influence "reserve wages" in the private sector (c) the rigid protection of employment which gives insiders strong bargaining power and (d) the lack of alignment of knowledge and skills attained with the needs of the economy.

References

DZS, 2009. *Priopćenja* br. 9.1.2/7 i br. 9.2.1/2 do br. 9.2.1/8. [online]. Zagreb: Državni zavod za statistiku. Available from: [http://www.dzs.hr].

KPMG, 2009. *Individual Income Tax and Social Security Rate Survey* [online]. Available from: [http://www.kpmg.com/SiteCollectionDocuments/Individual-Income-Tax-Rates-Survey-2009_v2.pdf].

OECD, 2008. *Taxing wages.* Paris: OECD.

Popijač, Đ., 2009. "Zašto nije uvijek dobro biti svjetski prvak!?". *Eukonomist*, (9), str. 31.

Rutkowski, I., 2007. "Taxation of Labor" in: Ch. Grey i A. Vourdakis, ed. *Fiscal Policy and Economic Growth in ECA*. Washington: World Bank.

SEEbiz, 2009. *Ante Babić: Porezno opterećenje rada treba smanjiti na 30%*. [online]. Available from: [http://www.seebiz.eu/hr/makroekonomija/hrvatska/ante-babic-porezno-opterecenje-rada-treba-smanjiti-na-30-%25,54386.html].

Sennholz, H. F., 1987. *The Politics of Unemployment*. New York: Libertarian Press.

World Bank, 2009. "Izvješće o konvergenciji Hrvatske s EU: ostvarivanje i održavanje viših stopa gospodarskog rasta (cjelovito izvješće)". *Izvješće*, br. 48879-HR. Zagreb: World Bank.

Urban, I., 2009. Come characteristics of the "criris tax" [online]. *Press Releases*, No. 11. Available from: [http://www.ijf.hr/eng/releases/11.pdf].

Zuber, M., 2009. "Minimalna plaća od 1. lipnja trebala bi se povećati 9,7 posto" [online]. Available from: [http://www.liderpress.hr/Default.aspx?sid=72945].

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