FAMILY TAX BURDEN:
A COMPARATIVE ANALYSIS OF CROATIA AND CEE

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SUMMARY

The paper analysis family tax treatment using three indicators of family tax burden: (1) income tax, (2) income tax + employee contributions and (3) income tax + employee contributions – cash transfers. The comparison encompases various differences in tax burden for four family types. The data for Croatia and CEE are roughly compared to OECD and EU-15 data.

Slovakia takes into account children mostly concerning first indicator and Hungary mostly concerning third indicator. Croatia's position is good and improving concerning first indicator, but relatively bad concerning third indicator. Poland is specific, since it does not take children into account, neither through tax reliefs, nor through the cash transfers.

Some recommendations are given for Croatia and CEE countries concerning improvement in the family tax treatment.

1. INTRODUCTION

Ability to pay principle of taxation requires that personal income tax systems take into account family circumstances and dependant persons cared for by families. The existence of different forms of family reliefs results in a tax savings due to children (and unemployed spouse). However, the complete insight into the family tax burden (tax/benefit position) requires the inclusion of other taxes similar to income taxes, which do not take family circumstances into account – employee contributions as well as negative taxes (cash transfers) that additionally take that circumstances into account.

Consequently, the comparative analysis in this paper is not only restricted to personal income tax burden of family, but includes also employee contributions, as well as cash transfers. The main three indicators analyzed are: income tax, income tax + employee contributions and income tax + employee contributions – cash transfers.

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The Croatian family tax/benefit position is compared to the tax/benefit position of Czech Republic, Hungary, Poland and Slovak Republic. The position of all these countries is globally compared to OECD and EU 15 (old EU members) average data.

The various differences in burden due to the family situation for the four family types are analyzed. The income of all family types is based on average production worker and its average wage.

At the beginning of paper, methodology is briefly described. The bulk of the paper is devoted to the comparison results, grouped according to stated indicators of family burden.

2. METHODOLOGY

The methodology is based on the regular OECD's "Taxing Wages" methodology that continuously measures tax/benefit position of production workers[3] (OECD, 2004a) for eight family types. For the purpose of this research, four family types are chosen: single person at 100% of APW (average production worker's) wage (*1*), one-earner married couple with two children with the same wage (*2*) and two-earner married couple with two children (*3*) and without children (*4*), where the second earner earns only 33% of the APW's wage (100-33).

The comparison of the tax/benefit position of the first two family types reveals the "maximum" difference in tax/benefit position due to the family circumstances (two children, unemployed wife). However it does not enable the separation of tax savings in respect of the children on one side and unemployed wife at the other. Since OECD does not collect data about one-earner couple without children, the insight into the tax savings (and benefits) due to children is got by comparing two-earner families (family types 3 and 4).[4] Still, the inclusion of these family types gives us the interesting opportunity to compare Type 2 and Type 3 and see what is happening when unemployed wife enters the labor force or vice versa.

Taxes covered are taxed assumed to be borne by individuals (workers, employees). So, the first measure of the tax burden is the personal income tax, that changes according to the family circumstances[5]. The second measure is the total gross tax burden: personal income tax + social security contributions of employees. It reflects family situation much less, because the employee contributions do not reflect the family circumstances. The third measure is the

[3] This is the possible constraint of the analysis, since average production worker is not a typical average employee anymore. The definition of average worker is going be broadened even by OECD, so as to include not only production worker in the manufacturing sector, but employees working in a broadened set of industries.

[4] Since there are also no data for families with one child, it was not possible to measure the rise (or fall) in tax savings (and benefits) due to the second child in relation to the first child.

[5] According to the OECD's methodology local income taxes/surtaxes are included in calculation for Croatia also. The surtax rate for the town of Rijeka (used in our calculation) is around the average surtax rate in Croatia.

total net tax burden: personal income tax + employee contributions – cash benefits. Needless to say, that it reflects family situation mostly.

Data for 2004 for the countries analyzed are compared by the OECD and "old" EU member states data using unweighted averages, as commonly used in the similar tax research (for instance OECD, various issues). The analysis is completed by the newest data for Croatia (2005), because of the recent changes in the scope of the "mini tax reform" in Croatia, that affect family tax treatment.

3. RESULTS

3.1. Income tax burden

Income tax systems take family circumstances into account. This is not done only by choosing family, instead of an individual, to be a tax unit, but also by different family reliefs (OECD, 2004a; IBFD, 2004). The former is relatively rare among the transition countries. Among the countries analyzed, only Poland has an option for family being the tax unit - married couples are taxed on their joint income (income splitting) and that option is supposed to be chosen here. Surprisingly, Poland has no tax reliefs for dependent children, that exist in all other countries analyzed (together with reliefs for dependent spouse in Czech Republic, Slovak Republic and Croatia).

Although it is more common for child tax reliefs to be in the form of tax allowances, Hungary and recently Slovak Republic have recognized the benefits of tax credits. While tax allowance, under a direct progressive schedule, brings more benefit to the upper incomes, which marginal tax rates and resulting tax savings are higher[6], tax credit (deduction from tax liability and not from the tax base) brings the same absolute tax savings to all income levels.[7] That is anyway, not the problem for Slovak Republic due to the flat tax (only indirect progression), but here the another advantage of tax credit comes into existence – its non-wastable (refundable) characteristic. Unlike tax allowances that could be wasted (not used) for lower incomes (for example here in Croatia), tax credits could be made non-wastable. If they exceed tax liability, the excess is paid to the taxpayer (as in Slovak Republic).

Table 1 shows the differences in family income tax burden for the countries analyzed.

[6] Tax saving = tax allowance x marginal tax rate

[7] Speaking in relative terms, the tax saving is, of course, much higher for lower incomes.

Table 1: Income tax for different family types (as % of gross wage) in 2004 and "absolute" (Δ) and relative differences (%)

Family / Country	S 100	M2C 100-0	M2C 100-33[1]	M 100-33[1]	Δ_1	$\%_1$	Δ_2	$\%_2$	Δ_3	$\%_3$
	1	*2*	*3*	*4*	*1-2*	*(1-2)/1*	*3-2*	*(3-2)/3*	*4-3*	*(4-3)/4*
Czech R.	11.4	5.3	6.4	9.8	6.1	53.5	1.1	17.2	3.4	34.7
Hungary	12.4	4.7	3.6	9,3	7.7	62.1	-1.1	-30.6	5.7	61.3
Poland	6.1	4.1	4.6	4.6	2.0	32.8	0.5	10.9	0.0	0.0
Slovak R.	7.9	-5.3	-4.0	0.0	13.2	167.1	1.3	24.5	4.0	∞
Croatia	8.2	1.9	2.8	6.2	6.3	76.8	0.9	32.1	3.4	54.9
Croatia'05	8.0	0.0	1.7	5.9	8.0	100.0	1.7	100.0	4.2	71.2
EU15 ∅	15.4	9.1	9.9	11.8	6.3	40.9	0.8	8.1	1.9	16.1
OECD ∅	14.3	8.9	9.5	11.2	5.4	37.8	0.6	6.3	1.7	15.2

Notes:
S-single, M-married, 2C- 2 children (between 5 and 12 years)
100 – average production worker's (APW) wage, 100-0 – only one spouse works, 100-33 – two-earner family (second earner's wage is 33% of the APW's wage)
$\Delta_{1,2,3,}$ - "absolute" difference in tax burden (tax saving) – this is the difference between two tax burden percentages, so it is in effect relative measure, but the another "relative" difference (%) is got by putting the former "absolute" difference in the relation with the starting tax burden
$\%_{1,2,3}$ – "absolute" difference (Δ) in percentage terms; in relation to the taken base (see the formula in the second row of the table under the %)
[1]37% for Croatia since 33% is below the minimum wage
Source: OECD, 2004a, p. 44 (for 1-4 for CEE) and author's own calculation for the remaining data based on Central Bureau of Statistics, various issues and current legislation

The tax burden of the single reveals the starting country differences (irrespective of the family circumstances). It can be seen that Hungary is mostly burdened and Poland the least. Croatia is somehow in the median position, although its burden is below the average (it could be said that it is among the relatively less burdened of the countries analyzed). As known, the burden of personal income tax in transition countries is considerably below that one of the EU and OECD.

Comparison of the first two family types reveals that Slovak Republic's family tax treatment is the most generous one, due to the both marriage relief and especially non-wastable tax credit for children. Croatia ranks as the second one and the improvement in the family tax treatment in the 2005 is due to the increased tax allowances for children and dependent spouse. Still, the possible tax savings for the dependent spouse and two children could have been even higher, but are not exhausted completely due to tax allowances not being completely exhausted.[8]

[8] The results for both countries are probably also influenced by the average production worker's wage being relatively low in comparison to the existence minimum in these two countries (and below the average wage). This could be partly (but not completely) mitigated by the announced broadening of the definition of the average worker.

The case of Poland (in this and further comparisons) confirms again that the choice for the family as the tax unit (joint taxation) does not automatically guarantee more generous tax treatment of the family circumstances (Blažić, 1993; OECD, 1993; Sever et al, 1997).

The second comparison (between Type 2 and Type 3) shows that the tax burden falls, as expected, when woman leaves the low paid job and rises vice-versa, but that this changes are relatively moderate.[9] [10] They are highest in Croatia, especially after the recent tax changes, indicating the possible disincentive (substitution) effects. However, the high percentages could be misleading, since the absolute tax burden is very low.

The only exception from the stated pattern in the tax burden trend is Hungary, where the tax burden changes in the opposite way (rises when woman leaves the labor force and falls when she enters it). The reason lies mostly in the non existence of marital reliefs in Hungary.

The third comparison (Type 3 and Type 4) enables us to concentrate on the tax saving (fall in tax burden or rise in negative taxes) for children only. It can be seen that these changes are higher in analyzed countries in general than in the OECD and EU on average. The only exception is Poland, that does not take children into account, as already pointed out.

The absolute tax saving (rise in negative tax) is the highest is Hungary, while the relative tax saving is highest in Slovak Republic (due to the non-wasted tax credit again). Croatia has improved its position in the 2005 as the result of relative (and absolute) rise in the tax allowances for children.[11]

It could be concluded that in general Poland is taking family circumstances the least and Slovak Republic the most into consideration. The family tax treatment in Croatia is improved recently.

3.2. Total gross tax burden

If social security contributions of employees (compulsory, of course) are added to income tax burden, we arrive at total gross tax burden. Employee contributions are in effect regressive

[9] The absolute changes are very low. Even the percentage changes are not high. The percentage fall in the family income is 25% (from 133 to 100) and changes are mostly inside that range (Hungary will be addressed later). The percentage change for Slovak Republic has not the negative sign, since it denotes rise in negative taxes (family is better off).

[10] However, the imputed income of the unemployed spouse (different childcare and housekeeping costs savings) should not be forgotten here. That could be one of the arguments in favor of (explaining) the lower percentages.

[11] Tax allowances for children in Croatia are expressed as a share of basic allowance, which is constantly rising due to the rise in the costs of living. However, in 2005 the share of these allowances has also risen.
It is interestingly to mention, also, that these shares traditionally rise in Croatia for each subsequent child. Although the literature suggests that each additional child's costs are lower (due to the "economies of scale" effect), it was motivated by the demographic policy.

income taxes.[12] In all five observed countries they are completely flat (12.5% in Czech Republic,13.5 % in Hungary, 25.4% in Poland, 13.4% in Slovak Republic (OECD, 2004a) and 20.0% in Croatia)[13]. If these figures are added to the initial data from Table 1 we arrive at the Table 2 data.

Table 2: Income tax and employee contributions for different family types (as % of gross wage) in 2004 and absolute (Δ) and relative differences (%)

Family / Country	S 100	M2C 100-0	M2C 100-33[1]	M 100-33[1]	Δ_1	$\%_1$	Δ_2	$\%_2$	Δ_3	$\%_3$
	1	*2*	*3*	*4*	*1-2*	*(1-2)/1*	*3-2*	*(3-2)/3*	*4-3*	*(4-3)/4*
Czech R.	23.9	17.8	18.9	22.3	6.1	25.5	1.1	5.8	3.4	15.3
Hungary	25.9	18.2	17.1	22.8	7.7	29.7	-1.1	-6.4	5.7	25.0
Poland	31.5	29.5	30.0	30.0	2.0	6.3	0.5	1.7	0.0	0.0
Slovak R.	21.3	8.1	9.4	13.4	13.2	62.0	1.3	13.8	4.0	29.9
Croatia	28.2	21.9	22.8	26.2	6.3	22.3	0.9	4.0	3.4	13.0
Croatia'05	28.0	20.0	21.7	25.9	8.0	28.6	1.7	7.8	4.2	16.2
EU15 ∅	27.8	21.0	21.8	23.8	6.3	22.7	0.8	3.7	1.9	8.0
OECD ∅	25.0	19.3	19.9	21.6	5.4	21.6	0.6	3.0	1.7	7.9

Notes:
See Table 1
[1]37% for Croatia since 33% is below the minimum wage
Source: OECD, 2004a, p. 46 (for 1-4 for CEE) and author's own calculation for the remaining data based on Central Bureau of Statistics, various issues and current legislation

Since contributions are flat and take no account of family circumstances, the absolute differences remain the same, but the relative ones are considerably smaller. So, these additional labor income taxes considerably mitigate the family impact of income taxes. This "negative" influence is stronger as contributions are higher relative to income taxes, as can be seen from the table 3.

Among the countries analyzed the negative impact (mitigation) is in general relatively highest in Croatia (after the reform changes), since Poland (with highest employee contributions) does not take the most important family circumstances (children) into account[14].

Table 3: Degree of mitigation (DM) of family circumstances due to the employee contributions (%)

[12] Since they are flat taxes on entire labor income only and their share decreases as entire income rises.
[13] Since the OECD and EU average employee contributions are lower (10.7 and 12.4 respectively – for the single APW worker), this brings the total gross tax burden of the analyzed countries closer to the OECD and EU average (since the OECD and EU averages for income tax burden were higher (Table 1)). The reason for relatively low average for the OECD lies in the non-existence of employee social security contributions in Australia and New Zealand – better to say, their inclusion into the income taxes.
[14] It is in effect also high for children in Slovak Republic, since only with income tax burden, this burden falls from zero to negative (Table 1).

Country	Contributions/ income tax 1[1] (Index)	DM of $\%_1$	DM of $\%_2$	DM of $\%_3$
		$(\%_{1T1} - \%_{1T2}) / \%_{1T1}$ (in %)	$(\%_{2T1} - \%_{2T2}) / \%_{2T1}$ (in %)	$(\%_{3T1} - \%_{3T2}) / \%_{3T1}$ (in %)
Czech R.	109.6	52.3	66.3	55.9
Hungary	108.9	52.2	79.1 (-)	59.2
Poland	416.3	80.1	84.4	- (not existing)
Slovak R.	170.0	62.9	43.7	- (extremely high)
Croatia	243.9	54.5	87.5	76.3
Croatia'05	250.0	71.4	92.2	77.3
EU15 ∅	80.5[2]	44.5	54.3	50.3
OECD ∅	74.8[2]	42.9	52.4	48.0

Notes:
T – Table (*T1* = Table 1);
[1]Income tax 1 = income tax of the type 1 family (S 100)
[2]Employee contributions for the single APW (S 100)
Source: Table 1 and Table 2

3.3. Total net (tax)burden

The complete tax/benefit family treatment and its comparison is given by the inclusion of cash benefits. Cash transfers for dependent children (child benefits – child allowances) are covered here, but also cash transfers related to social status in Czech Republic (that are again connected with children).[15] Table 4 reveals the combined effect.

Table 4: Income tax and employee contributions less cash benefits for different family types (as % of gross wage) in 2004 and absolute (Δ) and relative differences (%)

Family / Country	S 100	M2C 100-0	M2C 100-33[1]	M 100-33[1]	Δ_1	$\%_1$	Δ_2	$\%_2$	Δ_3	$\%_3$
	1	*2*	*3*	*4*	*1-2*	*(1-2)/1*	*3-2*	*(3-2)/3*	*4-3*	*(4-3)/4*
Czech R.	23.9	4.9	13.7	22.3	19.0	79.5	8.8	64.2	8.6	38.6
Hungary	25.9	6.1	7.9	22.8	19.8	76.4	1.8	22.8	14.9	65.4
Poland	31.5	29.5	30.0	30.0	2.0	6.3	0.5	1.7	0.0	0.0
Slovak R.	21.3	1.2	4.3	13.4	20.1	94.4	3.1	7.2	9.1	68.0
Croatia	28.2	15.6	22.8	26.2	12.6	44.7	7.2	31.6	3.4	13.0
Croatia'05	28.0	13.8	21.7	25.9	14.2	50.7	7.9	36.4	4.2	16.2
EU15 ∅	27.8	13.6	16.5	23.8	14.2	51.1	2.9	17.6	7.3	30.7
OECD ∅	25.0	13.1	15.7	21.6	11.9	47.6	2.6	16.6	5.9	27.3

Notes:
See Table 1
[1]37% for Croatia since 33% is below the minimum wage
Source: OECD, 2004a, p. 47 (for 1-4 for CEE) and author's own calculation for the remaining data based on Central Bureau of Statistics, various issues and current legislation

[15] Transfers related to social status in Slovak Republic do not affect the presented calculations (OECD, 2004a).

Although absolute differences are considerably higher than in previous tables, the relative differences show that cash benefits can not make up for the negative impact of the employee contributions.

The most transparent are last two columns data, since they enable to concentrate on the differences due to the children. Poland, again, does not take the number of children at the APW level into account (even not in the case of unemployed spouse – Type 2), although it could have been expected that at least cash transfers would make up for the non existence of child tax reliefs.[16] All other CEEs relative differences are higher than the OECD's and EU's. Croatia is lagging behind, since the two earner family from our analysis (Type 3) does not qualify for the child benefits. So, its burden is the same as in the Table 2.

The absolute differences reveal a different picture (but relatively the same for Croatia), with Hungary ranking the highest. Table 5 analysis the further structure of the differences due to the children.

Table 5: The structure of differences in net burden due to children (Δ_{3T4})

	Total difference	Tax savings	Transfers	Relation (in %)
	Δ_{3T4}	Δ_{3T1}	Δ_{3T4}-Δ_{3T1}	Δ_{3T1}:(Δ_{3T4}-Δ_{3T1})
Czech R.	8.6	3.4	5.2	40:60
Hungary	14.9	5.7	9.2	38:62
Poland	0.0	0.0	0.0	-
Slovak R.	9.1	4.0	5.1.	44:56
Croatia	3.4	3.4	0.0	100:0
Croatia'05	4.2	4.2	0.0	100:0
EU15 ∅	7.3	1.9	5.4	26:74
OECD ∅	5.9	1.7	4.2	29:71

Notes:
Total difference=tax savings + transfers
Transfers = Δ_{3T4}-Δ_{3T1} = 3_{T2}-3_{T4} (transfers could be calculated also from differences in net and gross tax burden of two earner family (Type 3))
Relation = taxes: transfers (both as percentage of total difference)
Source: Table 1 and Table 4 (and Table 2)

It is obvious that transfers are always more important than the tax savings (they are of highest importance in Hungary), with the already mentioned exception of Croatia that does not allow transfers for that family type. This suggests raising the income threshold that qualifies families for the child benefit.

[16] The cash transfers for children are received only by single earner with two dependent children at the 67% of an APW wage (OECD, 2004a).

Even when we take a look at the total difference for children comparing first two family types (Δ_{1T4}), Croatian situation (where the one-earner family does receive child benefits) is still relatively less favorable[17] (although improving). The first row of the table 6 shows the importance of transfers.

Table 6: Transfers for dependent children for one-earner couple (Type 2) and fall in transfers if wife is employed (Type 3)

	Czech R.	Hungary	Poland	Slovak R.	Croatia	Croatia'05	EU15	OECD
Δ_{1T4}-Δ_{1TI}	12.9	12.1	0.0	6.9	6.3	6.2	7.9	6.5
Δ_{2T4}-Δ_{2TI}	7.7	2.9	0.0	1.8	6.3	6.2	2.1	2.0

Notes:
Transfers could be calculated also from differences in gross and net tax burden of family (Δ_{1T4}-Δ_{1TI}=2_{T2}-2_{T4})
Source: Table 1 and Table 4 (and Table 2)

As already indicated above, it can be seen that the Croatian situation (leaving Poland aside) is the worst, although not so bad as previously. Czech Republic ranks the best and above EU and OECD average (followed closely by Hungary).

The non-existence of child benefits (cash transfers) for two-earner couple and existence of these benefits in Croatia only for one-earner couple indicates possible substitution effect (disincentive to work) for the second earner, which could be observed from the Table 4 (Δ_2 and $\%_2$). When second-earner leaves job, family gross wage falls for 25%, but net (tax) burden falls even stronger.[18] This effect is especially profound in Czech Republic due to the strong rise in transfers (Tables 4-6).

The second row of the Table 6 confirms the above conclusions.

4. CONCLUSION

There are considerable differences in the tax burden and family treatment in the countries analyzed**.**

It could be said, in general, that Czech Republic and Hungary have a higher income tax burden and the rest of CEE and Croatia lower tax burden.

Hungary does not have marital tax reliefs, what is relatively rare and Poland not even child tax reliefs, what is even rarer and surprising. As a result of that, tax burden of Poland does not

[17] Of course, with the already mentioned exception of Poland. Furthermore, it is not so bad when compared to the EU and OECD, especially taking into account data for 2005.

[18] For 2005 net replacement rate for Croatia is 80% and marginal effective tax rate 40% when Type 2 and Type 3 are compared (calculations based on OECD, 2004b). These figures are not dramatically high, but still considerable, since there are different other benefits, that are not taken into account here.

reflect family circumstances (children) at all. Tax burden in Hungary is rising when second earner in the family leaves low paid job. Family circumstances are mostly taken into account in Slovak Republic thanks to the non-wastable tax credits for children. Croatia's position is improved as a result of the latest mini-tax reform. Positive example of child tax credits in Slovak Republic (and Hungary) should be taken into consideration by other countries analyzed.

Since employee contributions strongly mitigate the pro-family impact of income taxes, the countries should consider their lowering / (partial) integration with income tax / moderate progressiveness. Their negative effect is highest right in Croatia.

In relative terms, cash benefits can not make up for the negative impact of the employee contributions. Still, they considerably contribute to the rise in "absolute" differences in the entire net burden, being higher than tax savings for children. Hungary is ranking the first now considering the treatment of children. Poland, again, does not take family circumstances into account, by not allowing cash transfers for children. The Croatian situation is not favorable, since the child benefits are not allowed for "average" two-earner family (with average production worker income of the first earner and lowest possible income of the second earner), but only for average one-earner family. So, the rise in the income threshold that qualifies families for the child benefit is recommended.

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