

FLAT TAX IN THE SEE: HAS IT REACHED THE PEAK?*

Helena Blažić, PhD
Associate Professor
University of Rijeka
Faculty of Economics
Ivana Filipovića 4
51000 Rijeka
Croatia
Phone: --385 51 355 150
Fax: --385 51 212 268
helena@efri.hr

Abstract

The paper presents comparative analysis of flat tax systems in transition countries in the light of their departure from Hall-Rabushka model of flat tax. Main findings of some recent empirical research of effects of flat tax in the transition countries are presented.

The second part of the paper analysis Hall-Rabushka roots of Croatian income tax and possible equity and efficiency effects of revenue neutral flat tax in that country using average and marginal income tax rates. Revenue neutral reform will probably lead to a rise in average tax rate for most of the incomes, except the highest ones and to the rise in already high total marginal effective tax rates (personal income tax rate + local surcharge + employee social security contributions) for lowest incomes. Combination of higher basic personal allowance with higher flat tax rate could lead to a negative efficiency effects.

Keywords: flat tax, average tax rates, Hall-Rabushka, transition economies

1. Introduction

The «flat tax revolution», started in the Baltic countries, has moved across the CEE and NIS with the great impact on the SEE too. Still, its rejection in Slovenia and Croatia has added new sparkles to the never ending debate about the overall effects of the flat tax and reopened the classical equity efficiency trade-off. It seems that everything has been already said about flat tax. The arguments in favour of it are repeated over and over again and include economic efficiency (positive effects of work effort, saving and investment resulting in positive effects on international competitiveness and economics growth), simplicity, higher tax revenues... (for instance Hall and Rabushka, 1985 and 1995; Mitchell, 2005; OECD, 2006; http://en.wikipedia.org/wiki/Flat_tax, 2008). Even equity is stated but it is, of course, result of the different value judgments as well as measurement methods.

One of the first most important hypothetical research of the effect of the original Hall and Rabushka model of flat tax showed positive effect on capital accumulation, increased efficiency of labor, but more concentrated distributions of earnings, income and especially wealth (Ventura, 1999). Some later research came to the similar conclusion (for instance Aaberge, R., Columbino, U. and S. Strøm, 2000; Caminada and Goudswaard, 2001; González and Pijoan-Mas, 2005; Adam and Browne, 2006; Larsen, 2006). One of the biggest disadvantages of the flat tax is a relative shift of a tax burden to the middle income class.

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But, some part of previous papers as well as some scarce empirical research for transition countries that implemented flat tax (Ivanova, Keen and Klemm, 2005; Brook and Leibfritz, 2005; World Bank, 2005a; World Bank 2005b and Keen, King, Varsano, 2006) and newest research for old EU members (Paulus, Peichl, 2008) have challenged the predominant beliefs about flat tax.

This paper will try to analyze some elements of flat tax concerning the relationship of empirical models with the theoretical ideal of flat tax, pointing out the recent trends in the field as well as assess the effects of its possible influence into the Croatian tax system.

At the beginning of the paper different flat tax models will be presented, with emphasize on the Hall-Rabushka model, pointing out its consumption-based substance.

The following comparative analysis will not only compare basic elements of the flat tax systems in the transition countries (with emphasis on SEE countries), but will also assess different models from the point of view of the Hall-Rabushka model (rates, exempt capital incomes, non-standard tax reliefs, deductibility of employees social security contributions, corporate income tax rates)

The remaining part of the paper concentrates on the possible effects of the flat tax introduction in Croatia. The existing system is compared to the different flat tax scenarios (combinations of basic personal allowance with different flat rates). Average and marginal tax burden is assessed and its equity and possible efficiency effects.

2. Hall-Rabushka flat tax and other flat tax models

The most prominent flat tax model is this one of Hall and Rabushka (1985, 1995). It is interesting to point out that the model has been developed primarily under the consumption-based framework - its alternative form (interest-adjusted income tax). It has been the most prominent form of the interest adjusted income tax in the literature. It seems that for a long time his specific base and not one rate has been its main characteristic/advantage.

The tax base excludes all capital income (interest income in the broader sense; better to say savings income), taxing only employment income and business income. The system is still progressive due to the basic personal allowance (family allowance). There are no non-standard tax reliefs and even employee social security contributions should be included in the tax base of income tax (their deductibility is not allowed). Business income is taxed under the standard model of consumption-based taxation: cash flow tax (with the immediate write off – immediate expensing as its basic characteristic) with no right to deduction of interest income.

Other forms of flat taxes are (OECD, 2006; Atkinson, 1995; Friedman, 1962):

- Income-based tax¹ with single rate and no basic (personal) tax allowance (“true flat income tax”): proportional system;
- Income-based tax with single rate and basic (personal) tax allowance (wastable): progressive system;
- Negative income tax (Fredman’s model): income-based tax with single rate and basic (personal) tax allowance/deduction (non-wastable) – when tax allowance/deduction exceeds income, income becomes negative (rather than zero): progressive system and negative income tax;
- Atkinson’s model of flat tax: income-based tax with single rate and non-wastable tax credit (“Basic Income/Flat Tax”): progressive system; in effect negative income tax.

A common feature of most of other proposals is restrictive attitude towards non-standard tax relief also, which should (together with only one rate) result in simplification. The tax is simplified even more if the same rate applies for corporate income tax.

Of course, different intermediate forms are also possible and practically implemented, as presented in the next chapter. However, Atkinson’s as well as Friedman’s model are still not (fully) implemented, the same being true for the first – socially unacceptable model (with the exception of Georgia). The second model is mostly implemented, but due to the exception of a lot of capital incomes it has a lot of elements of Hall-Rabushka model (see next chapter), which is the most prominent one.

¹ And not consumption-based; the tax base is the entire income and not only labor income

3. Is the Hall-Rabushka flat tax together with its effects really present?

Among all the flat tax supporters in the tax literature, Hall and Rabushka (1985 and 1995) mostly influenced, supported and boosted flat tax reform in transition countries.

However, besides one marginal tax rate followed by the basic personal (tax) allowance, there is not much left of their initial consumption-based model of personal income tax. No one of the countries (except Estonia) taxes individual business income² by the proposed cash-flow tax and denies interest deduction.³ Table 1 summarizes other relevant basic characteristics of flat rate systems in transition countries.⁴

Table 1: Flat tax in some transition countries (2008)

	Year of intr.	Rate (%)	Basic personal relief	Exempt capital incomes	Employee social security contributions deductible	Non-standard tax reliefs	Corporate income tax rate (%)
Albania	2008	10	Zero rated first bracket (not for high incomes)	-	NO	None	10
Bosnia and Herz. (Fed.)	2009	10	Tax allowance	Dividends, long term capital gains on real estate, most interest	YES	Many	10
Bulgaria	2008	10 (15 for sole traders)	None	Most interest, some capital gains	YES	Some	10
Czech Republic	2008	15 ¹	Tax credit (wastable)	Only long-term capital gains on real estate	NO	Some	21
Estonia	1994	21 ²	Tax allowance	Some interest, some capital gains, dividends	No employee contributions (only employer c.)	Many	21, but only on distributed profits
Georgia	2005	25	None	Long term capital gains	Not existing	None	15
Latvia	1995	25 (15 for business income)	Tax allowance - employment income only	Some interest, most capital gains, dividends	YES	Many	15
Lithuania	1994	24 and 15 ³	Tax allowance	Most interest, long term capital gains	N. a.	Many	15
Macedonia	2007	10	Tax allowance	30% of capital gains; long term capital gains on real estate	YES	None	10
Montenegro	2007	15 ⁴	Tax allowance	Capital gains, life insurance income	NO	None	9
Romania	2005	16	Tax	Some capital gains	YES	Only for	16

² Some of the countries (for instance Georgia, Albania) allow the option of immediate expensing under the corporate income tax, but this is more the result of the tax incentives per se, than the adoption of the Hall Rabushka model.

³ Except under the thin capitalization rules, that restrict those deductions.

⁴ The list of transition countries is not exhaustive; some other NIS have flat tax (Kazakhstan, Kyrgyzstan) as well as Mongolia and Iraq and not recognized country of Transnistria (Pridnestrovia). The only "old" developed country that has a flat tax is Iceland. Its flat rate has some dual elements – labor income is taxed under 22,75% rate (+ local income tax of around 13%), while capital income is taxed under 10% flat rate. Some tax heavens like Guernsey, Jersey, Hong Kong and Mauritius have flat tax also.

			allowance (not for high incomes)			private pension plans	
Russia	2001	13	Tax allowance (not for high incomes)	Some interest, some capital gains	Not existing (only employer s.s. contributions)	Many	24
Slovak Republic	2004	19	Tax allowance (depends on the income level ⁵)	Dividends, most capital gains	YES	Only for additional pension insur. and long term saving	19 (also a VAT rate)
Serbia⁶	2003. -2006	10 (from 2007. 10 and 15)					10
Ukraine	2004	15 (13 before 2007)	Tax allowance (not for high incomes)	Most interest, some capital gains	N.a. (seems NO)	Many	25

¹ 12,5 % from 2009

² 20% in 2009, 19% in 2010 and 18% in 2011 and later years; the same holds for corporate income tax rate

³ Lower rate (15%) applies to the investment income, income from sports, entertainment and arts, independent activities, rental income, capital gains, certain pensions and life insurance benefits.

⁴ 12% for 2009 and 9% for 2010 and later years

⁵ SKK 98,496 (19.2 times the living minimum) if the aggregate income is up to SKK 513,000; SKK 226.746 (44.2 times the living minimum), less one fourth of the aggregate income, if the aggregate income is higher than SKK 513,000. If the result is less than zero, the basic personal allowance cannot be claimed.

⁶ Serbia has a specific system of scheduler taxation. Different incomes are taxed under different proportional rates (for instance 12% for labor income, 10% from income of self-employment, 20% for capital incomes). If the net yearly income exceeds 3 times average annual salary the taxpayer is taxed under synthetic/comprehensive income tax, whose rate are 10% (up to 6 times annual salary) and 15% on the income above 6 times annual salary. So, the system has been progressive even in terms of direct progression (marginal tax rates).

Source: Author - based on IBFD, 2008; EC, 2008; Damijan, Polanec, 2005.; Vlada Federacije Bosne i Hercegovine, 2008

Basic characteristic of Hall-Rabushka model – its consumption-based characteristic (exemption of capital incomes) is not present in any of the countries. Albania is the only country that includes all capital income in the tax base. (Long term) capital gains and dividends are among the most exempt incomes, but that could be connected also to the elimination of double taxation of dividends as well as privileged treatment of capital gains, which is often in other (non flat tax) countries also.

The elimination of non-standard tax reliefs is also not fulfilled in most of the countries. Albania, Georgia, Macedonia and Montenegro do not have any non-standard reliefs at all, but this is due not only to the H-R model, but also to their previous non experience with tax reliefs. Slovak Republic and Romania could be added to that group also, due to the almost non existence of those reliefs. They are also relatively limited in Bulgaria.

Some countries allow deductibility of employee social security contributions, some do not and some of them do not have them at all (having only employer social security contribution).

More than half of the countries have the same tax rate for personal as well corporate income, adding to the investment neutrality between different business forms also. Slovakia has gone a step further – introducing the same rate for VAT, which has no theoretical base.

It is interesting to note that a lot of countries introduced flat tax only very recently and especially those countries are somehow closer to the Hall Rabushka model. This is especially true for SEE countries that are also characterized by lowest personal income as well corporate income tax rates (both being set at equal

low level). With the exception of Romania, they could be called “10 percent area” (with Montenegro having even 9 per cent starting from 2010).⁵ Furthermore, almost all of the stated countries without tax reliefs are SEE countries, which is one element more in Hall Rabushka model direction. Such a base broadening enabled the introduction of a low (10%) flat rate and obviously resulted in some gains in horizontal equity and simplicity also (besides the efficiency).

The analytical empirical evidence of the real effect of flat tax in transition countries and fulfillment of expected effects is very rare. There is very little research in that field and none of them for SEE. Russia (Ivanova, Keen and Klemm, 2005) and Slovakia (for instance Brook and Leibfritz, 2005; World Bank, 2005a and World Bank 2005b) are among countries more analyzed, while comprehensive comparative analysis are even rarer (Keen, King, Varsano, 2006). However, results challenge some common expected and believed features of a flat tax, introducing more skepticism.

Except in Latvia and Lithuania (which both have set the flat tax rate at the highest marginal tax rate prior to reform) and in Russia, adoption of the flat tax resulted in a reduction in personal income tax revenue. So, it seems that the Laffer-type response has not been present. Even some base-broadening seems not to have been enough to offset the effects of rate reductions in the upper income ranges and of increased basic allowances in most countries (to ease the burden for lower income classes). The lack or direct tax revenues was made up for by the increase in indirect taxes. There is no evidence that the rise of personal income tax revenues in Russia was the direct result of a flat tax introduction. The increased compliance was more the result of the improved tax administration and its better techniques aimed to a better tax collection and evasion combating. There was no significant positive impact on work effort. Probable the income effect has out weighted substitution effect or was no substantial behavioral response at all.

The distributional effects depend, of course, on the level of (flat) rate as well as basic personal allowance. Both being higher implies higher progressivity. Even combinations of relatively low tax rate (close to the level of previous lowest marginal tax rate or between lowest and highest marginal tax rate) and the increase of basic personal allowance could be beneficial to both high and low incomes (the relative loser is, as already pointed out, middle or upper middle income class) and can even lead to some increase in progressivity (however depending on the method used to measure it). “There is thus no general presumption that movement to a flat tax in itself is associated with a reduction in progressivity, though the commonly used summary indices of progressivity—which, in the few studies of this issue, show an increase in progressivity—may overstate the point” (Keen, Kim and Varsano 2006, p. 36).

The systems have been also not seen as much more simple due to the fact that the signification is associated not only with rates, but with a tax base. As can be seen even from the Table 1, most countries have not eliminated all tax reliefs and preferences from the base as well as abolished taxation of capital incomes. Still elimination of some tax reliefs (mostly in the form of tax deduction) has resulted in a base broadening, that has improved horizontal equity (and has brought to some resulting efficiency gains as well as simplicity).

Still, since almost none of the countries has excluded capital incomes from the tax base, but taxes them very often milder, the problem of their taxation and some sort of “duality” in the direction of “dual income tax” still remains.

It is hard to predict the future of the model. Still, it is obviously to expect that some more countries will adopt flat tax⁶, although not anymore from the SEE region. Taking into account the stated skepticism, “the question is not so much whether more countries will adopt a flat tax as whether those that have will move away from it” (Keen, Kim and Varsano 2006, p. 36).

On the other hand, Slovenia as well Croatia (which tax base has even been strongly influenced by Hall-Rabushka model), until now, have rejected the model. As pointed out in Slovenia “its effect on the economic growth would not be such as anticipated, while its effect on inequality would be extremely

⁵ Since the highest marginal tax rate of 15% is in Serbia only for very high incomes, it is in effect also part of the “area” (most employment income, however, being taxed under final withholding tax rate of 12%).

⁶ Recent research for countries of Western Europe (Paulus, Peichl, 2008) suggested that the combination of relatively high marginal flat rate of flat tax together with high basic personal allowance could have beneficial distributional as well as efficiency effects in Mediterranean countries (probably due to their specific welfare regimes, but also income distribution and relatively low social security contributions). The research for Spain (González and Pijoan-Mas, 2005) advocates also such a combination.

noticeable” (<http://www.gzs.si/eng/news/sbw/head.asp?idc=21627>, 2006).⁷ The same reluctance seems to be shown by the Croatian Ministry of Finance. Section 5 gives some evidence in support of that.

4. Brief introduction into the relevant elements of Croatian income tax and its Hall-Rabushka model roots

In 1994, Croatia was the first country in the world fully to accept the consumption concept in the field of direct taxes (income tax⁸ and profit tax⁹) in the alternative form - the "interest-adjusted income tax" and "interest-adjusted profit tax" (Rose, Wenger, 1992). The Hall-Rabushka model was accepted at the level of individuals (personal income tax), but not at the corporate level, where interest-adjusted profit tax (instead of cash-flow tax) was applied. So, the remaining part of this section will be devoted to personal income tax (called "income tax" in Croatia).

Capital income (interest income in the broader sense) at the individual level was almost not taxed at all. The only tax reliefs were the standard ones and they were given in the form of tax allowances. Basic personal allowance could have been increased because of dependant family members, disability or age (pensioners have been entitled to almost double basic personal allowance). There were no non-standard reliefs. The non standard relief for compulsory employee social security contributions (deduction of employee contributions) was the only one (it could be regarded as standard one too). Since these compulsory contributions are in effect for pension insurance, the Croatian consumption-based tax system still had some "mixed system" characteristics regarding personal expenditure tax elements concerning pensions treatment. The other mixed element in the direction of comprehensive income tax (Schans-Haig-Simons type) was taxation of income from real estate (except owner-occupied housing), because of the inclusion of rental income as well as real estate capital gains (only short term gains, and not applied to owner occupied housing) in the tax base.¹⁰ The latter horizontal inequity did not present any immediate distortion in the sense of inefficiency, taking into consideration elasticity considerations. On the other hand, the lack of financial capital in comparison with the relatively high existing stock of real estate capital in Croatia, puts forward the separate incentive elements of tax policy.

There were great debates in the time of introduction whether Croatia should have pure flat tax or still two rates. In the end, the arguments in favor of two rates prevailed.

In the meantime, more rates and more reliefs have been introduced. The system was actually abandoned in 2001 with the introduction of dividend taxation, which was abandoned again in 2005.

So, the today's system – especially the tax base is close to Hall-Rabushka model due to the capital income still being mostly exempt (the exceptions are already mentioned real estate income, as well as some minor

⁷ This is, among others, result of the International Academic Forum on Flat Tax Rate, organized in Slovenia in 2006, where even after first theoretical section was "unclear whether Flat Tax Rate system has positive impact or not" (Rožič, 2006). Also the results of later simulation for Slovenia (Čok, Majcen, Verbič, Košak, 2008) proved that some other options for tax reform are not inferior to the flat tax scenario.

⁸ Since the term «income tax» is not used in Croatia in relation to corporations/companies and their taxation (see next footnote), the term «income tax» is equal to "individual/personal income tax" and covers all individuals (including self-employed, even if they perform some sort of partnership).

⁹ The term "corporate income tax" would not be completely appropriate. The tax payers of the profit tax are corporations, but also some part of the non-corporate sector (partnerships with "trader status" and even the sole traders: the self-employed can opt to pay profit tax or has to be taxed under profit tax, if he fulfils some criteria for "bigger business units"). In this way the typical distortion of the classical income tax concept – between the corporate and the non-corporate sector - was avoided, as the consumption tax concept requires, and this remains even now. On the other hand, it could be argued that it is simply replaced by the distortion between business units (enterprises) that pay profit tax and business units that pay income tax (see previous note). In order to mitigate the problem, the Croatian legislation has given the self-employed the option of paying profit tax instead of income tax (still relevant).

¹⁰Such a treatment of the real estate is the result of the Croatian tax code having departed from the proposed reform draft of the Heidelberg KNS Group (Konsumorientierte Neuordnung des Steuersystems), in which the equity allowance concerning invested real estate capital was planned.

interest income). The standard tax reliefs – tax allowances remained the same. All family tax allowances as well as the disability allowance are expressed as percentages of basic personal allowance, easing in that way the inflation adjustment. A lot of non-standard tax reliefs (again in the form of tax allowances) were introduced in the meantime and are still present now. There are no prospects for their abolishment. The deductibility for employee compulsory social security contributions is broadened to include some voluntary contributions (for health, pension and life insurance). There are even four marginal tax rates (15, 25, 35 and 45 %).

Most taxpayers do not have to submit an annual income tax return to the tax authorities, because the bulk of the taxes is collected by withholding, which is final in most of the cases. Wages and salaries as well the pensions are taxed by withholding using the same technique (bands, rates and basic and family tax allowances (personal exemptions)) as in the case of personal income tax in general. That means that taxpayers who receive a wage/salary only from one employer and have no other income do not have to submit income tax returns. The same is true for pensioners, most of them paying effectively no tax at all because of the low pensions and higher basic tax allowance. A lot of other withholding taxes can be final, which implies in effect flat tax on those incomes.

The taxpayers *may* submit an income tax return if it suits them – in cases where they are entitled to a tax refund due to not completely exhausted basic personal (and family allowances) and other tax reliefs in the form of deductions.¹¹

In some cases, taxpayers *must* submit a tax return. Of course, this is in the case of income from self-employment (not incorporated business), income from abroad and wages/salaries from several employers.

5. Possible effects of the flat tax introduction in Croatia

The simulations of the flat tax introduction effect have been done under the presumption of the revenue neutrality, based on the existence of basic personal allowance (with different assumptions concerning other – non-standard tax allowances) and having calculated the relevant tax rate (which is, of course, higher than the lowest marginal tax rate).

One of the first attempts of the former simulation was done for year 2004 (Urban, 2006a) where the relevant tax rate was calculated at the level of 18.8% (the basic personal allowance was lower then today – 1,500 HRK). In effect¹², the rise of a tax burden for all income groups has been found out, except for the highest income groups (highest 3.8% of population). The highest 0.7 % of population had the decrease of more than 10 percentage points.¹³

That decrease could have been even bigger if all types of income had been taxed under the same (4 rate) schedule. As already mentioned, in effect only wages and business income undergo that scale completely and other incomes only if the income tax return is submitted.¹⁴

Our calculation¹⁵ is presented in the Graph 1, by using the monthly income, which is closest to everyday income perception. It is for the 2006 and compares the current situation (the tax schedule as well as basic

¹¹ So, withholding (flat) taxes are in effect optional and might be final at the choice of the taxpayers.

¹² However, the author has found out a slight decrease in tax burden of lowest income groups (those whose tax burden is under the basic personal allowance and around it). It is result of his comparison of the real tax burden under the present tax system and an ideal tax burden under the simulated (flat rate) system. Namely, under the former system some people do not claim back their tax overpaid (tax refund). This is, again, due to the fact that most of the taxpayers do not submit the tax return (most of the tax is collected by withholding and some of them are not aware of the fact that they have the right to tax refund). This is an interesting example how efforts directed towards the lower tax compliance and administrative costs can undermine equity of the tax system.

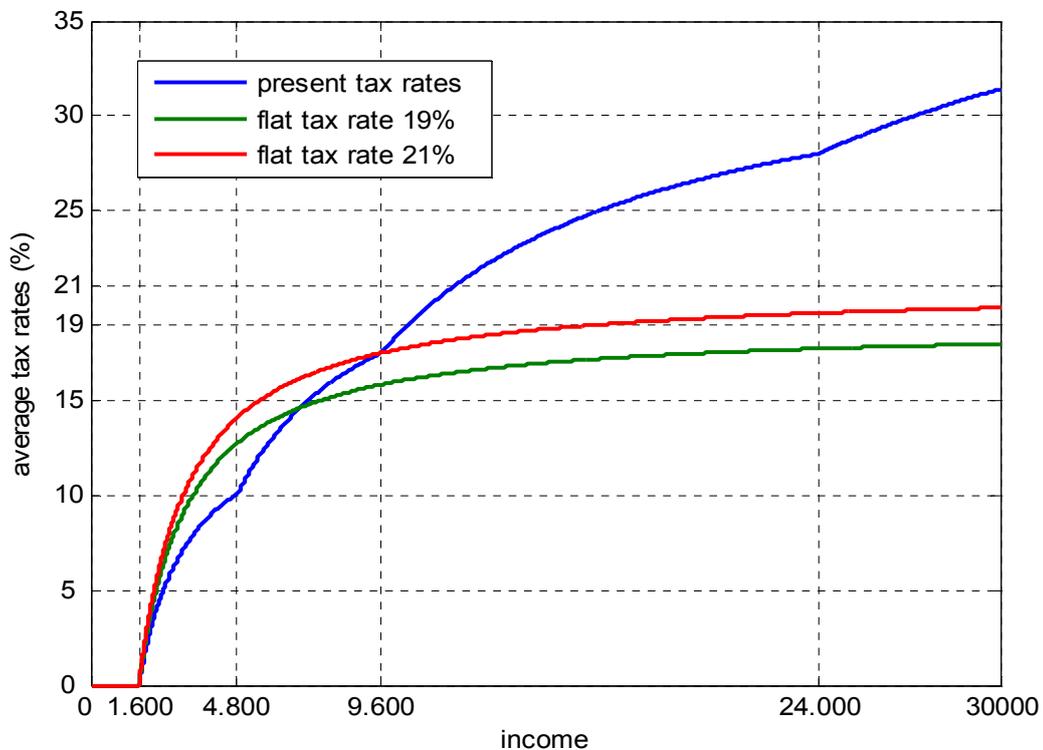
¹³ The difference between average tax rate under the existing and simulated system.

¹⁴ That is the strongest reasons for most of higher income tax taxpayers not to submit tax return at all, while the revenue loss (tax due) because of additional taxation of those incomes would eliminate the revenue gain (tax refund) because of the utilization of possible tax reliefs.

¹⁵ Based on the Tax Administration data (tax returns for 2006).

personal allowance are the same in 2008) with the flat taxes of around 19% and 21%. Since the graph captures the effects of the entire schedule on the entire income (all income types), the tax return data are closest to that effect and they were used for simulation and calculation.¹⁶ The graph captures the effects of the basic personal allowance only. It excludes, among others, the effect of other elements of personal (tax) allowances - standard reliefs (such as those one for supported family members, disabled persons and elderly), so it is assumed that they relatively do not change at all under the simulated system of flat tax. In the rate calculation, it has been also assumed (based also on Hall-Rabushka model) that non-standard tax reliefs will be abolished (but with the exception of social security contributions¹⁷). Our calculations led to a similar rate (Urban, 2006a) of 18.7% (around 19%). The maintaining of non-standard reliefs would imply higher rate of around 20.7 % (second rate in the graph – 21%). Our calculation assumes also that the surtax would be calculated in a same way as under the existing system.

Graph 1: Average tax rates for existing Croatian personal income tax and simulated flat rate systems



The already mentioned distributional disadvantage of a flat tax, presented also in the previous research for Croatia (Urban 2006a) is proved even here, using the different technique. Unlike with the standard tax schedules, where due to the direct progression (different nominal marginal rates of income tax) the rise in average tax rate is boosted every time again (with the every next tax bracket), the rise in average tax rate of flat tax(es) is caused by basic personal allowance only, which effect decreases as income rises. So, the

¹⁶ Calculation based on wage taxation data only (taxation of employees) yields similar results.

¹⁷ It is also usual to treat compulsory social security contributions as standard tax reliefs. However, original Hall-Rabushka model assumed them not to be deductible. Still, the practice of most developed countries speaks in favor of exempting them from taxation. Finally, that was the case in the first Croatian model of income tax, which was, as already explained, relatively close to flat tax and under the influence of consumption tax proposals.

progression (curves are rather steep at the beginning of income scale, even steeper than for the existing schedule) turns into proportionality for the high incomes (curves are rather linear).

Especially interesting are the interceptions of two flat tax systems with the existing system, that reveal “winners” and “losers” of the potential changes.

Those could be easily found by equalising the tax functions for the tax burden (even in absolute amounts).

So, for the first interception of 19% flat tax and existing income, the equation is

$$0.19Y (Y-1,600) = 0.15 (Y-1,600) + 0.1 (Y - 1,600 - 3,200)$$

where Y denotes income, which, as can be seen from the graph, is taxed under two tax brackets only for the existing system. The result is income (Y) of 6,933 HRK, whose tax in both cases is 1,013 HRK and average tax rate amounts 14.6%.

For the interception of 21% flat tax and existing income, the equation is:

$$0.21Y (Y-1,600) = 0.15 (Y-1,600) + 0.1 (Y - 1,600 - 3,200) + 0.1 (Y - 1,600 - 3,200 - 4,800).$$

The resulting income is, as it can be seen from the graph directly, the income of 9,600 HRK. It is taxed by the absolute amount of 1,680 HRK, which results in the 17.5% average tax rate.

The results are summarized in the Table 2.

Table 2: Interceptions of existing income tax with different flat taxes

Flat tax rates	Income	Tax	Average tax rate %	Income after tax
19%	6,933	1,013	14.6	5,920
21%	9,600	1,680	17.5	7,920

Source: Graph 1

Average income at the monthly level, for the taxpayers that have submitted tax return in 2006 is 4,420 HRK (4,499 HRK for wages, 2,917 HRK for pensions and 3,030 HRK for the income from self-employment). For all taxpayers (regardless whether the tax return was submitted or not) average income is around 3,297 HRK for all taxpayers (4,170 HRK for the employees, 1,979 HRK for the pensioners and 3,685 HRK for self-employed). It is obvious that all the average amounts are under the stated “interception” incomes (Table 2), so the introduction of flat tax “makes it worse” for the average incomes in very broad sense (taking into account also above average incomes).

Leaving the pension income aside (due to the double higher basic personal allowance and the resulting fact that only around 20% of them pay income tax – most of them under the lowest 15% rate), the flat tax of 19% would result in a lower tax burden only for relatively small amount of high incomes (around 17% of self-employed and 13 % of employees).¹⁸ After having taken into account pensioners, which comprise 40% of formal taxpaying population (most of them in effect not paying tax at all), the results come closer to those ones of Urban (2006a) – around 7%.

The gaining percentages of highest income population are, of course, smaller under the second scenario (21% rate), where these percentages amount 6.6% for employees and around 8% for self-employed. The sharp shrinking demonstrates also the huge impact of a slight rate reduction on the persons affected. Application to the entire populations leads to the assessment of around 4% of highest incomes.¹⁹

The efficiency aspects in general should be in favour of flat tax – the substitution effect is not rising with the rise in income. However, the marginal tax rate is higher for lower incomes (19% or even 21% instead of “only” 15%), indicating negative efficiency effects for those incomes as well as higher poverty (and unemployment) trap. The entire effect cannot be assessed without taking into account employee social

¹⁸ These amounts do not take into account other parts of personal allowance (allowances for children and dependent spouse). However, the bulk of the entire personal allowance at the state level is basic personal allowance (around 80% for those that have submitted the tax return and even more – 90% for wage earners). That would result in a little bit higher income level, but very slightly. On the other hand, taking into account local surcharge (where applied) would act slightly in the opposite direction.

¹⁹ Those results do not necessarily mean that progressivity decreases under flat tax. Even for Croatia that was presented by simulations of different combinations of flat tax and basic personal allowance (Urban, 2006b). Of course, increased progressivity is positively correlated with higher flat taxes and higher basic personal allowance.

security contributions, which are especially in Croatia under the highest in comparison with OECD countries (OECD, 2007) – even 20%. The entire amount rises to 39% or even 41%, which is not complete tax burden, since most of the taxpayers pay also local surcharge²⁰. Taking them into account, the marginal tax rate rises to 41% or 43%, which is rather high. It is necessary to add that the employee social security contributions ceiling mitigates the highest marginal tax rates (for highest incomes) under the existing tax schedule.

It could be concluded that (without substantial decrease in the social security contributions, which is quite not possible²¹) any combination of higher flat tax rate and higher basic personal allowance (bringing to more progressive effect and better position of lowest incomes) is quite impossible due to high marginal tax rates. Even the rates under the presented hypothetical schedule seem to be too high for lower incomes.

Of course, the solution could be found under the presumption of positive dynamic revenue effects (Laffer-type response) and the resulting rejection of revenue neutrality of new flat tax system. Such a combination of relatively low flat tax rate (at the level of lowest marginal tax rate of the existing system) and higher basic personal allowance (or even the same one) could, based on experience of other countries, have detrimental fiscal effects. The only solution would be this one already implemented by other countries in similar situation – more reliance on indirect taxation. Those taxes are already very high in Croatia and such a change would make system even more regressive, shifting relatively more tax burden to lower incomes again.

6. Conclusion

Although the Hall-Rabushka flat tax model is the most popular one and the flat tax revolution seems to be the revival of the original idea of those authors, the relatively little of it (besides its main and most striking characteristic- one rate) remained in its practical implementation. Furthermore, it is not proven that all the expected effects have realized completely. That could be result of the departure of practical implementation from the model and variety of its forms, but also to the lack of its expected behavioural type effects. It could also bring to the negative distributional effects, which would be almost for sure not beneficial for the middle income class.

Its rejection in Slovenia and Croatia seems to be in line with those arguments, although possibly not final. The specific problem of Croatian personal income tax is its interaction with employee social security contributions, which are rather high and relatively lower only for highest incomes. Revenue neutral reform will probably lead to a rise in average tax rate for most of the incomes, except the highest ones and to the rise in already high total marginal effective tax rates for lowest incomes. Combination of higher basic personal allowance with higher flat tax rate will lead to a negative efficiency effects (even higher marginal total tax rates for low incomes).

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²⁰ Its rates (calculated on income tax as its tax base) range from 0 to 18% (for the capital of Zagreb). According to the tax return data its effect could be assessed to around 10,7% of personal income tax revenues.

²¹ They are entirely for the pension insurance, which reform has been undertaken a couple of years ago. The pensions and their fiscal burden are among the most complex problems of the Croatian economy.

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