Lithuanian Free Market Institute

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PROGRESSIVE TAXES & INEQUALITY

INTRODUCTION

Recently, income inequality has become a widely discussed topic. Increasingly more people, politicians and scholars believe that inequality is a negative development *per se* and that something needs to be done about it. As a result, various measures aimed at combatting inequality are proposed, most of them concentrating on redistribution.

Progressive taxation is considered as the most popular measure to reduce income inequality. On the contrary, the flat tax regime is usually criticised for its alleged failure to reduce income inequality.

Together with the introduction of a cap on social security contributions, the arguments that centered on the idea that the progressive income tax will reduce inequality were commonly used to justify the introduction of a progressive personal income tax (PIT) rate in Lithuania effective as of January 1st, 2019.

Sadly, the discussion was not a well-informed one and did not raise the question whether or not the progressive PIT had helped to achieve the goal of reducing inequality in other EU member states.

The aim of our research is to enlighten this discussion by exploring to what extent the progressiveness of PIT is a decisive factor in reducing income inequality.

The answer to this question is based on two approaches. First, does a progressive PIT reduce income inequality significantly more than the flat one? Second, does a more progressive PIT reduce income inequality significantly more than a less progressive PIT?

The answers to these questions is significant in both theoretical and practical terms. If there appears to be no clear relationship between higher progressivity and larger reduction of inequality, then one may question whether the calls for higher taxation on higher income can be justified on the grounds of reducing inequality.

1. Research methodology

We have chosen EU countries for our study: the countries are of relatively similar level of development (compared to global deviations in development) and there is a high probability that the statistical data is comparable across countries due to identical standards and definitions. The source of the data for PIT rates is the "Taxes in Europe" database (European Commission) which provides an extensive up-to-date report on the tax system of each country.

Using the EUROMOD database which provides extensive data for income[1] inequality before tax and after tax (GINI index for disposable income plus direct taxes and GINI index for disposable income), our research compares the reductions of income inequality between more progressive and less progressive PIT systems.

First, we compare the reductions of income inequality by flat and progressive PIT systems across the EU from 2007 through 2017.

Then a regression analysis is applied to test whether higher progressivity is related to higher reductions in income inequality in the same geographical and time scope.

In our calculations, tax system progressivity is related to the percentage of the tax burden paid by taxpayers of each income bracket. The progressiveness of the tax system will be measured as the ratio between the sum of the average monthly income tax paid by the top 5 household decile by income and the sum of the average monthly income tax paid by the bottom 5 household decile by income. As the ratio goes up, tax progressivity increases.

The second indicator of the progressiveness will be based on the ratio between the effective income tax of the top 5 household decile by income and the effective income tax of the bottom 5 household decile by income. As the ratio goes up, tax progressivity increases.

It is possible that using these progressivity indicators a particular flat PIT system will appear more progressive than a certain progressive PIT system. This could happen if a progressive tax system had sizeable deductions that benefit high-income individuals or if a “flat” tax system had significant deductions for low-income earners.

2. Terminology

Income inequality

In the majority of countries, income rather than wealth is subjected to higher taxation. The probable reasons are numerous:

First, one might have wealth but no income to pay tax (not all wealth produces income).

Secon, taxation of wealth requires constant reevaluation of assets, whilst income is usually expressed in monetary terms.

Third, taxation of wealth can be interpreted as double taxation since wealth was accumulated from the already-taxed income (although this argument does not prevent taxing revenue from interest or capital gains of dividends).

Therefore, when it comes to fiscal policy and arguments about inequality, the debate tends to concentrate on income inequality rather than the inequality of wealth. That is why income inequality is the focus of this research.

[1] In this paper we are making an assumption that most people’s income consists of employment income, self-employment income, investment income, etc.

Progressive taxes

In very broad terms, progressive income taxation is a set of tax rates which tax income at higher rates as income get higher. This results in an increase in taxes as a percentage of income as income increases.[2] This is in contrast with per-capita, proportional (or "flat" tax) and regressive tax systems. However, it does not take into account that some proportional PIT systems only tax income above a certain threshold or exemption that makes them technically progressive.

People's attitude towards progressive taxation

Progressive taxation as an "envy tax":

When evaluating public attitude towards progressive taxation, we should not exclude a scenario under which people supporting more progressive taxation think that their own income would not be taxed by a higher progressive tariff. This is reflected in some opinion polls. For example, a representative opinion poll by RAIT in 2009 reported that more than a half of respondents supported the idea of introducing a progressive income tax in Lithuania.[3] Another representative poll by "Spinter Research" asked if people would want a progressive income tax applied to their own salary; 68% of the respondents disagreed, showing that people's perception towards redistribution changes significantly if their own personal income is concerned.[4]

We could broadly classify the two existing approaches to tax progressivity as *ex ante* and as *ex post.*

The *ex ante* approach estimates the progressivity by estimating tax rates. *Ex post* estimates progressivity by estimating after-tax income. The *ex ante* approach estimates the intentions behind the PIT system, while *ex post* estimates the effects.

The *ex ante* approach will be used in our research when comparing the reductions of income inequality by formally flat and progressive PIT systems.

The *ex post* approach will be applied when testing whether higher progressivity is related to higher reductions in income inequality.

People's attitude towards progressive taxation

Progressive taxes – for those earning "undeserved" income

People are more willing to justify tax if they believe that income was earned unjustly or effortlessly. According to Zizzo & Oswald (2001), in the modified "Dictator" game, "disadvantaged" subjects appear to target undeservedly earned money substantially more than they do other money[5]. Drawing an insight into reality this would mean that people of lower income are much more supportive of high taxation on income or wealth, if they think that income or wealth is "undeserved". Of course "undeserved" is a subjective term, which depends on the personal interpretation (e.g. are capital gains "deserved" or "undeserved"?) But this allows us to speculate that the perception of "undeserved income" is behind at least some taxation targeted at very specific income or institutions (e.g. capital gains tax, financial transactions tax, etc.)

In addition, we should not exclude an impact of political rhetoric on people's views on taxation. When looking for justification to increases taxes (or introduction of new taxes) politicians are keen to invoke the notion that some types of wealth or income are "unjust" and are therefore a viable subject to taxation. Especially if people do not quite comprehend the nature of the said wealth or income (e.g. capital gains). The interesting question however is the direction of this relationship: does the political rhetoric influence peoples' thinking or are politicians simply exploiting the already existing notions of "justice" and "fairness" among the population.

[2] Hagonian, K. (2011, April/May). The Inequity of the Progressive Income Tax. Policy Review, 3-17. Retrieved from http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=3f8f783f-afba-40ec-b941-207babd0d300%40sessionmgr198&vid=1&hid=109

[3] LFMI, Progresiniai mokesčiai – grįžimas į praeitį (2009). Retrieved from https://www.llri.lt/naujienos/ekonomine-politika/mokesciai-biudzetas/progresiniai-mokesciai-grizimas-i-praeiti/lrinka

[4] Spinter (2011). Du trečdaliai gyventojų nesutinka mokėti progresinių mokesčių, Retrieved from http://www.spinter.lt/site/lt/vidinis/menutop/9/home/publish/Mjc5Ozk7OzA=

[5] Zizzo, D., Oswald, A. (2001). Are People Willing to Pay to Reduce Others' Incomes? *Annales d'économie et de statistique* 63(63/64), 16. Retrieved from https://www.researchgate.net/publication/2546169_Are_People_Willing_to_Pay_to_Reduce_Others'_Incomes

3. Literature review

Academic literature offers nearly all imaginable relationships (and directions of relationships) between progressivity and inequality (see a summary below).

Table 1. Overview of most relevant findings in economic literature reviewed regarding causality, effect, and direction of the relationship between inequality and redistribution (progressivity)

Authors, paper	Relation between progressivity and inequality? / Direction of causality	Mechanism	Caveats, exceptions
(Duncan & Peter, 2012)	Yes. Negative relationship. Higher progressivity is correlated to lower inequality	Higher taxes on higher income earners reduce their income more than that of lower income earners.	If tax evasion is present, real effects of high taxes on reducing inequality may be much lower. Conversely, reducing taxes (of progressivity) might not have such negative effects on inequality as one could expect.
(Sinn, 1996)	Yes. High redistribution (progressivity) is correlated with higher inequality	State run and subsidized social insurance schemes create too many incentives to engage in risk taking and earn high incomes.	Lifetime income inequality data needed to test factual observation.
(Meltzer, 1983)	Yes. Inequality causes to undertake more redistributive policies	Inequality and pressures via median voter causes politicians to undertake more redistributive policies.	Meltzer explicitly mentions that tax system he is using is linear (proportional).
(Ardanaz & Scartascini, 2011)	Yes. Positive. Higher inequality should create incentives for more redistribution (and progressivity)	Inequality causes demand for more redistribution (progressivity).	Might not happen if political elites are able to ignore or obstruct the demands of citizens.
(Kesselman & Cheung, 2004)	Yes. Increases in tax progressivity increases pre-tax inequality	Increases in taxes (or progressivity) causes individuals to shift the tax burden onto their employers thus increasing pre-tax inequality.	Observed in one type of studies. Other studies yield different result. Only applicable to highly mobile, demanded individuals who are able to shift increases in taxes on employers.
(Doerrenberg & Peichl, 2012)	Insignificant results. Redistribution does not only decrease inequality, but inequality also positively affects levels of redistribution.	Inequality reduction is more actively achieved through measures of expenditure as opposed to taxation.	Do not find clear-cut evidence that second-round effects do not offset redistributive policy measures—especially for progressive taxation.
(U.S. Department of the Treasury, 2016)	Yes. Imposed tax changes have substantially reduced income inequality.	Due to the enacted policies, that made the tax system much more progressive than it was under pre-existing law, Gini coefficient declined by about 0.009 (in absolute value).	The analysis is based on a computed tax burden. Analysis is a comparison on existing tax laws and a counterfactual tax law that would have prevailed in the absence of the tax reform.

[6] LFMI calculations, EUROMOD

4. Do progressive PIT systems reduce inequality more than flat PIT systems?

Our question is relatively simple: do countries with progressive PIT systems reduce inequality more than countries with flat PIT systems. Here we should compare the reductions in inequality as measured by the GINI coefficient.

Figure 1. Average reduction of GINI income inequality by direct taxes in countries with flat and progressive PIT systems, reduction in absolute value (2007-2017)[6]

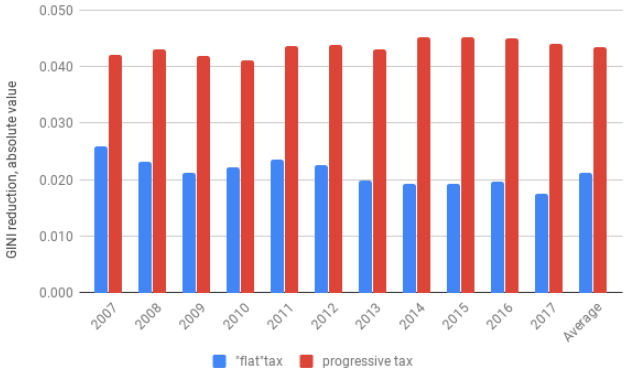
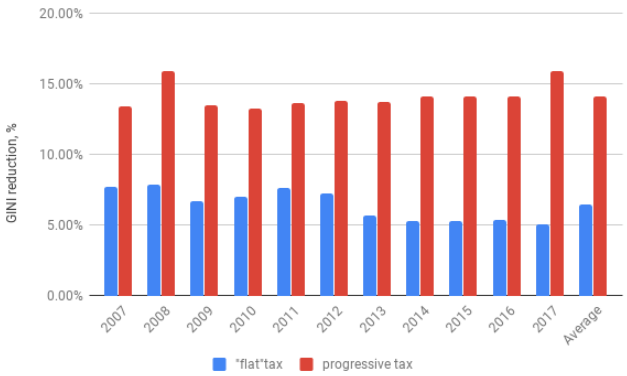


Figure 2. Average reduction of GINI income inequality by direct taxes in countries with flat and progressive PIT systems, reduction in % (2007-2017)[7]



At first glance, it seems obvious, that on average nominally progressive PIT systems reduce inequality significantly more than those nominally "flat". Figures 1 and 2 show that for any year from 2007 through 2017 GINI income inequality is

[7] LFMI calculations, EUROMOD

reduced more in countries with progressive PIT than with flat PIT systems.

However, the regression results predict that the existence of nominally progressive tax regime could reduce the GINI by mere 0.021. Although the results are statistically significant, the effect that a nominally progressive tax system has on inequality may be considered very limited.

However, countries with a flat PIT have higher original income inequality. This would imply that income in those countries is distributed less equally to begin with.

Does this reflect historical circumstances (considering that all flat PIT countries in the EU are post-soviet states)? Or is it simply a reflection of the aging population (retirees) entirely depending on state pensions? An exaggerated insight is offered by Guvenen, Kuruscu, & Ozkan (2014) who argue that progressive taxes flatten after-tax incomes and thus reduce incentives to accumulate human capital, perform better, and this later flattens the pre-tax incomes (however, they compare US an EU countries in general, not the countries with progressive and flat taxes).[8]

Another interesting observation provided by Kesselman & Cheung (2004) is that a progressive PIT causes more original income inequality by driving up pre-tax wages because highly desirable, well-paid professionals can simply pass the increase in tax onto clients and employers.[9]

5. Tax progressivity is more complicated than it seems

While theoretically progressive taxation should reduce inequality more than proportional taxation, there are a couple of effects that might distort this supposedly clear relationship.

First, progressive taxation might increase incentives to evade tax (e.g. by hiding income, changing cash income into non-cash benefits), which would reduce reported (or statistical) income inequality but not the actual level of inequality.

Conversely, in countries with a higher propensity to evade taxes, smaller (or less progressive) tax might not increase inequality as much as it would be predicted from a theoretical perspective.

In addition, many countries apply tax deductions and exemptions. One type of deductions is a minimum income allowance (or non-taxable minimum income) which is not subject to PIT. This feature, technically speaking, transforms nearly all the so-called "flat tax“ PIT systems in Europe into de facto progressive regimes.

As Waggstaff & Van Doorslaer have previously noted, there are some interesting variations between the countries in the relative effects of the various PIT instruments. For example, in Denmark tax credits are the only source of progressivity in the PIT system. In several other countries, notably Belgium, Italy and Spain, tax credits exert a substantial progressive influence on the PIT system. Their study shows, that the relative magnitudes of the rate, allowance and deductions effects vary across countries, with three clusters of countries emerging:

(i) the rate-structure countries, namely Australia, France, Italy, the Netherlands and Spain, where the rate effect is the dominant (but not the only) source of progressivity of gross and net tax liabilities;

(ii) the allowance countries, namely the English-speaking countries other than Australia, where allowances are the dominant source of progressivity of the PIT;

(iii) the mixed structure countries, namely Belgium, Finland, Germany and

[8] Guvenen, F., Kuruscu, B., & Ozkan, S. (2014). Taxation of Human Capital and Wage Inequality: A Cross-Country Analysis. *Review of Economic Studies*, 818-850. doi:10.3386/w15526

[9] Kesselman, J. R., & Cheung, R. (2004). Tax Incidence, Progressivity, andI nequality in Canada. Canadian Tax Journal, 52(3), 709-789. Retrieved from http://www.oberlin.edu/faculty/rcheung/cheungkesselman_ctj.pdf

> Sweden, where half (or slightly more than half) of the progressivity of GTLs is attributable to the rate structure and the rest to either allowances, deductions or a mixture of the two.[10]

In addition, usually different types of allowances and deductions are not seen as a defining feature of a progressive tax system, especially when it comes to policy discussions. This is an important consideration on the theorized causal links between income inequality and progressivity of taxes. Calls for higher progressivity and political pressure usually concentrate on increasing the progressivity by imposing marginally higher taxes on higher income, not by providing more deduction.

If deductions are not perceived as a major component of a progressive tax system then their occurrence would be coincidental rather than causal.

The conclusions of such comparison, of course, raise profound questions on what PIT progressivity really is. If some flat PIT systems appear more progressive can we really call progressive PIT systems "progressive"?

For example, although in 2017 Lithuania had a nominally "flat" tax regime, the ratio between the sum of average monthly income tax paid by the top 5 household decile by income and the sum of the average monthly income tax paid by the bottom 5 household decile by income was as high as in Ireland, which has a nominally progressive PIT system (Annex 2). Therefore, should the public policy debate concentrate on the PIT rates rather than the end result?

The next step is to evaluate whether progressive tax systems perform better in reducing inequality.

The comparison of GINI reduction and the progressivity indicators of PIT systems shows that there is no statistically significant relationship between tax system progressivity and reduction of income inequality:

Table 2. Effect of Tax Progressivity on Gini reduction

	Model 1	*Model 2*
Tax Progressivity	3.96e-04 (0.005)	
Effective Tax Progressivity		0.001 (0.035)
Constant	0.035** (0.005)	0.035** (0.005)
R^2	0.03	0.02
N	304	304

**P<0.01; *p<0.05; errors are clustered by country.

A similar notion is provided by the World Bank research, stating that more progressive taxes do not necessarily translate into greater redistribution if the revenue collected is too small to make a difference. Top income rates could be many times higher than the rates applied to the bottom, making the system very progressive, but the redistributive impact would still be very small if collections are so low that they do not make much of a difference in individual and household income.[11]

[10] Wagstaff, A., van Doorslaer, E., (2001) What Makes the Personal Income Tax Progressive? A Comparative Analysis for Fifteen OECD Countries, 310.

[11] Inchauste, G., Karver., J. (2018)., 3. Retrieved from http://pubdocs.worldbank.org/en/632981520461235859/EU-IG-Report-Fiscal-Redistribution.pdf?fbclid=IwAR06RnZdFQNT51jR08g-SBsuyy19I9pfJCfB2lp_8pzEEoI4i9qG-5CAiiQ

6. Conclusions[12]

- The reasearch raises a question if formal progressivity of the PIT rates is an accurate and relevant progressivity indicator.
- Due to deductions and tax credits, formally „flat“ PIT systems are *de facto* progressive.
- Even more, according to the tax progressiveness indicator used in the research[13], tax progressivity in Lithuania was among the highest in the EU up to 2018. A significant increase was recorded in 2016 and 2017 due to increases in untaxable minimum.
- There is no evidence that the absence of a nominally “flat” PIT system in Lithuania explained the somewhat higher GINI (disposable income) values in Lithuania. It is equally unreasonable to assume that from 2019 onwards the newly introduced 27% rate on higher income will be a decisive factor in reducing GINI values.
- Even a very simple empirical test on which the PIT system – proportional or progressive – reduces income inequality more is not as straightforward as it seems. A formal statistical test on the effects of progressivity on the reduction of inequality fails to produce statistically meaningful results. This echoes our prior theoretical insights that the relationship between progressivity and inequality is far from predictable.
- Does higher progressivity of income taxation lead to less inequality? This paper cannot confirm that neither by theoretical nor by empirical approach.
- This of course does not mean that more progressivity leads to less inequality. However demonstration of a lack of empirical proof for such otherwise widely-accepted concept is very important:
  - First, it reduces the credibility of claims and policy proposals to reduce inequality simply through higher and more progressive taxation.
  - Second, it puts into question whether such policy proposals are really intended to reduce inequality or to merely increase taxes (considering that the public is more sympathetic to policy goal of reducing inequality than merely increasing taxes).
  - Third, it re-opens the debate and decouples the reduction of inequality from tax increases (or higher progressivity). This has a potential to depoliticize the issue and bring forward truly effective solutions.

[12] While interesting, certain limitations of these results should be borne in mind. First of all, the data are not ideal: the data on personal income tax is simulated. EUROMOD also does not provide PIT data alone – data on direct taxes usually includes PIT (or similar in nature tax), taxes on capital and property taxes. However, PIT (or similar in its nature tax) constitute the major part of all taxes analyzed. Repeating this exercise with more suitable data (e.g. data provided by STI’s) would present a more accurate picture of today’s PIT systems. Comparatively little is known empirically about how different countries vary in terms of their reliance on different instruments to achieve progressivity of their PIT (rate structure, allowances, tax credits, etc.). Such information would seem to be potentially useful.

[13] I.e., the ratio between the sum of average monthly income tax paid by top 5 household decile by income vs the sum of the average monthly income tax paid by bottom 5 household decile by income.

Annex 1

Difference between GINI index for disposable income plus direct taxes and GINI index for disposable income (2017)[14]

	2017 (%)	2017 (absolute value)
Belgium	0.24	0.072
Bulgaria	0.02	0.009
Czech Republic	0.12	0.030
Denmark	0.20	0.051
Germany	0.20	0.056
Estonia	0.08	0.025
Ireland	0.25	0.074
Greece	0.09	0.029
Spain	0.13	0.046
France	0.15	0.042
Italy	0.18	0.056
Cyprus	0.10	0.032
Latvia	0.08	0.028
Lithuania	0.07	0.026
Luxembourg	0.26	0.063
Hungary	0.03	0.010
Croatia	0.09	0.026
Netherlands	0.22	0.055
Malta	0.13	0.035
Austria	0.23	0.057
Poland	0.06	0.016
Portugal	0.17	0.056
Romania	0.05	0.017
Slovenia	0.14	0.034
Slovakia	0.09	0.019
Finland	0.21	0.049
Sweden	0.18	0.042
United Kingdom	0.14	0.043

[14] LFMI calculations, EUROMOD, Eurostat. Yellow fillings mark formally progressive PIT systems, blue - “flat” tax systems.

Annex 2

The ratio between the sum of average monthly income tax paid by the top 5 household decile by income vs the sum of the average monthly income tax paid by the bottom 5 household decile by income (higher values indicate higher progressiveness)[15]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Belgium	7.5	7.3	7.3	7.0	7.4	7.4	7.4	7.7	7.7	7.9	8.1
Bulgaria	10.6	4.8	3.8	3.8	4.1	4.1	3.9	4.9	5.1	5.1	5.2
Czech Republic	9.1	11.6	10.8	10.9	10.1	10.9	10.0	10.9	10.8	10.7	10.3
Denmark	3.0	3.0	3.0	2.9	3.2	3.2	3.2	3.4	3.4	3.4	3.4
Germany	6.8	6.8	7.3	8.2	7.8	7.7	7.7	9.0	9.3	9.0	9.0
Estonia	5.8	6.2	6.6	6.5	7.0	6.8	6.6	6.7	6.7	7.3	6.5
Ireland	14.3	15.7	18.5	19.3	17.2	16.5	13.0	13.1	13.5	14.5	14.9
Greece	20.6	19.3	18.5	16.9	8.2	8.1	6.4	5.1	4.9	4.8	4.8
Spain	12.6	14.9	18.9	15.3	23.4	23.1	23.2	21.0	24.6	24.7	24.2
France	4.3	4.5	4.7	4.7	4.2	4.1	4.4	5.1	5.4	5.5	5.7
Italy	5.6	5.5	6.1	6.0	5.9	5.4	5.5	6.9	7.0	7.3	7.3
Cyprus	9.7	10.0	11.9	11.4	14.9	13.9	14.3	15.9	16.2	16.4	17.8
Latvia	6.0	6.7	9.3	6.8	7.7	7.7	7.7	6.5	6.4	6.4	6.4
Lithuania	6.2	5.8	7.8	8.0	7.9	7.4	7.5	9.4	9.2	10.6	14.8
Luxembourg	9.5	8.1	12.7	12.2	12.3	11.8	10.3	9.9	9.7	9.7	13.2
Hungary	4.8	4.5	4.8	3.5	3.0	2.8	2.5	2.3	2.4	2.4	2.4
Croatia					13.5	18.0	17.8	30.5	47.9	47.8	67.3
Netherlands	8.6	8.4	7.6	7.6	7.6	7.5	6.9	8.8	7.8	7.8	7.8
Malta	11.3	11.8	12.3	12.7	11.8	11.5	11.0	11.3	10.5	11.0	11.3
Austria	7.6	7.3	7.3	7.4	7.3	7.1	7.0	6.6	6.5	8.0	7.8
Poland	3.7	3.7	3.4	3.4	3.3	3.1	3.1	3.0	3.0	2.9	3.0
Portugal	23.7	24.9	24.3	22.1	22.8	19.0	17.3	16.8	18.9	18.8	18.1
Romania	5.4	4.9	4.0	4.0	4.7	4.6	4.6	5.0	5.3	5.5	5.0
Slovenia	7.2	7.5	8.1	7.7	8.7	8.9	9.0	8.0	7.8	7.7	7.5
Slovakia	8.5	8.1	9.5	9.1	7.1	7.0	6.0	5.3	5.2	5.1	5.1
Finland	3.9	4.1	3.9	4.0	4.1	4.2	4.1	4.3	4.4	4.4	4.4
Sweden	2.9	2.9	2.8	2.9	3.2	3.2	3.2	3.2	3.3	3.3	3.3
United Kingdom	5.5	5.3	5.2	5.3	5.3	5.3	5.5	5.9	6.1	6.2	6.2

[15] LFMI calculations, EUROMOD, Eurostat. Yellow fillings mark formally progressive PIT systems, blue - “flat” tax systems.

Annex 3

The ratio of the effective income tax of the top 5 household decile by income vs the effective income tax of the bottom 5 household decile by income (higher values indicate higher progressiveness)[16]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Belgium	1.6	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7
Bulgaria	2.1	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0
Czech Republic	2.2	2.9	2.8	2.8	2.6	2.8	2.6	2.6	2.6	2.5	2.4
Denmark	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Germany	2.0	2.0	2.1	2.3	2.2	2.2	2.2	2.3	2.3	2.2	2.2
Estonia	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.3	1.2
Ireland	3.0	3.3	3.2	3.3	2.9	2.8	2.2	1.7	1.7	1.8	1.9
Greece	5.3	4.8	4.9	4.5	2.1	2.2	1.7	1.6	1.6	1.4	1.3
Spain	3.6	4.2	5.3	4.4	5.7	5.7	5.8	5.1	5.9	5.9	5.8
France	1.4	1.4	1.4	1.4	1.2	1.2	1.3	1.6	1.7	1.7	1.7
Italy	1.5	1.5	1.7	1.7	1.6	1.5	1.5	1.9	1.9	2.0	2.0
Cyprus	3.5	3.6	4.2	4.0	4.8	4.5	4.6	4.8	4.9	5.0	5.4
Latvia	1.2	1.4	1.6	1.3	1.4	1.3	1.3	1.2	1.2	1.2	1.2
Lithuania	1.3	1.3	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.7	2.2
Luxembourg	3.2	2.8	4.2	4.1	4.4	4.2	3.6	3.4	3.3	3.3	4.5
Hungary	1.7	1.7	1.7	1.3	0.8	0.9	0.8	0.9	0.9	0.8	0.8
Croatia					3.4	4.5	4.5	7.3	11.0	10.8	15.0
Netherlands	2.4	2.3	2.2	2.2	2.2	2.2	2.0	2.3	2.0	2.0	2.0
Malta	2.8	2.9	3.2	3.2	3.1	3.0	2.8	2.6	2.4	2.4	2.5
Austria	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.5	2.4
Poland	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9
Portugal	5.5	5.8	5.7	5.2	5.6	4.5	4.2	3.9	4.4	4.3	4.1
Romania	1.2	1.2	1.1	1.1	1.3	1.3	1.3	1.3	1.2	1.2	1.1
Slovenia	2.3	2.5	2.4	2.2	2.5	2.5	2.6	2.4	2.3	2.3	2.2
Slovakia	2.3	2.2	2.8	2.7	2.1	2.1	1.9	1.8	1.8	1.8	1.7
Finland	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Sweden	0.9	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
United Kingdom	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.2	1.2

[16] LFMI calculations, EUROMOD, Eurostat. Yellow fillings mark formally progressive PIT systems, blue - “flat” tax systems.