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Tax Reforms and Income Inequality in Former Yugoslav Countries: Escaping the Avant-Garde Neoliberalism in the Income Tax Policy

Summary: After the breakup of former Yugoslavia Croatia, Serbia and Slovenia followed different income tax reform trajectories that could explain currently different levels of income inequality in these countries. Our paper analyzes redistributive effects of introducing progressive tax systems, like the ones currently implemented in Slovenia and Croatia, in the Serbian context. Using microsimulation modeling and Survey on Income and Living Conditions data for 2017 our results suggest that implementation of both Croatian and Slovenian tax system would yield lower levels of income inequality and poverty if applied in Serbia. Slovenian system achieves larger decrease in inequality due to higher tax burden on the top incomes and brings significant increase in tax revenues. Croatian tax schedule achieves stronger decrease in poverty as more generous personal allowance exempt higher portions of low incomes from labour taxes.

Key words: Progressive taxation, Inequality, Policy swapping, Microsimulation.

JEL: C81, D63, H24.

Three decades after the breakup of Yugoslavia its successor states took different welfare state trajectories that could explain current varying levels of income inequality. Slovenia has one of the lowest income inequalities in Europe, as measured by the Gini coefficient. Croatia is currently at the European Union average level of inequality, while Serbia marks one of the highest income inequality levels in Europe.

This paper investigates the relationship between income inequality and different personal income tax (PIT) regimes that these three countries adopted after the dissolution of Yugoslavia. Unlike Slovenia and Croatia that implemented modern progressive income tax schedule Serbia opted for a flat income tax, an avant-garde neoliberal policy. Avant-garde in a sense that this reform was not advocated neither by the European Union institutions in the process of accession, nor the international financial institutions like the World Bank and the International Monetary Fund.

Flat tax proposal were debated in Slovenia and Croatia on several occasions but never accepted due to equity consideration and both countries have retained progressive tax schedules. In a desire to attract investors many transition economies, Serbia

being one of them, adopted these kind of experimental flat tax reform without any serious considerations about the effects of such an option on inequality. This was surprising given the common background of these former Yugoslav socialist societies built upon the principles of solidarity and equality.

In this paper we discuss different ways tax systems have developed in each of the three countries and draw conclusions about the reasons for these differences grounded in a political economy framework. We explore the influence of the ideology of external actors on these systems, such as the international institutions, and discuss internal factors that shaped the debate on tax reforms. We use 2017 Survey on Income and Living Conditions (SILC) (2017)¹ data and *ex-ante* microsimulation approach to examine inequality, poverty and public finance implications of translating progressive personal income tax systems currently implemented in Slovenia and Croatia to a Serbian context. Our paper provides new contribution to a very limited literature that investigates the redistributive effects of introducing progressive tax schedules in former communist countries. Most of the work so far has been concentrated on analysing effects of flat tax in both transition and developing countries at the time of high popularity of this policy proposal.

Article is structured in the following way. After this introduction, first section discusses how flat tax became popular in former communist countries and presents the most important changes to the personal tax systems in Slovenia, Croatia and Serbia since the breakup. Second section reviews the literature that uses microsimulation models in tax policy analysis. Third section describes the data and the methodology while fourth section presents and discusses the results. Final section concludes the article.

1. Reforms of the Personal Income Tax System in Former Communist Countries

1.1 Reasons for Introducing Flat Taxes

The real era of flat tax started in the first decade after the collapse of communism in Baltic countries and Russia. Then in 2000s Ukraine, Georgia and Romania followed suit (Boris Majcen, Miroslav Verbič, and Mitja Čok 2009). In total, over twenty post-communist European and Eurasian countries adopted this policy solution. What is interesting from the political economy perspective is that this proposal was never advocated by the European Union actors in the process of accession nor by the World Bank or the International Monetary Fund, two institutions that are often regarded as proponents of the liberal economic and social reforms. Their role in this area in transition countries has been quite different. Not only that they did not push for the introduction of the flat tax, but instead warned that it could bring less revenues and that it is not an ideal solution for countries with high income inequality.

The greatest support for the flat tax came from the region itself. Informal networks of politicians and non-governmental organizations, together with some

¹ **Survey on Income and Living Conditions (SILC)**. 2017.
<https://www.cso.ie/en/releasesandpublications/ep/p-silc/surveyonincomeandlivingconditionssilc2017/>.

American right-wing think tanks, that provided theoretical arguments for the flat tax, pushed the topic high on the agenda. For policy makers in transition countries choice of the flat tax served as signal that they are at the forefront of liberal reforms on a global scale, as such a system is rarely found in developed or developing countries. They advertised it a simple, business-friendly tax scheme that would boost international competitiveness of the country. Any within country flat tax opposition was weakened by the fact that rising number of neighbouring countries was adopting the flat tax (Hilary Appel and Mitchell A. Orenstein 2018).

Advocates of flat tax solutions in former communist countries argued that flat tax would bring more revenue to the government since lower tax rate would create less distortions for economic activity and drive some of the taxpayers out of the shadow economy. Anna Ivanova, Michael Keen, and Alexander Klemm (2005) showed that despite increase in PIT revenues after the introduction of flat tax in Russia in 2001 it is hard to attribute this surge in tax receipt to the reform itself. Their analysis suggests that the surge in PIT revenues in Russia over this period was largely driven by an increase in real wage rates unrelated to the reform. Slovak flat tax reform of 2004 made the system more simple but the increase in PIT revenues was quite modest (Jan Remeta et al. 2015). In 2013, flat tax rate was abolished and personal income tax system was made more progressive which was seen as a response to the increase in the share of population supporting the view that the government should reduce income differences in Slovakia.

Second argument for adopting flat tax was that tax administration in post-communist countries is not yet capable of dealing with more complex tax schedules. Finally, and most importantly, proponents argued that flat tax would enhance incentives for working (labour supply), saving, investing and taking risks (entrepreneurship) and in the end boost competitiveness of the country. This was mostly theoretical reasoning as no evidence existed that introduction of the flat tax would bring these positive effects. Before the 1990s except Hong Kong no country had experience with the flat tax (Appel and Orenstein 2018).

There was a lengthy discussion about flat tax in Slovenia but in the end equity considerations prevailed over the efficiency arguments and the proposal was not adopted. Croatia considered flat tax proposals on several occasions but similar to Slovenia retained the progressive structure of the personal income tax system. Serbia embraced flat tax policy from the start of its post-2000s transition to a market economy without any serious considerations about the effects of such an option on inequality.

1.2 Personal Income Tax Reforms in Former Yugoslav Countries

This section discusses most important changes in the PIT systems that affected its redistributive capacity in all the three countries after the breakup of Yugoslavia. We focus on the political economy framework of debates that surrounded changes to the tax system especially when it comes to the proposals for the introduction of the flat tax.

Slovenia and Serbia embraced progressive tax schedules from the very start and in 1991 adopted tax systems with five tax brackets, going from 16% to 50% tax rates, and several tax allowances. Reform was led by country experts who were looking

at modern tax systems in Europe and other developed countries. In Serbia, it was argued that switch to progressive tax system would provide generous tax base and achieve more equitable taxation. However, turbulent political and economic circumstances (civil war and economic sanctions imposed by the international community) have effectively suspended the law and it was never applied in its true form.

First Croatian Minister of Finance in the post-independence period, professor Hanžeković, was in favour of retaining a cedular system of direct taxation from the Yugoslav period. That was in essence a proportional tax system with single rate applied to different sources of income at the moment they are generated. There was also an additional component in the form of progressive tax rates paid by those individuals whose total annual income exceeds certain threshold. Minister of Finance was also leading the first working group aimed at drafting new personal income tax law and at some point suggested a flat tax proposal that could made Croatia a first post socialist country to adopt such a system. However, after signing a technical cooperation with Germany their experts were in favour of introducing a modern, synthetic tax schedule with progressive tax rates arguing that a Croatian cedular system is old fashioned. According to Božidar Jeličić and Predrag Bejaković (2012), the influence of the German experts, most notably professor Manfred Rose from the University of Heidelberg and his team, was so strong that he could be regarded as the creator of the modern Croatian taxation system. Though equity considerations were leading the changes in the realm of income taxation, as argued by its creators, the new system, introduced in 1994, had only two brackets with the corresponding rates of 20% and 35%. In other European countries highest tax rate was between 46% and 60% at that time (Jeličić and Bejaković 2012). The number of tax brackets, allowances and deductions has increased over the years as well as the highest tax rate on personal income.

Wave of flat tax proposals reached Slovenia in 2004 when discussion emerged both in expert circles and wider public about the necessity to simplify the existing tax code. Also, there were concerns that Slovenia has one of the highest tax burdens on labour as besides PIT, social security contributions and a payroll tax were levied on wages. One of the proposals was to introduce a flat tax on income looking at the experience of Slovakia. It was widely discussed in the media but the response was mixed. While the big corporations have endorsed the idea, believing that more simplified tax schedule would improve the competitiveness, trade unions rejected the proposal believing that this could lead to abolishment of the reduced VAT rate leaving only one, higher rate. Flat tax proposal was even included in a government list of reforms in the following years when wide political, public and professional discussions continued regarding further steps of the personal income reform. Several projections regarding the effects of the reform were produced. Besides the governmental one, there were independent estimates from the academia. In the end, in 2007 flat tax proposal was not accepted and Slovenia retained a progressive tax schedule though simplified with three tax brackets. For labour income, highest marginal tax rate was lowered from 50% to 41% while a 20% flat tax rate for income from capital was introduced. Most allowances were preserved and those for children increased (Čok and Ivica Urban 2007; Majcen, Verbič, and Čok 2009).

Proposals to introduce flat tax system in Croatia came during the economic crisis in 2009 and then again in 2013 when the Minister of Finance was in favour of the idea arguing that more simple tax system would bring new investors to the country. There was no intense public debate as in the case of Slovenia, apart from the several academic contributions describing the efficiency arguments for the introduction of the flat tax. In the end, proposal was rejected for equity reasons (Helena Blažić et al. 2017).

The first half of 2000s saw the highest increase in the number of other transition economies that adopted a flat tax and that certainly influenced PIT reforms in Serbia after the turbulent 1990s and the regime changes in 2000. Starting as late reformer, there was a need to signal that the new government is committed to market-oriented policies and flat tax was considered to be a business-friendly solution. It is, however, unusual that despite sharing a common socialist background with Slovenia and Croatia, discussion of distributional effects of tax reforms in Serbia was completely neglected. In fact, there was no particular discussion around the reform and new Personal Income Tax Law adopted in 2001 re-installed the cedular system from former Yugoslavia. As already explained, it is in essence a flat tax system where majority of citizens pay only a wage tax with single tax rate. Other sources of income are much less important since the share of revenues from wage tax in total income tax revenues has been close to 90% in the whole post-2000 period. There are no family allowances except for those that pay annual income tax and these are the individuals whose total annual income exceeds certain threshold (three and six times average annual salary in Serbia). They are obliged to pay additional, so called annual income tax at progressive tax rates of 10% and 15%. Since less than 1% of total number of taxpayers actually pays the annual income tax, redistributive capacity of the personal income tax system is very low (Saša Randjelović and Jelena Žarković Rakić 2013).

As Mihail Arandarenko and Pavle Golicin (2007) argue, the real question is not how it was possible to install unheard-of system of personal income taxation which cannot be found in this form in any European country (and beyond), but rather how come that this first-class issue later never really reached electoral, public or policy debate. The latest change to the PIT system in Serbia that influenced its progressivity came in 2007 when zero tax bracket was introduced. But it did not come out of desire to increase the vertical equity of the tax system by making it more progressive. This was almost a side result of a decision of the Ministry of Finance to lower the wage tax revenues in order to cut the budgetary surplus. As for the public debate, this change went almost unnoticed (Arandarenko and Golicin 2007).

Following the 2008 economic crisis Slovenia was particularly concerned for lower income population and PIT reforms increased the progressiveness of the tax system. For those at the bottom of the income distribution general allowance was increased while for top income earners new, higher tax rate was introduced (Čok, Urban, and Verbič 2013; Urban, Čok, and Verbič 2019). Croatia experienced negative economic growth rates for nearly seven years following the 2008 crisis. Arguing that this could improve the competitiveness of the troubled economy number of PIT rates was reduced over the years and some most recent changes aimed to reduce the tax burden for high skilled individuals that are migrating from the country (Karlo Vajdić 2018). In Serbia, only with the release of the first results of the Survey on Income and Living

Conditions in 2013, showing that the country records the highest income inequality among European countries, advocates of the progressive personal income tax system have become somewhat more visible (Gorana Krstić and Žarković Rakić 2017).

2. Using Microsimulation Models in Tax Policy Analysis: A Survey of the Existing Literature

There is an extensive literature on the application of microsimulation techniques to the analysis of reforms of in the area of tax and social transfers policies (Anthony Atkinson and Holy Sutherland 1988; Francois Bourguignon and Amadeo Spadaro 2006; Francesco Figari, Alari Paulus, and Sutherland 2015). In the context of European countries besides individual country models there is also an integrated EU-wide model, EUROMOD, used to simulate individual tax liabilities and social benefit entitlements according to the rules in place in each of the twenty-eight member states. It is designed for making cross-country comparisons and for answering “what if” questions such as what would happen when we substitute (“swap”) tax or benefit system from one country to another (Sutherland and Figari 2013). For a wide coverage of non-European tax and benefit systems using a unified methodology there is a modeling approach of the Commitment to Equity (CEQ) Institute (Nora Lustig 2018). Both models are based on micro-data on income, earnings, labor market and the socio-demographic variables.

While EUROMOD-like models choose to simulate benefits and taxes rather than to use data from surveys (Christine Lietz and Daniela Mantovani 2006), CEQ view this method as discarding useful information from the data which is a more accurate reflection of reality than pure simulation. In this paper we rely on CEQ approach by taking all the available information from the survey (income components and social transfers) and simulating taxes. This is not only due to our interest to analyze a switch from a flat to a progressive system in Serbia but also because the data that we use do not contain the information on taxes paid and need to be simulated.

The main output of the microsimulation model are the changes in the household disposable income that arise as a consequences of a policy reform. They are calculated by adding up market income over each household member then subtracting simulated values of taxes for different reform scenarios (income tax, social contributions and other direct personal taxes), and adding cash and non-cash benefits and between-household transfers (e.g. alimony) available in the data. Household disposable incomes are equalised using the modified OECD equivalence scale.

Changes in disposable income that result after the implementation of reform in the realm of taxes, contributions or social transfers are used for the analysis of income inequality, poverty and budgetary effects of the reform. In this paper, reform scenario is a policy swap in which we analyze effects, on a sample of Serbian households, of replacing the Serbian personal tax system with Croatian and Slovenian one. Policy swapping analysis using microsimulation models consist of borrowing policies that prove to be effective in one country and implement them in other countries, in order to understand the effects of such a tax or benefit instrument on different population (Figari 2009). This allows policy learning. The work of Atkinson, Francois Bouguignon, and Pierre Chiappori (1988) was pioneering in this field when they applied

British tax system to French population. As they argued, comparing for example marginal tax rates of the British and French tax codes using their respective survey data is only suggestive, but not entirely relevant to the discussion of tax reform in either of the two countries. The effect of a particular policy depends not only on the policy design but also on the characteristics of the country in question. So, when discussing tax reforms the value of international comparisons, as they argue, lies in exploring the implications of applying a tax code of country *X* to the population of country *Y* (or *vice versa*). Some more recent applications of policy swapping include child policy borrowing between three European countries with very different systems: Austria, Spain and United Kingdom (Horacio Levy, Christine Lietz, and Sutherland 2007). Results show how relevant is policy borrowing exercise in distinguishing between the three factors that affect the final policy outcome: the level of spending, policy design and characteristics of national population.

At the time of rising popularity of flat taxes in former communist countries, Paulus et al. (2009) used microsimulation modeling to estimate the potential impact of several flat tax scenarios on household incomes in three Eastern European countries – Estonia, Hungary and Slovenia. They found that all scenarios would have negative effect on inequality and poverty, and most of the cost of the reform would be borne by lower income groups. Popularity of flat taxes motivated research in Western European countries and several papers have analyzed the effects of moving from progressive to flat tax schedules. Using microsimulation model Andre Decoster, Kris De Swert, and Kristian Orsini (2008) showed that introduction of revenue-neutral flat tax in Belgium would bring positive albeit very limited effects on labour supply. And this comes at a high price: large gain in disposable income for the three highest deciles and the losses for the lower half of the income distribution. Clemens Fuest, Peichl, and Thilo Schaefer (2008) analyse introduction of the flat tax with the help of microsimulation model for the German tax and transfer system (FiFoSiM). They find modest efficiency gains – the welfare gain equals 1.8% of overall income tax revenue and employment increases by 0.3% – that come at the cost of an high increase in income inequality. In particular, the top income decile benefits while the upper middle class suffers losses. Paulus and Andrea Peichl (2009) use EUROMOD to assess the effects of flat tax for ten European countries. They find that the main problem of implementing a flat rate tax could be to convince a majority of the population that redistribution in favour of the highest income decile is acceptable since that is what their results show.

Finally, most recent literature motivated by the rising inequality of some of the Central and Eastern European countries have started analysing effects of introducing progressive tax schedules in these economies. Using EUROMOD microsimulation framework and macro model paper by Salvador Barrios et al. (2020) analyze fiscal, redistributive and macroeconomic impact of several progressive tax scenarios in Bulgaria, Estonia, Latvia, Lithuania, Hungary and Romania. They find positive effects on redistribution and inequality in all countries. Reducing taxes for low (medium) income individuals increases their incentives for being employed, while raising taxes on high income earners lowers their employment rate. Overall effects, however, on both employment and GDP are relatively modest. Recent paper for Serbia by Randjelović and Marko Vladislavljević (2020) uses 2012 SILC data to analyze a shift from flat to

hypothetical progressive tax rates. They find that the change in tax rates would lead to a decrease in inequality by about 2.1 Gini points. Their analysis is based on the hypothetical system of optimal progressive rates which are calibrated rather than compared to other countries. Furthermore, unlike the analysis presented here, which includes the change of the overall personal income tax system, their analysis is limited to a change in tax rates and does not include different personal allowances and, more importantly, the introduction of family allowances which significantly changes the results for different family types.

3. Methodology

3.1 Data and Methods

In order to analyze redistributive and fiscal impact of the personal income tax systems in Serbia, Croatia and Slovenia, we use the Survey on Income and Living Conditions (2017) data. Our analysis consists of two parts. For the first part, we use harmonized SILC data for all three countries to analyze the overall impact of taxes and social security contributions on the income inequality. We start from the formula for the calculation of the net household disposable income (HDI) according to Eurostat (2017)²:

$$HDI_h = HGI_h - WT_h - Trans_h - ITSSC_h, \quad (1)$$

according to which HDI is calculated as the difference between the total gross household income (HGI) and the sum of regular taxes on wealth (WT), regular inter-household cash transfer paid (Trans) and tax on income and social security contributions (ITSSC)³. We calculate Gini indices for household gross and disposable income as well as the change in the Gini coefficient due to effects of income tax and social security contributions (ITSSC). Progressivity of the tax and social security contributions system is assessed using Kakwani index, which is the difference between the concentration coefficient of ITSSC with respect to HGI and the Gini coefficient for HGI (Lustig 2018).

Variable representing income taxes and social security contributions in the harmonized version of EU-SILC incorporates: (1) labour income taxes; (2) non-labour income taxes (taxes on income from capital, rents, capital gains, authorship right, etc.); (3) social security contributions. Non-labour income taxes are mostly flat and account for a very small share of total public revenues in all three countries, so with little or no redistributive capacity, while contributions are not part of the personal income tax system. Thus, when applying Slovenian and Croatian tax system to the case of Serbia we are primarily interested in the redistributive effects of personal labour income taxes.

² Eurostat. 2017. Methodological Guidelines and Description of EU-SILC Target Variables. <https://ec.europa.eu/eurostat/documents/1012329/8658951/Household+data+-+Income.pdf/b2ec94dd-4929-4220-94a8-0dd4b87c8cac> (accessed June 01, 2020).

³ These income concepts are represented by the following variables in the harmonized SILC data: total household gross income - HY010; regular taxes on wealth - HY120G; regular inter-household cash transfer paid - HY130G; taxes on income and social contributions - HY140G; total disposable household income - HY020 (Eurostat 2017). Additionally, from the harmonized SILC data we use household identifiers to identify which persons belong to the same household, their age and income in order to determine their eligibility for treatment as dependent household family members.

Therefore, for the second part of our analysis, in order to differentiate between personal labour income taxes and other two groups of taxes within the ITSSC variable, in addition to harmonized SILC data, we use more detailed, non-harmonized version of SILC data for Serbia⁴. Non-harmonized version is needed in order to: (1) tackle the issue of tax evasion by excluding informal employment from taxation (as informal employment rate is higher in Serbia – at 20.7% in 2017); (2) to differentiate between yearly and monthly self-employment incomes which are taxed in a different way in all three countries. Informal employment includes workers without written contract or without social security contributions paid (for both employees and self-employed). Persons working in informal employment are excluded from the labour income tax calculation; however, their income is included in total household disposable income.

We use the information on wages and other income from employment from non-harmonized version of SILC data and taxation rules in three countries to calculate the amount of labour income tax each individual within the Serbian households pays according to Serbian system (*SER_TAX*), or would pay according to Croatian (*CRO_TAX*) and Slovenian (*SLO_TAX*) system (see detailed description of the systems in Section 3.2). In the next step, new variable – *ITSSC_res* is defined as the difference between ITSSC and simulated labour taxes according to the current system in Serbia. By definition, *ITSSC_res* contains non-labour income taxes and social security contributions currently paid in Serbia. Therefore, household (*h*) disposable income calculated using data for Serbia is equal to:

$$HDI_h = HGI_h - WT_h - Trans_h - (ITSSC_{res_h} + \sum_h SER_{TAX_i}), \quad (2)$$

where the only difference compared to Equation (1) is that total value of ITSSC household pays is now divided into two components – sum of labour taxes household members pay according to Serbian tax system ($\sum_h SER_{TAX_i}$) and residual ITSSC which contain non-labour income taxes and social security contributions paid. We then use taxes, simulated following the rules of Slovenian and Croatian systems, to calculate disposable incomes in the case these tax systems are applied in Serbia:

$$HDI_{cro_h} = HGI_h - WT_h - Trans_h - (ITSSC_{res_h} + \sum_h CRO_{TAX_i}), \quad (3)$$

$$HDI_{slo_h} = HGI_h - WT_h - Trans_h - (ITSSC_{res_h} + \sum_h SLO_{TAX_i}), \quad (4)$$

where *HDI_cro* and *HDI_slo* represent disposable incomes for Croatian and Slovenian tax systems, respectively. Therefore, we calculate disposable income for Croatian and Slovenian scenario by replacing labour taxes households pay according to Serbian scenario with taxes paid according to Croatian and Slovenian scenario, while all other income components on the right side of the formula are assumed to remain unchanged. Progressivity of the labour tax system is estimated by using changes in Gini coefficients due to labour tax and Kakwani index, which is calculated as the difference between the concentration coefficient of labour tax with respect to HGI and the Gini coefficient for HGI.

⁴ From the non-harmonized SILC data we use variables representing information on different sources of labour income (income from employment, and income from different types of self-employment), information on type of contract (written contract or not) and types of social security contributions worker (or his employer) pays.

3.2 Parameters of the Labour Income Tax Systems

Personal income tax system in Serbia includes only one tax rate – 10% applied to the gross wage. There is a personal tax allowance (“zero tax bracket”) for dependent employment of 11,790 RSD, which represents about 22% of the average pre-social security contribution gross earnings income (APSGEI). For self-employed there is no personal allowance and the tax is paid on the full amount of the gross income. Based on Serbian tax schedule we calculate pre-social security contribution gross employment income (PSGEI) which is then used for calculating labour tax income based on Croatian and Slovenian tax rules. All three systems are presented in Table A1 in the Appendix.

In the Croatian system tax base is the difference between the pre-social security contribution gross employment income (PSGEI) and tax allowances. Due to lack of data we are not able to simulate tax deduction in the Croatian system which should also be subtracted from PSGEI⁵. Tax allowances consist of personal and family tax allowances. According to Urban, Čok, and Verbič (2019), personal tax allowance is set at 60% of APSGEI, while the tax allowance for each eligible adult in the family (spouse, parent, parent-in-law, etc.) is equal to 28% of APSGEI. The system includes progressive allowances for each additional dependent child starting from 28% of APSGEI for one child, 67% of APSGEI for two children to 122% of APSGEI for three children. For more children the following formula is applied: $allowance = PAB * (0.5 + 0,05 * i * (i + 3))$, where PAB is Personal allowance base, set at 2,500 HRK in 2017.

In order to be considered as a dependent, total yearly income (without social benefits) of a dependent person must not exceed 16% of APSGEI (HRK 12,500 in 2017 yearly). As there is no explicit criteria who is considered to be a child in the Croatian system, we assume that the differentiation between children and adult is being made in the same way as in Slovenian system. Children are those up to the 18 years of age or up to 26 if they are still in education. In the case there are two or more wage-earners in the household, total family allowance is applied to the highest earner in the household. Croatian tax system in 2017 included two rates – tax rate of 24% applied to the tax base that does not exceed 2.27*APSGEI, while for the tax base above that threshold a rate of 36% is applied. In addition to the income tax, the wages in Croatia are subject to municipality “surtax” calculated as the amount of personal income tax multiplied by the surtax rate. Based on Urban, Slavko Bezeredi, and Martina Pezer (2017) we calculate these taxes according to the following rates: 16% for workers living in densely populated areas, 12% for workers living in intermediate populated areas and 6% for workers living in thinly populated areas.

Similarly to the Croatian system, in Slovenia tax base is the difference between the PSGEI and personal and family tax allowances. As described in the Table A1 personal tax allowance for Slovenia is set between 36% (for low wages) and 18% (for high wages) of APSGEI depending on the PSGEI level. Tax allowance for each

⁵ Deductions include: donations for cultural, educational, scientific, medical, humanitarian, sports and religious purposes and contributions paid to voluntary pension funds. Other deductions include: (a) deductions for self-employed who employ persons living in “special areas”; (b) deductions for self-employed, for expenditures on research and development, and outlays for education of young employees; (c) deductions for HRVI and receivers of HBDR related survivors pension, etc.

eligible adult in the family (spouse, parent, parent-in-law etc.) is set at 14% of APSGEI. The system includes progressive allowances for each additional dependent child, starting from 14% of APSGEI for one child 28% of APSGEI for two children, 53% of APSGEI for three children. In order to be considered as a dependent adult, personal income (including taxes) of that person must be lower than family allowances for other dependent family members. In the case there are two or more wage-earners in the household total family allowance is applied to the highest earner in the household. Slovenian tax system in 2017 included five rates ranging from 16% to 50%, depending on the size of the tax base.

Figures A1 to A3 in the Appendix represent three personal income tax systems according to the rules described in Tables A1 and applied to Serbian earnings distribution (and expressed through percentages of the average wage). Given one tax rate and low level of personal allowance, tax system in Serbia puts an equal burden on every household type irrespective of the number dependent family members. Croatian system taxes less heavily households with more dependent family members compared to the system in Serbia, as visible from the intersection points of solid and dashed line in the Figures A1-A3. Furthermore, regardless of the family structure, after crossing a threshold of about three average wages, taxes in case of Croatia constitute a much larger share of PSGEI compared to Serbia. By taxing lower-income households less and by putting a larger burden on those better-off Croatian system is clearly more progressive than the one in Serbia. The same applies to Slovenian tax schedule that is much more progressive than Serbian system.

4. Results

4.1 Progressivity of Labour Tax Systems in the Three Countries

In this section we present the analysis of the harmonized SILC data for three countries. We first present components of household gross income (HGI) and distributional capacity of the entire income taxes and social security contributions (ITSSC) systems in three countries in Table 1. Values of wealth taxes and regular inter-household cash transfers paid⁶ are presented as the sum of these two components due to their low individual average value. Average HGI and HDI are the highest in Slovenia where the average income per adult equivalent is almost double the one in Croatia and more than four times higher than average household income in Serbia.

The share of ITSSC in household gross income is higher in Serbia (28%) than in Slovenia (22.7%) and Croatia (20.5%). On the other hand, wealth taxes and regular inter-household cash transfer paid make less than 1% of HGI in all three countries.

Table 2 presents income inequality in the three countries as measured by the Gini coefficient and the inequality reducing impact of the ITSSC systems. The highest inequality of the disposable income is found in Serbia where the Gini coefficient for

⁶ Taxes on wealth are payable periodically on the ownership or use of land or buildings by the owners, and include current taxes on net wealth and on other assets (jewellery, other external signs of wealth). Inter-household cash transfers include: compulsory alimony and child support, voluntary alimony and child support paid on a regular basis, regular cash support to persons other than household members and regular cash support to households in other countries.

household disposable income amounts to 37.8, with Croatia and Slovenia having much lower levels of inequality with Gini coefficients of 29.9 and 23.7, respectively.

Table 1 Total Household Gross Income and Its Components (in €, per Adult Equivalent, Annual)

	Household gross income (HGI)	Wealth taxes and transfers		Taxes on income and SSC		Household disposable income	
		Average	Share in HGI	Average	Share in HGI	Average	Share in HGI
Serbia	4,083	25	0.6%	1,142	28.0%	2,915	71.4%
Croatia	8,668	39	0.5%	1,779	20.5%	6,851	79.0%
Slovenia	17,749	144	0.8%	4,023	22.7%	13,583	76.5%

Source: Authors' calculation based on the SILC (2017) data.

Higher disposable income inequality in Serbia is a result of higher gross income inequality (40.8 in Serbia, compared to 34.4 in Croatia and 29.0 in Slovenia), but is also a consequence of lower redistributive capacity of income taxes and social security contributions. In Serbia, ITSSC system reduces inequality of disposable income by 3 Gini points, while in Croatia inequality is reduced by 4.5 and in Slovenia by 5.3 Gini points. The analysis of Kakwani index for the overall ITSSC component confirms this conclusion as index is much lower in Serbia (0.1) than in Slovenia or Croatia (0.2 and 0.18 respectively). Higher Kakwani index points to higher progressivity of the tax system.

Table 2 Gini Indices and Progressivity of ITSSC System

	Inequality (Gini index)			ITSSC progressivity	
	Household gross income	Household disposable income	Inequality reduction due to ITSSC	Concentration coefficient	Kakwani index
Serbia	0.408	0.378	0.030	0.508	0.100
Croatia	0.344	0.299	0.045	0.532	0.188
Slovenia	0.290	0.237	0.053	0.495	0.205

Source: Authors' calculation based on the SILC (2017) data.

4.2 Microsimulation Analysis: Policy Swapping Scenarios for Serbia

In this section we use microsimulation analysis based on the harmonized and non-harmonized SILC data for Serbia to separate the redistributive effect of labour taxes from the impact of non-labour income taxes and social security contributions. We then analyse changes in disposable income that would occur if the labour income tax system currently in place in Serbia is replaced with Croatian and Slovenian system, including both changes in the tax rates and in methods for the calculation of tax allowances.

Table 3 presents the descriptive statistics and progressivity of simulated labour income taxes following the rules of the current tax system in Serbia and in case Croatian and Slovenian labour taxation systems is applied on the Serbian labour income distribution. Given the relatively higher tax rates and lower allowance levels compared to Croatian system, the application of the Slovenian tax parameters would result in highest average taxes on labour income among the three countries. Since Croatian system has the most generous allowances compared to other two countries it yields lowest average tax per adult equivalent.

Because Slovenian system has more tax brackets and the top tax rates are higher than in the case of Croatia its capacity to reduce inequality is larger than the capacity of the system in Croatia. On the other hand, allowances are much more generous in the Croatian tax schedule than in Slovenian which means that low income households are more exempted from the taxes and this would lead to lower poverty rates in case Croatian system is applied to Serbian population. Finally, tax revenues collected with the Slovenian system would be almost double the amount of revenues collected with current taxation rules in Serbia or in case Croatian tax parameters are applied.

We also observe from Table 3 that labour taxes in Serbia are slightly more progressive than remaining part of the ITSSC, evidenced by much higher Kakwani index (0,137 for labour taxes; 0.1 for total ITSSC; compare Tables 2 and 3). However, out of the 3 Gini points reduction capacity of the ITSSC only 0.7 is due to labour taxes (compare Tables 2 and 3). This is due to the fact that labour taxes represent only about 16% of total ITSSC.

Table 3 Redistributive and Budgetary Effects of Labour Taxes in Serbia according to Three Labour Tax Scenarios

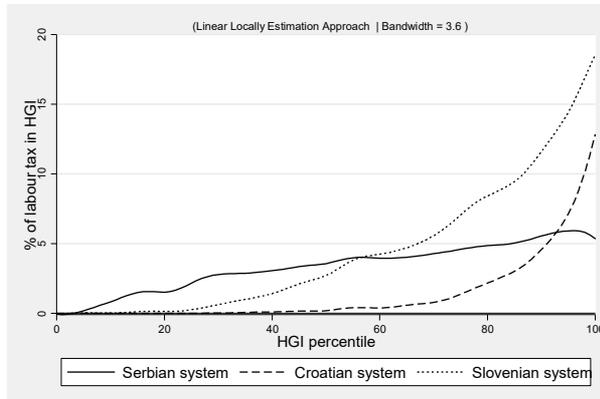
Tax system	Descriptive statistics			Progressivity (compared to HGI)	
	Average tax per adult eq.	Share in HGI	Total revenue (in mln. €)	Kakwani index	Gini decrease due to labour tax
Serbian	185	4.5%	802	0.137	0.007
Croatian	142	3.5%	650	0.444	0.021
Slovenian	341	8.4%	1,513	0.314	0.036

Source: Authors' calculation based on the SILC (2017) data for Serbia.

The application of the Croatian or Slovenian labour tax system to Serbian earnings distribution would clearly result in stronger reduction in inequality compared to the current system in place. Kakwani index for Serbian taxes is 0.137, while the same index for Croatian and Slovenian tax system is 0.444 and 0.314. At the same time, Gini decrease due to labour taxes is more prominent in the case of Croatian and Slovenian systems (reduction of 2.1 and 3.6 Gini points, respectively) than for the Serbian one. When we compare the two reforms, Croatian tax schedule is more progressive in the terms of Kakwani index due to higher share of earnings exempted from taxes (Figures A1 to A3 in the Appendix). On the other hand, because taxes have higher shares in earnings along the whole distribution (Figures A1 to A3 in the Appendix), the system in Slovenia has a larger redistributive capacity compared to the one in Croatia as evidenced by the higher Gini decrease due to labour taxes (Table 3).

Figure 1 extends the analysis of the progressivity of the three tax systems by looking at the share of labour taxes in total HGI according to percentiles of the HGI distribution. All three systems are applied to Serbian data. Given the very generous tax allowances in Croatian system labour taxes are practically non-existing for the bottom half of the HGI distribution. From the 6th to the 9th decile they are increasing rapidly but only at the top of the distribution they are higher than the ones in the current Serbian system. On the other hand, labour taxes according to Slovenian system are lower than the ones currently applied in Serbia for bottom half of the HGI distribution, but higher starting from 6th income decile. For the top income decile Slovenian system

yields very high taxes – up to 20% of the HGI, while for the current system in Serbia taxes for top income decile are not larger than 6% of HGI. Figure 1 also indicates that Slovenian system results in higher taxes than Croatian system at all parts of the HGI distribution.



Notes: Percentiles are calculated using the household gross income (HGI) per adult equivalent. Lines in the graph present the share of labour taxes in the HGI.

Source: Authors' calculation based on the SILC (2017) data for Serbia.

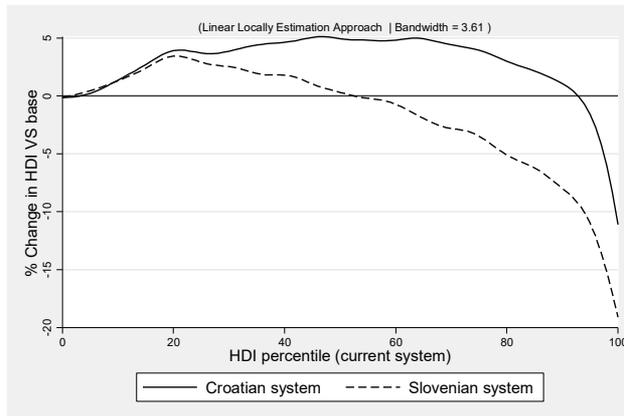
Figure 1 Share of Labour Taxes in Total HGI at Different Deciles of HGI Distribution

In Figure 2 we present how differences in the tax systems would translate in the changes in the equivalised household disposable income (HDI). Figure 2 shows percentage changes in HDI that would occur if Serbian tax system is replaced by Croatian and Slovenian one. For the Croatian tax schedule, HDI would be higher across the whole income distribution, except for the top decile. This is due to the fact that parameters of the Croatian system generate taxes that are lower than taxes resulting from the Serbian system at all parts of the distribution except for the very top (Figure 1). Positive changes in HDI are mostly pronounced at the middle of income distribution where equivalised HDI would be higher by up to 5%. At the top of the distribution HDI would be lower by no more than 10%.

Due to higher average taxes in Slovenian system average HDI would decrease. However, as evidenced in Figure 2, that shows changes in the disposable income per adult equivalent per percentiles in Serbia that would occur if Slovenian and Croatian labour taxes were applied instead of the current system, HDI at lower parts of the distribution would increase (by maximum of 3%), while incomes at the upper half of the distribution would decrease. This corresponds to the previous Figure 1 where parameters of the Slovenian system generate lower taxes compared to Serbian system in the lower half of the distribution but higher in the upper part of the distribution. The decrease in HDI is most prominent at the top of the income, up to 20%.

In Figure 3 we present the same indicator as in Figure 2, but now contrasting the effects that the tax system change would have on equivalised HDIs of households without children (left panel) and households with two or more children up to 17 years

of age (right panel). Again, we are looking here at changes in the disposable income in Serbia that would occur if current system is replaced with Slovenian and Croatian labour taxes. Changes in the HDI of households without children (which represent about half of the population) is similar the one presented in Figure 2: for Croatian system HDI is lower at all parts of the distribution apart from the top decile; while for Slovenian system HDI is slightly higher at bottom half and lower at the upper half of the distribution. For households with two or more children (that constitute about one quarter of the population in Serbia) we observe that two lines representing HDI change have moved up and more to the right indicating that, compared to households without children, a higher share of these households would experience positive effects on their HDIs due to reforms of the tax systems. This is because higher tax allowances for households with more dependent household members means they are being taxed less. Croatian system would bring increase of the HDI of up to 7% for the middle of the income distribution while only households at the very top would experience decrease of their HDI. In the case of the Slovenian tax schedule incomes of the households at the bottom two-thirds of the income distribution would increase by maximum of 5%, while households from top third of the distribution would face a decrease in the HDI.

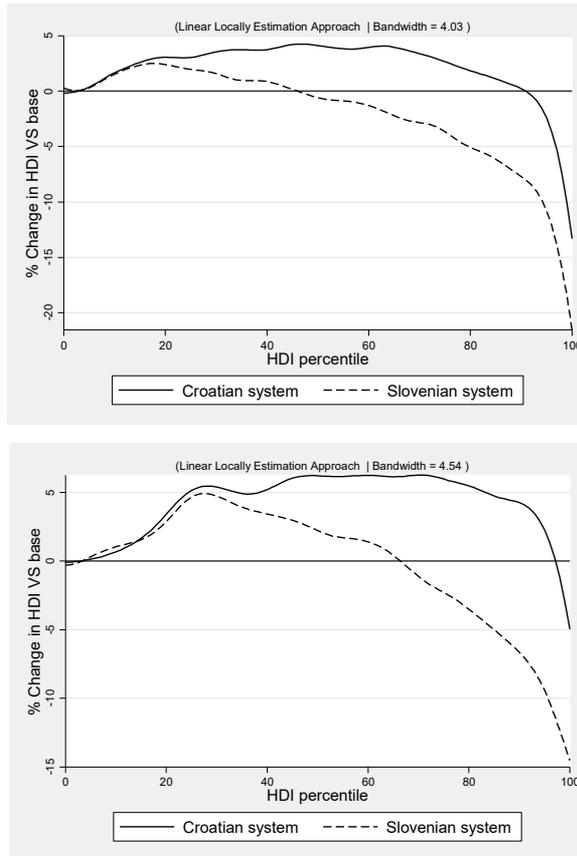


Notes: Percentiles are calculated using the baseline household disposable per adult equivalent income. Changes in the disposable income are presented as the percentage growth of the disposable per adult equivalent income in the reform scenario compared to the baseline scenario.

Source: Authors' calculation based on the SILC (2017) data for Serbia.

Figure 2 Changes in the Disposable Income per Adult Equivalent per Percentiles in Serbia

In Table 4 we calculate inequality and poverty indicators for the three systems for the general population and across different household types. HDI Gini index would decrease by 1.4 and 2.8 points in case current tax rules in Serbia are replaced with the ones applied in Croatia and Slovenia, respectively. As Figure 2 shows lower inequality stems mainly from the lower HDI at the top of the income distribution in the case these two system were applied. Slovenian tax schedule has higher inequality reducing capacity given that decrease of the HDI at the top of the income distribution is more prominent.



Notes: Percentiles are calculated using the baseline household disposable per adult equivalent income. Changes in the disposable income are presented as the percentage growth of the disposable per adult equivalent income in the reform scenario compared to the baseline scenario.

Source: Authors' calculation based on the SILC (2017) data for Serbia.

Figure 3 Changes in the Disposable Income per Adult Equivalent in Serbia per Percentiles in Households without Children (Left), Households with Two or more Children (Right)

At risk-of-poverty rate would decrease by 1.2 percentage points if Serbian tax parameters are replaced with Croatian system and 0.8 percentage points if replaced with Slovenian one. Higher poverty reducing impact of Croatian system is due to large tax allowances for individuals with low earnings which result in higher increase of their HDI. Tax allowances in both systems are more generous for households with two or more children which leads to larger increase of HDI (Figure 3, right) and reduction of their poverty rates – by 1.9 percentage points for Croatian system and 1.5 for Slovenian. This is particularly relevant given that households with two or more children have significantly higher poverty rates than those with no children or with one child.

Table 4 Household Disposable Income in Serbia (in €, per Adult Equivalent, Annual) according to Three Labour Tax Scenarios

Tax system	Gini index (HDI)	At-risk-of- poverty rate			
		Overall	Households without children	Households with one child	Households with two or more children
Serbian	0.378	25.7%	23.1%	23.8%	32.1%
Croatian	0.364	24.5%	22.2%	23.1%	30.2%
Slovenian	0.350	24.9%	22.5%	23.4%	30.6%

Source: Authors' calculation based on the SILC (2017) data for Serbia.

5. Concluding Remarks

Despite sharing a common background Serbia, Slovenia and Croatia developed their fiscal systems in different ways over the last three decades. Our results indicate that the redistributive capacity of the Slovenian income tax system is largest among the three countries with Serbia being the least able to reduce inequality with tax instruments and Croatia falling between the two. When this is coupled with lowest pre-fiscal income inequality in Slovenia and highest in Serbia the result is that Slovenia has one of the lowest inequalities of disposable income in Europe, Serbia one of the highest, while Croatia is at the average EU level of income inequality.

This paper reviewed changes in personal income taxation in three countries of the former Yugoslavia after its dissolution. Given the socialist legacy it was expected that high value would be placed on equity in redesigning the tax schedule but while in Slovenia and Croatia that was a case, tax reforms in Serbia neglected equity concerns. Serbia followed the path of large number of former communist countries that adopted flat tax although it was never on the list of reforms that the European Union in the accession process or the international financial institutions suggested them to implement. In fact, World Bank and International Monetary Fund even warned against consequences of the flat tax solution in terms of lower revenues collected and adverse effects on inequality. For domestic policy makers adopting flat taxes was an opportunity to signal to the investors that they are business-friendly environments. This was despite the fact that there was no evidence that flat tax could really improve the competitiveness of the country or attract new investments, as former communist economies were among the first one to experiment with this kind of tax schedule.

Our paper is a reminder of the rarely mentioned episode from the 1990s when Serbia opted for the progressive tax schedule but it was effectively suspended from the start due to political and economic crisis in the country. After the regime changes in 2000s flat tax system was a choice of the policy makers while re-introduction of the progressive parameters was never considered. In 2000s Slovenia and Croatia discussed reforms of their system along the lines of a flat tax proposals. Slovenia showed to have the most mature policy debates with many stakeholders included in discussing policy alternatives. It preserved the progressive structure of its personal income tax system with many tax brackets. Croatia, on the other hand, was more tempted to switch to flat tax and though it has not been adopted discussions around the topic affected the reforms of the tax system that was pretty much simplified over the years.

By applying Slovenian and Croatian personal income tax schedules to a Serbian context our results show that Slovenian system has larger capacity to reduce income inequality as measured by the Gini coefficient. Croatian system would achieve lower levels of poverty given more generous tax allowances that lead to tax exemption of low-income households. Both systems provide larger tax allowances for more numerous households and therefore have higher capacity to reduce their poverty rates.

In the period following the 2008 crisis many countries started to question the flat tax and suggested the return to more progressive tax schedules. First one was Slovakia in 2013 soon to be followed by Czech Republic. Albania, Ukraine, and Latvia abandoned their flat taxes in the aftermath of the 2008 economic turmoil. With new crisis on the horizon due to COVID-19 pandemics and expectations that inequality and poverty would increase this could be a new opportunity to question the benefits of flat taxes in other countries.

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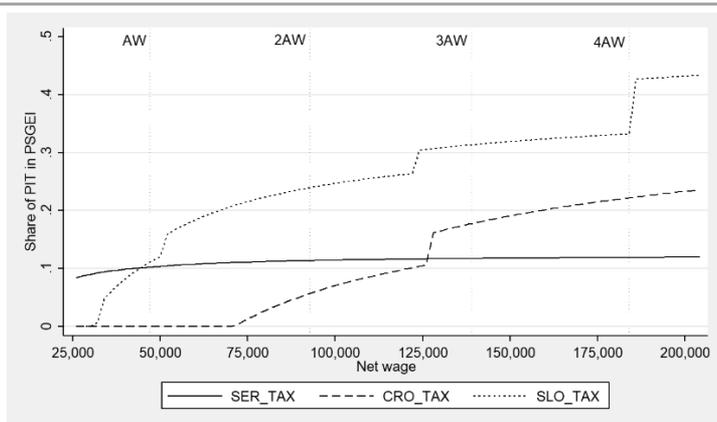
Appendix

Table A1 Personal Income Tax Systems in 2017

	Slovenia % APSGEI	Croatia % APSGEI	Serbia % APSGEI
General (personal) allowance			
Income bracket 1	0-62	0-∞	0-∞
Amount 1	36	60	22 (for employees)
Income bracket 2	62-72	/	/
Amount 2	25	/	/
Income bracket 3	>70	/	/
Amount 3	18	/	/
Allowance for dependants			
Spouse	14	28	/
1 child	14	28	/
2 children	28	67	/
3 children	53	123	/
Income brackets (rates)			
Bottom	0-45 (16%)	0-277 (24%)	0-∞ (10%*)
Middle 1	45-114 (7%)		
Middle 2	114-268 (34%)		
Middle 3	268-396 (39%)	>277 (36%)	
Top	>396 (50%)		

Notes: APSGEI: average pre-sic gross employment income. APSGEI in Croatia in 2017: HRK 75,718. APSGEI in Slovenia in 2017 17,896 euros. APSGEI in Serbia in 2017 51,354 RSD⁷. In Slovenia there is additional allowance for 4th dependant children 34.58%, 44.46% for fifth child and additional 9.8% for each next child. * Tax base for Serbia is gross wage which beside APSGEI includes social security contributions. At the level of the average APSGEI.

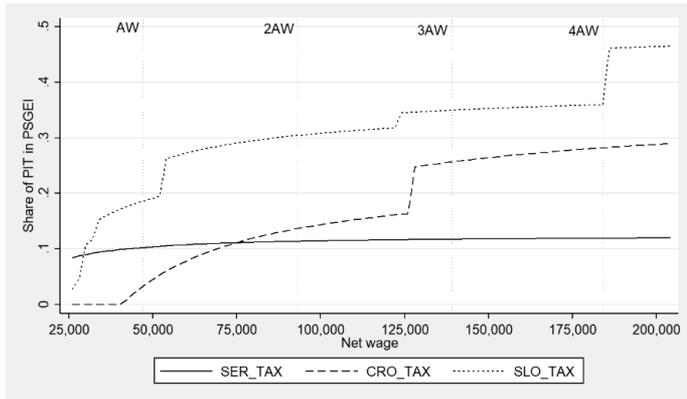
Source: Slovenian and Croatian system are presented according to Urban, Čok, and Verbič (2019). For additional information on the parameters we use EUROMOD reports for Croatia (Urban, Bezeredi, and Pezer 2017).



Source: Authors' calculations.

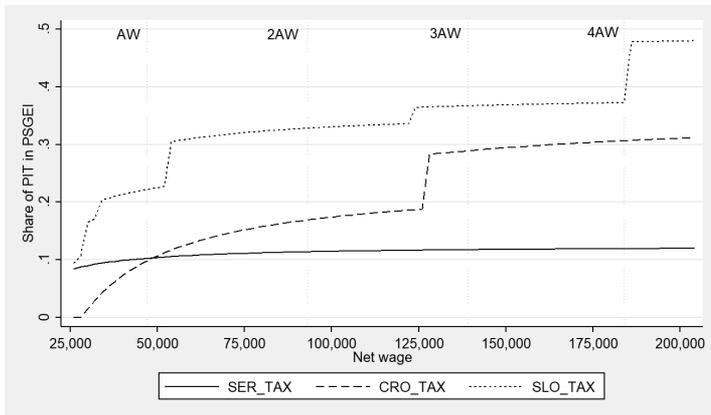
Figure A1 Share of PIT in the Pre-SIC Gross Earnings Income for a Person with a Dependent Spouse and Two Dependent Children, Compared to the Level of the Net Wage

⁷ This amount is scaled down in the simulations for the difference between the average wages in administrative and survey data.



Source: Authors' calculations.

Figure A2 Share of PIT in the Pre-SIC Gross Earnings Income for a Person with a Dependent Person (Spouse or a Child), Compared to the Level of the Net Wage



Source: Authors' calculations.

Figure A3 Share of PIT in the Pre-SIC Gross Earnings Income for a Person with No Dependents, Compared to the Level of the Net Wage